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INDEX

Sixty-Ninth Quarto Volume—July 1, 1920, to December 31, 1920

AUTHORS

Aeworth, W. M., 1079
Aishton, R. H., 887
Aitchison, Clyde B., 835
Alexander, L. B., 475
Anthony, J. T., 1117
Armstrong, A. H., 742
Atterbury, W. W., 563, 965, 1123
Averill, E. A., 1116

Bailey, Warner, 529
Balch, C. F., 685, 1111
Ball, Webb C., 617
Barker, F. M., 873
Barlow, H. C., 887
Bayfield, A. F., 883
Bebb, J. E., 475
Beeuwkes, Reiner, 235
Bell, Harry J., 876
Bell, J. Snowden, 343
Bennett, J., 824, 991
Berry, E. B., 695
Bierd, W. G., 801
Binkerd, Robert S., 848
Blake, T. W., 875
Borland, W. P., 95, 708
Brandt, E. L., 175
Bridgeman, W. G., 643

Castle, O. C., 874
Chamberlain, E., 869
Clark, Edgar E., 833
Clark, J. C., 1157
Columbia, Curtis F., 961
Cook, C. C., 325
Cornelison, H. L., 483
Curd, W. C., 829
Cuyler, Thomas De Witt, 1033, 1159

Davis, Francis W., 1012
Dean, F. W., 266
De Groot, E. H., Jr., 826
Diefendorf, R., 51
Dietrich, C. H., 890
Dixon, Frank Haigh, 7
Dow, Marcus A., 702
Dunn, B. W., 684
Dunn, Samuel O., 273, 427, 605

Eidson, M. M., 875
Emery, James A., 1107

Felton, Samuel M., 15, 749
Fosdick, E. G., 690
Fritts, J. C., 526
Fugina, A. R., 439

Garner, F. H., 643
Gennet, C. W., Jr., 921
Gibbs, A. W., 919
Glenn, John M., 1052
Glessner, C. C., 889
Gompers, Samuel, 192
Goodchild, A. A., 51, 392
Gutheim, A. G., 1149

Hanna, D. B., 266
Hardin, F. H., 527
Harvey, F. H., 270
Hawes, Richard S., 790
Henderson, George R., 109
Henkel, C. C., 396
Henry, S. T., 645
Hermann, R. L., 603
Hickey, W. F., 751
Hines, Frank T., 1014
Horrigan, J. F., 888
Hutchins, F. Lincoln, 176, 874

James, J. W., 875
Jenks, C. O., 873
Johnson, Alba B., 737
Jones, Arthur B., 892

Keefe, W. B., 474
Kell, G. A., 519
Knowles, C. R., 760
Koolidge, K., 514

Landon, W. G., 266, 1009
Lang, Charles F., 1102
Latimer, James B., 1144
Lauck, L. G., 620, 790
Lauck, W. Jett, 238
Lavis, F., 686
Lisman, F. J., 143
Loomis, E. E., 316

McAuliffe, Eugene, 447
McBride, Thomas C., 59
McDonald, Hunter, 846
McKeen, A. H., 439, 1144
McNitt, A. R., 888
Markham, Charles H., 1057
Mathews, T. W., 1061
Mercier, A. F., 828
Meredith, J. W., 525
Miller, A. J., 525
Montgomery, H. S., 784
Morse, C. A., 602, 1011

Muhlfeld, John E., 739
Murray, W. B., 709

Nicoles, K. M., 684

O'Meara, F. W. H., 889, 890
Orman, F., 344

Parsons, Col. William B., 1013
Peabody, J. A., 1170
Pearce, E. S., 644
Plant, L. G., 877, 929, 985
Prince, Theodore, 239
Pulleyn, John J., 703

Raymond, Wm. G., 353
Reed, H. L., 1052
Reid, John T., 891
Reimann, R., 152
Ridgway, Arthur, 618
Rink, G. W., 1024
Risque, John P., 267, 313, 443, 489, 573, 735, 791
Robinson, B. M., 967
Roesch, F. P., 827

Saunders, J. E., 621
Senger, J. W., 481
Shaw, Walter A., 834
Shepard, F. H., 744
Simms, William H., 734
Smart, A. G., 824
Smith, C. B., 1115
Smith, V. P., 556
Southcombe, James E., 456
Spence, Lewis J., 1153
Strong, J. B., 928
Stubbs, R. M., 346

Thayer, Robert E., 307, 566, 658, 1027, 1109
Thom, Alfred P., 765
Thorpe, W. A. C., 7
Tice, E. J., 874

Vauclain, S. M., 537
Von Schrenk, Dr. Hermann, 659

Weissenbruch, L., 29
Wells, Henry M., 456
Whiting, Frank V., 345
Willard, Daniel, 71, 244, 787, 1009
Wollner, William S., 691, 1161
Wood, A. J., 343, 473
Wright, Paul, 153

GENERAL INDEX

[Illustrated articles are indicated thus; Editorials thus†; Letters to Editor thus‡.]*

A

Accidents (See also Safety First):
Baltimore & Ohio at South Chicago, 406
Casualties in 1919, 1166
Denver & Interurban, near Globeville, 1110
Grade Crossings Protected by Humps in Tennessee, 1162*
Great Britain in 1919, 858
I. C. C. Bulletin 74, 894
I. C. C.'s Five-Year Record, 89†, 95
I. C. C. Investigation Reports, 152, 625, 708
Lackawanna & Wyoming Valley near South Pittston, Fa., 117, 1176
Locomotive Failures, 1912-1920, 1071*
Minneapolis & St. Louis near Arnold, Iowa, 117
Monthly Summaries of Train Accidents: April, 70; May, 441
Motor Car Accidents, 618
New York Central at Erie, 715, 1060*
New York Central at Schenectady, 428†, 454, 473‡
"No-Accident" Campaign; B. & O., 715, 1037
Norfolk & Western at Rural Retreat, 715
Peoria & Pekin Union near Acme, 428†, 454
Rear Collisions Reduced; Penn., 1037
St. Louis-San Francisco near Keighley, 329
Southern Pacific at Bertha, 454
Train Rules and Collisions, 553†, 556‡, 1141†, 1144‡
Accounting:
Bookkeeping, G. W. Anderson on, 992
Cost Records in Shops, 48†
Engineer Accountants, 1139†
Material; Canadian Pacific, 392
Mechanical Devices, 509†, 730†, 865†
Prevention of Mistakes, The, 509†
Pullman Surcharge, 372, 624
Acme Collision, 428†, 454
Additions and Betterments, Capital Expenditures for, 326
Adjustment Boards (See National)
Adler's Highway Crossing Signal, 222, 1124*
Advertising by the Railroads, 89†, 670
Advisory Committee of Association of Railway Executives, 47†, 55
Africa: Railroad Notes, 165
Air Brakes on Swedish Railways, 630
Alaska Railroad, Progress on, 1163*
Allocation of Standard Equipment, 278
American Association of Engineers:
Conference on Employment and Education, 866†, 899
Definition of "Engineer," 670
National Railroad Council, 249
Peabody, J. A., on Problems, 410
American Association of Passenger Traffic Officers: Election of Officers, 722
American Association of Port Authorities: Coordination of Rail and Marine Terminals, 1040
American Bankers' Association:
National Transportation, 790
Resolution on Transportation, 769
Transportation Act, The, 703
American Car & Foundry Company:
Annual Report, 39
Box Cars for Cuba Railroad, 141*
American Economic Association: Transportation Problem in the Coal Industry, 1149
American Electric Railway Association:
Heavy Electric Traction Discussed, 651*
American Engineering Council:
Meeting in New York, 1176
Meeting in Washington, D. C., 933
American Federation of Labor: Government Ownership Favored, 16
American Industrial Bankers' Association: Transportation Act, The, 657
American Institute of Electrical Engineers: Steam Versus Electric Locomotives, 732†, 739*, 919
American International Corporation: Henry, S. T., on South American Railways, 645*
American Iron & Steel Institute:
Annular Blooms for Rail Manufacture, 150*
Rail Consumption, 1874-1919, 956†, 964
American Locomotive Company:
Belgian Order Completed, 1069*
Earnings for Six Months, 255
Meter Gage, for South America, 839*
Saddle Tank Locomotive, 798*
American Manufacturers' Export Association: Transportation and the Citizen's Responsibility, 737
American Petroleum Institute: Meeting, 897
American Radiator Company: Promoting From Within, 474‡
American Rail Joint, 1173*
American Railway Association:
Annual Meeting, 893, 923
Automatic Train Control Committee, 738, 856
Automatic Train Control Discussed at Chicago, 708, 801
Freight Claim Prevention Campaign, 731†, 750, 866†, 887
Per Diem Rates, 780†, 799, 813, 923, 1081, 1175
American Railway Association (*Continued*):
Perishable Freight Division Established, 117
Reports of Executive Committee and Division General Committees, 923
Section III, Mechanical:
Equipment Painting Division's Convention, 529
Interchange Rules Modified, 627
Signal Division:
Annual Meeting, 118, 147
Meeting at New York, 1015
Substitute Crossties, Report on, 275*, 382†
Tank Car Outlets, 1074
Telegraph and Telephone Division's Meeting, 535, 554†, 571
American Railway Bridge and Building Association:
Annual Convention, 759, 770, 803
Feeding of Laborers; N. C. & St. L., 846
American Railway Development Association: Meeting at Chicago, 896
American Railway Engineering Association:
Apply the Recommended Practices, 596†, 602
Classification of Old Bridges, 847
Federated Societies, Vote Against, 640†, 670
Rail Failures in 1919, 1168
American Railway Express Company:
Consolidation Approved by I. C. C., 110, 150, 161, 1119 (decision)
Contract with Railroads, 248, 292, 1140†, 1154
Rates Increased, 317, 373, 574
Wage Increases, 251, 271
American Railway Supplies in South America, 262†, 267*, 313*, 443*, 573*
American Railway Tool Foremen's Association: Annual Convention, 442, 460
American Short Line Railroad Association (See Short Lines)
American Society for Steel Treating, 496
American Society of Civil Engineers:
Officers Nominated, 669
Rail Creeping, 841
River Bank Protection, 829*
Vote Against Membership in Federated Societies, 856
Woodward, P. H., on Traffic To and From New York City, 1083
American Society of Mechanical Engineers:
Annual Meeting, 1009, 1039
Locomotive Feed Water Heating, 59*
Materials Handling Section, 91†, 329
Modernizing Locomotive Terminals, 1024*
Modernizing Old Locomotives, 1098†, 1115
Railroad Section, 2†, 473‡, 644‡
Steam and Electric Locomotives, 732†, 739*, 919
American Welding Society: Chicago Section, 327
American Wood Preservers' Association: Officers Nominated, 1038
America's Foreign Competition, 1027
Anderson, Hon. George W.:
Railroad Wages and Bookkeeping, 992
Unified Railways Advocated, 837
Annual Report (See also names of companies):
Bureau of Locomotive Inspection, 1071*
Interstate Commerce Commission, 1019, 1075
Postmaster General, 1064
Annular Blooms for Rail Manufacture, 150*
Anthracite Miners' Wages Increased, 410
Antofagasta & Bolivia Railway, The, 730†, 736*, 791*
A. P. B. vs. Overlap Signaling, 439
Application for Certificates of Convenience and Necessity, 14
Appropriations Recommended by House Committee, 1175
Argentina:
Electrification Contemplated, 900
Henry, S. T., on Railways, 647*
Locomotives, Meter Gage, 839*
Railroad Notes, 122, 165, 503, 673, 814, 1085
Arnold, Iowa, Accident, 117
Assigned Car Rule, 74, 588
Assigned Engines, 1004†
Associated Industries of Massachusetts: Transportation Act, 787
Association of Railway Electrical Engineers: Annual Convention, 795
Association of Railway Executives:
Advisory Committee Created, 47†, 55
Boards of Adjustment Abolished, 1066
Capital Expenditures for 1920, 326
Compensation for Excess Empty Car Movement, 453
Express Contract, 248, 292, 1140†, 1154
Farmers' National Council on Government Ownership, Reply to, 1033
Financing and Allocation of Standard Equipment, 278
Loans Recommended for Equipment and Facilities, 31, 57, 263†, 289
Maintenance Allowance During Guaranty Period, 397, 711
Meeting at Chicago, 453
Meeting in New York, 799
Rate Increase on Commodities, 561
Resolutions on Speeding Up Freight Movement, 133†, 150, 173†, 261†, 304†, 446
Association of Railway Executives (*Continued*):
Special Committee on Car Service, Report of, 55
Trumbull, Frank, Tribute to, 280
Atchison, Topeka & Santa Fe: Annual Report, 431†*
Atocha-La Quiaca Line, 503
Atterbury, W. W.:
Labor Question, 965, 1123
Restoring Pre-War Efficiency, 564
Attorney General (See Compensation Contracts —Guaranty Payment)
Austin Company: Standardization of Electrical Distribution in Pennsylvania's Crestline Terminal, 483*
Australia: Railroad Notes, 205, 501, 949
Austria: Railroad Notes, 333, 815, 1085
Automatic Block (See Signaling)
Automatic Connectors (See Car—Connector)
Automatic Stop (See Automatic Train Control)
Automatic Train Control:
A. R. A. Joint Committee, 738, 856
Automatic Block Signals to Prevent Accidents, 1144‡
British Committee, 778†, 815
Discussion at Chicago, 708, 801
New York Committee, 291, 409
Regan Train Control Demonstrated in England, 724*
Shadle Stop; C. I. & W., 562
Test; N. Y. C., 291
Automatic Train Signal and Stop, Shadle; C. I. & W., 562
Automatic Transportation Company: Trucks, Electric Crane, 195*
Automobile Transportation Cost, 214†
Automobiles Shipped on Steel Decks, 108*
Average Haul of Freight, 856
Average Mileage (See Car Service)
Average Trainload, 947
Aviation: Mail Service, 459, 495, 541, 545

B

Bad Order Car (See Car Service)
Baggage, A Company to Trace, 19
Bailey, F. J.: Trainmen's Rest-Hours, 329
Baldwin Locomotive Works:
Belgian Order Completed, 1069*
Meter Gage, for South America, 839*
"Pershing" Type for Roumania, 567*
Switchers, Six-Coupled and Eight-Coupled, 797*
Baltimore & Ohio:
Accident at South Chicago, 406
"No-Accident" Campaign, 715, 1037
Bridge Transfer at Pittsburgh, 1097†, 1103*
Personnel Department, C. C. Cook on, 325
Timetable, First, 118
Water Supply in Coal Territory, 152
Baltimore: Pennsylvania Grain Elevator, 9*, 93*
Bangor & Aroostook: Wage Increases, 329, 369, 409
Bank, B. L. E. National, 809
Barnes, Cotton Loading Machine, 407*
Beahm Train Pipe Connector, 451*
Beck, A. E.: Store Door Delivery, 1127
Belgium:
Cab Signals, 29
Feedwater Heating, 310
German Freight Cars Ordered, 416
Locomotives from America, 1069*
Railroad Notes, 37, 122, 629, 814
Superheaters for Locomotives, 374
Benson, Admiral W. S.: Co-operation of Railways with Merchant Marine, 907†
Benton, John E. (See Intrastate Rate Proceedings)
Bertha Collision, 454
Bibbins, J. R.: South Water Street Project in Chicago, 52*
Bill of Lading, Claims for Order Notify Shipments Delivered Without Surrender of, 891
Bituminous Coal (See Coal)
Blacksmith Shop (See Shops)
Blanket Supplement for Rate Advance, 287
"Bleeding the Public," 263†
Block Signals (See Signaling)
Blooms, Annular, for Rail Manufacture, 150*
Board of Referees: Compensation of Chicago & Alton, 873
Boards of Adjustment (See National Boards)
Boiler (See Locomotive)
Bolivia:
Railroad Notes, 503, 815
Railways, J. P. Risque on, 730†, 735*, 791*
Bolshevist Russia's Economic Disaster, 165
Bonus System, Restoration of the, 341†
Bookkeeping (See Accounting)
Booster (See Locomotive)
Boston & Albany: Rail Joint, 1173*
Boston & Maine: Reconstruction of East Cambridge Engine House, 305*
Box Car (See Car, Freight)
Bradshaw, George: Safety Poster, 677
Brazil:
Electrification of Railroads, 546
Locomotives, Meter Gage, 838*

GENERAL INDEX—Continued

[Illustrated articles are indicated thus; Editorials thus†; Letters to Editor thus‡.]*

Bribes, Campaign Against; Pennsylvania, 410
Bridgeport, Loading L. C. L. Freight at, 1169*
Bridges and Buildings:
Baltimore & Ohio Bridge Transfer at Pittsburgh, 1097†, 1103*
Bridge Painting, 649
Bridge Renewals and Repairs, 132†
Car Repair Shed; N. P., 69*
Classification of Old Bridges, 847
Convention at Atlanta, 759, 770, 803, 846
Detroit-Windsor Bridge, 161
Forms for Bridge Inspection, 803
Grain Elevator at Baltimore; Penna., 9*, 93*
Gypsum Tile Roof, 961*
Michigan Central Bridge Over Rouge River at Detroit, 475*
N. Y., N. H. & H. Bridge at New London, Conn., 433*
P. & R. Bridge at Harrisburg, 869*
Program for Bridge Renewals, 682†
British (See Great Britain)
Brotherhood of Locomotive Engineers: National Bank, 809
Brotherhood "Unit-Action" on Wage Award Fails, 185
Buick Motor Company: Decks for Shipping Automobiles, 108*
Building Situation, Senate Committee on, 1113
Bureau (See also Interstate Commerce Commission—Annual Report)
Bureau of Explosives:
Fuses, How to Use, 856
Tank Car Outlets, 1074
Bureau of Locomotive Inspection, Report of, 1071*
Bureau of Railway Economics:
Freight Car Performance: August, 781†; September, 928
Operation of British and U. S. Railways Compared, 937
Passenger Rates in United States and Europe, 493
Railway Earnings in 1919, 756
Rates on Articles in Common Use, 561
Bureau of Safety (See also Interstate Commerce Commission—Accident Reports): Annual Report, 1165
Bureau of Standards: Cast Iron Cylinder Parts, 619
Bureau of Statistics (See Freight Traffic)
Burg, C. S.: Rate Advance Testimony, 65
Business:
Buy Now and Ship Now, 908†, 1003†, 1005†, 1049†, 1050†, 1102‡
Decline and Railway Retrenchments, 867†
Government Delays in Paying, 641†, 909†
Time to Take Lead, 865†
Buy American Railroads, 430†, 495, 733†, 883*, 908†
Buy Now! 908†, 1005†, 1049†, 1050†

C

Cab Signals in Europe, 29
Caille-Potonie Feedwater System, 307*
California Demurrage, 171†, 177‡, 349*
Calculating Maintenance (See Maintenance)
Cambria Steel Company: Locomotives, Eight-Coupled Switching, 797*
Canada:
Rate Increases, 163, 204, 262†, 331, 479 (decision)
Rate Increases and Cost of Living, 670
Rate Reductions, 1177
Wage Increases, 623
Canadian National Railways:
C. P. R.-C. N. Controversy Over the Turtleford-Shellbrook Line, 266‡
Employees Barred from Politics, 768
Canadian Pacific:
Car, Hopper Bottom Box, 785*
Construction of the Turtleford-Shellbrook Line, 266‡
Decks for Carrying Automobiles, 108*
Employment of Returned Soldiers, 327
Material Accounting, 392
Memorials to Employees, 624
Safety First Bulletin, 131†, 510†
R. R. Y. M. C. A. Work, 977
War Veterans Re-employed, 160
Capacity of an Engine Terminal, 49†
Capital and Labor, 1141†
Capital Expenditures for 1920, 326
Carbo Steel Decks for Automobiles, 108*
Car:
Connector, Beahm, 451*
Connectors, Automatic, 821†
Coupler Release Connection, E. D. J. O., 458*
Coupler, Type "D," 285*
Decks for Carrying Automobiles, 108*
Dump; D. L. & W., 807*
Grain Unloader, Stewart-Link, 93*
Fullman Sleepers, Improvements in, 661*
Car Building (See Car Production)
Car Distribution Graft Charges, 810, 1036
Car, Freight:
Box, 40-Ton; Cuba Railroads, 141*
Box, 60-Ton; C. P., 785*
Production (See Car Production)
Refrigerator, Pacific Fruit Express, 1145*
Safety Appliances, I. C. C. on, 482
Car, Freight (*Continued*):
Stencilling, Uniform, 529
Tank Car Outlets, 1074
Trinity Freight Unit System, 515*
Wrench, Swaco Hopper Car, 577*
Car Hire Bureau Abolished, 33
Car Loadings (See Car Service)
Car Mileage (See Car Service)
Car Orders in 1920, 262†, 597†, 779†, 815, 1005†, 1042
Car Production Statistics for July, 511†; August, 554†, 591; September, 772; October, 955†, 996; November and Eleven Months, 1179
Car Repair Shed; Northern Pacific, 69*
Car Repairers and Switchmen, Wages of, 175‡
Car Service (See also Commission on):
Aitchison, Clyde B., on, 835, 880
Average Car Load, August, 947
Bad Order Car Situation, 71, 130†, 133†, 211†, 339†, 1004†, 1142†
Chamber of Commerce on Increasing Car Supply, 446
Coal Car Supply During War Period, 1149
Contest on Increasing the Miles Fer Car Fer Day, 379†, 470†, 509†, 596†, 683†, 822†, 824 and 873 (prize papers)
Delays at Interchange Points, 2†
Demurrage in California, 171†, 177‡, 349*
Government and Private Operation Compared, 838
Increasing Average Car Mileage to 30 Miles Per Day, 71, 87†, 130†, 133†, 173†, 214†, 261†, 301†, 304†, 379†, 446, 470†, 509†, 525, 554†, 596†, 626, 683†, 778†, 821†, 822†, 824 and 873 (contest prize papers), 911†, 1005†, 1142†
Interchange Rules Modified, 627
Loading Competition; S. P., 409
Loading, Increasing, J. M. Glennon, 1052‡
Loading L. C. L. Freight at Bridgeport; N. Y., N. H. & H., 1169*
Loadings (See Car Service Division—Weekly Reports)
Maintenance and Track Conditions, 88†
Money for Suggestions on Increasing Car Movement, 261†
Per Diem Rates, 780†, 799, 813, 923, 1081, 1175
Picking Up Cars at Outlying Points, 130†
Priority for Railroad Orders, 63
Reconsignment of Coal in Chicago, 133†, 159
Reconsignment Order of I. C. C., 243
Repairs in Outside Shops, 71, 91†, 213†
Repairs, Moving Materials for, 263†
Repairs Needed, 130†, 133†, 339†, 1004†, 1098†, 1142†
Repairs to Cars and Locomotives, Cost of, 485
Report of Special Committee of Railway Executives, 55
San Francisco Committee's Recommendations on Crosstown Movement Within Terminals, 684‡
Special Service Cars, 339†
State Commissioners on, 835, 880
Watch the Individual Car, 339†
Car Service Division of American Railway Association:
Embargo Regulations, 647
Organization, 492
Weekly Reports of Freight Car Conditions, 17, 92†, 98, 156, 265†, 281, 301†, 321, 342†, 367, 379†, 405, 455, 470†, 491, 510†, 538, 575, 597†, 615, 641†, 666, 705, 732†, 757, 781†, 805, 843, 868†, 885, 907†, 931, 988, 1004†, 1028, 1065, 1099†, 1124, 1156
Car Shortage (See also Car Service):
Effect on Cost of Mining Coal, 102*
Local Initiative Is Necessary, 261†
New York Central Overcomes, 614*
Stamp Out Dishonest Practices, 172†
Supervision and More Supervision, 639†
Unloading, Reducing Time for, 214†
Car-Unloader, De Mayo, 577*
Cast Iron Cylinder Parts, 619
Castings, Normalized Steel, 730†
Casualties (See Accident)
Cedar Hill Yards; N. Y., N. H. & H., 179*
Central Railway Club: Upkeep of Freight Equipment, 481
Centralized System for Feeding of Laborers; N. C. & St. L, 846
Certificates of Convenience and Necessity, Applications for, 14
Chamber of Commerce of Kansas City: Railroads Handle Increased Amount of Freight, 15
Chamber of Commerce of the United States:
Creation of National Boards of Labor Adjustment Opposed, 990
Increasing Freight Car Supply, 446
Payment of Government Guaranty, 842
Railroad Committee, 117
Chairman Clark (See Clark)
Charleston, S. C.: The "Best Friend," 793
Charring to Preserve Wood, 879
Check, Pay; S. A. L., 1061*
Chesapeake & Ohio; Annual Report, 5†*, 41
Cheyenne Shop; U. P., 687*
Chicago:
Coal Cars, Reconsignment of, 133†, 159
Freight Tunnel, 52*
Chicago (*Continued*):
Outlaw Yardmen's Strike, 460, 481
Produce Terminal Proposed, 460
South Water Street Project, 52*
Chicago & Eastern Illinois:
Compensation to Be Fixed, 764
Reorganization Plan, 1167
Chicago & North Western: Reconsignment and Tracing Bureau, 527
Chicago, Burlington & Quincy:
Annual Report, 512†*
Capitalization of Surplus, 823†, 845, 945, 1073
Chicago, Milwaukee & St. Paul:
Gypsum Tile Roof on Roundhouse at North McGregor, Iowa, 961*
Lease of C. T. H. & S., 1016
Power and Maintenance Costs, 212†, 235
Chicago, Rock Island & Pacific:
Invest Your Money Carefully, 625
Telegraph Department, 459
Chicago Safety Council: Steam Transportation Committee, 1175
Chicago Section, American Welding Society, 327
Chicago Sectional Committee, Signal Division, A. R. A.: Automatic Train Control Devices, 708, 801
Chicago, Terre Haute & Southeastern Leased by C. M. & St. P., 1016
Chicago, West Pullman & Southern: Locomotive, Six-Coupled Switching, 798*
Chief Interchange Car Inspectors' and Car Foremen's Association: Annual Convention, 536, 543
Chile:
Electrification, 723
Railroad Notes, 673, 814, 949
China:
Locomotive Market, The, 570
Railroad Notes, 79, 165, 630, 674, 675, 723, 814, 900, 1085
Railroads Compared with Japanese, 109*
Rhea, Frank, Trade Commissioner, 375
Choate, Charles F., Jr.: New England Railroads, Condition of, 941
Cincinnati, Indianapolis & Western: Shadle Automatic Train Signal and Stop Tested, 562
Cincinnati Motor Terminals System, 91†, 219*, 1049†
Citizen's Part in Railway Development, The, 1067
Citizen's Transportation Committee: National Adjustment Boards Opposed, 495
Claims:
A. R. A. Prevention Campaign, 731†, 750, 866†, 887
Carriers Against Railroad Administration, 74, 151, 345‡, 495
Order Notify Shipments Delivered Without Surrender of Bill of Lading, 891
Claremont Terminal: Lehigh Valley, 599*
Clark Car Company: Dump Cars; D. L. & W., 807*
Clark, Chairman, of I. C. C.:
Coal Movement, 245
Rates, 1168
Classification of Old Bridges, 847
Classification of Subordinate Officials, 607, 831
Classification of Ties; P. & R., 654
Clayton Law, Bill to Postpone, 1070, 1126
Clerical Labor, Treatment of, 469†
Cleveland & Akron Object to Lake Coal Priority, 393
Cleveland, Cincinnati, Chicago & St. Louis:
Annual Report, 386†*, 424
Fosdick, E. G., on Training Employees, 690
Coal:
Anthracite Miners' Wages Increased, 410
Bituminous Coal Problem, 270, 430†, 447
British Coal Strike, 566, 949, 1109
Car Supply During War, 1150
Cost, 601, 857, 1049†, 1140†
Dunn, S. O., on Situation, 273
Effect of Car Shortage on Cost of Mining, 102*
Estimate of Movement to New England and Lake Ports, 245
I. C. C. Report on Conditions, 871
McAuliffe, Eugene, on Situation, 430†, 447
Monorail System for Handling, 197*
New England Situation, 159, 193
Priority Orders of I. C. C., 103, 158, 193, 245, 393, 655, 968
Production, 194, 246, 295, 331
Purchasing Inferior Coal, 1140†
Saving in Repair Shops, 340†
Shortage, J. D. A. Morrow on, 28
Strike, 250, 1151
Transportation Problem, 1149
Coal Miners in England, The, 566
Coaling Stations:
Council Bluffs; U. P., 559*
Louisville; K. & I. T., 149*
Coalometer, Thornley, 846*
Collections, Railway, Safeguarding and Transmitting of, 892
College Men in Railway Work, 2†, 7‡, 175‡, 343‡, 595†
Collision (See Accident)
Colombia: Railways Needed, 573*, 686‡

Commission on Car Service:
Activities of, 156
Circulars, 194
Name Changed to Car Service Division of American Railway Association, 492
Reorganization, 54
Report of Local Committees, 265†, 281, 379†, 405
Return Cars to Owners, 302†
Shipments of Company Materials, 427†
Summary of Conditions, 17, 92†, 98, 156, 265†, 281, 301†, 321, 342†, 367, 379†, 405, 455, 470†, 491, 510†, 538, 575, 597†, 615, 641†, 666, 683†, 705, 732†, 757, 781†, 805, 843, 868†, 885, 907†, 931, 988, 1004†, 1028, 1065, 1099†, 1124, 1156
Work of Local Committees, 61, 265†, 281
Commodity Prices and Railway Rates, 99*, 238, 295, 413, 561, 566*, 670, 958†
Compensation Contracts:
Chicago & Alton, 872
Chicago & Eastern Illinois, 764
Claims Against Railroad Administration, 74, 151, 345‡
Guaranty Ended September 1, 381†, 395
Guaranty Payment Delayed, 641†, 664, 694, 770, 842, 909†, 972, 1018, 1126
Guaranty Period During Maintenance Allowance, 397, 711, 990, 1032
Guaranty Refused by Pere Marquette, 340†
Mandamus to Force Payment of Guaranty; G. T. W., 972, 1018, 1126
Payments Up to July 1, 320
Compensation for Excess Empty Car Movement, 453
Compensation Laws, State, 344‡
Compensation to Engineers, 780†
Competition (See Contest)
Competition and "Speed Wars," 553†
Compounds (See Locomotive)
Condulets, Mogul, 290
Conference of Engineers on Employment and Education, 866†, 899
Congress (See also Senate):
Appropriations Recommended, 1175
Clayton Law, 1070, 1126
Session, Final, 1027
Connector (See Car)
Connection, E. D. J. O. Coupler Release, 458*
Conservatism and Electrification, 304†
Conserving Cash and Lumber, 1140†
Consolidation of Railroads, 641†, 657, 671, 927
Container System of Freight Transportation, 515*, 658, 684‡
Contest:
Increasing Car Mileage, 379†, 470†, 509†, 596†, 683†, 822†, 824 and 873 (prize papers)
Loading Cars; Southern Pacific, 409
Controllers, Elevator, 458*
Convention (See names of associations)
Conversion Products Corporation: Stazon, 456
Converting Locomotives to Modern Types, 48†
Conveyor, Godfrey Coal, 197*
Co-ordination of Rail and Marine Terminals, 1040
Co-ordination of Rail and Water Transport, 1057
Copper in Steel Tie Plates, New York Central Tests of, 146*
Cost:
Automobile Transportation, 214†
British Coal Strike, 948
Coal, 601, 857, 1049†, 1140†
Electric Switching, 653
Government and Private Control, 749
Labor Turnover, 1158
Leaks in Train Lines, 956†
Locomotives for Valuation, 380†, 387*
Maintenance of Electric Locomotive Equipment; G. T., 604
Power and Maintenance; C. M. & St. P., 212†, 235*
Rail Maintenance, 531*
Repairs to Cars and Locomotives, 485
Strike in France, 620
Substitute Crossties, 277
Cost Accounting in Shops, 48†
Cost of Living and Freight Rates, 99*, 238, 295, 413, 561, 566*, 670, 958†
Cost of Living, Cutting Down, 302†
Cost of Living, Decline in, 956†
Cotton Loading Machine, Barnes, 407*
Council Bluffs Engine Terminal, 557*
Coupler Release Connection, E. D. J. O., 458*
Coupler, Type "D," on Fullman Car, 285*
Court News (See Legal Decisions)
Court of Industrial Relations of Kansas: Rate Advance Case, 731†, 857
Cox, Governor, on Railroad Problem, 279
Cranes, Electric, on Trucks, 195*
Creeping of Rails, 841
Crestline Terminal, Electrical Distribution at; Pennsylvania, 483*
Crisis in Transportation, The, 47†, 55, 71
Crossing, Eymon Rail, 667*
Crossings (See Highway; also Grade)
Crosstown Movements Within Terminals, 684‡
Crouse-Hinds Company: Mogul Condulets, 290
Cuba:
Box Cars, 141*
Market for Cars, 674
Cummings, J. B., Appeals to Shippers, 625
Cummins, Senator: Proposed Legislation, 927
Curry, H. M., Addresses St. Paul Signal Engineers, 625
Cutler-Hammer Manufacturing Company: Elevator Controllers, 458*
Cuyler, T. DeWitt:
Letter to Farmers' Associations on Government Ownership, 1033
Review of Year, 1159
Cylinder (See Locomotive)
Czecho-Slovak Railways, Improvements on, 27

D

Decks for Carrying Automobiles, 108*
Definition of "Engineer," A, 670
Definitions of Subordinate Officials, 607, 831
Delaware & Hudson:
Car Tracing at Albany, 132†
Signal, Electric Train, 365*
Delaware, Lackawanna & Western:
Annual Report, 472‡
Cars, Automatic Dump, 807*
Delays Explained, 1097†
Stock Distribution Proposed—Separation of Coal Properties, 517, 697, 821†
Delays and Safety First, 131†, 510†
Delays at Interchange Points, 2†
Delays Explained; D. L. & W., 1097†
Delays to Cars in Yards, 554†, 683†
De Mayo Elevator, 577*
Democratic and Republican Planks, 70
Demurrage (See Car Service)
Denver & Interurban: Accident near Globeville, 1110
Department (See Organization)
Deseamed Rails, 323
Detroit, Toledo & Ironton: Purchase by Henry Ford, 90†, 132†, 143*, 172†
Detroit-Windsor Bridge, 161
DeWitt Clinton Exhibited, The, 118*
Dials, Safe Watch, 734‡, 784*‡
Director General Payne: Early Settlements Urged, 33
Dishonest Practices, Stamp Out, 172†
Divisional Paymasters; S. A. L., 1061*
Dixon, A. C.: Rate Advance Testimony, 25
Donnelly, Charles, 612*
Draft Appliances, T. E. A. Report on, 520
Drinking Fountain, Giessel, 1173*
Drives for Electric Locomotives, 651*
Duluth, Missabe & Northern: Employees Elected Directors, 327
Duplication of Work, 303†, 396
Dutch East Indies: Construction, 900

E

Earnings (See Revenues and Expenses)
Eastman, Joseph B., on Government Ownership, 991, 1040
Economy (See also Fuel):
Maintenance of Way, 909†
Small Expenditures, 1052‡
Ecuador: Railroad Notes, 814
E. D. J. O. Coupler Release Connection, 458*
Education:
Conference of Engineers, 866†, 899
R. R. Y. M. C. A. Work, 982
Trainmen, 553†, 556‡
Efficiency (See Operating Efficiency)
Egypt: Railroad Notes, 205
Election Returns and the Flumb Plan, 781†, 848
Election Returns and the Railways, 777†
Electric Crane Trucks, 195*
Electric Locomotive (See Locomotive)
Electric Railway Commission, Report of, 358
Electric Railways, Labor Board Denies Jurisdiction Over, 1121
Electric Traction, 795
Electric Train Signal; D. & H., 365*
Electric Train Staff, 51‡
Electric Trucks and Tractors, 796
Electric Welding, 795
Electrical Distribution in Crestline Terminal; Pennsylvania, 483*
Electricity for Pumping Water, 760
Electrification:
Argentina, 900
Austria, 333
Brazil, 546
Chile, 723
City Terminals, 1†
Conservatism, 304†
English Railways, 778†, 808
Fourteen Points for, 742*
France, Midi Railway of, 1179
Grand Central Terminal, 1†
Grand Trunk, Results on, 603
Illinois Central Studies, 1038
Italy, 546
Japan, 205
London & South Western, 205
New Zealand, 630
Pennsylvania Tunnel Route, 822†
Power and Maintenance Costs; C. M. & St. P., 212†, 235*
South Africa, 631
Steam vs. Electric Locomotives, 553†, 579, 732†, 739*
Superpower Survey, 327, 670, 1118
Sweden, 79
Switzerland, 79, 88†, 115*, 123
Elevations, Highest, in West, 896
Elevator Controllers, 458*
Elevator, De Mayo, 577*
Elevator, Grain, at Baltimore, 9*, 93*
Embargo Regulations, 647
Employee (See Labor; also Railroad Y. M. C. A.; also Education):
Bonus System, The, 341†
Clerical Labor, Treatment of, 469†
Employee (*Continued*):
Compensation Laws, State, 344‡
Cost of Living, Cutting Down, 302†
Election of Directors; D. M. & N., 327
Human Element in Railroading, 691
Lehigh Valley Stock Furchased, 495, 883*, 908†
Letter from President of St. L.-S. F., 330
Living Conditions of Trainmen Who Lie Over at Terminals, 1160
Medals for War Service; Penna., 99*
Morale, Rebuilding, 1111
Pennsylvania Reduces Force, 160
Pension, Minimum; U. P., 495
Pensioners, Relief for the, 428†
Politics Barred in Canada, 768
Pre-War Efficiency, Restoring, 563
Prizes to Station Agents; S. P., 261†, 292
Promoting From Within, 474‡
Promotion by Seniority, 692
Public Relations Department; I. C., 33
Reductions of Forces, 895
Representation Flan, Pullman Company, 1114
Returned Soldiers Employed; C. P., 327
Schools in Germany, 673
Selecting and Training, 49†, 89†, 171†, 326, 690
Stock, Railroad, Purchased, 430†, 495, 733†, 883*, 908†
Strikes:
Anti-Strike Bill Passed, 1127
British Coal Strike, 566, 949, 1109
Cost in France, 620
Miners in 1919, 1151
Outlaw, 34, 74, 327, 460, 481
Right to Strike, 1107
Shopmen at Houston; S. P., 809
Suggestions to Improve Methods of Handling Work, 1052‡
Trainmen's Rest-Hours, 514‡, 1160
Wages (See also Railroad Labor Board; also National Boards):
Anderson, Hon. George W., on, 992
Anthracite Miners, Increases to, 410
"Bleeding the Public," 263†
Canada, Increases in, 623
Car Repairers and Switchmen, 175‡
Clerks, 469†
Increases Granted by Labor Board, 129†, 135
Pay Check System; S. A. L., 1061*
Pullman Company's Representation Flan, 1114
War Veterans Re-employed; C. P., 160
Western Executives, Appeal of, 250
Employment and Education, Conference of Engineers on, 866†, 899
Engine (See Locomotive)
Engine Houses Reconstructed; B. & M., 305*
Engine Terminals:
Council Bluffs; U. P., 557*
East Cambridge; B. & M., 305*
Modernizing, 3†, 49†, 88†, 213‡, 218‡, 341†, 380†
Monthly Report of Distribution of Locomotive Hours; N. Y. C., 130†, 190*
Supervision at, 302†
Engineering Applied to Transportation, 1170
Engineering Council: Federated American Engineering Societies, 34, 329, 640†, 670
Engineers (See also American Association):
Compensation to, 780
Definition of Term, 670
Larger Field for, A, 172†, 177‡
Permanence of Positions, 682†
Problems for Solution, 410
Railroad Labor Board Award, 175‡, 303†
Transportation Engineer, The, 1170
England (See Great Britain)
Equipment (See also Car; also Locomotive)
Equipment, Deliveries and Orders, 1086
Equipment Loans, 31, 57, 248, 263†, 289, 528, 554†, 565, 694
Equipment Orders in 1920, 262†, 428†, 511†, 554†, 591, 597†, 772, 779†, 815, 955†, 996, 1005†, 1042, 1179
Equipment Fainting Division (See American Railroad Association—Section III, Mechanical)
Equipment Produced (See Car Production)
Equipment Situation After Federal Control, 71
Equipment Trust Agreements, 278
Equipment, Upkeep of, 481
Erie:
Barge Service Reopened, 327
Posters on Car Movement, 173†, 261†
Senator Harding Addresses Employees, 410
Erie, Pa., Collision, 715, 1060*
Esch-Cummins Bill (See Transportation Act)
Esch, Rep. John J., Defeated for Re-nomination, 495
Europe:
Feedwater Heating in, 307*
Passenger Rates in, 493
Railroad Conditions, S. M. Vauclain on, 537
Executive Staffs, Establishment of, 1112
Executive Turn-Over, The, 553†
Executives (See also Association of Railway)
Executives' Articles in N. Y. Tribune, 639†
Expenditure to Improve Methods of Handling Work, 1052‡
Expenses (See Revenues and Expenses)
Exports (See Foreign Trade)
Express:
Consolidation, 110, 150, 161, 1119
Contract, 248, 292, 1140†, 1154

GENERAL INDEX—Continued

[Illustrated articles are indicated thus; Editorials thus†; Letters to Editor thus‡.]*

Express (*Continued*):
Rates Increased, 317, 373, 574
Southeastern Company Organized, 660
Wage Increases, 251, 271, 409
Eymon Crossing, 667*

F

Facilities, Adequate, Report of Railway Business Association's Committee on, 1067
Farmer, "With" Instead of "For" the, 131†
Farmers' National Council: Government Ownership Advocated, 1033
Farmers' Views Solicited; I. C., 639†, 670
Federal Electric Railways Commission's Report, 358
Federated American Engineering Societies, 34, 329, 640†, 670, 856
Feed Water (See Locomotive)
Feeders for Railroads, 1010
Feeding of Laborers; N. C. & St. L., 846
Fiber Insulations in Track Joints, 380†
Finance (See also Accounting; also Society of Railway Financial Officers):
C. B. & Q. Capitalizes Surplus, 823†, 845, 945, 1073
C. & E. I. Reorganization Plan, 1167
D. L. & W. Proposes Separation of Coal Properties, 517, 697
English Railway Position, 1079
Equipment Trust Agreements, 278
Popularize Sound Investments, 90†
Securities, Increasing Confidence in, 642†
South America, Investments in, 686‡
Stock Purchased by Employees, 430†, 495, 733†, 883*, 908†
Stock Prices Advancing, 642†
Fines for Violation of Laws, 495
Fire Protection Association Meeting, 695
Fire-Resisting Faint for Wood, 102
Fires: Miscellaneous, 33, 69, 198, 459, 623, 715, 1037, 1175
Fletcher, R. V.: Rate Advance Testimony, 64
Floodlights and Their Uses, 131†
Floors, Freight House, 762
Flue Shop Equipment, 213†
Ford, Henry: Purchase of Detroit, Toledo & Ironton, 90†, 132†, 143*, 172†
Foreign Railway Visitors, 7‡
Foreign Trade:
America's Foreign Competition, 1027
Chinese Market for Locomotives, 570
Exports in May, 123, 124, 501; June, 333, 334, 375; July, 501, 502, 503, 595†; August, 673, 674; September, 858, 859; October, 1085, 1086
Exports, Locomotive, in 1920, 595†
German Competition in Locomotives, 509†, 658, 1027
South American Market, 262†, 267*, 313, 443*, 489*, 573*, 645*, 668‡, 730†, 735*, 791*
Forest Products Laboratory:
Charring to Preserve Wood, 879
Fire Resistant Paint, 102
Marine Borer Problem, 280, 1082
Teredo Damage in San Francisco Bay, 1082
Timber Cut from Dead Trees, 186
Forest Resources, Available, 659
Forging and Heat Treating Equipment, 509†, 640†
Fountain, Giessel Sanitary Drinking, 1173*
France:
Compound Locomotives in, 266‡
Cost of Railway Strike, 620
Electrification on Midi Railway, 1179
Feedwater Heating, 310,
Fuel Oil Called "Mazout," 501
Railroad Notes, 37, 79, 122, 546, 1085
Freight:
Cincinnati Motor Terminals System, 219*
Container System of Handling, 515*, 658, 684‡
L. C. L. Business in Chicago, 52*
L. C. L. Loading at Bridgeport, 1169*
Motor Truck and Water Competition, 341†
Perishable Freight Division of A. R. A., 117
Reconsignment (See Car Service)
Store Door Delivery, 1127
Way Bills, Mistakes in, 90†, 176‡
Freight Car (See Car, Freight)
Freight Car Efficiency and Yard Operation, 92†
Freight Car Loadings (See Car Service)
Freight Car Tracing, D. & H., 132†
Freight Claim Prevention Campaign, A. R. A., 731†, 750, 866†, 887
Freight Commodity Statistics, 545
Freight Congestion and Strikes, 34
Freight House Floors, Maintenance of, 762
Freight House Problem, Solution of, 643‡
Freight Loading (See Car Service)
Freight Rates (See Rate)
Freight Thefts, 896, 1006†
Freight Traffic (See also Car Service):
Decline in, 1004†, 1099†
I. C. C. Statistics for March, 324, 372; April, 36, 410; May, 410, 579; July and Seven Months, 569, 681†, 732†, 753, 812; August, 781†, 868†, 936, 991; September, 928, 976, 1039, 1127; October, 1172.
Year 1918—Government and Private Control Compared, 15, 342†
Freight Trains, Handling, 519
Freight Tunnel, Chicago, 52*
French West Africa: Railroad Notes, 546
Front End (See Locomotive)
Frozen Material Stocks, 340†, 474‡, 644‡
Fuel (See also Coal):
Commandments, 261†, 302†, 341†. 379†, 429†, 470†, 509†, 553†, 596†, 640†, 682†, 729†
Conservation Campaign, P. & R., 812
Consumption and Locomotive Tests, 779†
Economy, 88†, 211†, 509†, 640†, 729†, 907†, 1049†
Loss Caused by Front End Air Leaks, 88†, 101*
Fuel Oil (See Oil)
Funds (See Loans)
Fusees, How to Use, 856

G

Gas Pocket Causes Trouble—Michigan Central Bridge at Detroit, 475*
Geddes, Sir Eric, on Regrouping Scheme for British Railways, 187
General Electric Company: Induction Motor Control Panels, 578*
General Foremen's Association Convention, 459, 485, 496
"Germ Process." Lubricating Oils, 456
Germany:
Belgium Orders Freight Cars, 416
Feedwater Heating, 311
Locomotive Order from Holland, 509†, 658, 1027
Railroad Notes, 37, 123, 205, 374, 501, 629, 949
Revenues and Expenditures, 501
Russia Buys Locomotives, 723
School for Railway Employees, 673
Giessel Drinking Fountain, 1173*
Glasgow Rail Order, 416
Globeville Collision, 1110
Godfrey Conveyor for Handling Coal, 197*
Goethals, General: Pittsburgh Slide, 1030
Gold Car Heating & Lighting Company: Suit of Vapor Car Heating Co., 207
Gompers, Samuel, on Award of Railroad Labor Board, 192
Government Control:
Car Service Under, 838
Comparative Cost of, 749
Inland Waterways, 1014
Railroad Situation During 1920, 1159
Results Since March 1, 15, 564, 749, 848, 868†, 1159
Senator Harding on Railroads, 186
Government Guaranty (See Compensation Contracts)
Government Operation (See Government Control)
Government Ownership:
A. F. of L. in Favor of, 16
Eastman, Joseph B., on 991, 1040
Farmers' National Council Advocates, 1033
Geddes, Sir Eric, Opposes, 187
Plum Plan League's Propaganda, 430†
Postal Service, Propaganda in the, 48†
Governor Cox on Railroad Problem, 279
Gowen, Francis I.: Rate Advance, 64
Grade Crossings, Humps at, 1162*
Graft Charges, I. C. C. to Investigate Car Distribution, 810, 1036
Graft in Ticket Offices, 777†
Grain Elevator at Baltimore; Pennsylvania, 9*
Grain, Minimum Weights on, 374, 857, 1041
Grain Rates, Ex-Lake, 373
Grain Unloader, Stewart-Link, 93*
Grand Central Terminal Electrification, 1†
Grand Trunk: Electric Operation, Results of, 603
Grand Trunk Western: Mandamus to Force Payment of Guaranty, 972, 1018, 1126
Great Britain:
Accidents in 1919, 858
Automatic Train Control Committee, 778†, 815
Chinese Market for Locomotives, 570
Coal Strike, 566, 949, 1109
Deficit, Railway, 334
Electrification of Railways, 778†, 808
English Railway Statistics, 630, 790
Exports of Railway Material, 79
Feedwater Heating, 309*
Financial Position of English Railways, 1079
Freight Rates Increased, 428†, 464
Operating Statistics of British and U. S. Railways Compared, 937
Passengers Carried, 1913 and 1919, 334
Passenger Fares Increased, 363
Railroad Notes, 37, 205, 333, 334, 374, 415, 629, 630, 723, 814, 900, 949, 1086, 1179
Rate Inquiry, 30
Regan Train Control Demonstrated, 724*
Revenues and Expenses on Railways, 165, 416, 630
Great Britain (*Continued*):
Regrouping Scheme for Railways, 187
Standardization of Electrified Railways, 723
Wage Increases for Employees, 123
Guaranty (See Compensation Contracts)
Gypsum Tile Roof, 961*

H

Haiss Wagon Loader, 408*
Hampton, George P.: Letter to Farmers' Association on Government Ownership, 1033
Handling Freight Trains, 519
Hannaford, J. M., 612*
Harahan, William J., 1035*
Harding, Senator, on Railroads, 186
Harris, A. H., on Interest Rates, 240
Harrisburg, Pa., Bridge; P. & R., 869*
Harrisburg (Pa.) Chamber of Commerce: Two Great Railroad Problems, 563
Harrison, Fairfax, on Rate Increase, 292
Headlight (See Locomotive)
Heat Treating Equipment, 509†, 640,† 682†, 730†, 823†
Heat Treating Equation, 779†
Heavy Electric Traction, A. R. E. A. on, 651*
Hedderly, H. M.: Loading L. C. L. Freight at Bridgeport, Conn., 1169*
High Cost (See Cost)
Highest Elevations on Western Roads, 896
Highway Crossings:
Humps in Tennessee, 1162*
Lights in Maryland, 329
Signal, Adler's, 222, 1124*
Whistling at; M. K. & T., 329
"Hill" School of Statistics, 685‡
Hocking Valley: Annual Report, 50†, 83
Holland:
Electrification, Commission Studying, 416
Feedwater Heating, 310
Locomotive Order to Germany, 509†, 658
Hoppers (See Car, Freight—Box)
Hours of Service Reports in 1920, 849, 1165
Housing of Track Forces, 381†
Hudson & Manhattan: Fare Increase Denied, 333
Human Element in Railroading, 691, 1004†
Humps at Grade Crossings, 1162*

I

Idle Hour, The, 130†, 190*
Illinois and Wisconsin Retail Coal Dealers Association: Relation of Railroads to Coal Problem, 273
Illinois Central:
Annual Report, 216†*, 257
Constructive Criticism Sought, 291, 498
Electrification, Commission to Study, 1038
Farmers' Views Solicited, 639†, 670
Public Relations Department, 33
Traffic Performances Advertised, 498
Illinois Intrastate Rate Case, 295, 331, 366, 668, 973 (I. C. C. decision), 1177
Immigration and Emigration, 264†
Increasing Mileage (See Car Service)
Index for Previous Volume, 1†
India: Railroad Notes, 723
Induction Motor Control Panels, 578*
Industrial Cost Accountant Association, 74
Industrial Service, Locomotives for, 797*
Industry Tracks, 596†
Information, Form of Presenting, 821†
Inspection, Locomotive, 264†
Inspection Trips, 261†
Interchange Points, Delays at, 2†
Interchange Rules Modified, 627
Interest Rates, I. C. C. Hearing on, 239
International Earth Boring Machine, 494*
International Railway Association: Cab Signals in Europe, 29
International Railway General Foremen's Association: Annual Convention, 459, 485, 496
International Railway Master Blacksmiths' Association: Annual Convention, 330, 369, 372
Interstate Commerce Commission:
Accident Bulletin No. 74, 894
Accident Investigations, Reports of 407, 625, 708
Accident Record, Five-Year, 89†, 95
Accident Reports:
B. & O. at South Chicago, 406
D. & I. near Globeville, 1110
L. & W. V. at South Pittston, Pa., 1176
N. Y. C. at Erie, 1060
N. Y. C. at Schenectady, 428†, 454
P. & P. U. near Acme, 428†, 454
St. L.-S. F. near Keighley, 329
S. P. at Bertha, 454
Annual Report, 1019, 1075
Capital Expenditures for 1920, 326
Car Distribution Graft Charges Investigated, 810, 1036
Chairman Clark on Coal Movement, 245
Chairman Clark on Rates, 1168
C., B. & Q. Asks Authority to Capitalize Surplus, 823†, 845, 945, 1073
Civil Service Examinations for Attorney Examiner of Finance, 1128

Interstate Commerce Commission (*Continued*):
Coal Conditions, Report on, 871
Compensation of Chicago & Alton, 872
Consolidation of Railroads, 641†, 657, 671
Cost of Railroad Fuel, 601
D., L. & W. Wants to Capitalize Its Surplus, 517, 697, 821†
Equipment Loan, 31, 57
Express Consolidation, 110, 150, 161, 1119
Express Contract, 248, 292, 1140†, 1154
Grain Rates, Ex-Lake, 373
Guaranty Payment Delayed, 641†, 664, 694, 770, 842, 972, 1018
Hours of Service Law, 849, 1165
Illinois, Rates in, 366
Interest Rates, Hearing on, 239
Living Conditions of Trainmen Who Lie Over at Railroad Terminals, 1160
Loans from Revolving Fund, 916
Loans to Carriers, 31, 57, 248, 263†, 289, 528, 554†, 565, 694
Maintenance Allowance During Guaranty Period, 397, 711, 1032
Mississippi Valley Rates, 296
New England Rate Divisions, 488, 856, 941, 968, 1084, 1098†, 1129
Operating Statistics for March, 324, 372; April, 36, 410; May, 410, 579; July and Seven Months, 569, 681†, 732†, 753, 812; August, 781†, 868†, 936, 991; September, 928, 976, 1039, 1127; October, 1172
Priority Orders, 103, 158, 193, 245, 393, 655, 968, 1113
Rate Advance Hearings, 20, 64
Report of Chief Inspector of Locomotives, 1071*
Revenues and Expenses (See Revenues)
Security Issues, Regulation of, 34
Senate Committee Criticises Priority Orders, 1113
Subordinate Officials, Definitions of, 607, 831
Traffic Statistics, New, 812
Transcontinental Freight Rates, 463
Vacancy on, 172†
Willard, Daniel, on Transportation Problem, 71, 87†
Wisconsin Passenger Fare Case, 899
Interstate Commerce Commission Rulings:
Applications for Certificates of Convenience and Necessity, 14
California Citrus League v. Director General, Aberdeen & Rockfish Railroad, et al., 415
Canada, Charges on Shipments to, 947
Commercial Club of Duluth v. B. & O., 463
Export and Import Rate Limitation Suspended, 1083
Express Claims, 414
Express Consolidation Approved, 1119
Express Contract Approved, 1140†, 1154
Express Rates Increased, 317, 373, 574
Illinois Intrastate Rate Case, 315, 366, 973, 1177
Kansas Rate Petition, 731†, 857
Minimum Rates on Grain and Grain Products, 374, 857, 1041
New York Passenger Fares, 913, 947, 995, 1083, 1128, 1177
Per Diem Rates for Short Lines, 813
Rate Advance Decision, 215†, 223, 287, 315, 463
Reconsignment and Diversion Rules, 243, 462
Safety Appliances on Cars, 482
Service Orders, 103, 158, 193, 245, 393, 655, 968, 1098, 1113
Southern Pacific Water Service, 122
Interurban Railways, Labor Board's Jurisdiction Over, 1121
Intrastate Rate Cases, 312, 331, 351, 366, 373, 390, 413, 462, 477, 523, 555†, 611, 668, 913 and 973 (I. C. C. decisions), 995, 1083, 1128, 1177
Inventions and the Patent Office, 956*
Inventory, Object of an, 381†
Investigations, Information Derived from, 821†
Investment Bankers' Association: Transportation Act, The, 641†, 657
Investments in South American Rys., 686‡
Investments, Popularize Sound Railroad, 90†
Ireland, Railway Crisis in, 949
"Irrepressible Conflict" Between Capital and Labor, 1141†
Italy:
Decorations Awarded to Americans, 168
Electrification of Railways, 546
Railroad Notes, 79, 949, 1085
Rate Increases, 900

J

Japan:
Chinese Railroads, Comparison with, 109*
Electrification, 205
Railroad Notes, 205, 630, 673
Joint Committee on Automatic Train Control, A. R. A., 738, 856
Joint Meeting of Oil and Railroad Officers, 250
Jones, Edwin: Coupler Release Connection, 458*

K

Kansas City Sectional Committee, Signal Division, A. R. A.: Operation of Outlying Switches, 621*
Kansas City Southern: Maintenance of Way Association, 411
Kansas Rate Petition Denied, 731†, 857
Keighley, Kans., Derailment, 329
Kentucky & Indiana Terminal: Coaling Station at Louisville, 149*
Kleinschmidt Printing Telegraph, 116*
Knorr Locomotive Feedwater Heater, 307*
Koach, H. A.: Ticket Protective Bureau, 438
Kolchak Downfall and the Trans-Siberian Railway, 176‡
Korea: Railroad Notes, 673
Kruttschnitt, Julius: Rate Advance Testimony, 26

L

Labor (See Employee; also Railroad Labor Board; also National Boards; also Plumb Plan):
Anti-Strike Bill Passed, 1127
Change in Conditions, 910†
Election Returns, 781†, 848
Immigration and Emigration, 264†
"Irrepresible Conflict" with Capital, 1141†
Loomis, E. E., on Situation, 316
Maintenance of Way Problems, 303† 381† 639†, 1004†
Material Handling Machinery, 91†
Organizing for Political Action, 198
Pennsylvania Railroad's Policy, 965, 1123
Pullman Company's Representation Plan, 1114
Reduce Operating Expenses, 957†
Surplus, 1004†
Transportation Act, 1108
Turnover, J. C. Clark on, 1157
Turnover of Stowers Excessive, 427†
Vauclain, S. M., on, 537
Willard, Daniel, on, 73, 787
"Labor," a Newspaper (See Plumb Plan League)
Labor Board (See Railroad)
Lackawanna & Wyoming Valley: Accident at South Pittston, Pa., 117, 1176
Lackawanna Steel Company: Deseamed Rails, 323
Landslide (See Pittsburgh)
Lauck, W. Jett: Rate Increase and Cost of Living, 238
Law (See Legislation)
L. C. L. Freight (See Freight)
Leaks, Front End Air, 88†, 101*
Leaks in Train Lines, 956†
Legal Decisions:
Baggage Transported from Adjacent Foreign Countries, Liability as to, 1130
Bill of Lading, Limitation of Action on, 415
Compensation to Railroad Under Federal Control; C. & R. I., 164
Coupling on Curve, 253
Crossing Flagman's Negligence, 672
Crossing Rules, 948
Distribution of Coal Cars, 995
Drover, Injury to, 464
Federal Employer's Liability Act, 253, 672, 858, 948
Hours of Service Act, 164, 723
Injunction Under Federal Control, 415
Injuries of Express Messengers, 1084
Larceny from Freight Yard by Consignee's Agent, 333
Miscellaneous, 164, 253, 858, 948, 1130, 1178
Misinformation as to Train Time, 672
New York State Passenger Fares, 1083
Northern Pacific Land Grants, 464
Rate Fixing Order, 253
Safety Appliance Act, 589, 672, 1084, 1178
Southern Pacific Land Grants, 164
Switching Charges, Absorption of, 948
Legislation: Car Repair Sheds Required in Minnesota and North Dakota, 69*
Lehigh Valley:
Combination Ordered Dissolved, 1006†, 1030
Stock Sold to Employees, 495, 883*, 908†
Rail Laying, Modernizing, 1017*
Terminal, Claremont, 599*
Liberty Bond Holders Please Note, 339†
Lighter Captains of New York, Wage Increases to, 329, 369, 409
Lighting:
Floodlights, 131‡
Highway Crossing Lights, 329
Shops, 172‡
Train, 796
Lisman, F. J.:
Detroit, Toledo & Ironton Purchased by Henry Ford, 132†, 143*
Interest Rates, 239
Living Conditions of Trainmen Who Lie Over at Railway Terminals, 1160
Living Cost (See Cost of)
Loader:
Barnes Cotton Loading Machine, 407*
Haiss Wagon, 408*
Loading (See Car Service)
Loans from Revolving Fund, 31, 57, 248, 263†, 289, 528, 554†, 565, 694, 916 (I. C. C. Report)
Loans from War Finance Corporation, 1081
Locomotive:
Assigned Engines, 1004†
Belgian Order Completed, 1069*
"Best Friend of Charleston," 793
Booster Tests, N. Y. C., 699*
Chinese Market, The, 570†
Comparison of Saturated and Superheated Steam Locomotives, 1116
Compounds, Economy in Eliminating, 89†
Compounds in France, 266†
Cost for Valuation, 380†, 385*
Cylinder Parts, Cast Iron, 619
Locomotive (*Continued*):
Delays at Terminals, 1067
De Witt Clinton Exercises, The, 718*
Distribution of Locomotive Hours: New York Central, 1301, 1307
Draft Appliances, 25‡
Efficiency, Need for Increased, 1099†
Electric:
Drives, Various Types of, 651*
Heavy Traction, 651
Grand Trunk, 603
Steam vs. Electric, 153†, 519, 732†, 739*, 917
Swiss Railways, 123
Exports in 1920, 595†
Feedwater Heaters, Application of, 171†, 1116
Feedwater Heating, Development of, 59*
Feedwater Heating in Europe, 307*
Front End Air Leaks, 88†, 101*
Front End Design, 212†
Fuel Economy (See Fuel)
"Full-Jeweled," 1098†
Headlights, 795
Improved versus Unimproved, 1139†
Increasing Capacity of, 1098†, 1115
Industrial Service, Types for, 797*
Inspection, 264†, 639†
Loading Acording to Ratings, 1139†
Mallet vs. Five-Coupled, 908†
Meter Gage for South America, 839*
Modernizing, 1†, 3†, 48†, 130†, 262†, 302†, 380†, 729†, 1024*, 1099†, 1115
Mountain Type; N. Y., N. H. & H., 609*
Nozzle Tips, Size of, 907†
Operating Studies of Performance, 822†
Orders in 1920, 262†, 597†, 779†, 815, 1005†, 1042
Pacific Type Booster Locomotive, Tests of; N. Y. C., 699*
"Pershing" Type for Roumania, 567*
Pyrometer, The, 509†, 640†, 730†
Recording Instruments, 457*
Saddle Tank, 798*
Superheaters, Application of, 1116
Switches, Six-Coupled and Eight-Coupled, 797*
Tests for Efficiency, 779†
Trading for Oil with Roumania, 89†, 537, 567*
Uniflow Engine, The, 266‡, 343‡, 685‡
Waybill; New York Central, 130†, 190*
Water Indicating Devices, Tests of, 359*
Locomotive Inspection Rules, Disregarding, 639†
Locomotive Terminal (See Yards and Terminals)
Loco-Recorders, 457*
London & Northwestern: Beames, Capt. H. P. M., Chief Mechanical Engineer, 1086
London & Southwestern: Electrification, 205
Long Island: Woodward, P. H., on Passenger Traffic to and from New York City, 1083
Loss and Damage (See Freight Claims)
Louisville & Nashville:
A. P. B. Signaling, 439
Radio Telegraph and Telephone, 450
Lubricating Engineers Needed, 218‡
Lubricating Oils, "Germ Process," 456
Lumber (See Ties and Timber)

M

Machine, Earth Boring, 494*
Machine Tools:
Know Your Machine, 171†
Replacing Obsolete, 90†, 132†
Scientific Selection of, 2†
Machinery (See Material Handling)
Mail:
Aerial Service, 459, 495, 541, 545
Annual Report of Postmaster General, 1064
Maintain Your Shop Tools, 182†
Maintenance Allowance During Guaranty Period, 397, 711, 990, 1032
Maintenance and Power Costs; C. M. & St. P., 212†, 235*
Maintenance of Electrical Equipment; G. T., 603
Maintenance of Way (See also Bridges and Buildings):
Accidents, 618
Bonus System, The, 341†
Business Decline and Retrenchments, 867†
Economy in, 909†
Expenses and Traffic, 718†
Feeding of Laborers; N. C. & St. L., 846
Housing Problems, 381†
Human Element, Consider the, 1004†
Inspection Trips, 261†
Kansas City Southern's Association, 411
Labor Policy, 381†, 639†
Labor Supplies, 1004†
Preparations for Winter, 639†
Problems of Under-Maintenance, 49†
Standardization of Practices, 596†, 602
Supervision of, 173†, 429†, 510†, 729†, 1139†
Tie Shortage Creates Problems, 91†
Track Conditions and Car Maintenance, 88†
Maintenance of Way Master Painters' Association: Annual Convention, 649
Maintenance Settlement in Claims Against the Railroad Administration, The, 345‡
Mallet (See Locomotive)
Man of the Hour, The, 264†
Mandamus Filed in Guaranty Case; G. T. W., 972, 1018, 1126
Manganese Steel in Track Work, 928
Manila Railroad, Improvements on, 122

GENERAL INDEX—Continued

[Illustrated articles are indicated thus; Editorials thus†; Letters to Editor thus‡.]*

Manual Block (See Signaling)
Manufacturing in Railway Shops, 380†
Maps:
Colombian Railways, 573*
Swiss Railways, 115*
Marine Borer Problem, 280, 1082
Marine Employees' Demands Refused by Labor Board, 1058
Markham, C. H., (See Illinois Central)
Maryland & Pennsylvania: Adler's Highway Crossing Signal, 222
Massachusetts Chamber of Commerce: Reconstruction of Railway Transportation, 765
Master Car and Locomotive Painters' Association (See American Railway Association, Section III, Mechanical)
Material Accounting; Canadian Pacific, 392
Material Handling Machinery:
Barnes Cotton Loading Machine, 407*
Car Unloader, De Mayo, 577*
Container, Freight, 515*, 658, 684‡
Economizing in Labor, 91†
Haiss Wagon Loader, 408*
Materials Handling Section; A. S. M. E., 91†, 329
Material Stocks (See Stores)
Mazout, a Fuel Oil, 501
McDonald, Hunter: Humps at Grade Crossings, 1162*
Mechanical Handling (See Material)
Mechanical Equipment for Offices, 509†, 730†, 865†
Medals to Pennsylvania Patriot-Employees, 99*
Merchant Marine, Co-operation with, 907†
Mesabi Iron Company: Locomotive, Saddle Tank, 797*
Meter Gage Locomotives for South America, 839*
Meter Gage Railways (See Bolivia)
Mexico:
Per Diem Rules, A. R. A., 1081, 1175
Railroad Notes, 815, 949, 1085
Michigan Central:
Annual Report, 385†*, 422
Bridge at Detroit, Mich., 475*
Midi of France: Electrification, 1179
Midgley & Borrowdale Organized, 817*
Mileage (See Car Service—Increasing)
Milk Trains, Pennsylvania, 898
Miners' Strike in 1919, 1151
Miners' Wages Increased, 410
Minimum Weights (See Grain)
Minneapolis & St. Louis: Acident near Arnold, Iowa, 117
Minnesota and North Dakota Laws Require Car Repair Sheds, 69*
Mississippi Valley Rates, 296
Missouri, Kansas & Texas:
Fuel Oil Stations, 346*
Whistling at Highway Crossings, 329
Missouri Pacific:
Annual Report, 174†*
River Bank Protection Unique, 829*
Modernizing:
Engine Houses; B. & M., 305*
Locomotive Terminals, 3†, 49†, 88†, 213‡ 218‡, 341†, 380†, 865†, 1024*, 1139†
Locomotives, 1†, 3†, 48†, 130†, 262†, 302†, 380†, 729†, 1024*, 1099†, 1115
Rail Laying; L. V., 1017*
Mogul Condulets, 290
Money (See Operating Expenses; also page 261†)
Monorail System for Handling Coal, 197*
Montgomery Safety Watch-Dial, 784‡*
Monthly Engine Terminal Report; N. Y. C., 130†, 190*
Morale, Rebuilding, 1111
Morocco: Railroad Notes, 630, 673
Morrow, J. D. A.: Coal Shortage, 28
Motion Pictures:
Safety First; N. Y. C., 580
Story of Oil; S. P., 1037
Motor Car Accidents, 618
Motor Cars in Trap Car Service, 91†, 219*, 1049†
Motor Control Panels, Induction, 578*
Motor Terminals System in Cincinnati, 91†, 219*, 1049†
Motor Truck:
Aid to the Railways, 959†
Davis, F. W., on Transportation, 1012
Handling Company Materials, 1097†
Service Between New York and Albany, 341†
Munholland, R. C., on Demurrage, 171†, 177‡, 349*
Murray, William S.: Superpower System, 327, 670

N

Nashville, Chattanooga & St. Louis:
Feeding of Laborers, 846
Humps at Grade Crossings, 1162*
Radio Telegraph and Telephone, 450
Safety and Freight Claim Prevention Bureau, 809
Natchez & Southern: River Bank Protection, 829*
National Association of Railway and Utilities Commissioners:
Annual Convention, 833, 880
I. C. C. Rate Advance Decision Approved, 243
Intrastate Rate Advance Cases, 312, 331, 351, 366, 373, 390, 413, 462, 477, 523, 555†, 611, 668, 722, 913 and 973 (I. C. C. Decisions), 995, 1083, 1128, 1177
National Boards of Labor Adjustment, 495, 564, 957†, 965, 990, 1066, 1109, 1123
National Coal Association:
Effect of Car Shortage on Cost of Producing Coal, 102*
Speculating, 245
National Election and the Railways, 777†, 781†, 848
National Industrial Conference Board: Atterbury, W. W., on Labor Question, 965
National Industrial Traffic League:
Annual Meeting, 939, 1139†
Executive Committee, New, 994
Meeting at Louisville, Ky, 650
New Era of Railroad Transportation, The, 1139†, 1153
National Petroleum Association of America: Germ Process of Compounding Oils, 456
National Railway Appliance Association: Exhibit in March, 117, 897
National Railway Service Corporation, 241, 727
National Safety Council:
Annual Meeting, 617*, 784‡*
Dunn, S. O., on Railway Safety Work, 605
Meeting of Executive Committee Steam Railroad Section, 1081
National Thrift Week, 978
New England Coal Situation, 159, 193, 245
New England Railroad Club: Locomotive Terminal as an Operating Factor, The, 877*, 929*, 985*
New England Rate Divisions, 488, 856, 941, 968, 1084, 1098†, 1129
New Era of Railroad Transportation, 1139†, 1153
New Jersey Public Utility Commissioners Removed, 715
New London, Conn., Bridge, N. Y. N. H. & H., 433*
New York Central:
Accident at Erie, Pa., 715, 1060*
Accident at Schenectady, 428†, 454, 473‡
Annual Report, 382†*, 420
Automatic Stop Test, 291
Bond Issue, 540
Copper in Steel Tie Plates, Tests of, 146*
De Witt Clinton Exhibited, The, 118*
Electrification of Grand Central Zone, 1†
Equipment Shortage, Overcoming, 614*
Farmer, Co-operation with the, 131†
Locomotive Waybill, 130†, 190*
Monthly Engines Terminal Report, 130†, 190*
Motion Picture, "Bulletin 70," 580
Passenger Travel in 1920, 1041
Safety Agents Appointed, 946
Safety Rallies, Month of, 823†
Tests of a Pacific Type Booster Locomotive, 699*
New York Electrical Society: Superpower System, 670
New York Lighter Captains, Wage Increases to, 329, 369, 409
New York, New Haven & Hartford:
Annual Report, 134†
Bridge at New London, 433*
Loading L. C. L. Freight at Bridgeport, Conn., 1169*
Locomotive, Mountain Type, 609*
Yard at Cedar Hill, 179*
New York Passenger Fare Case, 373, 462, 499, 668, 913 (I. C. C. Decision), 947, 995, 1083, 1128, 1177
New York Railroad Club:
Annual Dinner, 1107
Human Element in Railroading, 691
Increasing Car Efficiency, 525
New York State Automatic Train Control Committee, 291, 409
New York State's First Train, 118*
New York Traffic Club: Meeting in New York, 771
New York Tribune: Railway Executives' Articles, 639†
New Zealand: Railroad Notes, 630, 814, 1179
Nicaragua: Railroad Notes, 415
Ninth Annual Safety Congress: Philosophy of Safety First, 702
Norfolk & Western:
Accident at Rural Retreat, 715
Draft Appliances, Tests of, 521
Signal, Highway Crossing, 1124*
Normalized Steel Castings, 730†
North Dakota and Minnesota Laws Require Car Repair Sheds, 69*
North Pole Drinking Fountain, 1173*
Northern Pacific:
Car Repair Shed, 69*
Expediting Car Movement, 1098†
Northern Pacific (*Continued*):
Hannaford, J. M., Succeeded by Charles Donnelly, 612*
Nozzle Tip (See Locomotive)

O

Observations on a Transcontinental Journey, 1140†, 1161
Office Efficiency, 303†, 396
Office Equipment, Mechanical, 509†, 730†, 865†
Officer (See also Organization):
Local Initiative Is Necessary, 261†
Meeting With Oil Men, 250
Filling Higher Offices, 640†, 683†
Subordinate Officials Defined, 607, 831
Supervision:
Car Loading, 639†
Engine Terminals, 302†
Maintenance of Way, 173†, 429†, 510†, 739†, 1139†
Traffic Handling, 428†
Twentieth Century, 1111
Wage Award, 303†, 344‡
Ogle Construction Company: Coaling Station for Kentucky and Indiana Terminal, 149*
Oil and Railroad Officers, Joint Meeting of, 250
Oil Fuel Stations; M. K. & T., 346*
Oil Fuel Used in France, 501
Oil, History of; S. P., 1037
Oil Traded for Locomotives with Roumania, 89†, 537, 567*
Oil Transportation, 897
Oils, "Germ Process," 456
Omaha Shop Project; U. P., 557*
Operating Efficiency:
Locomotive Performance, Studies of, 822†, 1139†
Train Orders, Elimination of, 1099†
Operating Expenses, Reducing, 957†, 1050†
Operating Statistics of British and U. S. Railways, 937
Operating Statistics for March, 324, 372; April, 36, 410; May, 410, 579; July and Seven Months, 569, 681†, 732†, 753, 812; August, 781†, 868†, 936, 991; September, 928, 976, 1039, 1127; October, 1172
Operating Tests (See Tests)
Order Notify Shipment (See Claims)
Organization:
Duplication of Work, 303†, 396
Filling Higher Offices, 640†
Fuel Supervision, 211†, 302†
Personnel Department, The, 325, 564, 691
Purchasing and Stores Department, 49†, 51‡, 211†, 340†, 381†, 469†, 474‡, 644‡
Rebuilding, C. F. Balch on, 1111
Service of Supply; Western Maryland, 917*, 969*
Union Pacific's Safety Department, 897
Outlaw Strikes, 34, 74, 327, 460, 481

P

Pacific Car Demurrage Bureau's Campaign, 171†, 177‡, 349*
Pacific Fruit Express Refrigerator Cars, 1145*
Paint (See also Master Car and Locomotive Painters; also Maintenance of Way Master Painters):
Cars, 866†
Fire Resistant, 102
Spraying, 761
Stations, 1008‡
Panels, Induction Motor Control, 578*
Passenger Fares:
Comparison of Rates in United States and Europe, 493
Great Britain, Increases in, 363
Illinois, 149, 295, 331, 366, 372, 688, 973 (I. C. C. Decision), 1177
New York State, 373, 462, 499, 668, 913 (I. C. C. Decision), 947, 995, 1083, 1128
Pullman Rates Increased in Missouri, 78
West Virginia, Increases in, 947
Wisconsin Case Argued, 899
Passenger Service.
Delays Explained; D., L. & W., 1097†
Tickets, 289
Wollner, William S., on, 1140†, 1161
Passenger Traffic:
New York Central, 1041
New York City, to and from, 1083
Pennsylvania Railroad, 1038, 1083
Southern Pacific, 395, 1038
Statistics, 899
Patent Office, United States, 956†
Pay (See Employee—Wages)
Paymasters, Division; S. A. L., 1061*
Payment of Guaranty (See Compensation Contracts)
Payne, John Barton: Boards of Adjustment Abolished, 1066
Payroll of Car Building Industry in August, 554†
Peabody, J. A.: Engineering Problems, 410
Pennsylvania:
Bribe-Takers, Campaign Against, 410
Crestline Terminal, Electrical Distribution at, 483*
Employees Dismissed, 160

Pennsylvania (*Continued*):
Expenses, Curtailment of, 1175
Grain Elevator at Baltimore, 9*, 93*
Labor Policy, 965, 1123
Medals to Employees for War Service, 99*
Milk Trains, 898
Pittsburgh Slide, 895, 946, 1029*, 1053*
Prizes for Best Track, 715
Rea, Samuel, Appeal of, 496
Rear Collisions, Reduction in, 1037
Regional Organization, 1123
Restoring Pre-War Efficiency, 564
Scholarship to Dorothy E. Holloway, 624
Stevens, Col. John, Project of, 343‡
Tenth Anniversary of Passenger Station, New York City, 1038
Tunnel Route, The, 822†
Pensioners, Relief for the, 428†
Per Diem Rates, 780†, 799, 813, 923, 1081, 1175
Peoria & Pekin Union: Accident Near Acme, 428†, 454
Pere Marquette:
Government Guarantee Refused, 340†
Increasing Car Mileage, 626
Safety Poster, 677
Perishable Freight Division of A. R. A., 117
Personnel Department:
Atterbury, W. W., on, 564
Cook, C. C., on, 325
Wollner, W. S., on, 691
Peru: American Equipped British Railways, 443*, 489*
Petroleum, Transportation of, 897
Philadelphia & Reading:
Bridge at Harrisburg, Pa., 869*
Classification of Ties, 654
Fuel Conservation Campaign, 812
Philosophy of Safety First, The, 702
Pittsburgh Basing Point Case, 207
Pittsburgh Bridge Transfer; B. & O., 1097†, 1103*
Pittsburgh Slide, 895, 946, 1029*, 1053*
Plain Engines (See Locomotive-Modernizing)
Plates, Steel Tie, Tests of Copper in; N. Y. C., 146*
Plumb Plan League:
Election Returns, 781†, 848
"Labor" Advanced in Price, 4†
Postal Service an Example, 48†
Propaganda for Government Ownership, 430†
Senator Harding Answered, 625
Poland: Railroad Notes, 37
Political Views on Railroad Problem, 70
Politics Barred for Employees; C. N., 768
Popularize Sound Railroad Investments, 90†
Postal Service, Propaganda in the, 48†
Posters on Car Movement; Erie, 173†, 261†
Post-Graduate Courses for Trainmen, 553†, 556†
Postmaster General, Annual Report of, 1064
Power, Unloading the, 1139†
Power and Maintenance Costs; C., M. & St. P., 212†, 235*
Power Operation of Switches, 621*
Practices, Recommended, A. R. E. A., 596†, 602
President Wilson: Coal Situation, 195
Pre-War Efficiency, Restoring, 563
Prices (See also Cost):
Buy Now, 908†, 1005†, 1049†, 1050†
Curves, 387
Present Tendency of, 778†
Steel, 1132
Prince, Theodore, on Interest Rates, 239
Priority for Railroad Orders, 63
Priority Orders for Coal, 103, 158, 193, 245, 393, 655, 968
Priority Orders of I. C. C. Criticised by Senate Committee, 1113
Private Control: Efficiency Since Resumption of, 15, 564, 749, 848
Private Ownership, Report on, 836
Prizes (See also Contest):
Station Agents; S. P., 261†, 292
Track Inspection, Penna., 715
Produce Terminal at Chicago, 460
Progress in Safety of Travel, 778†
Promotion (See Employee)
Psychology of the Purchasing Agent, 1049†
Public Ownership, Report on, 836
Public, The (See also Passenger Service):
"Bleeding the Public," 263†
Illinois Central Seeks Constructive Criticism, 291, 498, 639†, 670
Illinois Central Trains Employees, 33
Impartial Treatment of Shippers, 596†
Transportation and Citizen's Responsibility, 737
Transportation Combinations, 1107
Pullman Car with Type "D" Coupler, 285*
Pullman Company Adopts Employee Representation, 1114
Pullman Rates Increased in Missouri, 78
Pullman Sleepers, Improvements in, 661*
Pullman Surcharge, Accounting for, 372, 624
Pumping Water, Electricity for, 760
Purchases:
Buy Now, 908†, 1005†, 1049†, 1050†
Clayton Law, A Bill to Repeal Section 10 of, 1070, 1126
Coal, Inferior, 1140†
Purchasing Agent, Psychology of, 1049†
Purchasing and Stores Departments:
Organization of, 49†, 51‡, 211†, 303†, 340†, 381†, 469†, 474‡, 644‡
Western Maryland, 917*, 969*
Pyrometer (See Locomotive)

Q

Queen Catherine's Policy, 640†

R

Radio Telegraph and Telephone, L. & N., 450
Rail:
Annular Blooms, 150*
Consumption, 1874-1919, 956†, 964
Creeping, 841
Eymon Crossing, 667*
Failures in 1919, 1168
Joint; B. & A., 1173*
Lehigh Valley Modernizing Laying, 1017*
Maintenance Cost, 531*
Orders, 715
Renewals and Failures, 908†, 921, 956†
"Snow-Burnt," A Study of, 329
Railroad Administration (See United States)
Railroad Bookkeeping, G. W. Anderson on, 992
Railroad Committee of the Chamber of Commerce of United States: Increasing Freight Car Supply, 446
Railway Corporate Engineers' Association, 596†
Railroad Labor Board (See also National Boards):
Award, 3†, 13, 129†, 135, 175‡
Bangor & Aroostook, 329, 369, 409
"Bleeding the Public," 263†
Brotherhood "Unit Action" Fails, 185
Emery, James A., on, 1108
Expressmen's Wages Increased, 251, 271, 409
Gompers, Samuel, on, 192
Jurisdiction Over Interurbans, 1121
Lighter Captains in New York, 329, 369, 409
Marine Employees' Demands Refused, 1038
Rate Increases, Proposed, 183
Responsibility of, 966
Short Line Wages, 698, 747, 786, 837, 935, 963
Supervising Officers Overlooked, 303†, 344‡
Technical Engineers Not Included, 175‡, 303†
Western Executives to Employees, 250
Railroad Organizations (See Organization)
Railroad Problem (See Transportation)
Railroad Section of A. S. M. E., 2†, 473‡, 644‡
Railroad Regulation (See also Transportation Act; also Government Control): Discussion by State Commissioners, 833
Railroad Situation Reviewed for Year, 1159
Railroad Technology, 821†
Railroad Y. M. C. A.:
Canadian Pacific's Work, 977
Conditions at Railroad Terminals, 1160
Fifteenth International Conference, 822†, 977*
Growth of, 822†
St. Louis Exposition, 794
Where the Promise Is Performed, 955†
Railway Age Subscription Rates Advanced, 427†
Railway Business Association:
Equipment Deliveries and Orders, 1086
Meeting in Chicago, 530
Priority for Railroad Orders, 63
Report on Adequate Facilities, 1067
Railway Car Manufacturers' Association: Car Production Figures, 511†, 554†, 591, 772, 955†, 996, 1179
Railway Fire Protection Association: Annual Meeting, 659†, 730†, 751
Railway Managers, Up to the, 211†
Railway Ticket Protective Bureau, 438, 469†, 895
Rate Advance Case:
Hearings, 20, 64
I. C. C. Decision:
Automobile Transportation Cost, 214†
Blanket Supplement Authorized, 287
Cost of Living, Effect on, 99*, 238, 295, 413, 561, 566*, 670, 958†
Harrison, Fairfax, on, 292
Illinois, Application in, 315
Increases Authorized, 215†, 223, 287
Intrastate Cases, 312, 331, 351, 366, 373, 390, 413, 462, 477, 523, 555†, 611, 668, 722, 913 (New York), 973 (Illinois), 995, 1083, 1128, 1177
Kansas Petition Denied, 731†, 857
Livestock Shippers Ask Conference, 203
New England Roads Ask Larger Divisions, 488, 856, 941, 968, 1084, 1098†, 1129
New England Roads Ask Larger Divisions of Joint Rates, 488, 941, 968, 1084, 1098†
State Commission Hearings, 312, 351, 390, 413, 462, 477, 523, 555†, 668
State Commissioners Approve, 243, 555†
Supplemental Report, 463
Willard, Daniel, on, 244
Plumb Plan League's Newspaper Advanced in Price, 4†
Shippers' Arguments, 66
Summary of Testimony, 20
Testimony of:
Burg, C. S., 65
Dixon, A. C., 25
Fleacher, R. V., 64
Gowen, Francis I., 64
Kruttschnitt, Julius, 26
Shippers, 20
Thom, Alfred P., 67, 183
Thorne, Clifford, 25
Wood, T. H., 65
Wage Award, Advances to Meet, 181
Rate Making, Value for, 353
Rate of Return to Attract New Capital, 763
Rates (See also Rate Advance):
British Freight Rates Increased, 438†, 461
Canada, Charges on Shipments Into, 947
Canadian Railways, Increases to, 163, 204, 262†, 331, 479 (decision), 670
Chairman Clark on, 1168
Commodities and Freight Rates, 99*, 238, 295, 413, 561, 566*, 670, 958†
Express Rates Increased, 317
Grain, via the Lakes, 373
Inquiry in England, 30
Italy, Increases in, 900
Mississippi Valley Rates, 296
Water Rates Increased, 414
Rates Advisory Committee (See Great Britain)
Rea, Samuel:
Appeal to "P. R. R. Family," 496
Curtailment of Expenses, 1175
Rear Collision (See Accident)
Reclamation, A New Argument for, 1097†
Reclamation of Bridge, Building and Water Supply Materials, 803
Recommended Practices, A. R. E. A., 596†, 602
Reconsignment and Tracing Bureau; C. & N. W., 527
Reconsignment of Coal in Chicago, 133†, 159
Reconsignment Rules of I. C. C., 243, 462
Records, the Storage of, 270
Reduction of Railroad Forces, 895
Refrigerator Car (See Car, Freight)
Regan Train Control Demonstrated in England, 724*
Rehabilitating Our Railroad Organizations, 1111
Relation of Railroads to Coal Problem, 273, 430†, 447
Remote Control of Switches, 621*
Repairs (See Car Service; also Shops)
Reparation Rules, 36
Report (See Annual Report)
Representation (See Employee)
Republican and Democratic Planks, 70
Retrenchments and Business Decline, 867†
Revenues and Expenses:
English Railways, 165, 416, 630
German Railways, 501
Monthly Summaries: March, 118; April, 199; May, 411; June, 460; July, 627; August, 810; September, 782†, 955†, 992; October, 1050†, 1038
Relation Between Maintenance of Way Expenses and Traffic, 218‡
Tables, Monthly, Changes in, 1049†
Year 1919, 756
Review of Situation for Year, 1159
Revolving Fund (See Loans)
Rhea, Frank, Returns to China, 375
Rhodesian Railway Rates Increased, 165
Rivers and Harbors Congress:
Call for the Meeting, 899
Co-ordination of Rail and Water Transport, 1057
River and Rail Transportation Company: Trinity Freight Unit, 515*
River Bank Protection; Natchez & Southern, 829*
Roadmasters' and Maintenance of Way Association:
Annual Convention, 531, 542, 580
Tie and Timber Resources, 659
Roof, Gypsum Tile, 961*
Roumania:
Locomotives Traded for Oil, 89†, 537, 567*
Railroad Notes, 546, 1037
Transportation Crisis in, 502
Roundhouse:
Council Bluffs; U. P., 557*
Modernizing the, 881, 1181
North McGregor, Iowa, with Gypsum Tile Roof; C. M. & St. P., 961*
Rural Retreat Collision, 715
Russia:
Bolshevist Situation, 165
Locomotives Purchased from Germany, 723
Railroad Notes, 374, 629, 630
Russian Railway Service Corps, Work of, 153*
Rust Preventing Compound, Stazon, 456

S

Safeguarding Railway Collections, 892
Safety Appliances:
I. C. C. Ruling on, 482
Results of Inspections, 1165
Safety Devices, Investigation of, 1166
Safety Dials for Watches, 617*, 734‡, 784‡*
Safety First (See also National Safety Council; also Accidents):
Bell, Harry J., on, 866†, 876
Canadian Pacific Bulletin, 131†, 510†
Delays to Trains, 131†, 510†
Dow, Marcus A., on, 702
Economic Value of Work, 605
England, Movement in, 800
Motion Picture, N. Y. C., 580
New York Central, 580, 823†, 946
Pere Marquette Poster, 677
Southern Pacific, 161, 625
Union Pacific Organization, 887

GENERAL INDEX—Continued

[Illustrated articles are indicated thus; Editorials thus†; Letters to Editor thus‡.]*

Safety Signal Appliance Corporation: Adler's Highway Crossing Signal, 1124*
Safety Work, Essentials of, 866†, 876
Safety Wrench, Swaco, 577*
Sailing Day Plan at Bridgeport, 1169*
St. Louis Railway Club: Manganese Steel in Track Work, 928
St. Louis Railway Exposition, 794, 866†, 876
St. Louis-San Francisco:
Accident near Keighley, Kan., 329
Letter to Employees, 330
St. Louis Southwestern: Annual Report, 959†*, 999
San Francisco Bay, Teredo Damage in, 1082
San Francisco Committee on Car Service: Cross-town Movements Within Terminals, 684‡
Schenectady Collision, 428†, 454, 473‡
Schoyer, A. M.: Oil Transportation, 897
Scientific Tool Selection, 2†
Scrap (See Reclamation)
Seaboard Air Line: Pay Check System, 1061*
Secretary of Treasury (See Treasury)
Securities, Increasing Confidence in, 642†
Segregation of Properties and Cutting of Melons, 821†
Selection and Training of Employees, 49†, 89†, 171†, 326, 690
Senate:
Anti-Strike Bill Passed, 1127
Building Situation, Report on, 1113
Coal Conditions, I. C. C. on, 871
Living Conditions of Trainmen at Terminals, I. C. C. Report on, 1160
Senator Cummins: Proposed Legislation, 927
Senator Harding:
Address to Erie Employees, 410
Plumb, Glenn E., Answers, 625
Railroad Situation, 186
Senator Harris: Letter from Chairman Clark on Freight Rates, 1168
Service of Supply Organization, 49†, 51‡, 211†, 303†, 340†, 381†, 469†, 474‡, 644‡, 917*, 969* (Western Maryland)
Service Orders (See Interstate Commerce Commission Rulings)
Shadle Automatic Train Signal and Stop Tested, C. I. & W., 562
Ship Now! 1003†, 1102‡
Shippers:
Constructive Criticism Sought, I. C., 291
Impartial Treatment of, 596†
Increasing Car Loading, 1052‡
Rate Advance Testimony, 20
Shops (See also Machine Tools):
Blacksmith, Characteristics of, 961
Blacksmith, Don't Forget the, 264†
Coal Saving, 340†
Cost Accounting, 48†
Flue Equipment, 213†
Gypsum Tile Roofs, 961*
Heat Treating Equipment, 509†, 640†, 682†, 730†, 779†, 823†
Lighting Systems, 172†
Maintain Your Tools, 132†
Manufacturing in, 380†
Repairs in Builders' Shops, 91†
Spring Shop Needs, 304†
Union Pacific at Cheyenne, 687*
Union Pacific at Omaha, 557*
Short Line Railroads:
Financing the, 34
Labor Board, Hearings Before, 698, 747, 786, 837, 935, 963
Per Diem Rates, 813
Traffic Department, 117, 967
Siberia: Work of the Russian Railway Service Corps, 153*
Signal Division (See American Railway Association)
Signaling (See also Signal Division; also Automatic Train Control):
Adler's Highway Crossing Signal, 222, 1124*
Block System vs. Automatic Stops, 1144‡
Cab Signals in Europe, 29
Collisions and the Block System, 553†, 556‡, 1141†, 1144‡
Collisions Since Jan. 1, 1915, 89†, 95
Economy and Safety, 428†
Electric Train Signal; D. & H., 365*
Manual Block and Car Mileage, 212†
Overlap vs. A. P. B. System, 439
Shadle Automatic Train Stop, 562
Signal Engineers' Convention, 118, 147
Staff System, 51‡, 1008‡
Switches, Power Operation of, 621*
Tonnage Signals, 173†
Track Capacity, Increasing the, 428†
Yards, Track Approaching, 263†
Six Per Cent Return Under Transportation Act, 563
Slide (See Pittsburgh)
Society of Railway Financial Officers:
Annual Meeting, 865†, 891
Lehigh Valley Plan for Selling Stock to Employees, 495, 883*, 908†
South African Railways:
Coal Handling Equipment, 515*
Electrification, 631
Equipment Ordered, 949
Narrow Gage Railways, 631
South America:
Forest Resources, 659
South America (*Continued*):
Henry, S. T., on Railways, 645*
Locomotives, Meter Gage, 839*
Risque, John P., on Railways, 262†, 267*, 313†, 443*, 489*, 573*, 686‡, 730†, 735*, 791*
South Chicago Collision, 406, 428†
South Manchuria: Railroad Notes, 673
South Pittston, Pa., Collision, 117
South Water Street Project in Chicago, 52*
Southeastern Express Company Organized, 660
Southern Pacific:
Accident at Bertha, 454
Efficiency Coming Back, 26
Freight Rates and the Cost of Living, 99*, 566*
Loading Competition, 409
Motion Picture on Story of Oil, 1037
Passenger Traffic Record, 394, 1038
Prizes to Station Agents, 261†, 292
Safety at Crossings, 161
Safety Report, 625
Strike of Shopmen, 809
Traffic Statistics, 395, 1038
Water Service Application Denied, 122
Southern Railway:
Annual Report, 1100†*, 1134
"Best Friends of Charleston," 793
Rate Increases and Prices, 295
Way Bills, Mistakes in, 90†
Spain: Railroad Notes, 122, 815, 949, 1179
Special Committee on Car Service, Report of, 55
Specifications Classifying Old Bridges, 847
Speed Up Your Department, 131†
"Speed Wars" and Competition, 553†
Speedograph Corporation: Loco-Recorders, 457*
Spokane, Portland & Seattle: Settlement with Railroad Administration, 74
Spring Shop Needs, 304†
Springs, Heat Treatment of, 682†
Spray Painting, 761
Stabilizing the Railway Situation, 737
Staff System of Train Operation, 51‡
Standard Equipment, Financing and Allocation of, 278
Standard Forms for Bridge Inspection, 803
Standard Railroad Watch, 617*, 734‡*
Standard Steel Car Company: Coach Paint Shop at Hammond, Ind., with Gypsum Tile Roof, 962*
Standardization of Electrical Distribution—Pennsylvania's Terminal at Crestline, 483*
Standardization of Maintenance Practices, 596†, 602
State Commissioners:
New Jersey: Commissioners Removed, 715
New York: Automatic Stops, 291, 409
State Commission Rulings:
Alabama: Rate Increases, 857
Missouri: Pullman Fares Increased, 78
New York: Rate Increases, 373
West Virginia: Fares Increased, 947
State Commissioners:
Annual Convention, 833, 880
Rate Advance Approved, 243, 555†
State Compensation Laws, 344‡
State Rate Hearings (See Intrastate)
Stations: Painting and Improving, 1008‡
Station Agent, The Ambitious, 690
Statistics (See also Freight Traffic; also Passenger Traffic; also Revenues and Expenses):
Dead or Alive? 429†
English Railways, 493, 790, 937
Rail Consumption, 1874, 1919, 956†, 964
Wood Preservation in 1919, 802
Statistics, Operating (See Operating)
Statistics to Eliminate Waste, 685‡
Stazon, an Anti-Rust Compound, 456
Steam Versus Electric Locomotives, 553†, 579, 732†, 739*, 919
Stealing from Freight Cars, 1006†
Steel Castings, Normalized, 730†
Steel Prices, 1132
Steel Treaters' Societies Merged, 496
Stencilling, Uniform, 529
Stevens, Col. John, and the Pennsylvania Railroad, 343‡
Stevens, George W.:
Death, 800*
Tributes to, 984
Stewart-Link Belt Grain Car Unloaders, 93*
Stock (See Finance)
Storage of Records, The, 270
Store Door Delivery, 1127
Stores Accounting: Canadian Pacific, 392
Stores Department (See Purchasing)
Strikes (See Employee)
Stumpf Engine, The, 266‡, 343‡, 685‡
Subordinate Officials, Classification of, 607, 831
Subscription Rates Advanced, 427†
Substitute Crossties, A. R. A. Report on, 275*, 382†
Superheater (See Locomotive)
Superpower Survey, 327, 670, 1118
Supervision (See Officer)
Supply (See Purchasing and Stores)
Swaco Hopper Car Wrench, 577*
Sweden:
Electrification, 79
Railroad Notes, 333, 630
Switches, Outlying Operation of, 621*
Switzerland:
Coal Situation, 333
Electrification, 79, 88†, 115*, 123
Electric Locomotives, 123
Feedwater Heating, 310
Loan in U. S., for Electrification, 79, 88†, 165
Railroad Notes, 815

T

Tank Car Outlets, 1074
Telegraph:
Department of, C., R. I. & P., 459
Kleinschmidt Printing, 116*
Radio; L. & N., 450
Relieving Congestion on Wires, 303†
Telegraph and Telephone Division of A. R. A.: Meeting, 535, 554†, 571
Tennessee: Humps at Crossings, 1162*
Teredo Damage in San Francisco Bay, 1082
Terminal (See Yards and Terminals)
Terminal Superintendent, Qualifications of, 643‡
Tests:
Copper in Tie Plates; N. Y. C., 146*
Locomotives, New, 779†
New York Central Pacific Type Booster Locomotive, 699*
Shadle Automatic Train Signal, 562
Water Indicating Devices, 359*
Thefts from Freight Cars, 1006†
Thirty Miles (See Car Service)
Thom, Alfred P.: Rate Advance Case, 67, 183
Thorne, Clifford: Rate Advance Testimony, 25
Thornley Coalometer, 846*
Thrift and the R. R. Y. M. C. A., 978
Ticket Protective Bureau, 438, 469†, 895
Ticket Selling, Graft in, 777†
Tickets, Passenger Service, 289
Tie Plates, Tests of Copper in; New York Central, 146*
Tiering-Lifting Truck, 404*
Ties and Timber:
Charring to Preserve, 879
Classification of Ties; P. & R., 654
Forest Resources, 659
Lumber Conserved by Using Lower Grades, 1140†
Marine Borer Problem, 280, 1082
Substitute Crossties, Report on, 275*, 382†
Timber Cut from Live and Dead Trees, Comparative Value of, 186
Treated Material, Abuse of, 759
Wood Made Fire Resistant with Paint, 102
Wood Preservation in 1919, 802
Tie Shortage Creates Problem, 91†
Timber Docks, Maintenance of, 761
Timetable, First; B. & O., 118
Titan Steel Corporation Organized, 298
Tonnage Signals Save Equipment, 173†
Tool Foremen's Convention, 442, 460
Tool Selection, Scientific, 2†
Tracing Freight Cars; D. & H., 132†
Track:
Classification; P. & R., 654
Fiber Insulations in Joints, 380†
Manganese Steel, 928
Prizes Awarded; Pennsylvania, 715
Standards, Greater Use of, 213†
Track Capacity and Block Signaling, 428†
Track Supply Association: Exhibit at Roadmasters' Convention, 542
Traffic (See also National Industrial Traffic League; also Freight Traffic; also Passenger Traffic; also Car Service):
Traffic Club of Minneapolis: Comparative Cost of Government Operation, 749
Traffic Clubs: Election of Officers, 121, 994, 1128
Train Accidents (See Accident)
Train Lighting, 796
Train Load, Average, 947
Train, New York State's First, 118*
Train Orders, Elimination of, 1099
Train Pipe Connector Beahm, 451*
Train Robberies, 74, 117, 369, 768, 895, 896, 991
Train Rules and Collisions, 553†, 556‡, 1141†, 1144‡
Train Staff System, 51‡, 1008‡
Traingram Service, 303†
Training of Employees, 49†, 89†, 171†, 326, 690
Trainmen, Post-Graduate Courses for, 553†, 556‡
Trainmen Who Lie Over at Terminals, Living Conditions of, 1160
Trainmen's Rest-Hours Away from Home, 514‡
Transandine Railway, The, 645*
Transcontinental Freight Rates, 463
Transcontinental Journey, A, 1140†, 1161
Trans-Siberian Railway and the Kolchak Downfall, 176‡
Transportation Act:
Bankers' Associations on, 641†, 657, 703
Clark, Edgar E., on, 833
Effect on Credit, 703
Hawes, Richard S., on, 790
I. C. C. and Automatic Train Control, 709
I. C. C. to Regulate Security Issues, 34
Labor Board Denies Jurisdiction Over Interurbans, 1121
Labor Under the, 1107
Senator Harding on, 410
Shaw, Walter A., on, 834

Transportation Act (*Continued*):
Six Per Cent Return, Brig. Gen. W. W. Atterbury on, 563
Thom, Alfred P., on, 765
Willard, Daniel, on, 787
Transportation and the Citizen's Responsibility, 737
Transportation Club of Tulsa, Okla.,: Officers Elected, 1175
Transportation Combinations and the Public Interest, 1107
Transportation Conditions (See Car Service Division Weekly Reports)
Transportation Discussed at Annual Meeting of A. S. M. E., 1009
Transportation Engineering, 1170
Transportation Engineering Corporation:
Trucks, Electric Crane, 195*
Truck, Tiering-Lifting, 404*
Transportation Problem (See also Car Service; also Freight Traffic):
Citizen's Responsibility, The, 737
Coal Industry, 1149
Coal Operators and Railway Executives Co-operate, 113
Conditions in the West, 56, 113
Crisis in, The, 47†, 55
Felton, Samuel M., on, 15
Priority Orders for Coal, 103, 158, 193, 245, 393, 655, 968
Railway Managers, Up to the, 211†
Reconsignment Privileges Abused, 133†, 159, 243
Resolutions of Railway Executives, 133†, 150, 173†, 261†, 304†
Suggestions of U. S. Chamber of Commerce on Increasing Car Supply, 446
Unloading Cars, Reduce Time for, 214†
Willard, Daniel, on, 71, 87†, 91†, 92†, 1009
Trans-Siberian Railway, The, 155*
Traveling Engineers' Association:
Annual Convention, 340†, 519, 544
Subjects for 1921 Convention, 1126
Treasury Files Mandamus in Guaranty Case, 641†, 909†, 1018, 1126
Treated (See Ties and Timber)
Trinity Freight Unit, 515*, 658, 684‡
Trucks:
Electric Crane, 195*
Tiering-Lifting, 404*
Trumbull, Frank, Death of, 114*, 280
Trunk and Baggage Company, Inc., 19
Tunnel, Chicago Freight, 52*
Turnover (See Labor)
Type "D" Coupler on Pullman Car, 285*

U

Uniflow Engine, The, 266‡, 343‡, 685‡
Union Pacific:
Cars, Pacific Fruit Express Refrigerator, 1145*
Union Pacific (*Continued*):
Council Bluffs Engine Terminal, 557*
Omaha Shop Project, 557*
Overlap Signaling Scheme, 439
Pension, Minimum, 495
Safety Organization, 897
Shops at Cheyenne, 687*
Water Service Organization, 111*
Unit Containers for Freight Shipments, 515*, 658, 684‡
United States Bureau of Labor Statistics: Car Building Industry's Payroll for August, 554†
United States Electric Train Signal, 365*
United States Geological Survey: Highest Elevations on Western Railroads, 896
United States Patent Office, 956†
United States Railroad Administration:
Car Hire Bureau Abolished, 33
Claims Against, 74, 151, 345‡, 495
Maintenance Settlement, 345‡, 397
Reparation Rules, 36
Settlements with Railroads, 74, 1176
Settlements with Steamship Companies, 198
Unloader, Car, 577*
Unloading Cars, Reducing Time for, 214†
Uruguay: **Railroad Notes, 673**

V

Valuation:
Cost of Locomotives, 380†, 387*
Rate Making, 353
State Commissioners' Report on, 882
Vanderbilt, W. K., Death of, 196*
Vapor Car Heating Company: Suit vs. Gold Car Heating & Lighting Co., 207
Visual Signals vs. Automatic Stops, 1144‡

W

Wages (See Employee; also Railroad Labor Board; also National Boards)
Warfield, S. Davies: National Railway Service Corporation, 241
War Finance Corporation: Loans to Railroads, 1081
War Period and Coal Transportation, 1149
Watch Dials, Safe, 617*, 734‡, 784‡*
Watching the Performance of an Engine Terminal, 130‡, 190*
Water and Motor Truck Competition, 341†
Water, Electricity for Pumping, 760
Water in Coal Territory, Securing Uncontaminated; B. & O., 152
Water Indicating Devices, Tests of, 359*
Water Rates Increased, 414
Water Service Organization; U. P., 111*
Waterways:
Co-operation with Railways, 907†, 1040, 1057
Government and Inland Waterways, 1014
Waybill (See Freight; also Locomotive)
Weekly Report (See [illegible])
Weights of Rails, Economic, 531*
West [illegible]
Welding, Electric, 795
Western Electric Company: Employees as Bond Holders, [illegible]
Western [illegible]
Western Maryland:
Annual Report, 783†
Service of Supply Organization, 917*, 969*
Western Railroads, Highest Points on, 896
Western Railway Club: American and European Railroad Conditions, 537
Western Society of Engineers:
Automatic Train Control Discussed at Chicago, 708, 801
Co-ordination of Railway and Marine Terminals, 1040
Engineering Applied to Transportation, 1170
Rail Renewals, 908†, 921, 956†
Whistling at Crossings; M. K. & T., 329
Willard, Daniel:
New England Rate Divisions, 943
Rate Advance Decision, 244
Transportation Problem, 71, 87†, 91†, 92†, 1009
Winter Operation and Car Movement, 778†
Wisconsin Passenger Fare Case, 899
Wood (See Ties and Timber)
Wood, F. H.; Rate Advance Testimony, 65
Woodworth, P. H.; Passenger Traffic to and from New York City, 1083
Wrench, Swaco Hopper Car, 577*
Wright, R. C.: New England Lines, 943
Writ of Mandamus (See Mandamus)

Y

Yale Alumni Association: Results of Private Control, 848
Yards and Terminals:
Automatic Signals near Yards, 263†
Cincinnati Motor Terminals System, 219*
Claremont Terminal; L. V., 599*
Crosstown Movements within Terminals, 684‡
Efficient Operation of Terminals, 643‡
Electrification of City Terminals, 1†
Engine Terminal (See Engine Terminal)
Living Conditions of Trainmen at Terminals, I. C. C. Report on, 1160
Locomotive Terminal, The, 877*, 929*, 985*
Modernizing Locomotive Terminals, 1024*
N. Y., N. H. & H. at Cedar Hill, 179*
Parsons, Col. William B., on, 1013
Pennsylvania at Crestline, Ohio, 483*
Yard Operation and Freight Car Efficiency, 92†
Y. M. C. A. (See Railroad)

NEW BOOKS

Annual Statistical Report, American Iron and Steel Institute for 1919, 1102
Bituminous Coal Storage Practice, 912
Commodity Classification, 683
Developing Executive Ability, 1143
Engineering and Building Foundations, 960
Explanation of Train Rules and Train Orders, 1007
Exporter's Gazeteer of Foreign Markets, 683
Export Register of the Federation of British Industries, 912
Locomotive Up to Date, The, 1007
Powdered Coal as a Fuel, 1143
Practical Locomotive Running and Management, 1143
Proceedings, American Electric Railway Association, 50
Proceedings, American Railway Engineering Association, 734
Proceedings, American Wood Preservers' Association, 912
Proceedings, Association of Railway Electrical Engineers, 217
Railroad Curves and Earthwork, 386
Railway Accounting Officers' Association 1920 Synopsis, 6
Text Book of Materials of Engineering, 783
Tin, Sheet Iron and Copper Plate Worker, 555
Traveling Publicity Campaigns, 823

ELECTIONS AND APPOINTMENTS

*[*Indicates photograph and sketch. ‡Indicates sketch only.]*

Aagaard, Peter, 816*
Abbott, W. W., 259
Abercrombie, L. A., 905
Ackerman, Charles V., 725
Acosta, C. J., 551
Adams, C. W., 864
Adams, F. G., 507
Adams, Karl, 377
Adsit, C. R., 46
Aikman, Hugh, 39
Allen, J. W., 1001
Allen, W. C., 680, 820‡
Allison, Thomas M., 680
Allison, W. E., 548
Alvord, E. M., 552‡
Anderson, E. C., 128
Anderson, E. F., 507
Anderson, G. E., 773
Anderson, James, 78
Anderson, R. W., 210*
Andrews, W. S., 467, 507‡
Anton, J. F., 299, 467*
Appleton, C. W., 633
Archibald, G. M., 85
Armitage, A. D., 39
Armstrong, J. C., 1046
Armstrong, S. E., 46
Ashcraft, W. C., 819
Atherton, C. H., 209
Austin, F. D., 954
Avery, R. L., 728
Aydelott, J. H., 378
Ayer, L. E., 300

Baals, D. S., 1048
Bade, L. W., 728
Bagnall, R. V., 593
Bagwell, E. C., 378
Baker, B. H., 728
Baker, Charles W., 505*
Baker, E. F., 1001
Baker, E. H., 33
Baker, H. D., 126
Baker, H. V., 376
Baker, N. E., 728
Baker, William H., 678
Baldwin, George P., 633
Baldwin, James E., 169
Baldwin, R. S., 39
Ballard, H. R., 1047
Bannerman, J. M., 594
Bardwell, R. C., 776
Barker, A. C., 1047
Barnes, Charles R., 1178
Barnes, W. L., 54, 508, 637*
Barrett, Alfred M., 858
Barrett, W. C., 299
Barrington, R. G., 816
Barrows, Donald S., 860*
Barry, O. F., 338
Barry, P. D., 953
Barry, W. F., 1047
Bartlett, K. W., 1181
Barton, J. C., 819
Basinger, W. S., 426, 508‡
Bason, Frederick W., 167*
Bassett, J. S., 1002
Bateman, G. H., 593
Bateman, W. H. S., 548
Battles, H. I., 635, 819‡
Baylies, Fred N., 1180
Beach, R. E., 1137
Beames, Capt. H. P. M., 1086‡
Bean, L. H., 39
Bean, L. V., 378, 508*
Bearden, C. W., 551
Beck, T. Clem, 170
Beck, W. D., 299
Becker, Anton, 902
Behr, E. L., 1001
Behrle, J. L., 1047
Belding, R. A., 967
Belk, C., 426
Bell, F. A., 1001
Bell, [illegible]
Bell, [illegible]
Bell, Henry F., 210*
Bell, John P., 1132
Bell, R. H., 507
Bell, W. C., 864
Benjamin, H. A., 507, 594‡,, 1047
Benner, S. A., 298
Benners, E. H., 298
Bennett, W. C., 86
Benson, E. F., 679‡
Benson, E. S., 678
Berlinget, James, 967
Bernard, A., 810
Berry, C. W., 636
Berry, F. J., 1046
Besselo, A. J., 776
Betts, L. M., 54, 638*
Bevans, W. H., 954
Beven, C. T., 467
Bierdeman, A. B., 467
Bierman, H., 1138
Bigelow, W. C., 905
Biehlmeir, G. W., 906, 1002‡
Billingsley, W. F., 997
Bilts, C. H., 560
Bingham, C. T., 864
Birkett, J. H., 548

ELECTIONS AND APPOINTMENTS—Continued

[*Indicates photograph and sketch. ‡Indicates sketch only.]

Bivens, L. L., 1002
Black, B. F., 426
Blanton, J. C., 504
Bloodworth, B. R., 593
Boak, Cyril R., 593
Bodamer, E., 636
Boesser, O. G., 426, 593
Bohan, W. J., 378
Bole, Robert A., 38
Bolles, F. R., 505
Bond, T. E., 80, 260‡
Bonner, G. E., 636
Bonney, H. G., 1002
Boone, C. T., 300
Borrowdale, J. M., 817*
Bourke, John P., 1131
Bourne, B. E., 207
Bow, Harry G., 1181
Bowman, B. H., 775
Boyce, George R., 125
Bradford, C. C., 860, 902
Brady, F. P., 1046, 1137*
Brain, B. B., 906, 954‡, 1096
Brandenburger, L., 816
Breland, Albert N., 170*
Brennan, E. J., 210
Brennan, J. C., 128
Brennan, N. J., 426
Brennan, T., 905
Bressler, R. E., 676
Brewer, H. H., 507
Brewer, J. A., 505
Bridgers, S. S., 593
Briggs, Edward, 1001
Briggs, E. S., 552
Brinkman, H., 680
Brinley, Clarence C., 773
Bristol, C. H., 45
Brock, E. B., Jr., 507
Brock, H. C., 467
Brogdon, J. E., 820
Brooks, C. E., 636
Brooks, J. T. L., 377
Brooks, R. E., 507, 550
Brooks, T. E., 819
Brostedt, Augustus, 1047*
Brown, A. V., 819
Brown, C. B., 637, 680
Brown, C. H., 550, 679‡
Brown, D. M., 504
Brown, G. H., 300, 338
Brown, George W., 1180
Brown, H. H., 259
Brown, J. B., 378
Brown, L. S., 1046
Brown, Lucian C., 1180
Brown, Orno M., 426
Brown, R. M., 552
Brown, W. A., 551
Brownrigg, J. N., 418
Bryant, F. H., 170
Buch, R. S., 591
Buchenery, H. P., 1048
Buckingham, J. E., 210
Buckworth, A. B., 299
Buffer, Edward, 997
Bull, Henry W., 678
Bull, R. A., 632
Bullard, E. P., Jr., 816
Bullen, D. R., 633
Buller, F. J., 678
Bunting, G. J., 775, 948
Burgis, J. H., 338
Burgtson, Hugo T., 167
Burke, Thomas J., 1082
Burke, W. H., 338
Burnham, V. S., 905
Burns, L. F., 128, 260
Butts, George B., 338
Burkley, H. J., 467
Burnett, E. T., 1138
Burr, W. J., 170
Burry, V. J., 1131*
Butler, W. S., 953, 954
Buttler, P. M., 78
Butzen, T. N., 679
Byrne, P. C., 905, 1095‡

Cabell, L. F., 1046
Cady, P. C., 1043
Cahoon, J. L., 593
Cain, B. B., 117
Cain, J. H., 548
Caldwell, W. T., 1095
Callaway, W. R., 426
Calmback, G. M., 81
Cameron, J. R., 507
Cameron, James, 300
Cameron, O. K., 1095
Campbell, B. A., 679
Campbell, C. N., 86
Campbell, D. R., 905
Campbell, Edward, 467
Campbell, V. L., 1096
Candee, Willard C., 725
Canfield, John B., 590
Canfield, R. W., 128
Cannon, C. M., 378
Cantillon, J. P., 299
Capps, L. L., 125
Carey, A. D., 45, 170‡
Carey, J. J., 906
Carleton, J. L., 1047
Carr, Arthur J., 127
Carr, E. L., 1047*
Carson, D. B., 773
Carson, H. A., 78
Carter, E. Ben, 46, 210
Carter, E. E., 679, 819*, 1095
Carter, J. P., 378
Case, D. M., 46
Casey, M. B., 54
Casey, William, 548
Cass, L. S., 967
Cassels, A. W., 1047
Cassidy, A. F., 590
Castle, O. C., 550
Caton, W. J., 168
Caviezel, J. A., 905, 1001‡
Chambers, W. L., 1175
Champlin, R. A., 378
Chandler, J. W., 260
Chapin, F. H., 207
Chappell, B. T., 551
Charbono, F. H., 1131
Charles, T. N., 594
Chenery, Major C. T., 125
Cheney, C. M., 1047
Childs, Eversley, 1131
Childs, William Hamlin, 1131
Chisholm, R., 593
Choate, William G., 209‡
Chown, A. B., 78, 170
Clark, A. B., 680
Clark, F. M., 338
Clark, J. R., 298
Clark, R. F., 300
Clarke, F. F., 1095
Clawson, H. P., 548
Clayton, Merle S., 816
Cleary, T. J., 507
Clement, Don L., 1131
Clifford, H. A., 299
Clifton, W. D., 775
Coapman, E. H., 862
Coddington, J. M., 259
Coffin, Samuel P., 680
Colby, Albert Ladd, 291
Cole, G. E., 636
Coleman, E., 418
Coleman, F. O., 338
Coleman, P. J., 905
Collins, Charles J., 593
Collins, John F., 728
Concannon, H. W., 1048
Congden, G. J., 679
Congdon, C. O., 905
Connell, A. J., 1181
Connell, J. W., 1046
Conner, Brig.-Gen. W. D., 295
Connerton, M. J., 1096
Connett, H. A., 377
Connolly, J. J., 820
Conners, J. J., 680‡
Constans, L. H., 259
Cooke, Delos W., 168
Cope, C. G., 590
Corbett, James G., 45, 127‡
Cosley, H. H., 1043
Cotter, J. C., 39
Cottingham, George, Jr., 1096
Coulam, Henry, 259
Coulson, R. H., 508
Covington, S. A., 377
Cox, A. E., 552
Cranor, J. A., 905
Cravath, Paul D., 39
Craver, J. E., 819
Crawford, D. M., 170, 864
Crawford, D. T., 819
Crawford, E., 551
Crawford, R. W., 590
Crawley, R. P., 505
Creelman, R., 467
Crippen, C. I., 548
Crivel, George F., 950
Croft, Harry W., 1131
Crombie, D., 637
Crombie, J. C., 819
Crosbie, Robert, 953, 1095*
Crosby, G. L., 126
Crosby, R. M., 378
Crotty, M. J., 905
Crouch, J. M., 551
Crowder, R. V., 1096
Crowley, D. J., 773
Cuineen, J. W., 338, 507*
Cummings, J. H., 679
Cuncliffe, G. A., 551
Currlin, W. E., 255
Curry, H. M., 378
Curry, J. H., 259
Curtis, G. W., 1046
Curtiss, W. B., 207
Cushing, E. B., 552, 637*
Cutler, D. D., 1184
Cutshall, Harvey W., 335*

Dafoe, M. O., 78
Dager, George D., 209‡
Dana, C. C., 170, 259‡
Davant, T. S., 1137
Davidson, Albert, 552
Davidson, A. M., 45, 46
Davidson, C. B., 550
Davidson, C. R., 1047, 1048‡
Davis, A. E., 376
Davis, A. H., 300
Davis, D. M., 775
Davis, James C., 46
Davis, W. P., 260
Davitt, James J., 45
Day, L. R., 548
Deabler, C. O., 505
Dean, H. L., 1181
Dearborn, R. C., 551
DeGraff, S. J., 1048
Dehon, Theodore, 679
De Lamotte, O. J., 209
Dennison, E. B., 548
Desmidt, H., 820
Devereaux, J. J., 776
Devenish, W. R., 1047
Devlin, F. E., 338
Devney, M., 819
Dewey, A. L., 863
Dewey, F. E., 54
Dice, Agnew T., Jr., 548
Dice, A. T., Jr., 775
Dickerman, Clark T., 81
Dickey, W. E., 1180
Dickinson, A. J., 1096
Dickinson, W. W., 1047
Dike, Chester T., 86*
Divine, C. C., 776
Dixon, H. A., 552
Dobbins, D. C., 45
Dodge, G. G., 45
Doke, G. E., 552
Doles, J. B., 593
Donnelly, Charles, 612*
Dorsey, W. C., 338
Dos Passos, C. F., 1001
Doud, Willard, 39
Douglas, J. H., 170
Douglas, J. S., 1046
Douty, J. F., Jr., 633
Dowell, S. H., 299
Dower, D. W., 1048
Down, A. R., 550
Dozier, R. M., 775, 905‡
Druce, L. V., 507
Duffee, L. W., 864
Dunaway, C. H., 905
Duncan, James, 1178
Dunn, D. W., 860
Dunn, Seeley, 723
Dunn, W. R., 776
Duperow, W. E., 467
Du Puy, T. F., 39
Durham, George, 170
Durkin, T. F., 377
Duryee, W. S., 593
Dyer, John, 507

Eager, A. H., 552, 636, 864‡
Early, G. G., 209
Eastman, W. R., 78
Eaton, Thomas, 635
Eckroate, W. H., 170
Edmondson, F. A., 679
Edmondson, G. N., 46
Egbers, G. F., 468
Eggert, C. A., 1087
Ehrke, J., 819
Elder, F. W., 46
Ellicott, Edward B., 207
Elliott, L. H., 207
Elliott, W. J., 39
Ellis, George E., 899
Elmore, P. W., 46
Elvin, Albert G., 38*, 903
Emerson, C. L., 552
Emery, E., 863
Emmet, W. S., 946
Emmons, George E., 207, 633
Engelbright, E. W., 728
Engelhart, E. G., 725
Englebright, E. W., 1131*
English, William J., 728
Ennis, William D., 125
Enoch, A. B., 678
Enochson, I. O., 259
Entelman, Edward, 679, 863*
Evans, A. L., 1047
Evans, H. T., 1183
Evens, Alfred, 593, 728‡
Everheart, H. E., 259
Ewing, A., 45
Exley, L. P. O., 1184

Fairburn, R. L., 776
Fairhead, J. E., 467
Farley, D. S., 45
Farley, F. J., 678
Farmer, R. F., 45
Farrell, Andrew J., 209, 377*
Farrell, James A., 168
Fairburn, R. L., 776
Farrell, J. S., 725
Fatherson, T. W., 636
Favant, Frank H., 1131
Felder, L. R., 950
Fenno, John A., 377
Ferris, H. C., 550
Finley, James B., 467
Finley, R. F., 809
Finucane, J. W., 1138
Fisher, Victor B., 85, 127*
Fitzpatrick, F. F., 590
Fitzpatrick, F. G., 776
Fitzpatrick, J. P., 1095
Fleming, W. J., 207
Fletcher, Andrew, 168
Fletcher, L. E., 1002
Flinn, E. F., 338
Floyd, Chester B., 46
Fogg, W. H., 636
Ford, E. I., 953, 1046*
Ford, J. J., 1047
Fordyce, W. B., 905
Foreman, H. G., 678, 819‡
Foreman, R. J., 299
Forman, H. W., 426
Fosdock, E. G., 690
Fowler, C., 593
Fowler, J. B., 1096
Fowler, L. T., 259
Fox, H. K., 300
Frankel, M., 126
Frazee, A. M., 46
Fredericks, C. C., 725, 773*
French, J. B., 1043
Frew, T. C., 551
Friberg, Edward H., 259
Fries, A. J., 260
Fries, S. W., 505
Frost, E. A., 299
Fuller, H. A., 207
Fuller, N. H., 85, 259
Fuller, W. J., 125
Fulton, J. H., 1131
Furman, B., 594

Gaddis, P. L., 1046, 1138‡
Gairns, Andrew H., 725
Galbreath, A. W., 260
Galbreath, W. O., 1048
Gall, James N., 954
Gallagher, F. S., 552
Gallaher, T. B., 170
Galligan, C. W., 1047
Galligan, James A., 207
Gangawer, M. A., 1096
Gantt, Ira W., 78
Garey, L. B., 905
Gary, Elbert H., 168
Garner, F. H., 1001
Garrity, C., 507
Gassman, E. R., 1043
Gates, Robert M., 418
Gates, Thomas S., 38
Gavin, J. F., 117, 259
Gawthrop, Charles S., 168
Geagan, W. H., 1138
Gebhardt, R. L., 259
George, W. A., 1138
Gerke, Otis, 259
Gerlach, Daniel A., 679
Gibbs, G. P., 1046
Gibons, F. S., 545
Gibson, E. T., 378
Gibson, William C., 1181
Gilkerson, W. J., 338
Gill, R. J., 298
Gillispie, H. C., 954
Gilman, L. C., 728, 862*
Gilmore, T. N., 39
Glover, Hunter, 298
Goddard, Walter T., 633
Godfrey, F. E., 1001
Gold, M. H., 378
Gollos, Anatole, 1043
Goodfellow, J. C., 905
Gooding, W. J., 378
Goodloe, W. E., 593
Goodman, J. S., 776
Goodwin, Edward W., 426‡
Gorbell, A. P., 1047
Gormaley, B. A., 300
Gorman, E. R., 259, 679, 1001*
Gort, Godfrey, 903‡
Gough, James L., 167
Gould, Allen, 637
Gow, F. C., 679
Grable, H. R., 1181
Graham, H. C., 207
Graver, P. S., 1181
Gray, Walter, 1184
Gray, William S., 1131
Greaves, W. F., 1047
Greding, M. A., 1047
Green, A. L., 1096‡
Green, E. W., 679
Green, F. V., 81
Green, W. M., 1048
Greenabaum, A. L., 594
Greenbaum, A. L., 676
Greenleaf, W. A., 378
Greenwood, B. E., 378
Greer, John, 508
Gregg, F. A., 507
Greig, A. S., 1043*
Grenfell, C. P., 299
Grice, E. W., 819
Griffin, W. C., 426
Griffin, W. V., 678
Griffiths, W. F., 1138, 1184‡
Grimshaw, H. B., 378
Grisinger, J. C., 378
Groome, P., 905

Grossner, George W., 552
Grove, Dewitt Clinton, 81
Gruber, J. M., 678, 862*
Grundler, Fred, 905
Guess, W. G., 378
Guild, J. M., 906
Guild, W. H., 679
Guion, C. H., 128
Gunther, E. R., 467
Gurley, F. G., 905, 1047‡
Gutheim, A. G., 54, 638*
Guthrie, W. C., 467
Gutteridge, J., 776
Gzowski, C. S., 678

Haas, Exum M., 297
Hasking, E., 552
Hagerman, B. H., 862, 1001
Hall, R. J., 300
Hall, R. S., 207
Hall, Thomas L., 418
Hall, U. K., 728‡
Hall, W. S., 259, 593
Hallawell, R. E., 259
Hallberg, O. E., 299
Halpenny, R. M., 45
Hamill, H. H., 338
Hamilton, J. C., 593
Hamilton, M. E., 297‡
Hammer, F. D., 728, 864*
Hammond, F. S., 906
Hannaford, J. M., 612*
Hannigan, K. B., 1138, 1184‡
Hansen, Henry, 508
Hanson, I. T., 259, 967
Harland, W. H., 899
Harold, E. E., 551
Harrington, W. E., 507
Harris, C. M., 1002
Harris, P. R., 863
Harris, Richard G., 1132
Harris, S. C., 426
Harris, Walter B., 1131
Harrold, A. E., 632*
Hartman, Bruce, 860
Hartman, D. S., 593
Hartman, Ernest F., 126
Harty, William, Jr., 548
Harvey, A. S., 902
Hawley, F. M., 950
Harwood, George A., 128
Hassett, M. W., 260
Hastings, H. S., 905
Hately, W., 467
Hawken, C. C., 1002
Hawkins, E. P., 954
Hawkins, R. D., 552, 636*
Hawkins, W. T., 426
Hazen, H. T., 680
Heintz, A. T., 260
Heisey, N. T., 775
Helber, C. J., 1001
Hemming, J. C., 678, 819‡
Hempstead, R. C., 636
Hench, Horace B., 676
Henderson, R. M., 39
Hendricks, Laird W., 552
Hendricks, Victor K., 128
Hendrickson, C. E., 550
Henriques, E. J., 1184
Hennessey, J. F., Jr., 259
Herlehy, E. F., 1095
Herron, J., 820
Hess, George F., 85‡
Hevron, J. W., 259
Hewitt, H. H., 298
Hickie, C. H., 678
Hicok, I. W., 906
Higginbottom, W. C., 1046
Hill, F. M., 300
Hill, J. F., 170
Hilliard, E. J., 78
Hills, J. E., 85
Hine, Cline C., 507
Hines, Brig.-Gen. Frank T., 252, 295
Hines, Sherwood, 725
Hingle, R. J., 1180
Hitchcock, W. A., 207
Hixon, A. T., 551
Hodgman, C. A., 338
Hoehn, B. F., 45
Hoffman, W. G., Jr., 633
Hogan, C. H., 260, 378*
Holdredge, G. W., 1138‡
Holladay, L., 678
Holloway, Harry C., 1180
Hollowell, R. E., 376
Holmes, F. T., 1096
Holmes, G. A., 300
Holmes, H. B., 468, 594‡
Holtorf, C. C., 378
Hooper, F. H., 426
Hooper, H. H., 45
Hooper, W. H., 125
Hoover, Herbert, 933
Hopkins, L. P., 85
Hopp, E. W., 300
Hopper, F., 552
Horn, J. M., 467
Horning, D. H., 1002
Hosp, S. S., 300
Hough, W. M., 426, 551*
House, L. F., 946
Houston, J. A., 548‡
Houston, J. A., 905
Houston, J. P., 338
Hoverstad, G. A., 1138
Howard, J. H., 678
Howe, Carl, 1128
Howell, F. P., 820
Hudson, F. G., 299
Hudson, W. C., 1046‡
Huffman, C. P., 1002
Huggins, A. C., 1047
Hughes, E. H., 170
Hughes, H. R., 85
Hughes, W. J., 300
Hulatt, H., 508
Hultgren, D. A., 1131
Humphreys, Alexander C., 1131
Hungerford, H. L., 1046
Hungerford, J. S., 678
Hunt, C. M., 126
Hunter, A. W., 1002
Hunter, F. C., 906
Hunton, Eppa, Jr., 593*
Huss, George M., 594, 680
Huvane, J. F., 1181
Hurley, G. L., 378

Imhoff, F. Rodger, 676
Irvine, C. V., 1184
Irwin, J., 551
Irwin, R., 1001

Jackman, C. H., 39‡
Jackson, W. A., 635
Jacobson, C. M., 378
Jacobus, G. H., 728
Jaques, H. W., 1087
Jaeger, Fred, 126
James, Charles, 636
James, J. D., 950
Jamieson, J. L., 593
Jamison, C. R., 1181
Janes, Julius, 418
Jayne, D. W., 1131
Jenison, Edward S., 1180
Jennings, E. R., 1096
Jennings, R. E., Sr., 298
Jennings, R. E., 2nd, 298
Jennings, M. L., 1046
Jessen, L., 1001
Johnson, A. C., 1137*
Johnson, A. L., 863
Johnson, Isaac B., 1131
Johnson, John R., 593
Johnson, L. E., 1137
Johnson, O. F., 170
Johnson, R. M., 169
Johnson, Sidney G., 81, 167*
Johnston, G. H., 1047
Johnston, J. V., 1184
Johnston, J. W., 1048
Jones, A. R., 468
Jones, Henry Ford, 1178
Jones, H. S., 864
Jones, I. G., 946
Jones, N. W., 775
Jones, Paul, 300, 508
Jones, W. G., 378
Jones, W. H., 905
Jordan, J. J., 678
Jordan, S. A., 906
Juneau, C. G., 170‡, 378
Jurden, A. R., 1002

Kahant, C. G. 126
Keehan, M. E., 593
Keenan, J. L., 299
Keller, H. G., 1131
Kelley, S. J., 776
Kells, Willard, 552
Kelly, D. W., 819
Kelly, H. J., 168
Kelly, Prescott V., 902
Kendall, W. C., 54, 637*
Kenney, J. F., 905
Kenney, W. C., 636
Kennon, W. A., 906, 954
Kerr, D. J., 1046
Kerr, H. H., 39
Kerr, Joseph G., 1047‡
Kerrick, A. C., 299
Kidd, W. G., 679
Kile, H. L., 954
King, Charles F., 126
King, E. L., 679, 809, 820‡
King, J. W., 593
King, R., 1095
King, W. H., 863
Kingsland, W. A., 1046
Kinzie, W. D., 775, 776
Kipp, A. V., 259, 338*
Kirby, W. C., 378
Kirkland, W. B., 209
Kirkpatrick, C. S., 507
Kirkpatrick, W. A., 550, 679‡
Kitchell, J. G., 593
Kluber, E. F., 426
Knapp, B. H., 905
Knapp, H. H., 335
Knott, F. W., 378
Kopf, J. C., 1043
Krauth, S. F., 418
Krebs, C. P., 550, 635‡
Kretchmar, M. A., 725

Lading, A. E., 776
Lahey, Charles A., 121
Laird, W. I., 426
Lake, C. S., 426
Lamberg, G., 300
Land, George, 81
Landis, S. L., 1138
Lane, E. G., 906
Lane, Ralph, 1131
Lansdale, John, 128‡
Lantry, T. H., 728
La Poe, Wilbur, Jr., 672
Larkins, Fred, 545
Larsen, Elmer R., 126
Larsen, H. E., 1047
Latham, Arthur, 127
Lavarack, F. C., 81, 126*
Lavoie, L., 1096
Laugham, E., 1096
Lawler, G. M., 1002
Lawrence, James J., 46
Leach, L. P., 905
Ledogar, E. E., 298
Lee, A. E., 679, 1043
Lee, Ivy L., 734
Lee, James T., 297
Leighton, M. O., 125
Leimer, R. J., 594
Leis, E. R., 776
Lemon, J. W., 1138
Leverich, C. E., 775
Lewis, E. B., 863
Lewis, F. E., 636
Lewis, H. M., 426
Lewis, S. R., 426
Linderman, F. A., 260
Linn, W. A., 906
Liston, J. E., 954
Livingston, F. A., 902
Livingston, F. H., 259
Livingstone, W. C., 552
Lloyd, F. R., 300
Long, E. W., 170
Long, John F., 467
Longnecker, Oscar M., 678‡
Looney, T. C., 819
Loring, Homer, 39
Love, J. H., 1047
Lovell, G. J., 820
Lowman, Harry F., 1180
Lowry, R. C., 170
Lowther, W. H., 1002
Lucore, F. M., 551
Ludham, R. H., 1095
Lull, H. M., 552, 594
Lupton, S. J., 552
Luster, E. J., 860
Lutz, S. D., 776
Lynch, George J., 504
Lysle, M. C., 203

McAuley, J. F., 1048
McBride, P. B., 905
McCabe, I. C., 588
McCallum, N. W., 46
McCann, E. H., 594
McCart, Perry, 507
McCarthy, C. E. A., 905, 953‡
McCarthy, H. G., 593
McCarty, Charles, 1048
McCauley, F. F., 636
McCauley, P. H., 819, 1046
McCauley, W. W., 1046
McCaulley, C. G., 1137
McConnell, I. W., 39
McCormack, J. S. 860
McCormick, Charles H., 590
McCowan, Andrew, 552
McCrea, James A., 635*
McCreath, M. R., 593
McCullough, H. R., 1137*
McCullough, J. J., 1001, 1183‡
McDade, Benjamin M., 548
McDonald, B. M., 426
McDonald, E., 1001
McDonald, J. D., 338
McEdward, William G., 671
McElwain, G. W., 377
McFarland, H. F., Jr., 1048
McGarry, W. J., 54, 638*
McGinley, John P., 39
McGraw, Robert, 128
McGregor, H. C., 259
McGuirk, Charles W., 46
McIlravy, William N., 1131
McIntyre, A. C., 170
McKay, O. L., 85, 170‡
McKee, H. R., 819
McKercher, Clark, 1132
McKinley, A. C., 906
McKinnon, J. A., 259
McLaren, M. F., 378, 905
McLendon, H., 378
McLeod, S. F., 632
McManus, F. L., 45
McManus, T. W., 125
McMunn, Capt. W. N., 39
McNairy, O. F., 378
McNally, F. L., 864
McNeill, E. S., 45
McNicholl, G. A., 552
McNie, C. H., 1184
McPike, L. F., 117
McRoberts, T. J., 1001
McVey, W. D., 426, 552‡
Maddie, J. B., 594
Macabe, T. J., 678
Macdonald, G. E., 299
MacDowell, W. G., 1137
MacEdward, W. G., 588
Macgregor, J. A., 259
Mac Kie, F. J., 299, 507
MacKinnon, J. A., 775
MacNeill, J. G., 594
Macrae, J. M., 467
Macsherry, R., 1096
Magees, J. J., 117
Mahan, A. H., 776
Maharg, C. S., 259, 593
Main, H. J., 550
Maley, W. J., 1184
Malone, Capt. George B., 376
Maloney, John, 728
Manchester, W. G., 467
Mann, N. C., 1048, 1049
Markham, Joseph, 773
Marlatt, N. R., 1001
Marshall, J., 1096‡
Marshall, K. C., 45
Marteny, A. E., 820
Martin, C. L., 507, 594‡
Martin, M., 1047
Martin, W. L., 426
Mason, C. L., 1001
Mathias, Thomas H., 168
Mathley, M. B., 126
Matthews, G. B., 426
Matthews, H. W., 819
Maxey, O., 863
Maxfield, C. E., 551
Maxwell, A. S., 39
May, H. C., 1095
Mayer, Fred C., 300
Mayo, E. E., 86, 594
Melanson, H. H., 467
Meldrum, Norman S., 85
Melton, John M., 259
Mergen, B. M., 169
Merrell, C. B., 950
Messinger, Clifford F., 903
Meyer, Francis J., 128
Meyers, Fred, 169
Middleton, F. G., 377
Middleton, Maury, 905
Midgley, S. W., 817*
Millard, Floyd H., 593, 635‡
Miller, A., 1046
Miller, H. W., 862
Miller, S. F., 527
Miller, Walter E., 335
Miller, Walter E., 333
Milliken, R. M., 507
Mills, H. O., 300
Milner, B. B., 207, 504*
Minich, V. E., 590
Mitchell, C. B., 950
Mitchell, C. M., 467
Mitchell, E. D., 125
Moats, C. W., 905
Modlin, E., 426
Moffatt, W. J., 78
Moffitt, A. A., 45
Mohler, E. M., 377
Monroe, J. E., 594
Monroe, William, 906
Montgomery, T. G., 593, 863‡
Mooney, P., 378
Moore, F. K., 207
Moore, H. W., 1002
Moore, M. M., 418
Moran, J. A., 1095
Morna, J. W., 207
Mordica, W. A., 1048
Morgan, H. G., 1096‡
Morgan, H. M., 863
Morris, A. K., 954
Morris, W. W., 637, 680‡
Morrison, F. W., 538, 377
Morrison, S. A., 299, 636
Morton, Charles D., 950, 997*
Morton, H. U., 950, 997*
Mosby, W., 45
Moss, Jerome A., 125
Motsett, Charles H., 465*
Muchnic, Charles M., 38, 168
Mulholland, R. C., 899
Mull, Howard C., 1180*
Muller, C. E., 426
Mullins, A. Z., 338
Muncey, L. F., 551, 679‡
Munro, A. S., 338
Munro, W. I., 551, 1046
Munro, W. R., 1095
Murphy, D. L., 819
Murphy, J. E., 169, 550
Murphy, M. B., 551
Murray, F. H., 636
Murray, Isaac, 170
Murray, W. A., 46
Murray, W. L., 39
Murrian, W. S., 81*
Mutchler, C. B., 508
Myers, Frank L., 45

Nader, V. M., 207
Nagel, J. R., 906, 954
Nash, Frank D., 86*
Nauman, F. D., 776
Naylor, E. J., 46
Needles, A. C., 1137
Nelson, Barney, 39
Nelson, Charles A., 776
Nelson, O. W., 905
Nelson, J. E., 551
Nelson, M. E., 728
Nero, C. H., 550
Nesom, C. N., 209
Nestor, S. J., 78
Neubert, C. E., 548
Neuenhan, C. A., 505
Nevins, J. S., 550
Nye, Marcellus, 905
Nyswonger, J. W., 1096
Newman, H. L., 1002, 1138‡

ELECTIONS AND APPOINTMENTS—Continued

[*Indicates photograph and sketch. ‡Indicates sketch only.]

Nichols, W. H., Jr., 1131
Nicholson, R. F., 508
Nickel, H. W., 454
Nicoud, R. J., 1047
Noble, H. A., 418
Noble, William S., 376, 465*
Nolan, D. B., 728
Nolan, M. J., 551
Norman, F. L., 552
Norris, E. S., 552
Norris, T. A., 378
Notley, F. L., 552
Noyes, W. H., 300
Null, C. M., 45

Oakes, C. E., 776
Oakes, M. H., 680
O'Brien, F., 636
O'Brien, W. D., 1001
O'Brien, William, 377
Ochs, J. J., 338
O'Day, J. M., 545
Odell, J. T., 298
O'Donnell, J. C., 1046, 1047
O'Donnell, J. P., 1001
Ogborn, W. H., 1095
Ogg, O. J., 45
O'Leary, Capt. Thomas, Jr., 38
Oliphant, A. C., 125
Oliver, E. R., 863
Ormond, M. J., 170
Orttenburger, C. G., 338
Osborn, W. E., 377
Osborne, D. H., 167
Osborne, John G., 997
Osborne, N. C., 338
Osborne, S. H., 1002
Osborne, W. H., 997
Osborne, W. V., 997
Osterman, F., 1048

Packard, D. B., 728
Paddock, Edwin F., 126
Palmer, F. H., 550
Pangle, M. E., 300
Parham, E. F., 905
Parmelee, Julius H., 594, 820*
Parsons, C. F., 260
Parsons, J. G., 260
Partridge, T. K., 1184
Patterson, G. E., 259
Patterson, P. C., 593
Pattison, Hugh, 860‡
Paul, John, 507
Paul, Lesley C., 207
Payne, G. W., 1002
Payne, J. B., 39
Payson, Randolph, 168
Pearsall, D. M., 820
Peckham, Carl L., 127
Peebles, S. T., 125
Pelley, J. J., 259
Pelter, F. P., 1095
Penfield, W. H., 1048, 1184*
Peters, Harry T., 39
Peterson, A. C., 338
Pfeiffer, A. T., 128
Phelps, C. B., 54
Pheney, P. A., 637
Philips, D. G., 170
Phillips, M. H., 1131
Pierce, C. J., 78
Pierce, E. L., 1131
Pike, W. C., 771
Piper, C. J., 300
Pitcher, Floyd J., 906
Plimpton, B. A., 167
Ploss, H. W., 338
Plumhof, H. J., 679
Polland, Harry, 170
Pond, James C., 507‡
Poor, C. O., 902
Pope, Roy, 85*
Porteous, D. C., 378, 680
Porteous, T. C., 1047
Potter, Mark W., 85, 1178
Powell, W. G., 1138
Pratt, W., 551
Prentiss, G. N., 954
Prestridge, G. S., 299
Price, W. T., 863
Pritchard, J. S., 946
Pulliam, S. H., 46
Purdy, H. L., 776
Purdy, L. W., 46
Purvis, H. W., 378, 636*
Pyle, G. C., 300

Quantic, C. J., 776
Quirk, Robert E., 672

Radford, Robert, 1087
Rainhart, Thomas M., 1131
Randall, T. D., 167
Randall, W. L., 167
Randolph, Major O. C. F., 548
Rautenstrauch, Walter, 376‡
Reagan, F. H., 633
Reese, J. W., 820
Redding, J. H., 1046, 1183*
Reece, R. G., 78
Reid, Geo. T., 953
Reilly, F. C., 967
Reinbrecht, G. H., 954
Renfrow, R. R., 467
Reinhold, E. V., 728
Replogle, J. Leonard, 167
Rex, C. D., 594
Rhea, Frank, 375
Rice, F. F., 775, 954*
Rice, M. J., 1043
Rice, Nathaniel M., 46*
Rich, E. A., Jr., 591
Rich, H. C., 775
Richards, Elmer, 127, 169*
Richards, I. B., 819, 954‡
Richardson, E. M., 903
Richart, B. D., 863
Riggs, H. T., 127
Rippey, W. N., 1047
Rivers, W. E., 776
Roberts, B. G., 378
Roberts, Dan W., 300
Roberts, John C., Jr., 725
Roberts, J. E., 550, 863‡
Robinson, Dwight P., 39
Robinson, Harry T., 426
Rock, E. B., Jr., 377
Rodenbaugh, H. N., 46, 210‡
Roe, James P., 38*
Roehl, W. J., 426
Roett, J. D., 125
Rogatchoff, Theodore, 376
Rogers, Walter F., 590
Romney, Leo, 255
Rose, Charles C., 953
Rose, L. M., 209
Rose, Norman W., 46
Rosevear, A. E., 467
Ross, A., 259
Rosser, W. W., 38
Rosseter, F. S., 85
Rouleau, L. J., 170
Rounseville, D. C., 46‡
Rowe, A. K., 679
Rowell, W. E., 39
Rowland, S. V., 636
Roy, L. C., 902
Rubens, H. S., 678
Rummel, E. F., 85
Runge, C. W., 507
Runyon, H. M., 338
Russell, W. A. B., 507
Ruth, W. A., 816
Rutherglen, Alfred, 905
Ryan, Allan A., 590
Ryan, D. H., 467
Ryan, F. R., 126
Ryan, J. E., 299
Ryan, M. F., 418
Ryan, N. A., 635
Ryan, S. F., 1184

St. John, L. N., 679
Sample, F. L., 426
Sanderson, Richard, 1087*
Sanford, W. H., 725
Sauls, C. L., 378
Scanlon, J. C., 39
Schafer, N. W. H., 776
Schaffenburg, V., 593, 1095
Schierbecker, H. F., 505
Schirmer, G., 860
Schlude, John N., 126
Schmidlapp, Carl J., 590
Schoulty, C. C., 1001
Schroyer, H. H., 950
Schwab, J. E., 338
Schwerin, F. W., 1043
Scott, Charles, 1184
Scott, F. W., 299
Scott, J. L., 1096
Scott, J. R., 552
Scott, Osborne, 467
Searls, Niles, 170
Selden, M. C., 954
Semple, C. C., 335
Senter, C. L., 551, 679‡
Sesser, John, 468
Sewall, Arthur W., 38
Sexton, C. B., 551
Shafer, Arthur B., 728
Shannon, James, 728
Shaw, F. A., 338, 864
Shaw, J. H., 467
Sheets, R. A., 468
Sheffer, M., 679
Shelton, A. D., 728
Shepard, R. M., 467
Sheridan, Richard J., 548
Sherley, Swagar, 378
Sherry, G. F., 209
Sherwood, F. B., 467
Shire, W. J., 126
Shoemaker, H., 552
Shone, B. F., 260
Shreeve, G. J., 678, 906*
Shumate, E. E., 1096
Siems, Alan G., 335
Siems, Claude H., 335
Sievers, W. H., 593
Silleox, L. K., 170, 300
Simpson, James, 467, 636‡
Simpson, R. E., 728
Skellie, W. A., 593
Skillen, J. R., 819
Slimp, J. E., 950
Slingman, T. D., 167
Small, F. F., 863, 1137
Small, W. T., 259
Smart, G. E., 636
Smiley, G. R., 637
Smith, A. E., 954
Smith, Edward L., 168
Smith, F. E., 1001
Smith, F. S., 905
Smith, F. W., 593
Smith, H. B., 1096
Smith, Huntington, 46
Smith, R. H., 128
Smith, R. J., 39
Smith, R. M., 1002
Smith, S. W., 335
Smith, Sam C., 679
Smith, Vinton, 1132
Smith, W. E., 819
Smith, Willard D., 725
Smithey, W. W., 593, 775‡
Snead, R. H., 819, 862‡
Snell, V. G., 338
Snider, J. Noble, 776‡
Sollitt, E. A., 550
Spangler, D. E., 54, 638*
Sparks, I. T., 507
Sparling, J. M., 299
Spartlen, Lee W., 775
Spaulding, C. L., 128, 468‡
Spayde, D. D., 259
Spence, H. M., 906, 1001
Spence, T. E., 81
Spencer, Paul B., 906
Spicer, W. H., 338
Staats, J. Harry, 1131
Stackhouse, Powell, 1131
Stafford, Harry B., 1181‡
Stanton, H. L., 426
Stanton, J. E., 207
Stark, Paul, 259
Stearns, W. G., 1132
Stebbins, L. H., 210
Steer, E. J., 1132
Steffa, W. C., 551
Steffans, W. C., 545
Steiger, G. R., 593
Steinberger, M. F., 378
Steinmetz, W. R., 82*
Stenger, F., 679
Stephen, George, 467
Sterrett, D. R., 632
Stevens, O. M., 635
Stevenson, W., 299
Stevenson, William, 860
Stewart, A. F., 680
Stewart, George H., 1184
Stewart, Hamilton, 1131
Stewart, W. F., 679
Stone, C. E., 728, 1096
Stone, J. E., 300, 508
Streyer, J. A., 967
Strouts, A. J., 259, 679
Stuart, H. A., 552
Sturdevant, E. J., 338
Sullivan, H. G., 593
Sullivan, J. J., 209, 259
Sullivan, W. J., 1183*
Summers, L. E., 82
Swan, C. M., 46
Sweeney, Joseph, 1081
Sweet, M. J., 1047
Symington, C. J., 633
Symington, Donald, 633
Symington, John F., 633
Symons, F. E., 860, 902

Tadlock, A. U., 588
Tait, H. A., 467
Talty, John A., 903‡
Taussig, Walter M., 1181
Taylor, C. W., 636
Taylor, Daniel, 678, 953*
Taylor, E. L., 905
Taylor, Guy, 946
Taylor, V. R., 1048
Temple, C. H., 1184
Temple, H. H., 467, 468
Temple, R. H. M., 905
Thelen, Max, 300, 552
Thomas, C. E., 775
Thomas, Eugene P., 168
Thomas, George G., 728
Thomas, G. M., 179
Thompson, A. M., 39
Thompson, F. C., 950
Thompson, J. N., 1002, 1048‡
Thompson, M. D., 551
Thorpe, C. C., 1046
Thurber, W. M., 819
Tice, W. R., 776
Tinker, Edward R., 39
Tinney, W. G., 1002
Tisdale, A. A., 551
Tisdale, F. W., 552
Tobin, William H., 85*
Todd, J., 636
Toops, G. N., 1048
Topping, Charles T., 1181
Trabold, F. W., 39
Traber, H. L., 550, 635‡
Travers, William, 776
Trevaskis, J., 905
Trimble, L. H., 637
Trotter, C. G., 85
Trumbull, A. G., 636
Turley, Wm., 776
Turnbull, T., 552
Turner, W. F., 86, 862, 953
Turney, C. A., 635
Turney, R. B., 1095
Tyler, L. C., 1048
Tyler, Sidney, F., 38

Udell, C. B., 678
Ulmer, F. H., 207
Umshler, A. M., 819
Underwood, E. M., 46
Unzicker, R. R., 551
Upp, J. W., 633
Urbutt, C. F., 299

Vallean, H. G., 863
Vance, H. H., 1095, 1183*
Vanden Boom, G. C., 1181
Vandersluis, W. M., 1096
Vanneman, Charles R., 1178
Van Schaick, Arthur P., 1181
Van Zandt, J. S., 426‡
Vaughan, R. C., 1095, 1183‡
Veal, F. L., 906
Veale, C. A., 1048
Verceau, L. A., 300
Vesey, L. E., 632
Vestal, G. C., 593
Violett, B., 46
Vogle, R. H., 1087
Voorhees, B. S., 128, 468‡
Vosburg, J. F., 1047, 1048*

Wadleigh, F. R., 167
Wagner, C. E., 338
Wagner, F. H., 1095
Walder, G. H., 906
Walker, Charles I., 210‡
Walsh, Martin W., 507
Wagstaff, George, 125
Walbridge, H. D., 1131
Wallace, J. F., 946
Walters, L. C., 46
Walton, N. B., 551, 863‡
Walts, S., 776
Wanamaker, Henry, 260, 468*
Warning, E. G., 46
Warnock, Harry R., 207‡
Warnock, R. R., 300
Warren, A. E., 507
Washburn, M. F., 299
Wassum, J. W., 1095
Watson, S., 260
Watson, Walter, 860
Watson, W. A., 39
Waugh, J., 1047
Way, A. B., 418
Weatherston, R. J. S., 78
Webb, J. B., 816
Weber, Orlando F., 1131
West, B. A., 45, 819
Wetherald, Joseph R., 548
Wharton, W. M., 1001
Wheeler, C. W., 128
Wheeler, Wilmot F., 1131
Whepley, G. N., 170
Whipple, A. L., 725*
Whitaker, J. W., 1137*
Whitaker, S. T., 903
Whitbeck, Ross M., 126
White, H. H., 1002
White, L. L., 635
White, T. P., 550
White, W. L., 1183
White, W. M. K., 1131
Whited, F. T., 299
Whitehead, George W., 168
Whitehurst, Roland, 167
Whiter, W. L., 1046
Whiting, C. L., 45, 85
Whiting, J. H., 590
Whittaker, H. W., 128
Whittelsey, T. F., 117
Whittlesey, James T., 1132‡
Whittemore, F., 809
Whyte, F. M., 773
Whyte, W. A., 552
Wilcox, A., 551
Wilcox, D. E., 775
Wilde, F. H., 1096
Wilde, G. W., 728
Wilkinson, Horace S., 1131
Williams, A. B., 260
Williams, A. D., 300
Williams, E. A., Jr., 1181
Williams, E. P., 902
Williams, G. P., 45, 169
Williams, H. C., 637
Williams, I. Harvey, 39
Williams, R. W., 1096
Williams, S., 1095
Williams, T. L., 863
Williams, W. Woodward, 376
Wilson, H., 728, 1096
Wilson, Hugh S., 820
Wilson, J., Harmon, 593

Wilson, L. C., 903
Wilson, S. C., 950
Wilson, T. A., 85
Wilson, W. Ray, 46
Wilson, W. V., 775
Wilt, H. B., 728
Winans, Ray G., 1178
Winburn, Fred E., 1096‡
Winchester, P. H., 468
Winship, L., 906
Winterson, F. A., 550
Wirth, C. A., 468, 680
Wise, E. E., 946
Wood, A. K., 39
Wood, F. G., 170, 864
Wood, I. E., 126
Wood, P. O., 954, 1184‡
Woodall, L. H., 1095
Woodin, William H., 168
Woods, A. K., 946
Woody, E. R., 954
Woolley, Robert W., 1176
Worman, H. L., 954*
Wright, C. R., 46
Wright, G. R., 863
Wright, H. C., 426
Wright, M. T., 1095
Wright, N. R., 1002
Wynn, F. S., 905, 953*
Yeomans, George G., 45*
Yohe, J. B., 169
Young, C. B., 128
Young, C. D., 291
Young, C. E., [illegible]
Young, J. F., [illegible]
Young, P. A., 178
Young, Le Grand, 45‡
Young, Samuel Rella, 861
Young, W. R., 728
Zeller, Joseph L., 1087
Zwight, Silas, 378

OBITUARY

Adams, A. G., 426
Adams, Melvin O., 300‡, 377
Andrews, G. K., 128
Andrews, J. D., 864, 1002
Andrews, Morton C., 548

Babcock, Alfred J., 902*
Baker, George, 997
Ball, Sir James Benjamin, 674
Bethard, Albert D., 128‡
Biles, George P., 776*, 863
Bonzano, M. F., 820‡
Bowen, C. J., 1086
Burgess, Junius L., 1184
Burley, David E., 300
Burnett, Harry C., 86, 170
Bush, David L., 1184
Butler, Ira M., 260

Campbell, R. A., 1002‡, 1138
Clark, Charles Alexander, 260‡, 299
Cole, J. H., 1001, 1002
Collins, Wallace G., 128‡
Cooke, C. J. B., 900
Crosby, V. S., 1048‡
Curran, David J., 680
Currie, James C., 1131‡

Dailey, George W., 260‡

Ekstrom, Axel Carl, 86

Foreacre, W. N., 680, 728
Friede, M. Sergey, 208‡

Gleason, John C., 378
Goelsdorf, Dr. Karl, 260‡
Goodeve, Arthur S., 995

Hall, W. A., 680
Harbourt, James Clarence, 725
Harrison, Gabriel W., 260
Hauck, Arthur E., 860‡
Higgins, C. C., 820, 864*, 954
Hogan, John F., 128

Keffer, William H., 86‡
Kimball, Benjamin A., 170
King, Henry C., 860‡

Lamb, Richard, 728‡
Lampton, William M., 1184‡
Lane, John J., 86
Leighton, George, 508

Miller, Robert Speer, 1048‡
Moore, William H., 468, 906

O'Donnel, Richard L., 594*

Patriarche, Arthur, 338‡
Paul, Jacob W., 208
Peasley, James C., 128‡

Ralston, Joseph S., 505
Randolph, Isham, 300‡
Reynolds, J. J., 1002, 1138‡

Schiff, Jacob H., 594
Schreiber, Edward A., 126
Shillinger, John G., 906‡
Small, H. J., 1002*
Stevens, George W., 800*, 984
Stewart, Charles R., 426
Stuart, Donald G., 820‡

Talmage, John C., 505
Thacher, Edwin, 591
Thomas, Isaac B., 468*, 637
Thompson, N. F., 338‡, 508
Tiffin, E., 680
Trumbull, Frank, 114*, 280

Vanderbilt, William K., 196*

Waitt, Arthur M., 906‡
White, William H., 300‡, 593
Wight, Pearl, 128
Williams, A. M., 86
Williams, Elisha S., 773‡
Wilson, C. C., 378

Yantis, F. S., 299
Young, Bertram, 170, 259

RAILWAY CONSTRUCTION

Alabama & Mississippi, 505
Alberta & Great Waterways Railway, 903
Aransas Harbor Terminal Railway, 951
Atchison, Topeka & Santa Fe, 336, 505, 549, 591, 633, 676, 817, 861, 951, 1044, 1181
Atlantic Coast Line, 633, 1088

Baltimore & Ohio, 726, 861
Big South Fork, 336
Blue Ridge Development Company, 817

Canadian National, 41, 298, 505, 549, 676, 774, 903, 997, 1088
Canadian Pacific, 773, 903, 997, 1044
Carolina Lines, 951
Central of Georgia, 254, 817
Central of New Jersey, 861
Chesapeake & Ohio, 951
Chicago & Alton, 633, 726, 861
Chicago & North Western, 298, 336, 505, 549, 591, 773, 817, 997, 1132
Chicago & Western Indiana, 418
Chicago, Burlington & Quincy, 336, 549, 591, 726
Chicago Great Western, 549, 817
Chicago, Indianapolis & Louisville, 773, 1044
Chicago, Milwaukee & St. Paul, 169, 336, 726, 1132
Chicago, Rock Island & Pacific, 505, 591, 633, 676, 726, 997
Chicago, St. Paul, Minneapolis & Omaha, 633, 817
Chicago Union Station Company, 505, 591, 676, 726, 997, 1181
Cisco & Northeastern, 169
Cleveland, Cincinnati, Chicago & St. Louis, 997
Colorado & Southern, 336, 903
Cornwall, 773
Cowlitz, Chehalis & Cascade, 951

Dayton & Troy Electric, 861
Delaware, Lackawanna & Western, 505
Denver & Rio Grande, 418
Denver & Salt Lake, 1044
Detroit & Ironton, 676
Detroit, Toledo & Ironton, 591
Duluth & Iron Range, 861, 1088

Eastern Texas, 1044
Edinburg, Falfurrias & Gulf, 41
Elgin, Joliet & Eastern, 726

Ft. Dodge, Des Moines & Southern, 773
Fort Worth & Denver City, 336, 903

Georgia, Southwestern & Gulf, 1132
Grand Trunk, 633, 676, 861
Great Northern, 591, 726, 1044
Gulf Coast Lines, 817, 1044
Gulf, Colorado & Santa Fe, 951
Gulf, Mobile & Northern, 861, 1044

Houston & Shreveport, 951

Idaho Central, 591
Illinois Central, 549, 633, 861, 997, 1044, 1132
Interstate Railroad, 418

Jackson & Eastern, 169

Kansas City, Mexico & Orient, 773
Kansas, Oklahoma & Gulf, 817
Kettle Valley, 903

Lehigh Valley, 951, 1044
Long Island, 951
Los Angeles & Salt Lake, 41
Louisville & Nashville, 997

Marshall & East Texas, 298
Miami Corporation, The, 951
Michigan Central, 773, 903, 1132
Michigan Northern, 298, 676, 1132
Midland Valley, 633
Minneapolis & St. Louis, 676
Minneapolis, St. Paul & Sault Ste. Marie, 773
Missouri, Kansas & Texas, 41, 298, 336, 726, 903, 1088, 1132
Missouri Pacific, 676, 726, 861

Nashville, Chattanooga & St. Louis, 254, 298
New Jersey, Indiana & Illinois, 336
New Industries Company, 726
New York Central, 726, 773, 817, 951
Norfolk & Western, 951
North Carolina Roads (Electric), 505
Northern Pacific, 418, 1044

Oahu Railway & Land Company, 676, 1044
Ocean Shore, 773, 817
Ogden Union Depot, 549
Oklahoma-Southwestern, 1088

Pacific Fruit Exchange Co., 726
Pacific Great Eastern, 774, 997
Palatine, Lake Zurich & Wauconda, 591
Pearl River Valley, 1132
Pennsylvania Lines, 633, 676, 774, 1044
Pere Marquette, 298, 677, 817, 997, 1044, 1088
Philadelphia & Reading, 817
Philadelphia, Newton & New York, 1044

Quebec & Chibougamou, 903

Richmond, Fredericksburg & Potomac, 774

St. Louis-San Francisco, 82, 169, 726, 774, 817, 903, 997
St. Louis-Southwestern, 549
San Francisco-Oakland Terminal Railways, 951
Santa Fe-Northwestern, •633
South Dayton Railway, 505
Southern Pacific, 418, 591, 861, 1181
Southern Railway, 726, 861
Spaulding Logging Company, 951
Spokane & British Columbia, 1044
Spokane, Portland & Seattle, 1044
Sugar Pine Railway, 951

Tampa Southern, 677
Tennessee, 817
Texas & Pacific, 206, 298, 633, 951
Texas Central, 677
Texas, Oklahoma & Eastern, 774

Uintah, 1044
Union Pacific, 41, 418, 633, 774, 861, 951
Union Station, 861
Uvalde & Northern, 298, 1044
Utah Terminal, 336

Victoria, B. C., 997

Wenatchee Southern, 677
Western Pacific, 505, 677, 774, 903
Wichita Falls & Southern, 1044
Wichita Falls, Ranger & Ft. Worth, 206, 817
Wichita Falls Southern, 206, 951
Willamina & Grand Ronde, 418
Wisconsin & Michigan, 677, 1132

FINANCIAL NEWS

Akron, Canton & Youngstown, 774
Alabama Great Southern, 774
Albany & Susquehanna, 1133
Ann Arbor, 337, 592
Anthony & Northern, 168
Arkansas & Louisiana Midland, 209, 299
Arkansas & Louisiana Missouri, 337, 419, 592
Arkansas Railroad, 904
Ashland Coal & Iron Railway, 337
Atchison, Topeka & Santa Fe, 168, 209, 466, 774
Atlantic Coast Line, 1133, 1182

Baltimore & Ohio, 634, 677, 727, 774, 904, 1088, 1182
Bangor & Aroostook, 904
Boston & Maine, 168, 377, 466, 506, 592, 634, 677, 1088
Birmingham & Southeastern, 209
Boston & Maine, 998, 1133, 1182
Buffalo & Susquehanna, 1045
Buffalo, Rochester & Pittsburgh, 592

Canadian Northern, 998
Canadian Pacific, 209
Cape Girardeau Northern, 549
Carolina, Clinchfield & Ohio, 634, 998
Central New England, 727
Central of Georgia, 40, 209, 1045
Central of New Jersey, 1[illegible]
Central Vermont, 168, 1133
Central Wisconsin, 1045
Chesapeake & Ohio, 904, 952, 998, 1088, 1133
Chicago & Eastern Illinois, 40, 592, 727, 1182
Chicago & North Western, 337, 549, 592, 1045, 1088, 1133
Chicago & Western Indiana, 337, 466, 506, 634, 998
Chicago, Burlington & Quincy, 727, 861
Chicago Great Western, 337, 1045, 1133
Chicago, Indianapolis & Louisville, 419, 727, 774
Chicago, Milwaukee & St. Paul, 337, 677, 818, 10[illegible]

FINANCIAL NEWS—Continued

Chicago, Rock Island & Pacific, 466, 506, 634, 677, 861, 952, 1088
Chicago, St. Paul, Minneapolis & Omaha, 377, 506, 774
Cincinnati, New Orleans & Texas Pacific, 952
Cincinnati Northern, 952
Cleveland, Cincinanti, Chicago & St. Louis, 952, 1045
Collins & Ludowici, 1133
Columbus & Greenville, 904
Cripple Creek Central, 337

Delaware & Hudson, 256, 299, 337, 466, 818, 1045
Delaware, Lackawanna & Western, 506, 549, 592, 634
Denver & Rio Grande, 466, 549, 904, 952, 1133
Denver & Rio Grande Western, 904, 998
Detroit & Ironton, 256, 677
Detroit & Toledo Shore Line, 1045
Detroit, Toledo & Ironton, 127, 377, 549

Eagles Mere, 1133
Edmonton, Dunvegan & British Columbia, 209, 299
Electric Short Line, 904
Elgin, Joliet & Eastern, 727, 998
Erie, 40, 299, 419, 904
Evansville, Indianapolis & Terre Haute, 904

Federal Valley, 904
Fernwood, Columbia & Gulf, 1045
Ft. Smith & Western, 861, 1045
Fredericksburg & Northern, 1133

Galesburg, Rockford & Northern, 256
Grand Rapids & Indiana, 1182
Grand Trunk, 127, 634
Gulf, Mobile & Northern, 549, 774, 904
Gulf Ports Terminal, 466, 506, 1045

Hawkinsville & Florida Southern, 168
Hocking Valley, 82

Illinois Central, 634, 774, 1182
Illinois Southern, 168, 549
Indiana Harbor Belt, 592, 861, 1088
Interstate Railroad, 1088

Jacksonville Terminal, 998

Kanawha & Michigan, 952
Kansas City, Mexico & Orient, 82, 506, 592, 677, 727
Kansas, Oklahoma & Gulf, 466

Lake Erie & Western, 952
Lake Superior & Ishpeming, 1088
Lake Tahoe, 82
Lehigh & Hudson River, 861, 1133
Lehigh Valley, 1045
Long Island, 299, 466, 677, 952
Louisiana & Arkansas, 377, 419
Louisville & Jeffersonville Bridge & Railroad Company, 1045

Maine Central, 592, 774
Mason City & Ft. Dodge, 952
Maxton, Alma & Southbound, 904
Memphis, Dallas & Gulf, 506
Michigan Central, 952, 1133
Midland & Northwestern, 774
Midi Railroad (France), 634
Minneapolis & St. Louis, 952, 1088, 1133
Missouri, Kansas & Texas of Texas, 506, 818
Missouri Pacific, 678, 998
Moore Haven & Clewiston, 904
Mount Tamalpais & Muir Woods, 727

National Railway Service Corporation, 727
New Orleans, Texas & Mexico, 678, 818
New York Central, 299, 337, 377, 419, 466, 506, 549, 861, 952, 1133, 1182
New York, Chicago & St. Louis, 1133
New York, New Haven & Hartford, 40, 168, 419, 466, 550, 678, 775, 861, 904, 952, 1088, 1182
Norfolk & Portsmouth Belt, 299, 337, 419
Norfolk & Western, 168, 861, 998
Norfolk Southern, 952
Northern Pacific, 299, 337, 775, 818, 861
Northwestern Pacific, 40

Ocean Shore, 775
Orangeburg Railway, 904

Paris & Mt. Pleasant, 466, 550
Pearl River Valley, 592
Pennsylvania, 592, 775, 818, 861, 1182
Peoria & Pekin Union, 1088
Pere Marquette, 592
Philadelphia & Reading, 678
Pittsburgh & Lake Erie, 169, 209, 377, 506, 634
Pittsburgh & Shawmut, 256
Pittsburgh & West Virginia, 256, 419, 634, 904, 1045
Pittsburgh, Cincinnati, Chicago & St. Louis, 862, 1182
Pittsburgh, Shawmut & Northern, 904
Potato Creek, 775
Reid Newfoundland Company, 549
Richmond, Fredericksburg & Potomac, 466, 634
Richmond Terminal Railway, 862
Rutland, 904

St. Joseph Belt, 506, 1045
St. Louis & Hannibal, 592
St. Louis-San Francisco, 82
St. Louis Southwestern, 337
St. Paul Union Depot, 256
San Diego & Arizona, 40, 82
Santa Fe Northwestern, 727
Seaboard Air Line, 466, 506, 550
Shearwood Railway, 862
Southern Pacific, 40, 818, 862, 998, 1133
Southern Railway, 678, 1088
Southern Railway in Mississippi, 904
Superior & Southeastern, 169

Tabor & Northern Railway, 727
Tennessee, Alabama & Georgia, 1133
Tennessee & North Carolina, 1088
Tennessee Central, 998
Terminal Railroad Association of St. Louis, 377, 419, 506
Texas & Pacific, 592, 678, 862
Toledo & Ohio Central, 952
Toledo Terminal Railroad, 127, 1133, 1182
Trans-Mississippi Terminal, 678, 862, 1045, 1133

Ulster & Delaware, 41
Union Pacific, 862
Union Terminal Company of Dallas, Tex., 634, 727

Valdosta, Moultrie & Western, 904
Virginia Blue Ridge, 466, 550, 727
Virginia Southern, 1045
Virginian, 592

Wabash, 419, 634
Washington & Lincolnton, 1133
Western Maryland, 127, 256, 337, 592, 678, 1133
Western Pacific, 41, 466, 818, 952, 998
West Side Belt, 634, 904
Wheeling & Lake Erie, 634, 998
Wilmington, Brunswick & Southern, 1182
Wisconsin & Northern, 550, 727

Zanesville & Western, 952

EDITORIAL

Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Index for Previous Volume

In order to conserve paper at this critical period, the *Railway Age* has printed only a sufficient number of indexes for the volume covering the first six months of this year to provide for direct requests from its subscribers. Those desiring indexes should immediately advise the New York office, 2201 Woolworth Building. The copies of the index are now ready for distribution and will be mailed promptly.

Electrification of City Terminals

Increased value of property due to the electrification of city terminals is pointed out in no better way than in the recent developments in the Grand Central zone in New York City. The success attendant upon the Grand Central development should receive careful study. It will be borne in mind that building conditions in New York are more congested than in practically any other city and that the solid rock for foundations available on Manhattan island makes the construction overhead of heavy business blocks and hotels more practicable than might otherwise be the case. Furthermore, pioneers in electrification have learned that each application of electric motive power presents a distinctly individual problem. As in the case of steam power, to take one part of the problem, locomotives designed for one class of service are not applicable to another. Details of design of both the locomotives and the power supply system must be carefully worked out to meet the peculiar conditions of service. On the other hand, many features of each electrification find their application elsewhere, and while it may be to a lesser degree than in this New York development, each terminal electrification makes available valuable overhead rights and increases the value of adjoining property. The degree to which the value of overhead rights and the desirability of adjoining property will be enhanced is one of the factors in each individual problem.

The Grand Central Zone

The electrification of the New York Central's line into New York City and the redemption through the Grand Central Terminal development of the passenger yards adjacent to the terminal, have stood out for many years as one of America's greatest examples of civic improvement. Nevertheless, it is doubtful if even the most optimistic participants in the work in question ever looked forward to seeing just how great an effect the electrification and terminal improvement were going to have on the development of New York city. Within the past few months announcement has followed announcement of new building construction on the land made available for such use by electrification or in the vicinity made more desirable thereby. The developments now under way, or the plans for which are announced, are estimated to call for the expenditure during the next year or two of no less than $100,000,000. They include some ten office buildings, among which will be the Bordon building of 23 stories, the Park Madison building with twin towers 31 stories in height, etc. There will also be a combined church and office building and two or more co-operative apartment houses. The Manhattan Hotel is to be remodelled into an office building. The Murray Hill Hotel is to be replaced by an enormous structure of 3,000 rooms and announcement has been made of a 3,000-room addition to the Commodore which already has 2,000 rooms. The New York Tribune says that, "There never has been under way in such a small area at one time so many great structures of different character." The features that may be pointed out in these improvements are many. They mean for one thing that for the time being the development of New York is gravitating toward the Grand Central terminal. They also include a solution of the old problem of the relation of a city's hotels to its railroad stations. There also can be no doubt that they are going to have an appreciable effect on the passenger revenues of the New York Central and a strengthening of its strategic position as a passenger carrier in New York City. Here clearly is an example of what electrification of passenger terminals can do under the best possible conditions.

New Locomotives from Old

Economical locomotive operation depends on keeping the proper balance between a large number of co-ordinated but often conflicting factors. The problem is a complex one. It has seldom been considered and analyzed in its broad aspect, but under fixed conditions it was possible for the roads gradually to develop a policy for handling the motive power problem that was economically sound. The advisability of improvement or replacement could be weighed and past experience served as a reasonably sure guide. But since 1914 the entire set of relationships between the cost of old equipment and new equipment, and between fuel and wages and maintenance have been upset. The past is no longer a trustworthy index for the future; in fact, it is very misleading. Railroad officers must begin over again and consider the effect of changed conditions to determine where the line should be drawn between engines that are to be replaced as quickly as possible and those that are to be made fit for a long period of service. Unless the problem is studied carefully there is danger of overlooking the advantages of improving the heavier locomotives that were not originally equipped with modern appliances. There are of course many operating conditions that cannot be met by anything short of an entirely new design of power. The limitations of rebuilt engines must be recognized. But every new locomotive means a large additional capital charge at a high rate of interest, while rebuilding a locomotive usually involves a comparatively small charge and in addition lengthens the life of the engine and reduces the annual charge for its replacement. There are few old engines on which it would be difficult to apply modern improvements. It is probable many roads that

buy new locomotives overlook the possibility of effecting large savings at comparatively small cost by improving existing power.

College Men in Railway Service

We have had many comments on the series of editorials relating to the technical graduate in the mechanical department which appeared in recent issues of the *Daily Railway Age*. The railroads must take active steps to attract college graduates to their service. We use the expression "active steps" advisedly. Formerly a certain number of technical graduates drifted more or less regularly into the railroad service each year, but today the railroads, in order to secure a fair proportion of these men, must overcome severe competition on the part of other industries. It will not do simply to send representatives once a year to talk to the senior students in the colleges. A carefully planned campaign must be developed to keep in touch with the students throughout their college courses; the students must also be shown that there is a real future for them on the railroads. Reports that have gone back to the college faculties from graduates who have entered railway service have not been very encouraging in recent years. It will be necessary, therefore, first to convert the college professors to a more favorable impression of the opportunities offered by the railways. The feeling on the part of some of them is so strong and the necessity of recruiting technical graduates into railway service is so great that it would seem that the American Railroad Association can well afford to take steps to make a thorough survey of the situation and then to apply such measures as may seem best to ensure that the railways will secure their full proportion of the college graduates. We publish elsewhere this week a very interesting letter on college men in railway work that we have received from Professor Frank Haigh Dixon, of Princeton University. The young college man who is considering entering railway service will, we fear, have rather mixed feelings after reading Professor Dixon's letter.

A. S. M. E. Railroad Section

The American Society of Mechanical Engineers, in order to make its work more effective, recently decided to develop a series of professional sections, each one of which would give its attention to a highly specialized field. Ten of these sections are in the process of organization. One of them—the Railroad Section—with a registration of 400 members, has already elected its executive committee. The purpose of this section is to promote railway mechanical engineering either by the preparation of professional papers, by discussion and debate, or by technical research. It will provide the opportunity for getting together the mechanical officers of the railways, designers of railway equipment and railway supply men for the discussion of technical details. This section has a big opportunity before it. It succeeds the old railroad committee of the A. S. M. E. which for a while did splendid work; when it was most needed, however, during the war period, it apparently went sound asleep. The new section will give the railway and the railway supply engineers an equal opportunity for the discussion of railway mechanical problems. The engineers of railway supply companies, because they have had ample time and opportunity to specialize and because in most cases they have had special facilities for performing their work, have made a remarkable contribution to railway mechanical engineering and yet have been unable to participate, except to a very limited extent, in the discussion of such subjects before railway mechanical associations. This, in a way, is exceedingly unfortunate, but the new section of the American Society of Mechanical Engineers, if properly directed, can do much to overcome this shortcoming in the railway mechanical associations.

Scientific Tool Selection

No man of limited financial means, when buying a suit of clothes, would think of entering the first store he saw, accepting the first suit of clothes offered for inspection and paying whatever price was demanded. Instead he would decide whether the suit was to be used for sport, business or dress and, after canvassing the field, would buy where he could get the best value for his money. This case is exactly analogous to present conditions in the railway field. Many railroads with limited appropriations are making up lists of machine tools and shop equipment to be bought in the near future. Under any conditions it is foolish to buy such equipment without a careful scientific analysis of the needs and making every dollar do the most possible good, and this is particularly true at the present time. The first step in any analysis is to determine and keep well in mind, the goal sought. Obviously, as far as back shops and round houses are concerned, the object is to repair and return locomotives and cars into service with as little delay and unnecessary expense as possible. The question as to just what equipment is most needed is not easy to decide. Obsolete and inefficient machines must be replaced but who will determine which machines are obsolete and inefficient? New equipment suitable for the size and number of locomotives and cars in service must be provided but who can say what equipment is most needed? A scientific analysis should be made of just what tools and equipment will give the best results and this analysis is impossible without accurate cost data of the different processes. With a method of cost accounting that will show detailed labor and material costs, it is readily possible to determine whether the old machine is costing more to operate than would pay the interest and depreciation charges on a new machine two or three times over. The mechanical department will find less difficulty in securing appropriations for new tools if it can support its requests by a detailed analysis of how the work is now being done and exactly what savings can be expected by the proposed new installation.

Delays at Interchange Points

Many unnecessary delays occur at freight interchange points because of "bad order loads," or the improper loading of freight cars. But little more time would be required to load these cars correctly at the points of origin, thus eliminating delays at the interchange points as well as much unnecessary expense. Two extra switching movements are required, one to place the car on the repair or adjusting tracks and another to return it. It is estimated that on an average about 500 such cars are handled at a point like Buffalo every day. One of the greatest sources of trouble is the loading of such commodities as tile, and bags of grain, sugar or similar commodities. Unless proper protection is provided the doors are forced outward by such loads and the cars are unsafe to operate. Blocks of stone and automobiles are often loaded in flat cars without proper staking. While they may be operated safely over level stretches of track it is necessary to see that they are loaded strictly in accordance with the M. C. B. requirements before sending them over mountainous divisions. It is surprising how many loaded cars have to be held up in order to apply

ladders so that trainmen can go over the tops of loads to turn the retaining valves which must be used in mountainous territory. These things do much to aggravate the car shortage and shippers and local railway representatives should see to it that the cars leave the point of origin in such condition as to go safely and promptly to their destination.

Plain Engines

The most commendable feature in many useful machines that figure in our daily routine is the fact that they will survive an unusual amount of wear and tear and the usual amount of misguided tinkering—that they are in fact fool-proof. It would not be impossible to build locomotives today that could be placed in the same category. Superheat and numerous other features have not simplified locomotive maintenance and there are few devices designed to promote locomotive efficiency or capacity that will not increase maintenance or add something that under certain conditions might cause an engine failure. But with all the trials and tribulations that may attend the introduction of new devices would it be wise to relinquish any of them if we could? Could the railroads do business today with "plain engines"? It is interesting to speculate as to how far the increases that have occurred in locomotive size could alone be depended upon to stand the strain of current operating conditions. It is difficult to imagine just how the railroads could "get by" today without the added complications and the refinements in locomotive design as well as the increases in locomotive size. Carrying this thought to its logical conclusion, it is more than interesting to predict what the situation would be 10 or 20 years hence, without new developments that will make for still further improvement in locomotive efficiency and capacity. Is it not entirely possible that within the near future successful locomotive performance will likewise be based on means for heating boiler feedwater and creating a defined path for boiler circulation, and that many devices now in their infancy will soon be regarded as necessities rather than luxuries? The trend is clear and executives who are progressive in their attitude towards locomotive development will not only better current conditions, but have a due regard for the future of American railroads.

Locomotive Terminal Tendencies

What is the true function of an engine terminal? Can it be considered simply as a locomotive shelter, very much as you now regard a garage for your automobile? The modernized conception assigns functions of greater magnitude and importance to the engine terminal. In the first place, as locomotives are increasing in size and the number of special parts is rapidly multiplying, it is seldom that an engine can be handled through the terminal without requiring considerable attention from skilled mechanics. The successful operation of this or that device designed to promote locomotive efficiency and capacity is wholly dependent upon systematic maintenance. Keeping locomotives in a satisfactory state of repair is the true function of an engine terminal; hence the speed and thoroughness with which this can be accomplished is respectively the measure of terminal efficiency and success. When locomotives cost one-third or one-fourth of what they do now and were religiously assigned to a single engineer, terminal facilities did not materially affect the schedule of the locomotive at the terminal, but today these facilities are the principal factor in determining the time that a locomotive must remain inactive. Therefore, in gaging the efficiency of your engine terminals, consider first the average time that it requires to turn locomotives at each terminal. Before purchasing a new lot of heavy freight locomotives you should know that the engines you have are not averaging an excessive amount of time in the terminals, or that a smaller investment towards improving these terminals will not produce more locomotive service-hours. The tendency that should govern terminal design, stimulate terminal improvements and dominate terminal operation, should be that of expediting locomotive movement.

Hustling the Railroad Labor Board

ONE WHO CONSIDERS all the things that have been done which are adapted to make the Railroad Labor Board a failure might reach the conclusion that there is a widespread conspiracy to destroy it. W. N. Doak, vice-president of the Brotherhood of Railway Trainmen, on June 23 gave out an interview in Washington in which he said: "We desire the public to know that this much heralded and advocated method of adjusting questions of this character, according to the present indications, is a rank and hopeless failure." Perhaps the wish was the father of the thought in Mr. Doak's case because, like the other railway labor leaders, he has been and still is opposed to any Railroad Labor Board on which the public as well as the companies and the employees has representation. Certainly, if the President of the United States, the leaders of the railway brotherhoods and many other persons continue to act in relation to railroad labor controversies as they have recently the Railroad Labor Board will prove a "rank and hopeless failure."

The board has announced that it will render an award in the wage proceedings now pending before it by July 20. This announcement has been received in most quarters with satisfaction and even acclaim. The circumstances in which it was made should cause it to be received with dissatisfaction and apprehension. Why we say this can be best be rendered clear by a review of the developments up to the present time in connection with the creation and work of the board.

When the Transportation Act which created the board was passed there were pending, ready to be referred to it, wage demands from the railway employees amounting to a sum exceeding the total annual expenses of the United States Government before the war. President Wilson delayed for some weeks after the Transportation Act was passed to appoint the members of the board. It was not the board's fault that action on the demands of the employees had been postponed month by month by the Government's Railroad Administration, or that President Wilson delayed for weeks to appoint its members. It would have been a herculean task for any body of men to determine, as between the different classes of railway employees and as between them and the public, the equities involved in demands coming to $1,000,000,000 a year.

The difficulties attached to the problem were increased by the fact that most of the members of the board, and especially the one-third of them appointed to represent the public, knew, when they were appointed, almost nothing about the technicalities and merits of the multiplicity of matters in controversy.

Theoretically, the board was created to determine judicially, with due regard to the rights and interests of all concerned, what advances in wages should be granted and what demands of the employees should be refused. Nevertheless, since it was appointed tremendous pressure has been

put on it to make it "step lively." It was forced to go into a session in Washington almost before the ink was dry on the commissions of its members, although the law required that it should sit in Chicago. Then an effort was made to have the law amended to provide that it should sit permanently in Washington, a move obviously intended to locate it where it would be subject to political influences. The "outlaw" strikes of railroad employees have seriously interfered with transportation. But they have also afforded the best demonstration possible of the need for some agency for dealing intelligently and impartially with railway labor controversies. Nevertheless, the heads of the railroad labor brotherhoods, and even some business men who ought to know better, have used the outlaw strikes constantly to put pressure on the board to make it hurry.

These efforts to hustle the board culminated last week, when the leaders of the brotherhoods called at the White House. After their call, President Wilson sent the chairman of the board a message in which he said: "Reports placed before me show the transportation situation hourly growing more difficult, and I am wondering whether it would not be possible for your board to announce a decision with reference to the pending wage matter." If such reports were placed before the President, they were absolutely false, because at the time he sent his message transportation conditions were better than they had been at any time since the "outlaw" strikes began. Throughout June the railroads moved a substantially larger amount of freight than they were moving before the strikes began, or than they moved in June, 1919.

In a statement soon afterward issued to the press, the chairman of the Labor Board, Judge Barton, said: "There are many angles to this question;" and that "Whatever decision is reached must stand in the court of public opinion. * * * There are other parties besides the men themselves—the public, which must pay the bill, and the carriers, which will *assess* the public. * * * All must be treated justly. We are getting nearer a decision every day, but it will be impossible to predict when it will be made." Nevertheless, the President's message had an effect. It was immediately announced that an award would be made by July 20.

At the same time the press gave publicity to a report, evidently emanating from labor union sources, that an average advance in wages of 22 per cent would be granted—which would amount to almost $700,000,000 a year.

The fact appears to be that when it was announced that an award would be made by July 20 the board did not know what its award was going to be. How, then, could it announce that an award would be made by July 20, or by any other date? If its members agree by that date, it can make an award, but suppose they don't agree by then? However, the *Railway Age* has no doubt the award will be made on or before July 20. All signs are that the board has at last yielded to the bullying to which it has been subjected and that it will make an award on scheduled time, whether its members can or cannot honestly say by July 20 that they have considered the matter sufficiently to have reached an intelligent conclusion.

But what will be the result of an award made as a result of such a series of developments? We look forward to it, and to the reasons which the board will give for it, with great curiosity, but also with great misgivings. Meantime, it must be said that this is an amazing way to handle a controversy over the very important question, whether the American public shall be required in future to pay the railway employees $1,000,000,000 more annually than they are now receiving. When the public receives the bill for all this performance it may find it not altogether to its liking.

The Plumb Plan League Makes a Miscalculation

FOR THE BENEFIT of those of our readers who are not members of the Plumb Plan League, and who therefore may not regularly receive its newspaper "Labor," we regret to announce another increase in the cost of living. The price of our esteemed contemporary has been advanced from $1 to $2 a year, a clear 100 per cent. Now is the time to subscribe because it may go higher. The announcement was made in last week's issue in a two-column statement signed by the 16 executives of the railroad labor organizations who with some of their members compose the membership of the league. They explain that last October, when the league began issuing the paper in its present form, news print paper was selling for 5½ cents a pound. "The directors of the league, accepting the best advice available, believed they would be able to print 'Labor' and carry on the various activities of the league at an expense not to exceed one dollar per member," but since then the best advice has gone wrong and paper is now selling for 13½ and 14 cents a pound. "Labor" is "at the mercy of the profiteers" and it has been necessary to draw on the league's reserve fund of $40,000.

"Labor" must be placed on a solid financial footing, and the activities of the Plumb Plan League must be expanded in order that the campaign for government ownership of the railroads and their democratic control may be pressed with increasing vigor. The outlook is pictured as "never more promising." "Private ownership has broken down." (The railroads also must be placed on a solid financial footing and be expanded. Their cost of operation has also gone up in spite of the "best advice obtainable" and they want to increase their prices nearly 30 per cent.)

We recall several occasions on which the league and others have been advised of the many economies that could be put into effect under the Plumb plan in the operation of the railroads but we are not informed as to whether the directors got their advice on the price of paper from the same source as their advice that the railroads are worth only $12,000,000,000.

It may be remembered that the Plumb Plan League was restrained by a hard hearted, it not "hard-boiled" Congress last summer from the opportunity it sought to demonstrate how the railroads should be managed, without a rate advance, with all the wage advances necessary to prevent unrest among the employees and with dividends only for the employees—the so-called "official" employees to receive double dividends in order to relieve the public of anxiety as to the danger of their combining with the rest of the employees in too frequent raises in pay all around. Next to those who are sure they could run the railroads better than those who have been doing it, one of the most numerous classes of citizens is composed of those who have ideas as to how a newspaper ought to be run. Therefore, shortly after it became evident that Congress had not been persuaded by the alluring figures set up by Mr. Plumb to show what could be done with the railroads, it was not surprising to see the league embark upon the publication of a model newspaper. But even newspapers that are advocates of government ownership are no more immune from increases in expenses than are the governments that try to run railroads. Having assisted in creating a shortage of paper by the additional columns they have devoted to denouncing the profiteers who have raised prices in other lines of business, even the Hearst papers have long ago boosted their prices 50 to 100 per cent, and now "Labor" has succumbed to the inexorable laws of arithmetic, after having successfully evaded the libel laws for several months. Possibly it all happened while the league's brilliant counsel, Glenn E. Plumb, was away from the office denouncing the

railroads for increasing rates, but anyway it happened. Newsprint paper is an important item in the expense of a newspaper. It corresponds in a general way to the importance of labor in a railroad's expense account. It comes high but it is most difficult to operate successfully without an adequate supply of it.

If the Plumb Plan League were operating the railroads nothing like this could happen. In the first place railroad employees are not profiteers. They would be so interested in making the railroads produce profits which they would receive as dividends that they would not want to increase wages. Therefore there could never be such an increase in the cost of labor as has taken place in the cost of paper. Mr. Plumb has fully explained that. In the second place, if railroad expenses should for any reason be increased it would not be necessary to raise rates. Mr. Plumb has also explained that. To raise rates would be to kill the goose that lays the golden eggs, so to speak. It would dry up the traffic and merely make conditions worse. The way to meet increased expenses on a railroad, Mr. Plumb has repeatedly assured us, is to reduce rates and produce a greater volume of business.

It is not necessary for "Labor" to do this. Its announcement says "there is a constant demand for literature. The workers will pay two dollars a year as cheerfully as they have paid one dollar," and it is hoped to see "Labor" with a circulation of a million copies in the very near future, which will enable it to expand its activities. It is to be "as carefully edited as the best of the organs of capitalism."

It is is to have "trusted and trained correspondents in all parts of the United States and the principal capitals of the Old World," including Russia.

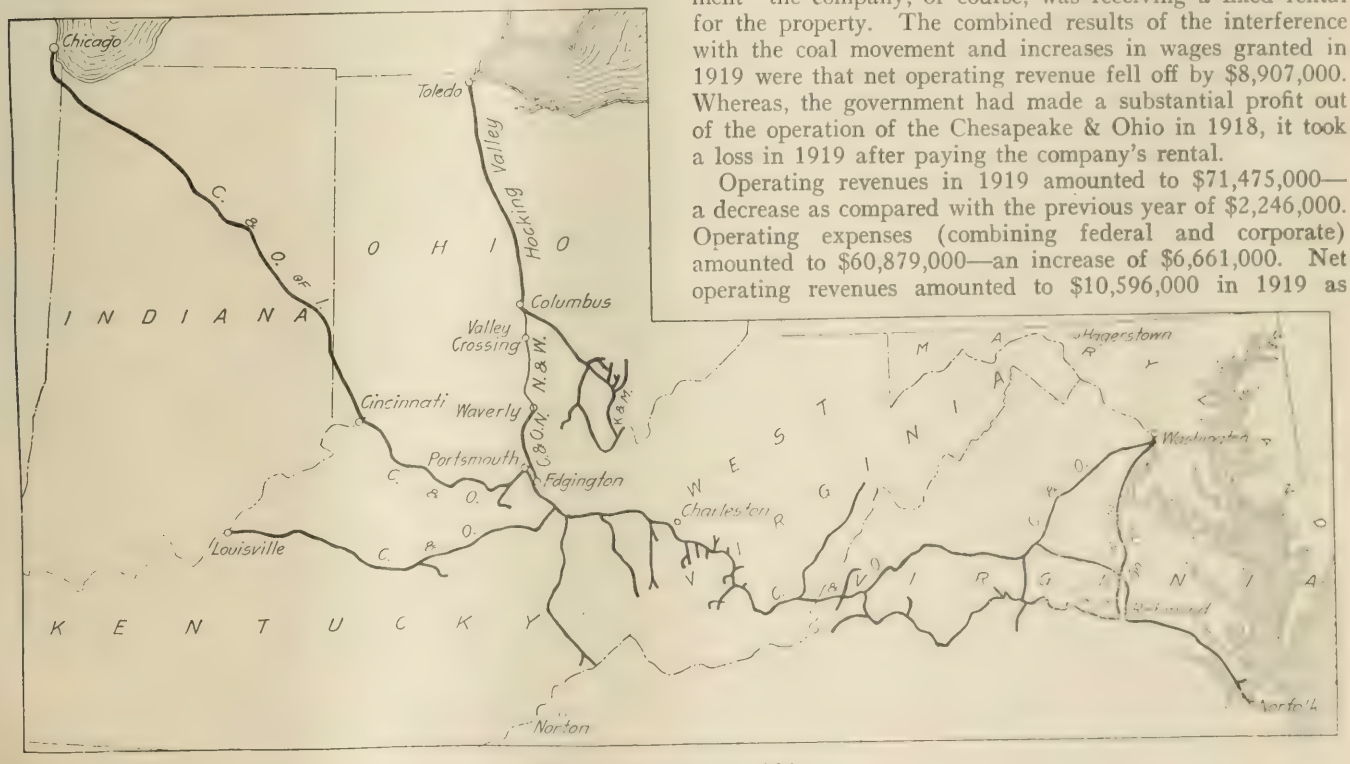
And there is still a third reason why all the principles of the Plumb plan do not apply to its newspaper. Under the Plumb plan the government would hold the bag. If for some inconceivable reason wages were increased, if other expenses mounted, if reducing rates did not increase revenues, or if any other unforeseen contingency occurred comparable to a rise in the cost of paper, which the Plumb plans officers were advised would not happen, should happen, our long suffering but old reliable friend the tax-payer would always be there to help out. One of the elements of the tri-partite system was missing from the management of "Labor."

We repeat our suggestion to subscribe now before the price goes higher. If the present circulation of 240,000 should be reduced by the increase, following the analogy of what Mr. Plumb says will happen if freight rates are advanced, it will, of course, be necessary to raise the price again. "When you read 'Labor' you get the last word on what's news in the world of labor—Read it every week." You get information regarding the railroads you see nowhere else. Once it showed how the government had made a profit of $900,000,000 out of the railroads, instead of a deficit.

Chesapeake & Ohio

IN THE EARLY PART of 1919 there was a sharp falling off in the bituminous coal business following the cancellation of war orders, etc., after the armistice. In the latter part of 1919 there were strikes of shopmen and of coal miners which seriously interfered with the movement of coal. Both of these facts affected the Chesapeake & Ohio unfavorably; that is, they affected the results of operation by the government—the company, of course, was receiving a fixed rental for the property. The combined results of the interference with the coal movement and increases in wages granted in 1919 were that net operating revenue fell off by $8,907,000. Whereas, the government had made a substantial profit out of the operation of the Chesapeake & Ohio in 1918, it took a loss in 1919 after paying the company's rental.

Operating revenues in 1919 amounted to $71,475,000—a decrease as compared with the previous year of $2,246,000. Operating expenses (combining federal and corporate) amounted to $60,879,000—an increase of $6,661,000. Net operating revenues amounted to $10,596,000 in 1919 as against $19,503,000 in 1918. The rental paid by the government in 1919 was $14,589,000 as compared with $13,227,000 in 1918.



The Chesapeake & Ohio

Notwithstanding the falling off in coal tonnage, average train loading was maintained remarkably well. Coal and coke tonnage amounted to 25,471,000—a decrease of 8.5 per cent. The falling off in other freight tonnage was even greater, the total amount of other freight tonnage was even 1919 being only 10,127,000 tons, or 18.4 per cent less tonnage than was carried in 1918. The total tons of all freight per train averaged 1,151—a decrease of less than half of one per cent as compared with the previous year. The tonnage per locomotive in 1919 averaged 1,003, actually an increase of 2.7 per cent over the previous year. Average load-

ing per loaded car was 37.7 tons—a decrease of 1.3 per cent.

Apparently the Chesapeake & Ohio was well maintained during 1919. The following table shows the cost of repairs per unit of equipment in 1919 and 1918:

	1919	1918
Per locomotive	$6,227	$6,082
Per passenger train car	1,860	1,634
Per freight train car	165	150

The Chesapeake & Ohio came out well in regard to rail. The equivalent of 204 miles of track were relaid with new rail, most of it 100 lb. rail, although it is interesting to note that 1,545 tons of 130 lb. rail were laid.

The Chesapeake & Ohio was one of the few companies which succeeded in getting additional compensation over and above the average operating income in the three years of the test period as defined by the general rules for arriving at rentals. The company claimed an additional $1,047,000, but actually got considerably less than that. The standard return fixed for 1918 was $13,227,000. This was increased after hearings to $13,630,000, so that the total amount received in 1919 with adjustments for 1918, etc., was $14,589,000, and the company, after the payment of corporate expenses, taxes and interest on debt, had $5,774,000 available for dividends. Four per cent dividends were declared calling for $2,511,000 and leaving a surplus for the year of $3,263,000.

The situation of the Chesapeake & Ohio is an interesting commentary on the problems that will be presented both to the managements of railroads and to the Interstate Commerce Commission. The company imperatively needs additional capital both for new equipment and for additions and betterments. The board of directors say that they feel reasonably confident that if rates are adjusted so as to afford all of the railroads in its group an aggregate of 5½ per cent on the value of the property used in operation that the Chesapeake & Ohio's share will be not less than 5½ per cent; nevertheless it is not in a position to raise new capital. This average of 5½ per cent would be more than the company has been receiving either under the governmental rental, or with the exception of two years, under private operation. The percentage of return on property investment in 1919 and 1918 was 4.77; in 1917 it was 5.64; in 1916, 6.14; and in 1915, 5.11. The management in its annual report describes the situation of the company as follows:

"Reference to the statement of Return on Property * * * indicates that an adjustment of rates on the foregoing basis should afford your company on the whole a slightly better average return upon its property investment than it has enjoyed during recent years. This is on the assumption that the Commission accepts your property investment accounts as fixing the property value on which a return is to be allowed. The return allowed by the Act, however, on any additions to your property hereafter made, is not sufficient under present conditions to provide for the charges which your company must meet upon the new capital required to make such additions. Your directors, therefore, feel that while additions and betterments to existing facilities reasonably necessary to take care of your traffic must be made, it is undesirable to extend any of your lines into new territory or to encourage the further development of the coal fields now reached by them. One difficulty facing your company is the fact that during the war, as a result of pressure by the government for maximum coal production, the number of mines tributary to your lines was increased from 375 to 625."

The following table shows the results of operation of the property in 1919 and 1918 under federal operation. The figures are not combined with the corporate figures and do not therefore in all cases correspond with the figures mentioned in the comments above:

	1919	1918
Mileage operated	2,507	2,485
Freight revenue	$53,073,002	$55,720,373
Passenger revenue	14,158,153	13,629,892
Total operating revenues	71,475,016	73,720,797
Maintenance of way and structures	11,608,515	9,700,660
Maintenance of equipment	18,114,492	16,178,533
Traffic expenses	471,582	484,418
Transportation expenses	28,766,158	26,189,743
General expenses	1,542,271	1,315,060
Total operating expenses	60,878,522	54,217,347
Taxes	2,485,078	2,278,184
Operating income	8,105,846	17,222,465
Net to the government after paying rentals	748,129*	8,829,200

*Deficit.

New Books

Railway Accounting Officers' Association 1920 Synopsis. Edited by E. R. Woodson, Secretary of the Association. Published by the Railway Accounting Officers' Association, 1116 Woodward building, Washington, D. C.—228 pages.

This is the first book of its kind ever published. It is a comprehensive but carefully selected synopsis of decisions and recommendations relating to freight, passenger and disbursement accounting made by the Railway Accounting Officers' Association from 1888 to 1920. It describes the methods used by American railroads in accounting with each other for freight and passenger revenues and disbursements. No attempt has been made to go into the general theories of accounting. The freight section gives the rules and describes the practices in regard to accounting for freight between different roads and is illustrated by the forms in general use. Starting with the waybill, it describes the preparation of the bill, methods of making corrections, abstract and division statements, manner of settlement, etc.

While most of the recommendations of the Railway Accounting Officers' Association are not mandatory, nevertheless, they are standard practice and are as essential to understand as if they were mandatory. It may be recalled that overcharge claim rules of the Association are now mandatory and these, of course, are included in the synopsis.

An attempt has been made to put together the descriptions of standard practice which have been developed by the Association and its members in such a way as to make the book comprehensible by a man who has not had special training in the accounting department. In this attempt, the compiler has been eminently successful. Necessarily, the book is hard reading. The exactions required by the science of the art makes any description of practice and methods somewhat technical and devoid of color. It is a book meant for study and reference. It need hardly be said that every officer and every clerk and employee of the accounting departments of American railroads who has the slightest ambition to rise in his work, should read and study this Railway Accounting Officers' Association 1920 Synopsis. As a matter of fact, it would repay operating officers, station agents and traffic officers many times over to read the book and have it available for reference.

The efforts of the Railway Accounting Officers' Association are devoted to the advancement of railway accounting as a science and as a profession. It is rather difficult for the older accounting officers who have been in the game for many years, who have discussed with representatives of the Interstate Commerce Commission, time without number, the problems that have become so familiar and have heard, year after year, discussions of these problems within the Association itself, to realize how much of a mystery the whole thing is to the employee who is just entering the ranks. Even to the ambitious young chief clerk, the opportunities to study branches of accounting other than those with which he comes in direct contact, seem difficult. A great deal of credit, therefore, is due to the Association and especially to its secretary for this big step taken to place within reach of railroad men generally and employees of the accounting departments in particular, a comprehensive and easily comprehensible description of standard practice.

Letters to the Editor

Foreign Railway Visitors

Boston, Mass.

To the Editor:

I have just read the article in the *Railway Age, Daily Edition,* for June 12, in which reference is made to the reception accorded to foreign railway men visiting the United States.

As I am just leaving the country after a four months' visit, I should like to express the impression my visit has left on my mind.

I can assure you that wherever I have been nothing could have exceeded the courteous and freely offered assistance given me in connection with the enquiries I came over here to make. This applies to railroad officers, railroad supply manufacturers and others with whom I came in contact.

My one regret is that time has not permitted my taking full advantage of the many offers for closer study of American railroad practice.

One of the features that has most impressed me has been the freedom with which information has been made available, and in my case, at any rate, this has been coupled with the greatest personal kindliness.

I shall take back with me the fixed impression that American railroad men are indeed hard to beat for real hospitality.

W. A. C. Thorpe,
Indian State Railways.

College Men in Railway Work

Princeton, N. J.

To the Editor:

From my academic retreat, I have been observing for many years with satisfaction the increasing number of college men who are going into business in general, and at the same time I have been disturbed by the lack of any trend toward that business activity in which I have the greatest interest—transportation. With this situation in mind I addressed a letter recently to a considerable number of railway executives representing both large and small systems and located in various parts of the country, inquiring concerning the opportunities at the present time for college men in the railway field. I did not concern myself with the problem of vocational training—whether the young man can be trained for railway service in the college; that is another question by itself. My inquiry was in substance this: Does the college trained man, other things equal, stand any better chance of advancement in the railway industry than his untrained competitor? The answers have proved so interesting and so significant that I am sure a summary of them will be welcomed by a wider circle of readers.

On the one hand there is a considerable number of leading executives who believe unreservedly in the college man. Most of them are putting their ideas into practice and are taking college men into their service, the larger number of men being drawn, however, from the engineering schools rather than from the purely academic institutions. To be sure, these executives made the obvious point that there is no short cut for hard work, that the industry is becoming stabilized as it becomes more closely regulated, that the opportunities for rapid advancement which were open in the pioneer days are now closed, and that the young man must accept a greater stability in employment as an offset for the larger rewards offered in competitive industry. Yet these replies all insist that the opportunity for large public service and for employment that will develop the capacity for leadership was never greater than now. The following statement from one of the letters is an admirable summary of this point of view:

"My own belief is that the complexities, as well as the scope, of the matters handled by the railway officers in the higher executive positions are now such that these positions are not likely often to be filled other than by men who have had such an orderly training of the mind as is secured through a college education, though there will happily always be those coming up in the service who, through correspondence schools, private reading and by recourse to other agencies, will similarly fit themselves for the discharge of their duties.

"I have always felt that the railroad service offered a splendid opportunity to the virile type of man who enjoyed an outdoor life and intimate contact with his fellows, and that the service would be immensely benefited could a stream of men of this type, who had had football, baseball or crew and other athletic training, be inducted. I have introduced a good many of these men into the service, and almost without disappointment."

But the discouraging answers considerably outweigh the favorable ones in number. One discouraging note running through many of the letters grows out of the uncertainty or pessimism of their authors as to the future of private operation. One is hardly surprised at this pessimism. Moreover, I thoroughly agree with these correspondents in hesitating to recommend railway service to the college graduate if we are to have permeanent government ownership and operation. Until there is a thorough overhauling of the civil service, no informed college teacher can conscientiously send any virile young man into that deadening atmosphere.

Again, many of the letters show a distrust of the college bred man—an attitude common among business men in general ten or twenty years ago, but rapidly disappearing in manufacturing, banking, foreign trade and other fields which the college men are entering in large numbers. One writer warns the college boy that he must not expect to get by on his diploma and good clothes. There is a general feeling that he is not willing to begin at the bottom and work up, that he has not the patience to travel the rough road, and that before his apprenticeship is complete he leaves the service to seek other lines, where advancement is more rapid, where living conditions are more congenial and where the compensation is larger.

One of the ablest of our railway executives who appreciates fully the latent capacity of the college man, writes in this discouraging vein:

"We have made an earnest effort to enlist in our service men of breeding and education with the purpose of giving them an opportunity to develop into officers, but on the whole the experience has not met with encouragement. Except on the purely clerical side (which I do not recommend), railroading is a rigorous and exacting life. The work is incessant and roving and calls for imagination and a high purpose during the years of apprenticeship as well as in the time of responsibility. There are few diversions, and for protracted periods small opportunities for association with those with whom such young men as I refer to have been brought up. We find that these things test character beyond the endurance of many men who are fitted by ability to succeed, the more because they see their college associates leading a more comfortable life and apparently succeeding quite as well in the cities.

"It is a difficult problem and one which gives me sincere concern, as every failure sets back the work by discouraging the practical railroad men who have worked through many hardships to positions of responsibility and are not predisposed to believe that college education is a short cut to the success they have themselves achieved with travail and self-denial.

"As a result of this experience I am loth to ask our managing officers to put forth again their effort at training."

For the situation just described, is the college man altogether the blame; and if not, where lies the trouble? So far as it is true that the young man lacks determination, avoids hard work, looks for the quick and easy road to fortune

we of the colleges are at fault. But there is this encouraging feature in it: we are aware of our shortcomings and are already taking steps to correct them. The business departments and schools affiliated with the colleges have done much to dignify business and alter the college boy's attitude. A marked change in this respect has gone on in the last decade and is still proceeding. Moreover, the movement is under way for the creation of vocational departments in the colleges that shall study the peculiar needs of each business and the aptitudes of the graduates for the respective careers.

But what have the railways done in the way of developing personnel departments, of fitting men into their proper places, of recognizing talent and making use of it? Here is a group of selected men, selected when they enter college by the intellectual test of entrance examinations, and selected again when they decide to enter the railway service after four years of training, by instructors who have followed them closely. It is the customary thing for the successful business man to tell the college boy that he must begin at the bottom and work up, which is true to a degree, but not to the extent that they have in mind. If his four years' training means anything, his apprenticeship, when guided by intelligent and sympathetic oversight, should be materially shortened. The college man, if he seeks a career in the railway industry, should not of course flinch before the hard work, the long hours, the geographical isolation, the relatively slow advancement, and the relatively small remuneration of the early years, but is he not entitled to the sympathy and encouragement of his superior officers, and the opportunity to show his right to advancement in the service?

This raises one of the difficulties most frequently referred to by the correspondents—the standardization of labor conditions, due to extension of union organization and control. Many executives express the very definite opinion that the college man cannot advance in the face of the seniority restrictions of union labor. One of the western executives writes: "With us our men come out of the melting pot and are fitted to their conditions out here, and in the West, at least, a man could not have a greater handicap than to be started in his work virtually at the bottom, but be labelled as a potential officer."

I do not profess competence to solve this problem and it may be that the increased strength of unionism, growing out of the experience of the past three years, has made any plan for apprenticeship training of prospective officers impossible. But I have a feeling that the case is not so hopeless; in fact I wonder whether in many instances the block to advancement is not rather the hostility of a minor officer who is prejudiced against "the college feller," rather than the restrictions of trade-unions. I have a hope that if the problem were frankly tackled a way would be found out of what seems to be an *impasse*.

And my own concern is not primarily for the college man, who has many other and at present more attractive opportunities, but for the future of the industry itself. "American Railroads," published by authority of the Association of Railway Executives, states as one of its principles without the observance of which government ownership is unavoidable, "that the railroad industry should attract and retain the ablest type of men."

When I observe, as I have for many years, the appearance every spring at the colleges of the "scouts" from various business enterprises, picking off the leading men of the senior class, when I note that the banking interests are now seeking college men because they want to train "bankers and not bank clerks," I cannot help wondering whether in the long run the railway industry will not fall behind in the race, if it does not find some way to take advantage of the trained mind with its capacity of grasping problems in the large, and solving them on the basis of broad fundamental principles, rather than by making a practice of resorting to rule of thumb methods learned in the school of experience.

I close with a quotation from an executive who has put this thought into practice and who believes in it without reservation:

"There can be no doubt of the advantage to the young man who begins his work with an intensively trained mind. Other things being equal, he will go ahead faster and get farther than the man who lacks that great initial advantage. Indeed, in the technical branches of railroading, as well as mining and most of the productive industries, we have reached the point where the preliminary training of a college or a university course is no longer looked upon merely as an advantage, but has become, practically speaking, a necessity for the young man who aims at a place in the executive forces. Nor is this disproved by the fact that a few men of extraordinary genius are even now able to overcome the handicap of a lack of such training. For the typical young American, who is not a genius, but who has ability and ambition, nothing, in the fierce competition of our present life, can entirely make up for the lack of a college education. This applies to railroading just as fully as to manufacturing and mining industries.

"The speculative area has now passed. With the settlement of the country, the opening to agriculture of nearly all tillable land, the placing of industry on a permanent basis, and in more recent years the firm establishment of public regulation as a definite policy accepted by all, the controlling factors have combined to remove railroading almost wholly from the realm of speculative enterprise, at least as far as those who work in it for salaries are concerned. As a result, the work of the railroad officer has become one of the most highly stabilized of the professions, from the viewpoint of remuneration and certainly of employment.

"To a young man of ability, about to graduate from college, and confronted with a choice of professions, I would, therefore, say that railroading offers a more certain career than most branches of commerce or industry, with less likelihood of suffering through the mistakes or wrongs of others and also with somewhat less probability of gaining the very highest monetary return.

"However, for the young man with a good mind, quick brain, sane common sense and thorough training in his college, who desires to enter upon a life service of great activity and unsurpassed interest, which, with capacity, devotion and hard work on his part, will always pay him a satisfactory living, and held reasonable assurances of an excellent, if not excessive, salary in his maturer years, I know of nothing better to recommend than a railroad career.

"It is far from an easy life. On the contrary, few occupations demand more absolute subordination of personal interests to duty than does the work of a railroad operating officer. It is a career that will involve many trying experiences with long and often irregular hours of arduous duty, but it has its compensations. Few careers present a greater variety of problems, or are better calculated to prevent the mind from getting into a rut, and few present greater opportunities for travel and association with men in other lines of business or for studying human nature, in general, in all its aspects.

"Finally, the young man who chooses the railroad profession will have the great and lasting satisfaction of knowing that he is earning more than his own living every day, and that he is engaged in one of the most indispensable forms of service toward his fellowmen to which his own life could be devoted."

FRANK HAIGH DIXON,
Princeton University.

DANVILLE, KY., reports that freight cars in yards at Danville and vicinity have been looted of merchandise valued at $86,500 by an organized band of thieves.

THE COST OF THE RAILROADS.—There has been bad and unsafe financing in the railroad industry as there has in others. It is a criterion which applies to the rate situation as a whole and dictates that the Interstate Commerce Commission establish a reasonable estimate of the cost of the roads in the aggregate. Only in this way will it be possible to get investors to provide the funds for future extensions which are now so sorely needed by the country.—*The N. Y. Journal of Commerce and Commercial Bulletin.*



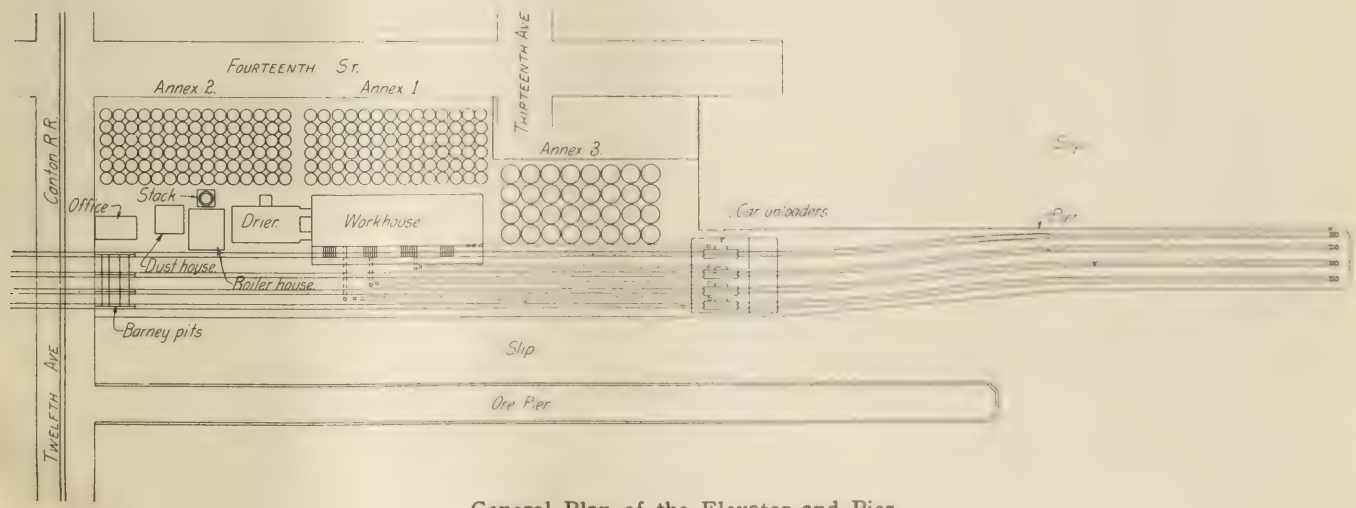
The Completed Elevator and the Slip

An Improved Grain Elevator for Export Service

Pennsylvania's New Plant at Baltimore, Md., Has Modern Facilities for Large Capacity Operation

ONE OF THE LARGEST and most modern grain elevators in the world has recently been put into service by the Pennsylvania Railroad at Canton, Md., now a part of the city of Baltimore. The new structure, which is built of reinforced concrete and structural steel, was designed to replace an old elevator located on the Patapsco river which had burned in 1916, and, at the same time to provide for greater facilities in the handling of export grain. It has a storage capacity of 4,257,000 bushels, while, through the medium of four new-type car unloaders, it can receive and unload grain at the rate of 40 cars an hour. Docking facilities have been provided for vessels drawing up to 35 ft. of water, five of which can be loaded simultaneously, the shipping rate being 1,800,000 bushels for a day of 10 hours. All movements of grain are controlled by one man, the grain despatcher.

The new plant called for entirely new construction throughout with the exception of the old concrete storage bin annex which originally formed a part of what was known as the old No. 3 elevator. While the shore line crosses at about 350 ft. from the in-shore end the entire project was designed and constructed as a large pier, 1,418 ft. long and 262 ft. 4½ in. wide for approximately one-half its length or for a distance of 735 ft., and 99 ft. 4½ in. wide at the car unloaders, tapering to 86 ft. wide for the remainder of the pier. The buildings and equipment consisted of a work house, car unloaders, drip shed, two storage bin annexes in addition to the old annex, shipping conveyor galleries, traveling gantries, a marine tower, grain driers, dust house, boiler house, transformer house and an office building. All equipment throughout is electrically operated.



General Plan of the Elevator and Pier

Export Grain Facilities at Baltimore

The new plant is located on the site of the old elevator and is one of the three elevators owned by the Pennsylvania at this point, the other two being comparatively small. With

the completion of the new No. 3, that road will have a storage capacity for grain approximately as great as the total storage capacity of all the Baltimore elevators during the last three years. A summary of the elevators at this point shows the following:

Elevators and Capacities at Baltimore

	Location.	Capacity.	Number of boats handled at one time	Depth of water
Pennsylvania R. R.				
No. 1.....	Canton	500,000	2	32 ft.
No. 2.....	Calvert Street.....	250,000	Not export	
No. 3.....	Canton	4,257,000	5	35 ft.
		5,007,000	7	
Baltimore & Ohio—				
El. E.....	Mt. Clare	250,000	Not export	...
El. B.....	Locust Point.....	1,200,000	2	28-33 ft.
El. C.....	Locust Point.....	1,300,000	2	28-33 ft.
		2,750,000	4	
Western Maryland Elevator	Port Covington...	2,000,000	3	30 ft.

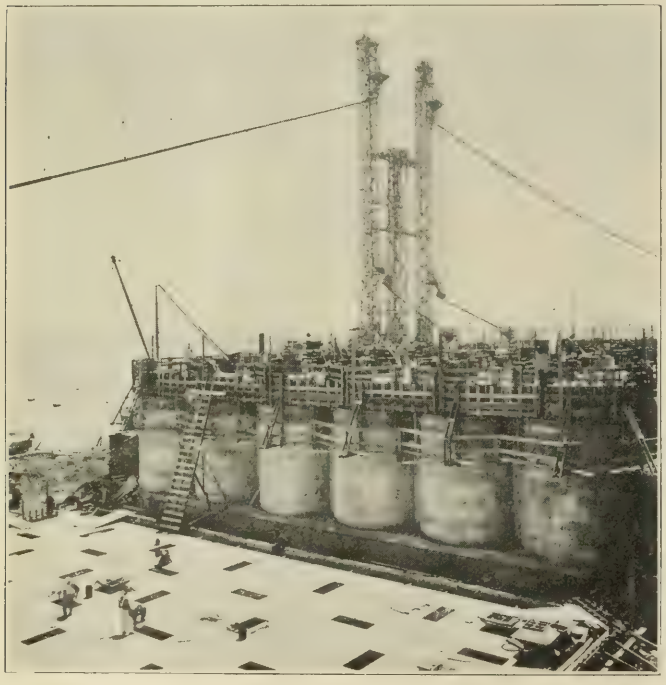
This shows a total grain capacity of 5,007,000 bushels for the Pennsylvania as compared with a total of 9,757,000 bushels for all the elevators combined.

An indication of the stimulus to grain export in which the new No. 3 will be a big factor may be drawn from the following table which shows the amounts exported during 1919. This of course does not include any grain from No. 3.

EXPORT CARGO GRAIN

Where loaded	Number of vessels	Number of bushels
Canton	66	8,131,262
Locust Point	168	19,293,446
Port Covington	158	18,573,011
	392	45,997,719

This shows that approximately 46,000,000 bushels of grain was exported from elevators having a total capacity

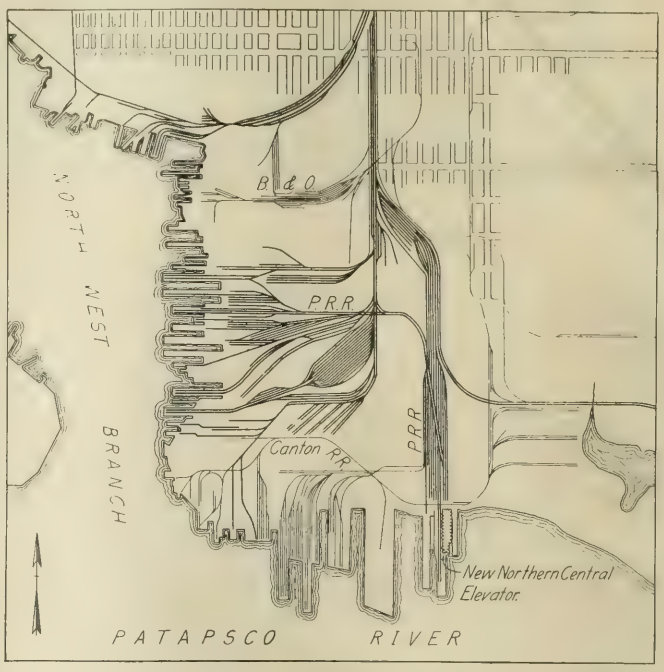


Pouring Concrete for the Grain Tanks

of 5,000,000 bushels. The addition of No. 3 makes a 43 per cent increase in the total capacity, but as the new elevator can handle a greater amount of grain per hour in proportion to its larger capacity this percentage represents a very small minimum in the potential export capabilities of the port of Baltimore.

Unloading of Grain by Mechanical Means

The old No. 3 yard, which was used in conjunction with the old elevator and an adjacent ore dock will be retained in use. At present this has a capacity of 1,001 cars, but with the completion of the work under way this will be increased to 1,560 cars, while future works call for an increased capacity, bringing it up to 1,966 cars, or nearly double its original size. In operation strings of 14 cars are picked up in the yard and delivered on one of the four receiving tracks of the elevator by a switching engine which is then uncoupled and backed into the clear. While a cut of 14 cars is not the maximum number which can be handled it has been found that, on the average, this number secures ample clearance between the car unloaders and the barney pit located just off the street line. The barneys are of the four-wheel,



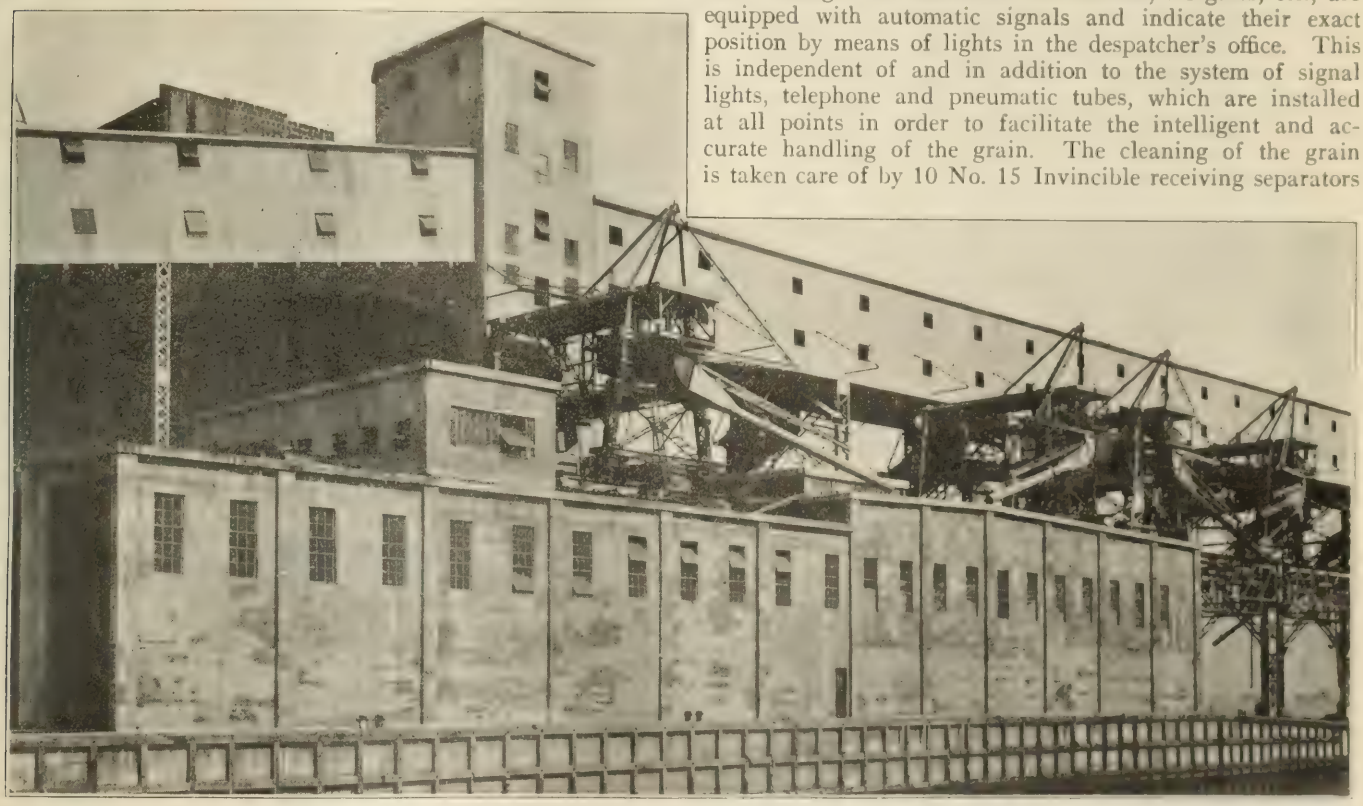
Relation of the Elevator to the Other Export Facilities

endless-cable type, running on a track of 3 ft. 2 in. gage laid between the rails of the standard gage track and equipped with standard couplers. They are housed in pits beneath the track and when a cut is ready they are pulled out and coupled on to the cars in the usual manner. They are operated by a two-speed 75-hp. reversible slip-ring type motor controlled by the man operating the car dumper. The operator is thus able to spot a car on the unloader after which it is uncoupled and the remainder of the cars backed in to the clear.

The cars are then clamped in the unloader and revolved about 30 deg. against an automatic door opener. After as much grain as will run out freely has been discharged the car is tilted endways, the total movement from extreme to extreme being about 90 deg. After the car is completely unloaded the barney again brings up the loaded cars, at the same time kicking the empty car onto one of the tail tracks. These tail tracks have a short run-off of 60 ft. leading from the car unloader on a 5 per cent grade, changing to 2½ per cent for 60 ft., then 1 per cent for 120 ft., ½ per cent for 60 ft., and then level to the end of the pier or for a distance of 320 ft. When all cars have been unloaded, the string of empties is pulled back by the barney which then returns to its pit, after which a switching engine removes the cars and spots another cut of loaded cars. During the operation of the car unloading the operator is kept advised by a system of red and green lights, the red signifying "stop unloading" and the green, "proceed with the next car." No. 1 track, or the track next to the work house, is provided with pits where cars may be unloaded by semi-automatic shovels.

Distribution of the Grain

The grain which is dumped from the cars falls into a steel hopper, which feeds onto a 42-in. conveyor belt running in a tunnel. There are four of these tunnels, one for each unloader, running lengthwise of the pier, each with its conveyor belting and trippers for discharging the grain onto cross belts running to four receiving legs, each with a capacity of 20,000 bushels per hour and located in the work house. The work house, which is situated at about the center of the plant, forms the heart of the plant operation. Practically all of the machinery incidental to the handling, cleaning and drying of the grain is housed in this building, which is 211 ft. long, 61 ft. deep and 210 ft .high. There are also 131 bins in this house with a storage capacity of 675,000 bushels of grain. The main grain storage, however, is in the three annexes which have capacities of 1,235,000 bushels, 1,325,000 and 1,022,000 bushels, respectively. Annex No. 1 has 84 circular bins and 65 interspaces, 15 ft. 4 in. in diameter with 7 in. walls. Annex No. 2 has 90 circular bins and 70 interspaces, while Annex 3 has 32 circular and 28 interspaces, the total capacity being as stated, 4,257,000 bushels.



The Pier End of the Elevator, Showing the Gantries for Loading Ships

The grain after being elevated into the work house by the receiving legs, is delivered to a garner, of which there are two for each receiving leg, with capacities of 3,000 bushels. It is then allowed to fall into a steel weighing scale holding 2,000 bushels after which it can be delivered to the storage bins or to the cleaner and drier. The complete handling equipment consists of the four receiving legs already mentioned, five cleaner legs for elevating grain to the cleaning machines, with capacities of 15,000 bushels each per hour, one drier for grain passing through the drier with the same capacity, and 9 shipping legs for elevating grain for shipment, with capacities of 20,000 bushels each per hour. In addition to the two scales and garners for each receiving leg, each shipping, cleaner and drier leg has one scale surmounted by a garner of the same capacity as those for the receiving end. This makes a total of 19 elevator legs and 23 scales with garners, all served by a well designed method of 42-in. conveyor belting of which there are over 10 miles in this plant.

All scales are of the solid lever fulcrum plate-bearing type with a printing beam and an automatic draft-recording attachment. These scales have been so arranged that, by means of a device operated by a handle, the weights can be lifted from the counterpoise hanger, thus permitting the operator to obtain the balance of the empty scale in a short space of time. The elevator legs are each driven by individual electric motors coupled to the head-shaft by an electro-magnetic clutch and driving through a Stewart-Falk steel herringbone, helical cut reduction gear. The gear and bearings run in an oil bath.

To prevent the mixing of the grain at any point and in order that the despatcher can keep accurate track of its movement through the house and the annexes, all gates, etc., are equipped with automatic signals and indicate their exact position by means of lights in the despatcher's office. This is independent of and in addition to the system of signal lights, telephone and pneumatic tubes, which are installed at all points in order to facilitate the intelligent and accurate handling of the grain. The cleaning of the grain is taken care of by 10 No. 15 Invincible receiving separators or cleaning machines working in batteries of two each, with a capacity of from 3,500 to 5,000 bushels per hour.

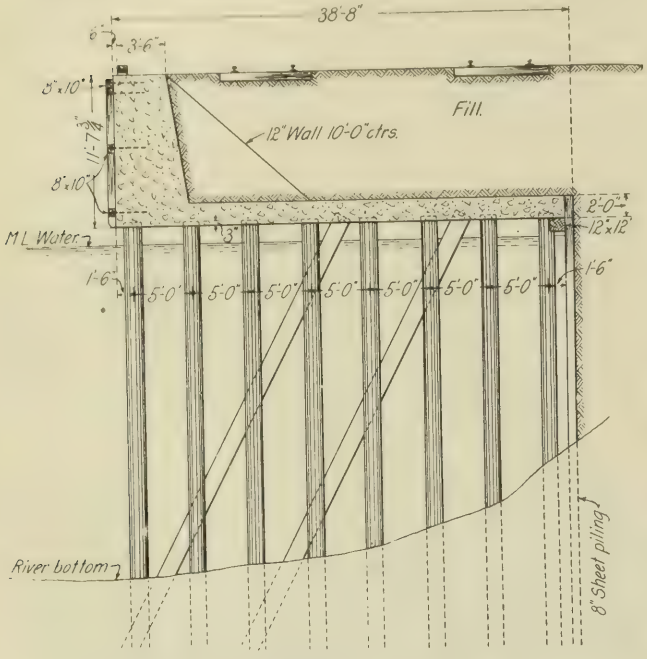
Export grain is drawn from any of the storage bins and conveyed to the shipping legs which elevate it to 12 shipping bins of 10,500 bushels capacity, each of which delivers the grain direct to three traveling gantries operating over the four receiving tracks adjacent to the work house. Four more traveling gantries are located on the extension to the pier while the far side is equipped with 11 fixed spouts and bagging hoppers. The grain is delivered to these gantries by six separate belt conveyors running in a two-story conveyor gallery which is supplied by a similar installation under the shipping bins.

General Construction Details

In preparing the site for the pier and in providing slips on each side of the pier considerable dredging was necessary in order to secure the increased depth and length desired. The slip adjacent to the ore dock was made the full length of the pier, or 1,418 ft. long and 145 ft. wide between the

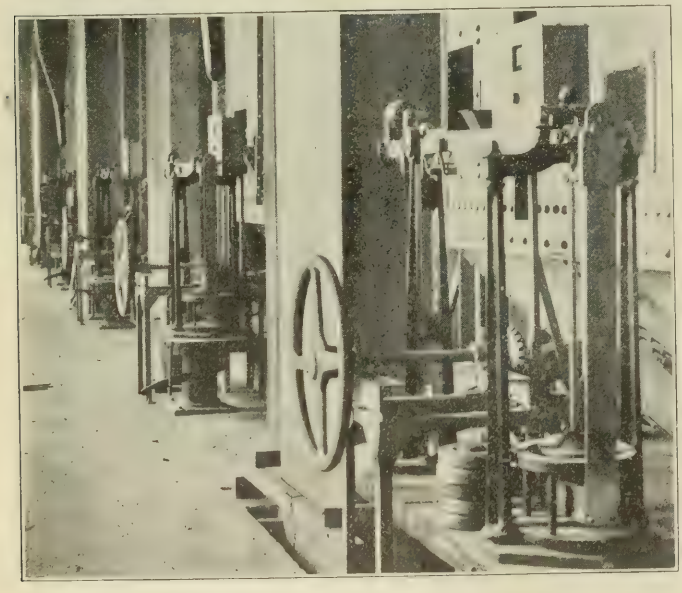
two docks at the in-shore end, widening to 158 ft. at the outer end. The other slip is considerably shorter, being approximately 163 ft. wide and 683 ft. long to a pile breakwater running parallel to the pier. A total of 700,000 cu. yd. of mud, sand and clay was removed by dredges, a portion of which was used for filling on the in-shore end.

The pier itself was built entirely on piles varying in length



Section Through the Pier Wall

from 60 to 70 ft. and driven to refusal. These were spaced on 2½ ft. centers under all the buildings, the car unloader and the supporting columns for the steel superstructure of the conveyor galleries and gantries. The remainder of the

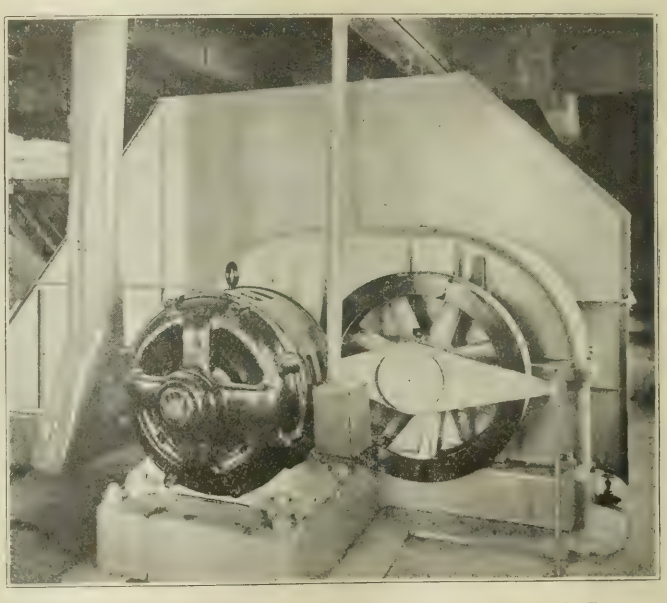


The Grain Weighing Scale

piles, of which a total of approximately 25,000 were used, were spaced on 5-ft. centers. All piles were cut off at mean low water level.

The in-shore end of the slip was constructed in a similar manner and extended from the new dock line over to and connecting with the old ore dock. This is parallel to and approximately on the street line at this point and is backed by 8-in. sheet piling extending the whole length of the end of the slip and for 38 ft. under the new pier. Another line of sheet piling was driven lengthwise of the pier and 38 ft. from the edge until opposite the in-shore end of the work house, where it was swung over paralleling the outer edge of that building. At the off-shore end of the building another line at right angles was joined to it and run over to connect with an old bulkhead marking the property line of an adjacent pier.

All piling outside of the bulkhead was creosoted, using No. 2 oil with a total absorption of 12 lb. per cu. ft., the piling inside the bulkhead being untreated. The portion of the pier lying inside the bulkhead was then filled in to the top of the piles after which 2 ft. of concrete decking was installed resting directly on all piles. This was done throughout with the exception of the car unloader pit which extends 15 ft. below low water level. The construction of this pit called for coffer dam work which was carried on without any particular difficulty. The four receiving and tail tracks are supported by a sand and cinder fill; the total height of the concrete retaining walls and the fill being 13 ft. above low



Elevator Motor Drive, with Herringbone Helical Gears

water. These retaining walls are faced on the outside with timber to form the dock line and to prevent vessels from shattering the concrete. They are braced crosswise by 12-in. re-inforced concrete walls spaced on 10-ft. centers. The outer end of the pier has a 10-ft. concrete platform around it while the entire pier, including the platform, is underlaid with high pressure water mains and connections for fighting fire.

A 6-in. fill of cinders was laid on the concrete decking at the building sites and the floors poured upon this. All concrete was poured from three towers, supplied by a battery of three ½-cu. yd. mixers, one of which was held in reserve. Raw material was unloaded into a hopper at the outer end of the adjoining pier already mentioned, which discharged it onto conveyor belts which carried it to the storage piles. As it was needed, the material was allowed to fall through into a tunnel constructed under the storage pile and equipped with a belt conveyor that delivered the material to the mixers.

This work was carried out under the direction and supervision of the engineering department of the Pennsylvania Railroad, A. C. Shand, chief engineer, J. F. Murray, assistant chief engineer, and W. H. Cookman, architect, with

J. W. Craig, assistant engineer in charge of the field work. The dredging was done by the Maryland Dredging Company, Baltimore, Md., while the construction of the pier was carried out by the Arthur McMullen Company, New York and Philadelphia. The elevator proper was designed by James Stewart & Co., Chicago, co-operating with the Pennsylvania and was erected by the former. The car unloaders were designed jointly by James Stewart & Co., and the Link-Belt Company, Chicago, the machinery being furnished by the latter company. The grain weighing scales were furnished and installed by the Standard Scale & Supply Company, Pittsburgh, Pa.

Wage Award Announcement Set for July 20

Definite Date Is Made Public to Allay Unrest Among Organized Employees and in Compliance with President's Request

Prodded by the President of the United States, by Government officials and by labor organizations, and confronted with sporadic "protest" strikes, principally of yardmen in Eastern terminals, the United States Railroad Labor Board issued a statement on June 25, through its chairman, Judge R. M. Barton, to the effect that a decision on the billion dollar wage demands of organized railway employees, which the board has had under consideration since April 20, will be announced on or possibly before July 20. The public hearings on these demands terminated on June 2 and since that time the Labor Board has been in executive session. The unrest which has been prevalent in the ranks of organized labor for the past year was aggravated by the apparent inaction and the silence of the board, and as a result many of the employees, particularly those engaged in yard service, went on "vacations" in protest. This recurring movement spread rapidly through the Eastern terminals and the situation was finally brought to the attention of President Wilson, with the result that on June 23 the following message was sent over the President's signature to the board:

"Reports placed before me show that the transportation situation is hourly growing more difficult, and I am wondering whether it would not be possible for your board to announce a decision with reference to the pending wage matters. At least, would it not be possible for your board, if it has reached no final conclusion relative to these vital matters, tentatively to agree upon a settlement or even a partial settlement?"

The reply to this message has not been made public, however. Two days later the following announcement was made by Judge Barton:

"The chairman is authorized to say that the board is earnestly and actively engaged in working out and formulating a decision, having agreed on a method of working out the problem.

"It takes time and great care to formulate a decision which can be clearly understood and applied without doubt of practical difficulty. The board and all its forces are engaged and are not losing an hour.

"The board will announce a decision on and possibly before July 20, 1920. This decision, when made, will take effect as on and of May 1, 1920."

Practically from the time the board was created pressure has been constantly brought to bear to render a decision. Representative after representative of the various labor organizations have daily called, telegraphed or written the board's headquarters in Chicago, requesting an audience with its members, or presenting statements concerning the alleged impossibility of holding the men at their work longer without increased compensation. In addition, representatives of the outlaw labor organizations, which have been instrumental in conducting the recent unauthorized strikes of switchmen, have maintained a barrage of questions, the purpose of which was to ascertain how the award of the board will apply to their members who are still "on vacation." This attempted intimidation of the board has led to the issuance of several statements by Judge Barton to the effect that the board would not under any circumstances be hurried in making its decision, but that everything possible was being done to expedite the final award and that all of its members were working ceaselessly to arrive at a just and reasonable decision.

Several of the labor leaders, particularly W. N. Doak, vice-president of the Brotherhood of Railroad Trainmen, have recently issued statements either in Washington or in Chicago assailing the principles upon which the board is established. However necessary these statements may be for the maintenance of brotherhood leadership, it is evident that they have resulted only in hindering the board and if anything the result has been to delay the decision.

At the same time Secretary Wilson of the Department of Labor declared in a formal statement that while the board had had a big task to perform it could "render no better public service in the existing situation than by coming to a speedier determination of the questions at issue before it."

All of these factors contributed toward forcing the board to name a definite date upon which it will make its award public. Now that this has been done, it is the opinion of several of the brotherhood leaders that labor conditions will begin to improve and that no further trouble should ensue, at least until after the award has been made.

Another angle to the relations between the sporadic strikes and the board's delay in reaching a decision was voiced by one of the members of the board, who stated recently that, in his opinion, these strikes are prompted by an internal fight for control of the railway unions and not primarily by dissatisfaction with wages. The wage question had been injected, it was intimated, to deceive the public and these unauthorized strikes will continue even after the wage case is settled.

There has developed as a result of the present wage controversy and of the position taken by the railway managers and by representatives of the employees, another struggle which promises to be of no little importance. Its outcome may affect the successful operation of carriers under the Transportation Act and it may result in the creation of a distinct third class, composed of supervisory employees as distinguished from the executives and managers and the employees.

During the recent hearings before the board many of the labor organizations, particularly the trainmen, clerical and station employees, telegraphers, signalmen, maintenance of way employees and shop craft employees, requested the establishment of certain rates of pay for members of their organizations who are "subordinate officials" and whose duties include the supervision of employees who are members of the same labor organizations. In the instance of the trainmen, demands were presented for the establishment of certain wage rates for yardmasters and assistant yardmasters, who are

members of the Brotherhood of Railroad Trainmen, and whose chief duty is the supervision of yard workers, many of whom are members of the same organization.

In the reply to the demands of the men, the managers questioned the right of the labor organizations to represent men who were serving in these capacities, saying that they were unable to see where any jurisdiction has been conferred upon any labor organization to represent subordinate officials, either in the Transportation Act or in the rulings of the Interstate Commerce Commission.

The next phase of the struggle began after the hearings before the board were closed. As stated before, the managers had opposed the inclusion of subordinate officials in any award which the board might make. Now the subordinate officials themselves have entered the fight with vigorous protests against their representation by any labor organization. Organizations of these men demand that any request made on behalf of employees doing supervisory work be ignored and that they be classed as officials and not with the men whom they supervise.

The Grand Order of Supervisors of Railroads, whose membership is composed of supervisory foremen in every department on over 56 different railroads, was first to file a protest with the board. Later the United Terminal Yard Masters' Association presented an intervening petition against the Brotherhood of Railroad Trainmen assuming to represent yardmasters as a class in demanding wage increases.

The contention of both of these organizations and of the managers is that it is not the intention of the Transportation Act to treat employees with supervisory duties the same as the various classes of employees. In addition, both of these protesting organizations and the managers called attention to the fact that the United States Railroad Administration, during the period of Federal control, issued instructions that subordinate officials were not subject to wage orders and that the Federal managers of the various roads, with approval of the Railroad Administration, should treat these employees as officers.

Hearings were held by the Interstate Commerce Commission for the purpose of determining what class of officers of carriers should be included within the term "subordinate officials" as that term is used in the Transportation Act. The resulting rule was, that subordinate officials are such as are not "vested with authority to employ, discipline or dismiss employees." This ruling of the Commmission has been interpreted as meaning that any supervisor who has any of the responsibility of employing, dismissing, disciplining or concerning wages or money, is an officer.

T. G. Poirier, first vice-president of the Grand Order of Supervisors of Railroads, in his petition to the board, said:

"Efficiency and production in this great nation of ours is the crying need, and in order to deliver and bring ourselves to a recognized standard, we nor any other supervisor can consistently be affiliated with the craft organization he supervises and be a success. The craft organizations surely realize that a man promoted from the rank and file to a supervisory position is promoted because either of his peculiar knowledge, education, talent or ability. Wouldn't it be a sad state of affairs if after obtaining his promotion, which was secured solely upon his own merits, he would be subjected to any legislation regarding wages and working conditions that his craft organization saw fit to give him."

Under the terms of the Transportation Act the carriers are granted adequate rates on the assumption that "honest, efficient and economical management" prevails. If the inclusion of supervisory officials in the labor organizations is consummated, the managers insist that they cannot be responsible for the proper functioning of the nation's carriers according to the terms of the Transportation Act.

Applications for Certificates of Convenience and Necessity

THE INTERSTATE COMMERCE COMMISSION has issued directions governing the filing of applications for certificates of public convenience and necessity or permission to retain the excess earnings of a newly constructed railroad in accordance with the provisions of the transportation act.

An application for a certificate of public convenience and necessity must set forth detailed information including the name of each state and of each county or parish in which such additional or extended line of railroad is proposed to be constructed or operated, or in which all or any portion of a line of railroad, or the operation thereof, is proposed to be abandoned; the location, route or routes and termini of the line proposed to be constructed, operated or abandoned; a brief statement of the reasons relied upon to show that the present or future public convenience and necessity require or will require the construction or operation or construction and operation of such additional or extended line of railroad or permit of such abandonment; and what hearing, if any, applicant desires in the matter of its application.

Upon receipt of any application for such certificate the commission will cause notice to be given to and a copy filed with the governor of each state in which such line is proposed to be constructed or operated, or the operation is proposed to be abandoned, with inquiry as to whether or not such governor or any representative of such state desires to be heard in the matter, and notification of the right to be heard as provided in the interstate commerce act with respect to the hearing of complaints or the issuance of securities, and the applicant carrier will be required to publish said notice and the copy of the application for three consecutive weeks in some newspaper of general circulation in each county in or through which the line of railroad is constructed or is to be constructed, or operates or is to operate, or all or any portion of a line of railroad, or the operation thereof, which is proposed to be abandoned.

Upon receipt of the application the commission will transmit to the applicant carrier a questionnaire or list of interrogatories to be executed, and the return to such questionnaire or list of interrogatories shall be made under oath and the original shall be signed and filed with the secretary of the commission on behalf of the applicant carrier by its president, a vice-president, auditor, controller or other executive officer having knowledge of the matters therein set forth. Copies of the returns made to the questionnaire or list of interrogatories will be furnished by the commission to the governor of each state interested, as in the case of the applications. With the return of the interrogatories the applicant carrier will be required to furnish proof to the commission that notice and copy of the application have been published for three consecutive weeks in some newspaper of general circulation in each county in or through which said line of railroad is constructed or is to be constructed, or operates or is to operate, or all or any portion of a line of railroad, or the operation thereof, which is proposed to be abandoned.

Any carrier, or any corporation organized to construct and operate a railroad, proposing to undertake the construction and operation of a new line of railroad and applying, to the commission, in accordance with paragraph 18 of section 15a of the interstate commerce act, for permission to retain for a period not to exceed 10 years all or any part of its earnings derived from such new construction in excess of the amount in said section previously provided, shall make application and return to the questionnaire ordered with respect to applications for certificates of convenience and necessity, and the procedure in such cases shall be substantially the same. The form of questionnaire is prescribed in the order.

Railroads Handle Increased Amount of Freight*

Transportation Situation Unsatisfactory, But Talk of Carriers Having "Broken Down" Is Baseless

By Samuel M. Felton
President Chicago Great Western

IT IS JUST FOUR MONTHS since the railways were returned to private control after twenty-six months of government operation. These four months have been a period of turmoil and stress in the railroad business. When the roads were returned the public was greatly dissatisfied with the results of government management, and more friendly to private management, than ever before.

In consequence of developments which have occurred, or which are alleged to have occurred, since private operation was resumed, the managements of the companies already are being subjected to bitter criticism by persons and newspapers who are in favor of government management, or of employee's management under the Plumb plan. While these attacks are unjust, they cannot safely be ignored.

The character of these attacks is illustrated by certain statements which a former prominent government official is quoted as having made in a recent address. He said, in substance, that during the war the railways had "broken down," that the government had to assume their operation to keep the country's commerce moving, that within a few months the government had the railways running efficiently, and that it continued to run them efficiently until they were restored to private operation. Now, he alleged, after they have been back in the hands of the companies only a few months they are again "broken down."

These allegations as to what occurred before the government took the roads and as to what has occurred since it returned them, are equally untrue. In 1917, the last year before government operation, the railways moved a much larger traffic than ever before, and continued to do so until the very day government operation was adopted. The Railroad Administration had power to do many things which the private companies previously were forbidden by law to do. Did the government, with all of its opportunities and power, increase the amount of traffic handled anywhere near as much in proportion as the private managements had been increasing it?

The increase in the freight handled in 1918, under government operation, was less than 2 per cent, and in 1919 the amount of freight handled was much less than it had been under private operation. If ever the effects of the so-called "breakdown" under private operation would have been plainly manifested, this surely would have been in the last two months of 1917, just before the government took the railways over. In those months the railways had to fight the worst weather conditions ever known. On the other hand, in November and December, 1918, the business offered to the railways under government operation was the largest ever known, and weather conditions were exceptionally favorable. Now, in the months of November and December, 1918, the number of tons of freight moved one mile under government operation was 69,193,000,000, while in the last two months of 1917, under private operation, it was 68,365,000,000, or barely 1.2 per cent less.

With respect to developments since the railways were returned to their owners, it must be admitted that they have been unsatisfactory to both the railway managements and the public. But consider for a moment the conditions that existed when the railways were returned. The government had followed a policy which many people at one time believed would render it impossible ever to return the railways to private operation. The official organizations of many roads were disrupted. Traffic was diverted from its normal channels. Freight cars were pooled and the cars of the various railways were scattered all over the country, so that even today the railways have upon their own lines only a small percentage of their own cars. Not a single passenger car was bought during the more than two years of government operation. About as many freight cars and locomotives were bought as had ordinarily been scrapped by the railways in a single year. Repairs of freight cars were so inadequately done that when the roads were returned an abnormally large number of freight cars were in bad order. The number of new rails and ties laid in the tracks was abnormally small. While the eight-hour day was established and advances in wages amounting to over $1,200,000,000 a year were made, railway labor conditions were not improved, but made much worse. For several months before the roads were returned the employees were demanding vast additional advances in wages. The government did not definitely grant or refuse these, thus greatly aggravating the dissatisfaction and unrest among the employees. Operating expenses increased enormously while no corresponding advances in rates were made, with the result that when the railways were handed back to their owners their net operating income had been practically wiped out. In February, the last month of government operation, the railways failed by about $12,000,000 to earn enough to pay their operating expenses and taxes.

In addition to all these things, there had been a strike in the coal mines in November and December, 1919. The accumulated fuel supplies of the country had been enormously reduced, resulting in great increases in the demands upon the railroads for transportation. The other kinds of traffic demanding movement also were larger than ever before. The Transportation Act was passed only a week before the railways were returned. Therefore, almost up to the day that they were returned there was such uncertainty as to their future that the managements of the companies could take hardly any important steps to provide for the resumption of their operation.

If there had existed no conditions except those I have mentioned to render enormously complex and difficult the problem presented to the managements during the months immediately following the resumption of private operation, the conditions I have mentioned would have presented a problem sufficient to tax their energy and ability to the utmost. In the latter part of March, however, less than a month after the roads were returned, there began a series of sporadic strikes on the railways in all parts of the country. These were "outlaw" strikes begun because of discontent created under government control.

The demands which the employees had before the Railroad Administration for months were then under consideration by the Railroad Labor Board, a government body which had been created by the Transportation Act to settle rail-

*Abstract of address delivered before the Chamber of Commerce of Kansas City, Mo., June 30, 1920.

way wage controversies. Since the railway companies could not have granted the demands of the employees without practically disregarding the provisions of the Transportation Act, and since the strikes came in less than a month after private operation was resumed, it is obvious that private operation should not be held responsible for the results produced by these strikes.

Increased Freight Handled

Many persons, however, seem to think, and some charge, that the railway companies have failed to meet adequately the situation created by the strikes and by the other conditions which they inherited from government management. Many seem to think, and some charge, that the serious industrial and financial conditions which developed were due to the fact that there was an enormous reduction in the amount of freight handled by the railways. As a matter of fact, in spite of all the adverse conditions with which they have had to contend the railways, even since the strikes began, have moved more business than they did in the same weeks of last year. Reports made to the American Railroad Association by a very large majority of the railways of the country show that between March 21 and June 12, 1920, which includes the period of the strikes, the number of cars of freight moved by these roads was 8,264,485, as compared with only 7,708,927 during the same weeks of last year, an increase of 555,518 carloads. In the week ended June 12 the number of carloads of freight handled by these roads was 754,857 as compared with 726,176 last year, or an increase in that week of almost 69,000.

Causes of Coal Situation

With respect to coal, the statistics of the United States Geological Survey show that up to June 12 the railways had transported 39,000,000 tons more than they did during the same period of last year. Why, then, are there complaints of a serious coal shortage all over the country? Chiefly because the country's coal supplies were enormously depleted by the coal mine strike last November and December, and that it has never been possible to offset this depletion of the supplies.

It seems to me the facts I have presented afford a conclusive answer to the propaganda which is being carried on to show that the railway managements, since private operation was resumed, have not solved as efficiently as could be reasonably expected the extremely difficult problem presented to them—a problem which is largely a heritage from government operation. In fact, I think they show that, considering all the conditions, the railway managements have been doing much better than might reasonably have been expected.

It is, however, far from my purpose to imply that the problem confronting the railway companies and the public is solved, or anywhere near solved. Unfortunately, it is far from solved and it will take not merely months, but years, of good understanding and close co-operation between the railway managements, the railway regulating authorities and the public to solve it in a way that will be beneficial and satisfactory to all.

Inadequacy of Railroad Facilities

There are many factors in the situation which are important, but perhaps the one which should give the most concern to the public, as well as to the railway managements, is the great inadequacy of the present facilities of the railways to the demands of the country's commerce.

Developments over a period of years have shown with increasing force and conclusiveness that the facilities of the railways have become insufficient to handle the commerce of the country. During the railroad strikes, many industries were forced partially or wholly to close down. This was not merely because of the strikes. It was due to the fact that before the strikes, even when the railways were operating to their capacity, they were not able to handle anywhere near all the traffic offered; and, of course, when the strikes reduced the amount of freight they could handle the industrial situation rapidly became acute.

Every day that the nation, or those who represent it in governmental affairs, delays to adopt the measures necessary to enable the railroads to expand their facilities, we are courting disaster.

The railways of the country as a whole are asking for an advance in freight rates averaging 28 per cent. After it had been made the advances in freight rates in this country since pre-war days would be less than the advances in the prices of almost any class of commodities or in the wages of almost any class of labor. Under government control freight rates were advanced 25 per cent. A further advance of 28 per cent would make the average advance since government operation was adopted about 65 per cent. The average advance in annual wages per railway employee since before the war has been 96 per cent, and the increases in the prices of almost all railway materials and equipment have been from 100 to 200 per cent. Government reports indicate that the increases in the prices of all the principal commodities that enter into the cost of living have averaged about 100 per cent. After the proposed advances had been made railway rates would be lower in proportion to general wages and prices than before the war.

A. F. of L. in Favor of Government Ownership

FOLLOWING are the resolutions with reference to government ownership of railroads adopted by the American Federation of Labor at its convention at Montreal on June 17:

"Whereas the organizations represented by delegates endorsing this resolution and several others have been and are now doing everything possible to educate the American people to the seriousness of the railroad situation, and the necessity for adopting some other means for operating the country's transportation systems in order to provide more adequate and cheaper transportation and to eliminate the sinister influence of railroad corporations from our national life, and

"Whereas the railroad question is an industrial question, it is also a social question, and it is far more than a question of dividends to stockholders or the wages of employees, it is a question that involves every industrial activity of the nation, and

"Whereas we believe that the continued operation of the railroads under the provisions of the transportation act of 1920 neglects all these questions and makes their solution impossible, and we believe further that the provisions of this act providing for a subsidy and the utilization of public funds by private individuals is a betrayal of the public interest and is subversive of the traditions of our country; and

"Whereas, the organizations represented by the delegates endorsing this resolution and several other organizations have, after careful deliberation and by instructions of their respective memberships, adopted and are advocating a plan providing for government ownership and democratic operation of the railroad properties; therefore, be it

"RESOLVED, That the fortieth annual convention of the American Federation of Labor go on record as indorsing the movement to bring about a return of the systems of transportation to government ownership and democratic operation; and be it further

"RESOLVED, That the executive council be and are hereby instructed to use every effort to have the transportation act of 1920 repealed and legislation enacted providing for government ownership and democratic operation of the railroad systems and necessary inland waterways."

The resolutions were adopted by a vote of 578 delegates, representing 29,159 votes in favor of the resolution and 8,349 against it. While the resolutions were advocated by representatives of the Plum Plan League and the language referring to "government ownership and democratic operation" is the phraseology used by the league, it is apparent that the language was purposely made vague in order to enlist votes of delegates who would not specifically approve of the Plumb plan, and no explanation seems to have been offered of the meaning of "a return of the systems of transportation to government ownership."

The vote came after a spirited debate during which President Gompers took the floor against the resolution. He said in part:

"I am not going to make any extensive argument upon the proposition. I merely want to call your attention to a few facts. One is that if this minority report is adopted and the government shall be persuaded to accept our point of view, then the government shall own and control and operate the railroads of our country and all railroad employees shall become government employees; that not only will the railroads be owned by the government, but all the attributes and all the tributaries to the railroad service will of necessity come under the ownership and control of the government of the United States; that all the employees of the railroads, on the tugs, on the ocean and coastwise traffic will come under the ownership and control of the United States; and the employees in all these services will become government employees.

"Under the control and operation of the railroads during the war the representatives of the railroads, then for the time being regarded as government employees, were prohibited by the director of the railroads from exercising any activity on the political field. I want to call your attention to these facts and the tendency to prevent the men of labor in all activities, in all forms of employment, from exercising their economic as well as their political rights, and particularly the employees of the government of the United States; and that government ownership simply means that the workers in these industries become government employees.

"Reference was made to the conditions in the United States, under which, under private ownership of the railroads, we were unable to do the service so necessary to winning the war. It was quite true that it was the government which finally took over the railroads, operated them, administered them and brought order out of chaos, inability and confusion, but the facts should be known in addition to the results. The facts are that if the railroad managers had attempted to do what the government did, the railroad managers would have been sent to prison for violating the terms of the Sherman anti-trust law. They were prohibited from doing the things that the government did and that the exigencies of the war demanded, and that is the reason why the government took over the railroads, because the railroad managers were not permitted to pool their issues or to pool their operations.

"I was in close touch with the situation before and during the war, and the president of one of the big railroads was a member of the Advisory Commission of the Council of National Defence, of which I also was a member. I know that the railroad managers were desirous of doing the things that the government did, but were not in position to do so without laying themselves open to the charge and the indictment that they were violating the expressed laws of the United States.

"I am merely presenting these matters to you, not argumentative, but to simply have you understand the situation. If I were in the minority of one in this convention, I would want to cast my vote so that the men of labor shall not willingly enslave themselves to government authority in their industrial effort for freedom. At least, so far as the record shall go, whatever shall betide us in the time to come out of the action of this convention, and out of the action of our government upon it, let the future tell the story who is right or who is wrong; who has stood for freedom and who has been willing to submit its fate industrially to the government even of our beloved country."

Car Service

WASHINGTON, D. C.

THE accumulations of freight cars had been reduced to 116,962 cars on June 11, according to reports received by the Commission on Car Service, as compared with 125,606, the preceding week, 159,209 on May 28 and 290,000 on April 16. The total for June 11 included 28,857, which connections were unable to accept, 36,560 for local destinations and 34,460 for export.

The car shortage, however, continues to show increases. For the week ended June 8 the average of deferred car requisitions was 114,042, as compared with 105,000 the preceding week. This included 30,803 coal cars.

The figures showing percentage of home cars on home lines for June 1 are not as favorable as anticipated. On May 1 the percentage for all cars stood 25.9. On May 15 this had dropped to 25.3 and on June 1 it had gained again to 25.7. There is an improvement in box cars in all districts except the Southern, coal cars show a falling off in all districts except the Allegheny, which remains at the May 15 figure—32.2 per cent.

It is expected that June 15 figures which will reflect the effect of relocation of cars under I. C. C. Service Orders 2 and 3 will show a distinct improvement.

In a circular addressed to the roads, Chairman Kendall of the Commission on Car Service says:

"This subject needs vigorous policing on the part of all. Will you lend your assistance toward making existing car service rules more fully effective?"

In order to comply with the President's proclamation of July 12, 1919, prohibiting the exportation of arms or munitions of war from the United States to Mexico, and to prevent the indiscriminate sale of arms and other munitions along the border, all railroads have been instructed to immediately embargo all shipments of arms and ammunition to Mexican border points except those covered by government bills of lading; or those that are authorized by proper military authorities, or those that are authorized to be exported into Mexico by a license issued under the authority of the Secretary of State.

The Commission on Car Service has issued the following summary of general conditions as of June 14:

Box Cars—There is an active demand for box cars in all parts of the country, and at no point are full requirements being met. The shortage is most pronounced in Central and Western districts. The movement of box cars to western territory from New England and the Southeast is progressing satisfactorily, and will result in improving the situation in that district. There is an acute shortage of ventilated box in the southern and southeastern sections on account of heavy vegetable crop already in process of movement. All lines have been asked to move this class of equipment in homeward direction empty in the event immediate loading is not available to southeastern or southwestern vegetable loading territory.

Automobile Cars—The demand for automobile cars continues active. Attention should be given to movement of this class of equipment in accordance with instructions in effect.

Flat Cars—In central and northwestern territory the demand for flat cars is considerably in excess of the available supply on account of heavy movement of agricultural implements, building material, etc. Shortages in southern territory also exist.

Stock Cars—Heavy loading of stock continues in the west, the demand being increased in the southwest by dry weather affecting pastures. This class of car is also in demand for loading watermelons and new potatoes in the southeast and southwest.

Refrigerator Cars—Heavy demand for refrigerator cars in California. Due to the co-operation of the railroads in hauling empties west we have so far reasonably met requirements. It is essential that this movement be continued. More than 500 cars are being loaded daily and the peak has not been reached. It is conservatively estimated that the total movement of perishable freight under refrigeration for June will amount to 17,000 cars and about the same for July. The movement westward should equal the daily loading. Banana loading New Orleans and Mobile protected. Arrangements made to increase supply for dairy products and meat in the west. Requirements for peaches and other commodities in southeast being met currently.

Open Top Cars—In the first half of June bituminous coal production shows a satisfactory increase over performance during the last half of May. Special instructions, placed with all carriers to the effect that coal production must be protected on a 50 per cent basis before open cars are distributed to other commodities, are expected to assist in increasing the coal production to what has been determined as absolutely necessary if seriously depleted fuel stocks are to be replenished during the period of favorable operating weather. The establishment of lake and tidewater coal pools by facilitating prompt unloading of coal at ports should further improve the situation. Special instructions have been issued requiring that mill gondola cars be moved promptly to the steel loading territories, and temporary restrictions have been placed against using this class of equipment in the automobile movement. Circular CCS-33, issued June 2, provides for temporary curtailment of distribution of open cars to commodities other than coal until coal needs have been reasonably met.

The car loading figures compiled by the Commission on Car Service continue to show large increases over last year, in spite of the strike and the congestion resulting from it. The reports for the weeks ending March 27 to May 22 were published in the *Railway Age* of June 11, page 1685. There are now available the reports for three additional weeks ending June 12, which show that for the 12-week period this year, 8,264,485 cars of revenue freight were loaded, as compared with 7,708,927 for the corresponding period of 1919. These figures do not include the Pennsylvania System and several smaller roads that have failed to report and which should add over 100,000 cars a week. Therefore they are not comparable with the figures for 1918, which include the omitted roads, but they do indicate a total 85 or 90 per cent of the loading for 1918. For that year the figures for the week of March 27 are not shown in the reports but for the 11 weeks ending June 12, 1918, the total was 10,789,051. For the three weeks since the publication of the previous report the revenue cars loaded were:

	1920	1919	1918
May 29	777,763	678,604	1,021,280
June 5	717,555	700,196	933,107
June 12	794,857	726,176	974,870

The accumulations had been reduced by June 18 to 106,107 cars, a reduction of 10,000 in a week. This brings the number down to about what it was in March, when the roads were returned to private management. The deferred car requisitions for the week ended June 15 were 114,103.

Records of the Commission on Car Service indicate that a number of roads are continuing in effect embargoes issued by regional directors prior to March 1. Some of the conditions influencing the issue of these embargoes have been corrected, but the roads on whose account they were laid have not issued cancellation notices, and in consequence embargo records of all roads generally are somewhat confused.

In order that this situation may be corrected in a uniform manner, the roads for whose account such embargoes were issued were instructed to arrange to cancel, effective July 1, all embargoes issued by regional directors; and where conditions demand the continuance of any of these embargoes they should be reissued according to practices now prevailing.

The effective date of the cancellation of these embargoes has been fixed so as to permit of ample time in which to review the files and prepare reissues where necessary for handling by mail, so as to avoid the expense incident to transmission by wire.

In Circular C.C.S.-45 the Commission on Car Service says that on account of the limited time in which to make shipments of threshing machines, tractors and other farm machinery intended for the handling of this year's crops, special attention should be given to the distribution of flat cars for the protection of such commodities and to that end the following instructions must be observed in the handling of flat car equipment:

1. Flat cars must not be used for the handling of passenger automobiles or other freight that ordinarily loads in other types of cars.

2. Flat cars may be used for loading automobiles boxed for export when shipping permits are authorized.

In a circular addressed to the railroads, the Commission on Car Service points out that the only authority in Service Order No. 1 of the Interstate Commerce Commission with respect to the rerouting of freight is contained in the direction to all common carriers by railroad "to forward traffic to destination by the routes most available to expedite its movement and relieve said congestion, without regard to the routing thereof made by shippers or by carriers from which the traffic is received." "This direction," the circular says, "does not contemplate a general disregard of shipper's routing. Under it freight can only be diverted when the result is to accomplish expedition of movement for the relief of congestion. All railroads must observe the direction to the letter. Rerouting other than where necessary to accomplish the specified result is unauthorized and must be avoided."

The Commission on Car Service has issued a circular, C.C.S.-47, regarding box cars covered by orders of the Commission on Car Service for movement from one railroad to another, which, the circular says, must be delivered through to the destination road specified without substitution or diversion except that equivalent cars may be substituted for such cars as become in bad order while in transit.

Unless otherwise specifically directed, box cars moving on such orders may be loaded, subject to the following conditions:

1. The permission hereby granted for loading will apply to the railroad originating the movement under the order, or to any railroad intermediate between the originating road and the final destination road.

2. Cars may be loaded only in blocks of 25 cars or more for movement intact to final destination road.

3. Cars may be loaded by one or more shippers providing they are assembled and delivered in minimum blocks specified.

4. Cars may be loaded only when destined to points strictly local to and for unloading on the rails of the final destination line. For instance, cars billed to the Great Northern Railroad could not be loaded to St. Paul unless

they were to be actually unloaded on the rails of the Great Northern; nor could they be loaded to a point beyond the Great Northern rails, even though routed via that road.

5. Cars may not be loaded to a destination on an intermediate road.

6. This permissive loading can only be taken advantage of when the routing for the loads follows strictly the routing specified for the empty cars under the commission order.

7. In order that the movement of such loaded cars may be definitely identified by intermediate and final destination roads as applying to such order, the following provisions must be observed. (The provisions referred to give instructions for reporting.)

8. Any loaded cars offered for interchange on a commission order contrary to the above provisions will not be credited on such order, and roads loading such cars will be required to make up deficiencies in deliveries.

9. The permissive loading provided for herein must not interfere with the delivery of cars in accordance with the average daily rate or other terms specified by the commission order.

10. These provisions do not apply to cars moving in accordance with Interstate Commerce Commission service order.

Circular C.C.S.-48 points out that just at this time, when the car situation is most acute, the Commission on Car Service is experiencing great difficulty in assembling necessary working data and compiling reports, on account of the failure on the part of some of the railroads to render reports promptly and in accordance with outstanding instructions.

The summaries of transportation conditions on the railroads which are compiled by its office are used not only by the Commission on Car Service but by the Interstate Commerce Commission as well, and in order that both bodies may properly function it is imperative that complete information be available by having the various reports come forward promptly.

The roads are asked to impress upon those responsible for the preparation and rendition of all reports to the Commission on Car Service the importance of furnishing reports as requested. It is also suggested that arrangements be made to have the office advised promptly if it is found that any report can not be furnished when due, giving in brief the reasons for delay.

Service Order No. 7 of the Interstate Commerce Commission being designed to increase coal production by requiring preferential placement of cars for coal loading, the Commission on Car Service has cancelled its Circular C.C.S.-33, which ordered a 50 per cent priority for coal in the use of open-top cars.

All carriers, both those east and west of the Mississippi River, are asked to note carefully the aim of Service Order No. 7 to increase coal production in mining territory east of the Mississippi River.

"Carriers west of the Mississippi River," its circular says, "must note that the obligation of the roads east of the river with respect to the preferential placement of coal cars in coal mine service cannot be met without the simultaneous strict performance by all carriers west of the river of all outstanding orders designed to move coal cars into the east. The cancellation of C.C.S.-33 should not be construed as indicative of any lack of necessity for the movement of coal cars from western lines back to the east."

The National Coal Association has issued a statement saying that although the order giving a 30-day priority to open-top cars to the bituminous coal mines had been in effect for 8 working days, only slight improvement in car supply was reported from the coal fields and that the majority of mines are experiencing car shortages running anywhere from 25 to 50 per cent of the normal supply. "The failure of railroads to comply with the commission's order has been due partly to the interference in movement of coal cars due to the switchmen's strike," the statement said, "but apart from this there is an apparent lack of disposition with some of the carriers to rigidly put the commission's order into effect. Many of the railroads still are allowing coal cars to be used, as formerly, for the transportation of other commodities, including pleasure automobiles, and in this way depriving the mines of the equipment so badly needed to ship coal.

"All over the country great manufacturing plants, public utilities and other large consumers are clamoring for an immediate supply of coal so as to avert a shut-down of industry. The coal operators can supply all the coal the country needs if the Interstate Commerce Commission's order is rigorously carried out. It is all a matter of coal cars and nothing else.

"While the cry has been raised against shipping any coal for export the fact is that almost no coal at all is being shipped out of the country at this time. In the 5 months ending May 31, only 4 per cent of the entire bituminous coal production of the country was exported."

The Interstate Commerce Commission on June 30 issued Service Order No. 8, because of an emergency with respect to the transportation of bituminous coal for the Philadelphia Electric Company, a public utility which operates lighting and electric power systems of the city of Philadelphia, Pa.

It appearing, according to the order, that the Philadelphia Electric Company has not a sufficient supply of coal with which to continue the operation of the lighting and electric power system and may shortly be obliged to discontinue operation unless immediate relief is afforded, the Pennsylvania Railroad and the East Broad Top Railroad & Coal Company were authorized and directed to assign cars to the Rock Hill Coal & Iron Company for the transportation of approximately 12,000 tons of bituminous coal now above ground to be shipped by that company from Orbisonia, Pa., to the Philadelphia Electric Company, Philadelphia, Pa., at the rate of 20 cars per day for 12 consecutive working days beginning with July 1, 1920, excluding Sundays and legal holidays, in addition to and without regard to the existing ratings and distributive shares for the mines upon said railroads.

A Company to Trace Baggage

The Trunk and Baggage Company, Inc., Chicago has recently been organized to prevent loss of baggage and luggage. The central office of the newly formed company is located in Chicago and branch offices are to be established throughout the country. The service rendered by the company is somewhat similar to the Key-Ring Register which is in common use. Trunks, suitcases, handbags and articles of luggage of any description may be registered with the name and address of the owner, a brief description of the article being kept in the central office of the company. Each article registered has an identification in a permanently attached numbered metal plate of attractive design, this number plate, which corresponds to the register records kept in the office of the company, providing identification for each article. Lost luggage generally accumulates in relatively few places, such as baggage check rooms and hotels. By pre-arranged plans with the agencies serving the traveling public articles lost or unidentified and bearing the registered metal disc can be returned promptly to the owner. This company also maintains a tracing department whose function it is to protect the luggage of the companies' subscribers against losses.

Majority of Shippers Favor Rate Advance

Summary of Testimony Before I. C. C. Shows Need of Carriers for Additional Revenues Fully Recognized

WASHINGTON, D. C.

THE SHIPPERS of the United States, as represented by their testimony before the Interstate Commerce Commission in the general rate advance hearings, are practically unanimous in favor of a substantial general advance in freight rates for the purpose of increasing the revenues of the carriers, at least to the extent of recognizing the necessity for an increase and offering no objection to any amount the commission may find justified. Since the presentation of testimony on behalf of the carriers was completed on June 10 the hearing has been devoted to the testimony of shippers and state railroad commissioners, either of a general character or with relation to the rates on particular commodities.

More than 100 witnesses appeared on behalf of shippers and while the *Railway Age* has published a general account of the progress of the hearings each week, it has seemed worth while, even at the risk of some repetition, now that the shippers' case has been completed, to go back over the record and present in brief form a summary showing the attitude expressed by each witness who has appeared in the case since the presentation of evidence on behalf of the roads was completed. Some of these appeared for their own companies or were delegated to speak for many companies in an industry. Many of the witnesses were officers of national or sectional associations representing particular industries or branches or groups of industries while others represented commercial organizations comprising shippers of all classes.

In a few cases lawyers made statements in the nature of testimony on behalf of organizations or groups of shippers. In many other instances companies or organizations were represented only by lawyers who attempted to serve the interests of their clients by emphasizing certain points by cross-examination of other witnesses so that no exact statement of their position can be made. Most of the state railroad commissions took no part in the proceedings. The group of commissions representing the intermountain states, that have long complained of what they regard as a discriminatory rate adjustment, appeared in an attitude of criticism of the carriers and asked that their rates be not increased until an effort has been made to provide the necessary revenue from other rates. A few other state commissions were represented by witnesses or by letters expressing their attitude, which was in general rather favorable to the carriers.

Many who testified strongly urged the necessity for an advance in rates for the purpose of putting the railroads in a financial condition that will enable them to render a more adequate service; others merely expressed an entire willingness to leave the matter to the judgment of the commission. Some thought the railroads get get along very well on less of an increase than the carriers have applied for and many offered reasons as to why their own commodity or section should receive less of an advance than is applied generally. Most of the shippers who appeared were interested in the methods proposed for applying the advance to the existing adjustment of rates and there was a sharp conflict of interest and of opinion as to the justice of a percentage basis of advance, but a majority expressed approval of the percentage basis proposed by the railroads, either because they considered that such a plan would be in their own interest or because it was regarded as the only practical way to make a general advance effective without undue delay.

The great majority expressed little concern as to the measure of the general advance but were vitally interested in the method of applying the advance and the effect on the relationship of rates as between competitors. The principal protestants at the hearing were the representatives of shippers, whose traffic moves for long distances to market in competition with others who have a much shorter haul and whose rates on a percentage basis would be increased by a greater amount than those of their competitors, to such an extent that many of them feared they would be unable to meet the competition. This class of witnesses has usually asked that the percentage increase be limited by a specific maximum, which was the plan followed by the Railroad Administration in many instances in putting into effect the 25 per cent increase in June, 1918. Another class of protestants included those whose prices are fixed largely by the demand at the markets and who, therefore, pay the freight rates directly.

In the following summary, taken from the official stenographic record of the hearing, an effort has been made to state as concisely as possible the general position expressed by each witness as to the need for an advance in rates, the amount of the increase and the method to be used in applying it. In most cases it has been possible to do this in the exact language of the witness, although frequently in a greatly condensed form. Naturally it has been impossible in so brief a form to include all of the qualifications which a witness may have expressed or a complete interpretation of the meaning he may have attached to general phraseology. In some instances a witness who began by saying he was in favor of a "substantial," a "generous" or a "reasonable" increase, later made statements which indicated that his ideas were less liberal than some others might assume from the expressions used, while frequently a witness who began by objecting rather violently to the method of increasing rates proposed by the carriers later indicated in response to questions that he was in no way objecting to any advance even in his own rates but was merely trying to reduce the amount of the proposed increase or to preserve some relationship.

The vital necessity for improved transportation service was strongly emphasized by a majority of the witnesses and a large number showed that they were far more interested in service than in the amount of the rate and were in favor of allowing the carriers sufficient revenue to enable them to give better service. On the other hand, many of those who were asking for an exception or modification in their favor declined to recognize any connection between the rate level and service, although many who asked for special consideration rested their argument on the condition of their own business, rather than upon any lack of appreciation of the railroads' difficulties.

The summary follows:

General

R. M. Field, representing National Industrial Traffic League and Illinois District Traffic League.—Presented statement by special committee, N. I. T. L., authorized by executive committee, emphasizing need for an increase in rates to enable roads to increase facilities and improve service, but making no argument on measure of rate advance. Personally he expressed opinion carriers had not asked for enough.

J. M. Belleville, traffic manager, Pittsburgh Plate Glass Company, Pittsburgh.—"We do not believe that improved transportation service can be given unless it is paid for and we are entirely willing to accept what the commission finds is a proper and just rate and to pay it very cheerfully."

Martin J. Parlin, traffic manager, Belknap Hardware Manufacturing Company, Louisville, Ky.—Described effect on his

company of impaired service and said he was willing to leave amount of advance to commission.

C. L. Lingo, traffic manager, Inland Steel Company, Chicago, and appearing for traffic committee, Illinois Manufacturers' Association.—Authorized by association to say the Interstate Commerce Commission "should be as liberal in the treatment of the railroads' request for increased rates as the law will permit." Favored straight percentage advance.

J. H. Beek, Chicago, executive secretary, National Industrial Traffic League, speaking on behalf of St. Paul Association of Public and Business Affairs.—Instructed to say that the receivers and forwarders of freight of St. Paul "favor such an increase in rates as in the judgment of this commission is necessary to properly restore the transportation facilities of the country."

M. M. Caskie, traffic manager, Montgomery, Ala., Chamber of Commerce, appearing for Southern Traffic League.—Said law prescribes approximate measure of revenue to which railroads are entitled and presented exhibits to show that earnings of Southern lines in three months of 1920 do not justify as much of an increase as they have asked.

H. T. Moore, traffic manager, Atlanta Freight Bureau.—Concurred in views expressed by Mr. Caskie and said statement of National Industrial Traffic League does not correctly represent views of governing board of Southern Traffic League nor of Atlanta Freight Bureau.

H. W. Prickett, manager Traffic Service Bureau of Utah, representing also Chamber of Commerce and Commercial Club of Salt Lake City and Traffic Bureau of Utah.—Carriers serving intermountain section should be segregated and rates in other sections equalized before there should be any increase in intermountain rates.

James Q. Gulnac, Bangor, Me., representing Bangor Lumber Company, Passadumkeag Lumber Company, State Pier Commission, Commission of Foreign and Domestic Commerce of State of Maine, Maine Press Association, Maine Railroad Commission, Maine Chamber of Commerce, Maine Agricultural League, and Maine State Grange.—"Realizing how vitally we are interested in the railroads, we are very willing that our rates should be increased whatever amount it is necessary to increase them to give us good service. We are prepared to pay our share. The only thing we ask is that the increase be a percentage increase, and that it be for Maine and for New England the same as to all the rest of Official Classification Territory."

R. C. Fulbright, Southwestern Industrial Traffic League, Texas Industrial Traffic League and Texas Ports Traffic Association.—"It is the position of the Southwestern Industrial Traffic League that the carriers do need more revenue. We are not in a position to say what we think that increase should be, but as far as we can tell we are of the opinion that there should be a substantial increase in the rates of the carriers. We furthermore believe that the action should be taken as promptly as possible. Increase should be uniform throughout Western Classification territory and differentials that are established and recognized by this commission should not be increased materially." He opposed a special increase for Southwestern lines.

Clifford Thorne, Chicago, on behalf of Farmers' National Grain Dealers' Association and 412 independent oil companies.—"The issue in this case is not whether an advance in rates should be granted; but the issue is, how much of an increase is justified. All of those for whom I speak want to see the railroads self-sustaining." He suggested that the roads be allowed 6 per cent on a basis reached by capitalizing the standard return at 6 per cent and adding thereto the addition to property made since December 31, 1917, and also the investment in non-federal controlled lines, less depreciation and plus increase in materials and supplies, a total of $16,611,050,649, on which 6 per cent would be $996,663,036. By making allowance for increases in traffic he estimated the roads would need an increase of 12.85 per cent in total revenues, or 18 per cent on freight traffic, reducing the amount asked by carriers by $386,000,000.

A. F. Vandegrift, manager traffic department, Louisville Board of Trade.—Presented resolution adopted by board expressing opinion that applications of carriers should be carefully analyzed by commission, that necessary revenue should be derived from increase in passenger rates on proper relative relation with a reasonable increase in freight rates, that proper relationships should be preserved, and questioning the soundness of property investment account as basis of value.

Raymond L. French, Manufacturers' Association of Connecticut.—"Carriers, in order to transact their business as it should be done, should receive such increase as is necessary," but association favors specific increases on low grade commodities, and a percentage on high grade commodities.

Coal and Coke

O. E. Harrison, Southern Coal Operators' Association.—"We have nothing to offer relative to the carriers' necessity for more revenues to meet the requirements of a satisfactory service, which we must have. If their prosperity is really threatened no citizen and surely no shipper should deny them a just measure of relief." Objected to method proposed for adjusting coal rates.

W. J. Womer, Chicago Coal Merchants' Association, also traffic manager, The Consumers' Company, Chicago.—Objection of the association is not to the measure of the increase, but to the method carriers propose, which would disturb differentials as to destination rates.

H. M. Waybright, Pittsburgh Coal Producers' Association.—"We recognize the need for an immediate increase in the revenues of the railroads sufficient to insure their solvency and prosperity by means of an increase in freight and passenger rates. Public welfare might be conserved by adopting a higher percentage of increase on freight of greater value and a lower percentage than proposed on coal." He favored increasing lake cargo coal rates by a uniform percentage rather than a uniform increase in cents.

C. O. Elbert, for Northern Illinois or Third Vein district Coal operators.—If commission finds that carriers are entitled to an advance in freight "we are perfectly agreeable to accepting whatever this commission finds," and coal should bear its burden on exactly the same basis as all other commodities, strictly on a percentage basis.

W. A. Holley, Central Illinois Coal Traffic Bureau, Chicago.—"The carriers need and are properly entitled to additional revenue and we have no objection to such award as the commission may make increasing existing rates to meet the requirements, provided the increases are applied for the purpose required and spread fairly over the whole traffic. We concur in the suggestion that a straight percentage basis be applied." Percentages proposed satisfactory except the 27 per cent from Indiana-Illinois mines to Wisconsin and Minnesota. Should be same as from the docks.

C. P. Hoy, for Fifth and Ninth Illinois districts Coal Bureau.—Percentage basis should be applied. Not opposed to carriers being granted whatever increase in rates commission may determine they are properly entitled to.

W. A. Prinsen, for Northwestern coal docks.—Matter of providing additional revenues is for commission and railroads to decide. If more money is required to have a proper transportation system, the docks desire that revenue to be furnished. Asked restoration of adjustment with relation to competition from Illinois.

F. T. Bentley, traffic manager, Illinois Steel Company, and constituent companies of the United States Steel Corporation.—Only practical way is to place straight percentage advance on all commodities everywhere.

C. E. Warner, traffic manager, Southwestern Interstate Coal Operators' Association, also speaking for Oklahoma Coal Operators' Association.—Favored percentage advance. No opposition to any general increase commission may find necessary.

George Heaps, Jr., representing Iowa Coal Operators' Association.—If in the opinion of the commission it is found necessary to increase all rates in effect, he urged that coal rates in West be increased by adding flat percentage.

S. L. Yerkes, representing Alabama Coal Operators' Association.—Bearing in mind the necessity of providing promptly increased revenues for carriers, the association interposes no objection to such increases as commission may find proper. Favors percentage increase in coal rates.

George M. Cummins, Davenport, Ia., representing public utilities and consumers of coal in Davenport, Rock Island and Moline.—Not objecting to any increase commission may find necessary under the law. "We desire railroads to get sufficient revenue to rehabilitate the transportation systems and give us the service we are in need of." In favor generally of percentage increase on coal rates.

Grain and Grain Products, Livestock and Packing House Products

A. F. Vandegrift, appearing for Cairo, Ill., Board of Trade; Evansville, Ind., Chamber of Commerce; Henderson, Ky., Chamber of Commerce; Louisville, Ky., Board of Trade; Memphis, Tenn., Merchants' Exchange; Merchants' Exchange of St. Louis; New Orleans Board of Trade; Omaha Grain Exchange; Board of Trade of Kansas City; Traffic Bureau of Nashville, Tenn.—Presented resolution adopted at conference of these markets at St. Louis, May 17, urging that commission, following its determination of amount of increase, require carriers to so adjust their rates as to yield

amount of revenue required and at same time preserve present equalization between these markets.

C. B. McGinnis, Memphis, Tenn.—In favor of percentage advance.

E. H. Hogueland, Southwestern Millers' League.—"We are not opposing any necessary and proper increases in freight rates. We have two principal interests in this case. One is to see that the carriers secure enough money to restore reasonably adequate service. Perhaps our most vital interest is the maintenance of rate relationships to and through the grain markets." Favored specific advances on different rates.

F. S. Keiser, Duluth Board of Trade.—"We advocate any advance which commission may deem necessary to place railroads on a stable financial basis. We make no objection to the western carriers' proposal of advancing grain rates, to the method proposed or the measure involved." Objected to any advance which will increase earnings of Great Lakes Transit Corporation.

Henry T. Clarke, Omaha Grain Exchange.—"The Omaha Grain Exchange is in favor of such increased rates as this commission may deem reasonably necessary for adequate service. If the percentage increase applied for by the carriers is granted, the adjustment as introduced by the carriers is satisfactory to us."

B. Needham, master Kansas State Grange, and representing also Kansas Agricultural Council.—"We insist that the freight rate increase at this time shall be only such percentage as will produce the minimum required by the railroads, after the utmost economy and efficiency in labor and management shall be put into effect," and that "no decision shall be reached which discriminates against agricultural, or in favor of any other industry." Particularly opposed flat increases on grain and live-stock rates in Kansas territory. Favor percentage only. Said statement was approved by T. C. Atkeson, Washington representative National Grange.

Clifford Thorne, on behalf of Farmers' National Grain Dealers' Association.—Asked 6 cent maximum increase on grain, that Illinois be divided between Eastern and Western districts, and that equalization of rates be preserved while keeping the advance within the increase on other commodities.

Walter E. McCornack, representing Interior Iowa packers.—Asked percentage advance on livestock and packing house products without any maximum but with restoration of former relation between live-stock and products.

A. Sykes, Ida Grove, Ia., vice-president, National Livestock Shippers' League and president, Corn Belt Meat Producers' Association.—Application of carriers proposes to place an additional burden on an already overburdened industry. Did not say no advance should be made on livestock but that the industry should be given special protection.

E. B. Spiller, secretary and general manager, Cattle Raisers' Association of Texas.—"We do not take the position there should be no increase in rates on livestock, but the increase should not be in excess of the absolute minimum which the commission finds to be necessary.

J. H. Mercer, president, National Livestock Shippers' League and secretary, Kansas State Livestock Association.—Should be no increase in rates until commission has made fullest investigation, and if it should be determined that increase should be made, depressed condition of livestock industry should be given special consideration.

Sand, Gravel, Cement, Brick, Etc.

O. P. Gothlin, for National Association of Sand and Gravel Producers.—"Revenues derived from sale of transportation service are inadequate; there should be an advance in the general level of rates, but a blanket advance on all freight rates would be unwise and unjust. Another advance now will be disastrous to sand and gravel business and it should receive less advance than some other commodities now enjoying low rates."

V. O. Johnson, president, National Association of Sand and Gravel Producers.—Should be no advance in sand and gravel until other rates that are unduly low are raised to a reasonable level.

W. P. Carmichael, producer of sand and gravel in Indiana. —30 per cent increase on sand and gravel would be disastrous.

E. Brooker, traffic manager, Pennsylvania Sand & Gravel Producers' Association.—"Operators I represent appreciate the needs of the carriers for additional revenue, in order to provide more adequate transportation facilities, but feel such additional revenue should be obtained on commodities not now bearing their proper share of transportation costs."

R. E. Riley, for Silica Sand Producers of Northern Illinois.—"Association supports this application in so far as it is necessary to provide funds for rehabilitation of the transportation industry. Sand is already carrying about all it can and we ask that this industry be given consideration so it will not be necessary for these carriers six months from now to come to this commission for another advance to make up for the business that has been annihilated."

John Rice, Easton, Pa., president, General Crushed Stone Association and National Crushed Stone Association of the United States.—Crushed stone, sand, gravel and slag are least able of all traffic to stand an increase. Rates already relatively too high. Association asks no selfish advantage and hopes that sympathetic consideration of the problem may be given by commission.

John C. Graham, Michigan Portland Cement Company, Chelsea, Mich.; Newago Portland Cement Company, Newago, Mich.; Peerless Portland Cement Company, of Union City, Mich., and Peninsular Portland Cement Company, of Cement City, Mich.—Cannot stand higher rates.

J. F. Lockley, Newago Portland Cement Company, Newago, Mich.—Protested against further advance on quarry scrap and shale, but not on coal or other materials nor cement.

T. F. McClaren, Peninsular Portland Cement Company, Cement City, Mich.—No objection to whatever general advances in rates may be necessary to insure railroads added revenue sufficient to take care of their needs. Objects to any further advances on clay and limestone, but not on other inbound supplies or on outbound product.

A. J. Ribe, traffic manager, Birmingham Slag Company, Birmingham, Ala.—"We do not object to a freight advance for the future, but we are anxious before an advance is made, to knock out a double advance we are now paying on combination rates. We prefer a specific to a percentage advance."

George J. Frye.—"We believe it to the public interest that an advance in rates shall be granted at this time and shall have no objection to our industry bearing its proper proportionate share, but feel that preference should be given us, on blast furnace slag."

C. D. Curtis.—Read statement by American Association of State Highway Officials objecting to amount of proposed increase on roadbuilding materials.

F. T. Bentley, traffic manager, Illinois Steel Company, Chicago.—Urged a straight percentage advance on stone, gypsum, slag, etc.

James Bale, Grand Rapids, Mich., Plaster Company, also speaking for United States Gypsum Company, Acme Cement Plaster Company, St. Louis, American Cement Plaster Company, Chicago, American Gypsum Company, Port Clinton, Ia., Cardiff Gypsum Plaster Company, Ft. Dodge, Ia., Centerville Gypsum Company, Centerville, Ia., Cement Securities Company, Denver, Colo., Michigan Gypsum Company, Grand Rapids, Mich., Plymouth Gypsum Company, Ft. Dodge, Ia., Wasen Plaster Company, Ft. Dodge, Ia.—In favor of a flat advance in cents per 100 lb.

G. W. Oliver, statistician, Chicago, appearing for National Paving Brick Manufacturers' Association, American Face Brick Association and Hollow Tile Building Association.—Rates on brick in C. F. A. and Trunk Line territory already too high.

B. L. Glover, Iola Cement Mills Traffic Association of Kansas City.—"We are not opposed to the carriers receiving an increase in revenue, if, where and to the extent it is shown they are rightfully entitled to it. Any increase in rates on cement should be made by adding to present rates a fixed amount in cents per 100 lb."

F. T. Bentley, traffic manager, Universal Portland Cement Company, Chicago.—"Our position is for a straight percentage advance on rates as they lie. There has been no difficulty in selling cement. The entire difficulty is in getting it moved."

F. E. Paulson, general traffic manager, Lehigh Portland Cement Company, Allentown, Pa., also speaking for about 40 cement companies.—"If the commission finds the carriers are in need of additional revenue, we are willing to bear our share of the transportation burden, but we are here in opposition to a percentage advance in cement rates and in support of a flat advance, the amount to be determined from the evidence."

Walter Young, general traffic manager, Atlas Portland Cement Company, New York.—"The company supports the application of the carriers for a percentage increase in their revenue as applied to the shipment of cement."

Frank E. Guy, eastern traffic manager, Universal Portland Cement Company, and three other cement companies.—"We are in favor of an advance in freight rates. We believe the railroads are entitled to the same. What that advance should be we will very gladly leave to the Interstate Commerce Com-

mission, but the advance should be spread over the entire industry on a percentage basis."

Petroleum and Products

J. S. Wood, vice-president Mexican Petroleum Corporation.—In favor of a percentage advance from all shipping points.

Edward H. Shelley, traffic manager, Tidewater Oil Company.—In favor of a percentage advance.

William Jervis, Texas Company.—"We consider a flat increase as being illogical and favor the percentage increase."

E. A. Fall, Inter-Ocean Oil Company, Baltimore, Md.—In favor of a percentage advance.

F. W. Boltz, traffic manager, National Petroleum Association, representing 51 refiners in Official Classification Territory, members of the association.—"The application of the carriers, in so far as rates on petroleum and its products are concerned, between points in the eastern district, if any increase is permitted, should be modified." Proposed increase too large, but if any increase is to be made would be inclined to favor a percentage with a maximum increase in cents per 100 lb. of a very nominal amount.

A. C. Holmes, Tulsa, Okla., traffic manager, Empire Refineries, Inc., and chairman of transportation committee, Western Refiners Association.—"Possibly the transportation companies are in need of more revenue; that is for the commission to determine. We believe this commodity is now bearing more than its fair share of the country's transportation charges." Favored percentage with a maximum.

Pat Malloy, Tulsa, Okla., president, Western Petroleum Refiners' Association.—"We are in favor, if an increase must come at all, of a flat increase as opposed to a percentage."

Lumber

W. J. Strobel, traffic manager, North Carolina Pine Association.—"We believe the carriers are entitled to an advance in rates but to what extent we are not prepared to state. We are of the opinion that the commission will grant that which they are justly entitled to. We do most urgently recommend a straight percentage basis."

Ray Williams, for Cairo, Ill., Association of Commerce, also for Paducah, Ky., Metropolis, Ill., and Thebes, Ill., lumber interests.—"We leave it entirely to the commission as to how much the carriers require." Urged a percentage advance applied to the rates as they were before General Order No. 28 to correct what he considered a maladjustment made at that time.

A. G. T. Moore, traffic manager, Southern Pine Association, New Orleans.—"Carriers should have a general advance in rates to enable them to meet the heavy increase in the expense of operations. We express no opinion as to the measure of the advance. We approve the proposal of the carriers to apply a straight percentage increase on all traffic generally."

W. E. Gardner, traffic manager, Georgia-Florida Sawmill Association and traffic manager, Southern Crate Manufacturers' Association.—"The percentage increase is the proper method of supplying the revenues which may be required under the transportation act by the carriers."

U. S. Musick, Cairo, Ill., Association of Commerce, and lumber interests of Cairo and nearby territory.—"We are not at present concerned in the measure of the rates to be promulgated. We feel the commission will know best what rates to allow. We know that the railroads must have more money to operate and we know that we must have railroads. We ask you to fix such increase as is needed so that lumber will pay its just part of the money to be raised." Objected to present adjustment of rates.

V. W. Krafft, for Associated Cooperage Industries of America.—"The association and its members are willing to pay any advanced rates necessary to rehabilitate the transportation system and keep it in operation as an effective machine, but are opposed to a percentage increase, believing the best interest of all parties will be served by an increase of a specific number of cents per 100 lb."

E. L. Carpenter, for Northern Pine Manufacturers' Association and Western Pine Manufacturers' Association.—"I assume that the lumber business must stand its fair share of whatever increases are necessary to operate these roads efficiently and economically. A percentage increase on the product of the Inland Empire, Oregon, California and Washington, would undoubtedly have the effect of decreasing the amount of lumber that could be put into competitive markets."

E. E. Williamson, for Northern Pine Association, Western Pine Association, California White and Sugar Pine Association, and Southern Hardwood Traffic Association.—The western lumbermen are not opposing a rate increase. If a rate increase is to be made on lumber the interest of the industry, the country, and of the railroads will be best subserved by making that upon a per cent basis, subject to a maximum charge.

Donald D. Conn, traffic manager, Shevlin, Carpenter & Clark Company, Minneapolis, and also representing same associations as Mr. Williamson.—"The lumber producers of the west are not here to oppose reasonable rates but a percentage increase on lumber will destroy existing relationships and seriously affect the ability of the western producers to distribute their lumber in C. F. A. and Trunk Line territory." Favored a percentage subject to a maximum.

J. H. Townsend, secretary and manager, Southern Hardwood Traffic Association, Memphis, Tenn.—"Carriers are entitled to increased revenue in order to meet increased operating costs and to supply adequate equipment and transportation facilities, but forest products cannot bear as great an increase as the general class of traffic and continue to move." Favored a percentage subject to a maximum.

A. C. Dixon, Eugene, Ore., vice-president, West Coast Lumbermen's Association and chairman, traffic committee, Willamette Valley Association.—"At this time and under existing conditions, it is our opinion that the lumber industry on the coast cannot pay the increase suggested by the western carriers, or anything approaching that increase. Such an increase as proposed will close down a great many mills immediately. We object to the amount of the increase as asked for by the western carriers as a whole and do not agree with them as to property value, the grouping or the use of the year 1919 as a representative year. We feel our shipments should not be taxed further until proper and proportionate advance has been made in passenger fares."

Julius H. Brown, chairman, traffic committee, National Lumber Manufacturers' Association, representing redwood industry of California.—Desire commission to grant such increase as is necessary but objected to a percentage increase unless subject to maximum.

Fruits and Vegetables

Joshua C. Chase, president of Chase & Co., Jacksonville, Fla., growers and distributors of Florida fruits and vegetables, also representing other growers and exchanges.—"We do not feel the advance of 31 per cent demanded by the railroads in the Southern territory is justified or desirable so far as the rates on Florida fruits and vegetables are concerned."

R. S. French, for National Apple Shippers' Association, National League of Commission Merchants of the United States, and Western Fruit Jobbers' Association of America.—"We fully recognize the carriers' needs for increased revenue and their establishment upon a financial basis which will enable them to meet the country's transportation requirements with proper efficiency. The fresh fruit and vegetable industry, as represented by this organization, is willing to pay such advances as may be necessary, consistent with the maintenance of production and the movement of that production at a fair profit." Objected to percentage advance on ground the industry cannot stand it, unless limited by a maximum.

E. G. Dezell, director and member traffic committee, California Citrus League and assistant manager, California Fruit Growers' Exchange.—Present rates on oranges too high and percentage increase would pyramid the overcharge.

W. H. Young, Fremont, Neb., for Nebraska Potash Producers' Association.—Proposed increase on coal, oil and potash would make it necessary to close down plants.

Ore

W. W. Collin, for Jones & Laughlin Steel Company, Pittsburgh.—Most essential to assure to carriers the full measure of increase to which they are entitled. Submitted proposed plan for increasing rates designed to produce full percentage of revenue but to preserve present differences as between furnace points. Should be no percentage increase on northern lines from mines to lake ports because they received an increase in 1918, when lines from lake ports to furnaces did not, but he proposed to add 74 cents a ton to rates as they were in 1917, that the entire movement be treated as a through movement, and that the revenues of the lines south of the lake ports be taken care of through the medium of divisions in order to divide the revenue equitably.

Jean Paul Muller, attorney for 68 members of Lake Superior Iron Ore Association, also blast furnace interests in Cleveland, Toledo and Detroit.—Protest against any increase in iron ore rates now in effect from mines to upper lake ports.

H. D. Rhodehouse, traffic manager, Chamber of Commerce of Youngstown, O., appearing for Republic Iron & Steel Company, Youngstown Sheet & Tube Company, Brier Hill Steel Company, Sharon Steel Hoop Company, Shenango Furnace Company, and Trumbull Steel Company.—Protest against any increase in iron ore rates from mines to upper lake ports. If commission should find rates from ports to furnaces do not produce sufficient revenue for carriers' needs, they suggest that

present rates to all consuming districts be advanced by an equal percentage. Cambria Steel Company and Midvale Steel Company take exception and propose a flat increase in cents if any advance is made in rail rates south of ports.

E. V. Benjamin, representing Myles Salt Company, New Orleans.—Opposed proposed increase in his rates on ground that it would shut his product out of markets.

James P. Daly, traffic manager, Donner Steel Company, Buffalo, N. Y., also representing Lackawanna Steel Company, Rogers, Brown & Company, Buffalo Union Company, and Wickwire Spencer Steel Corporation.—"We object to no reasonable rate increase." If increases in ore rates are to be granted they should be based on the rates in effect before General Order No. 28 and applied by a uniform percentage.

James Brown, President, Gulf States Steel Company, Birmingham, Ala., also appearing for Alabama Company, Sloss-Sheffield Steel & Iron Company, Woodstock Iron Corporation, Sheffield Iron Corporation, and Republic Iron & Steel Company.—"Do not come in the attitude of habitual or professional objectors; they realize the existing condition affecting the railroads and the shippers are the result of war. Object of present application is to support a just and equitable advance in freight rates generally for the railroads of the South," but local situation resulting from General Order No. 28 requires adjustment before new increase can properly be applied. A 25 per cent advance should be applied to rates in effect before General Order No. 28 and such general advance as commission now finds called for should be superimposed.

Robert Hula, traffic manager, Steel & Tube Company of America, Chicago, also authorized to speak for By-Products Coke Corporation.—"We are not appearing in opposition to a reasonable increase as the circumstances require, but we are opposed to the method sought to be applied." Proposed addition of 25 per cent to ore rates in effect prior to General Order No. 28 and addition of new percentages, 24 per cent for western roads and 30 per cent for eastern roads.

C. L. Lingo, traffic manager, Inland Steel Company, Chicago.—Opposed increase on ore for northern ore carriers. Proposed readjustment to give lines south of lake ports the increase they did not receive from General Order 28 by taking it from northern lines.

Frank R. Raiff, traffic manager, American Smelting & Refining Company, also representing American Smelters Securities Company, Anaconda Copper Mining Company, Baltimore Copper Smelting & Rolling Company, Chino Copper Company, Federal Lead Company, Garfield Smelting Company, Nevada Consolidated Copper Company, Ray-Consolidated Copper Company, United States Smelting, Refining & Mining Company, United States Zinc Company, and Utah Copper Company.—Objected to superimposing proposed increases upon present rates on bullion. "We are not questioning any advance that may be necessary on the general tonnage."

Miscellaneous Commodities

J. J. Wait, traffic manager, Hibbard, Spencer, Bartlett & Co., appearing for special committee, Chicago Association of Commerce.—"Nearly all shippers are in favor of immediate increases in rates." Asked that base rates from Chicago to Missouri river be increased by specific advances in order to preserve differential relationship with St. Louis, which would be destroyed by percentage advance.

James R. Hanahan, manufacturer commercial fertilizer, Charleston, S. C., and appearing on behalf of independent fertilizer plants at Wilmington, Charleston, Savannah and Jacksonville.—"Fertilizer interests are not opposed to an increase in rates needed to increase the revenues of the railroads," but proposed increase on fertilizers would operate to disadvantage of plants located at the ports as compared with their competitors at interior manufacturing points.

T. A. Bosley, Richmond, Va., assistant traffic manager, Virginia-Carolina Chemical Company, appearing also for Southern Cotton Oil Company, Charleston, S. C., Mining and Manufacturing Company.—Favored straight percentage increase on commercial fertilizers.

W. J. Womer, Chicago, for National Association of Ice Industries.—Ice should be excepted from advance on the ground that rates are now higher than general level.

C. C. Ferber, Tobey-Hanna Ice Company, Scranton, Pa.—Ice should be excepted from advance on the ground that rates are now higher than general level.

James S. Davant, commissioner, Memphis Freight Bureau.—Cotton receivers and shippers would cheerfully submit to any increase on rates on cotton commission may find proper and necessary, but hope commission will instruct an equalization at Memphis of through rates on cotton. Increase should be based on rates in effect prior to General Order No. 28, adding 25 per cent plus new increase resulting from this case.

J L. Roberts, representing H. F. Watson Co., F. J. Lewis Manufacturing Co., Barrett Co., and Chatfield Manufacturing Co.—"Parties I represent do not object to paying their share of the increase in revenues which they feel the carriers should have," but said that if 30 per cent is added to both inbound and outbound rates on tar and pitch they will be paying a double increase as compared with articles with which these products are in active competition.

State Commissions

A. L. Flinn, Minnesota Railroad and Warehouse Commission.—Presented statement by commission that some increases in rates probably are necessary but it has no definite information on the subject. Passenger rates should not be increased. No objection has so far appeared to straight percentage increase, so long as proper relationship is maintained. Should be some understanding as to how proceeds are to be used so far as purchase of new facilities is concerned.

J. B. Campbell, Spokane, Wash., representing various shippers' associations and counsel for state commission of Washington, Montana, Idaho, Utah, New Mexico, Nevada and Arizona.—"The cure of the existing evils in rate-making will very largely cure the canker of insufficient revenue. The present need of the carriers is not so much a matter of increased revenue as it is efficiency of service. The carriers in the mountain states are in need of but little, if any, increased revenue.

Fred A. Williams, member Public Service Commission of Oregon.—Opposed giving roads or northwest percentage needed by all western roads, on ground that it would reduce traffic from his state.

O. O. Calderhead, statistician and traffic expert, Public Service Commission of Washington.—Commission does not admit that carriers are entitled to the amount asked for. "Grave question as to whether carriers are operating with any degree of efficiency." Percentage method of increasing rates is wrong.

John F. Shaughnessy, member Nevada Railroad Commission, also representing Intermediate Rate Association and commissions of intermountain states.—Opposed increases in intermountain rates unless found necessary after increase of sub-normal rates in other sections. Criticised railroad inefficiency.

M. C. Moore, rate expert Mississippi Railroad Commission.—"The railroad commissioners of Mississippi want to see the railroads given rates that will yield them a good return on the value of their properties, and that probably some increase in rates must be made, but they believe a percentage increase on all rates in Southern Classification Territory would yield revenues largely in excess of their legitimate requirements." General level of rates in, to and from Mississippi is high and should be revised before being subjected to general advance.

Mason Manghum, for Virginia Corporation Commission.—"The Commission is not in any position to advise whether or not carriers need any increase. It will be in sympathy with any increases this commission finds the carriers are entitled to under the law. It does not believe the sole question in this case is simply a matter of increasing rates. There should be an intensified practicing of economy and efficiency in operation. The general advance, if any, should be materially lower upon low-grade materials."

Joseph E. Benton, solicitor, National Association of Railway and Utilities Commissioners, Washington, D. C.—Association taking no part in the case, because disposition of members has been to rely upon thoroughness of investigation which Interstate Commerce Commission will make. Presented statements from various state commissions transmitted through him to Interstate Commerce Commission. Letter from Shelby Taylor, chairman, Louisiana Railroad Commission, expressed objection to application of Southwestern lines, and opinion that "best interests of the country as a whole will be subserved by applying a uniform level advance, rather than different levels of advance in different territories.". "We feel that the ultimate solution of the great financial emergency confronting the carriers must largely rest with the Interstate Commerce Commission, and our inclination is to follow the recommendations of the Interstate Commerce Commission in the application of a rate advance, in Louisiana, in so far as such advance may be applied without creating undue hardship or grave injustice."

Letter from Public Utilities Commission of Connecticut said: "The feeling of this commission favors co-operation, and in general is favorable to the claim of the carriers for increased freight rates legally allowable on facts presented under the provision of the interstate commerce act as recently amended by Congress. The paramount necessity for improved freight transportation requires a rate more in keeping with present day prices than the present rate, and one that will enable the carriers to furnish transportation for the general welfare of the country."

Public Utilities Commission of Maine in letter said: "We ask that you, in conjunction with a committee from our state Cham-

ber of Commerce, to represent this commission to the extent of urging no more than a uniform increase of 30 per cent."

Rebuttal Testimony

Testimony on behalf of the shippers was completed on Tuesday, June 29, and was followed by rebuttal testimony in relation to the rates on particular commodities, on behalf of the carriers.

A. C. Dixon, of the West Coast Lumbermen's Association, said that lumber is the most important industry in the Northwest, and the foundation of the business and industrial development of that part of the country. "The Western lumbermen cannot by any line of argument be convinced that a change in the established relationship giving one competitor a substantial advantage over another will not contribute to the ultimate driving out of the market of the one against whom the differential is made," he said. As evidence that a rate differential would prevent the movement of lumber, Mr. Dixon said that in 1907, lumber rates from the Pacific Coast were advanced 10 cents per 100 lb. by the carriers, with the direct purpose of stopping the movement to points east of the Missouri river. He said that J. C. Stubbs, director of traffic for the Harriman lines, had told him "there should have been a fence put around that timber years before," and that he would have done it if the commission had not prevented it. He said that Mr. Stubbs had said his purpose was to preserve the traffic until a higher price could be obtained for the lumber, and the railroads could get more for carrying it, and so that the railroads might show that tonnage to prospective buyers of railroad bonds.

"Unless all signs fail," Mr. Dixon said, "we are again approaching one of the downward swings in the lumber industry. The lumber industry in the West did not make even normal profits during the war. In recent weeks prices have declined rapidly and the cost of manufacturing lumber has advanced relatively in a greater degree than the cost of operation of the railroads." He disputed testimony made by Julius Kruttschnitt of the Southern Pacific before the Senate Committee in January, 1919, that the Southern Pacific did not need the additional cars allocated to it by the Railroad Administration. Mr. Dixon said there was a serious condition of shortage on its Northwestern lines in 1916 and 1917.

Fred H. Wood, counsel for the Western roads, asked Mr. Dixon if he had any reason to believe that the representatives of the railroads of the Northwest desire to establish a basis of rates which would deprive them of 25 to 30 per cent of their total tonnage. Mr. Dixon said he thought they intended to check the movement to Eastern points, although they did not intend ultimately to reduce the traffic.

Mr. Dixon's reference to Mr. Kruttschnitt's testimony aroused considerable resentment on the part of Mr. Wood, who showed that Mr. Kruttshcnitt had also testified that at the time the Railroad Administration asked the Southern Pacific to take 2,000 of its cars the company was building 5,300 cars in its own shop at a considerably less cost. He said Mr. Kruttschnitt was talking about the justice or injustice of the allocation rather than about the need for more cars. Commissioner Aitchison asked Mr. Wood whether the 5,300 cars were to add to the equipment or whether they would merely represent replacements, and Mr. Wood said he did not know. After some heated language, someone suggested that there might easily have been a shortage in the car supply in the Northwest, and on the Oregon lines of the Southern Pacific, whether or not the Southern Pacific had enough cars, because the Southern Pacific does not do business entirely with its own cars, and many of its cars might have been somewhere else. Mr. Wood showed also that Mr. Kruttschnitt had testified that the Southern Pacific in 1917 had got 84 per cent more service out of its cars than it had two years before. Mr. Dixon admitted that this indicated efficiency, but he had a good deal to say in criticism of railroad inefficiency at the present time.

"My judgment is, that before it can be determined that a very considerable amount of extra equipment is needed," he said, "better use of the equipment now at hand should be made."

Alfred P. Thom asked the witness if it was his judgment that the commission should halt now and make no provision for the future of transportation—"just let everything stand where it is," because there is now inefficiency, and movement is delayed by congestion.

"No," replied the witness, "my judgment is that it ought to go slow now and make an effort to have the transportation people get the nearest possible to the maximum efficiency out of the equipment they have."

Joseph N. Teal, Mr. Dixon's counsel, asked Mr. Thom if putting more cars in the congested section would help the situation any. Mr. Thom did not appear to be worried about any danger of too many cars being forthcoming for some time.

"My idea," he said, "is to provide for the needs of transportation while we can and when we remedy these other conditions we will then have adequate transportation facilities to handle the business of the country."

Edward Chambers, vice-president of the Atchison, Topeka & Santa Fe, and the traffic witness for the Western railroads, announced that it was the intention of the roads to publish joint through rates on lumber on the basis of a percentage increase from the Pacific Coast to points in C. F. A. territory, and also that the roads are now prepared to continue the same exceptions to the minimum $15 a car charge as were authorized by the Railroad Administration and are now in effect. The exceptions include brick, cement, coal, coke, logs, ore, sand, gravel and crushed rock.

Mr. Chambers was cross-examined by J. N. Teal of Portland, Ore., regarding the carriers' intentions as to readjusting rates for the purpose of restoring relations after the general advance is made. Mr. Chambers said that the necessary readjustments would be worked out just as rapidly as possible, but that there is no time to do this before the rates are put in effect. He said that in General Order No. 28 the percentage increase on lumber had been limited by a maximum because the lumber industry at that time was "in a bad way," but that conditions now have changed. He also discussed the estimate he had made for the director general that the amount of land grant reductions in revenue during 1918 had amounted to only about $5,000,000. He said that the shippers who seemed to think the amount should be much greater, have in mind all the freight that was shipped for government account during the war period, whereas, as a matter of fact, the land grant reductions applied only to shipments of troops and supplies for the War and Navy Departments, and was confined by the Railroad Administration to the land grant roads strictly. It was not applied to the great volume of freight in which various government departments were interested, but which was not shipped directly for the account of the War and Navy Departments. In reply to criticisms by shippers' representations that the railroads in their estimates have taken no account of increases in rates since General Order No. 28, Mr. Chambers said that the increases and decreases since that time have about offset each other. Mr. Chambers also said that most of the land grant traffic was handled during 1918, and that there was very little of it in 1919.

Thorne Asks Reduction in Amount of Increase

Clifford Thorne on June 26 made a general statement accompanied by a large number of exhibits from which he asserted that the railroads are asking for $386,000,000 more than is required. This figure he arrived at by assuming that the volume of traffic will increase on the basis of the first four months of this year, and by reducing the basis of value from $20,616,000,000, the railroad book value, to $16,611,050,649. This figure he obtained by capitalizing the stand return at 6 per cent.

Mr. Thorne also allowed for a 5 per cent increase in passenger fares, which he suggested be taken as 2 mills per passenger mile. He said that although the 1919 figures for the roads that have filed statements separating their revenues and expenses between freight and passenger service show a lower operating ratio in passenger service, he thought the current months would show a different condition, because of the absence of the military passenger travel, and that if the proposed percentages of advance be applied to the freight traffic, it would show a lower operating raito than the passenger service.

Mr. Thorne attacked the property investment figures of the carriers as excessive by several millions. For one thing he wanted to deduct $995,384,881 for accrued depreciation. He also presented an estimate of the present market value of the railroads of $12,300,000,000, based on computations of quotations where they are available, or par value where no price is quoted, and applying the ratio thus obtained to the balance. He took the position that the standard return representing the three pre-war years was liberal.

Mr. Thorne said that in the 15 per cent case in 1917 the Eastern railroads had underestimated their net operating income by $95,000,000, and that they were doing the same thing in this case by basing their exhibits on the constructive year ended October 31, 1919. He estimated, on the basis of results for four months of 1920, that there will be an increase in revenue for the year of $607,000,000. Commissioner Aitchison asked how, assuming the Railroad Labor Board renders a decision soon, the retroactive wage increase, back to May 1, should be taken care of in any advance in rates which may be authorized in this proceeding. Mr. Thorne replied that any increase in wages up to the time the rate advance goes into effect is a proper burden to be taken care of in the same way as that of the war period.

"Would you then make a second advance in rates to take care of the increase in wages?" asked Mr. Aitchison. Mr. Thorne replied that if the Labor Board should report very quickly, the commission might see its way clear to revise its estimates. Commissioner Eastman said that so far as any back pay is concerned, any subsequent increase in wages cannot relieve the government of its guaranty, to which Mr. Thorne agreed. Mr. Thorne said that he could see no objection to the commission, without hear-

ing, adding that increase to the present figures, making the rate advance cover both propositions. This, he said, would save a great deal of time, expense and confusion in the publication of tariffs. If any hearing is to be had at this time it might be a good plan to place on record in a public manner the amount of the increased expense and to discuss possibly the method of applying the increase.

Mr. Thorne said, however, that if the railroads and railroad labor are both successful in their demands, it would mean an increase in freight rates for the country as a whole of 55½ per cent. This would mean 60 per cent in the East, about 50 per cent in the West and 60 per cent in the South, and such a burden suddenly placed upon the freight traffic would be demoralizing to American industry. Any advance occasioned by the wage increase, should be spread out over the entire earnings of the railroads from all sources, and he said that if the Labor Board grants an increase in wages of $500,000,000, an increase of one-half cent per mile on passenger traffic plus an increase of 20.26 per cent on all other traffic would produce sufficient revenues. Mr. Thorne also presented some exhibits comparing railroad securities with other securities, saying these show that railroad credit is almost as good as the credit of the principal governments in the world today, as indicated by the yields on recent issues. Considering the tendency in interest rates, he said, there can be no question but what railroad credit has maintained its own, and considering its relation to general financial conditions, it has shown an actual improvement.

The testimony on ore rates brought out some vigorous criticisms of the adjustment made by the Railroad Administration in 1918, when all of the increase was put on the rate from the mines to the upper lake ports, and not on the rates from the lower lake ports to the furnaces. The eastern carriers have asked that they be given an additional increase in this case to make up for that they missed in 1918, but the shippers, as shown by the summary printed above, suggested various ways of correcting the adjustment made by General Order No. 28. O. W. Dynes filed an answer on behalf of the carriers in the northern peninsula of Michigan to the plan proposed by the Jones & Laughlin Company. Most of the witnesses on iron ore rates objected to the application of a percentage to the present rates, but the objection was rather as to the methods proposed for changing the rates than to any advance at all.

A. T. Haines, vice-president and general manager of the Pacific Coast Steamship Company, presented an application for an advance in all the rates in which his company participates, corresponding to the increase in rail rates, but preserving to the steamship company a differential under the rail rates.

After the completion of the shippers' testimony, on June 29, Charles L. Henry, of Indianapolis, representing the American Electric Railway Association, made a statement on behalf of the electric railways, urging their need of an increase in freight and passenger rates. He also urged an increase in steam railroad passenger fares, saying that if they were not advanced it would result in the ultimate involvency of a large number of electrical railways.

Alfred P. Thom, counsel for the Association of Railway Executives, read statements by railway executives as to the need for additional equipment, and Chairman Clark announced that if the railroad testimony in rebuttal of the testimony of the shippers could be completed on Wednesday the commission would allot three more days for orral argument and close the hearing on Saturday, July 3. Five hours were allowed for argument on behalf of the carriers and 10 for other arguments.

N. B. Wright, assistant freight traffic manager of the Central of Georgia, began the rebuttal testimony by offering a compilation of the freight rate authorities issued by the Railroad Administration to show that any increase in rates ordered by the Railroad Administration after General Order No. 28 were offset by the reductions. Some of the representatives of Southern shippers had complained that in making up their estimates of needed revenue the roads had not allowed for some increased rates which became effective this year.

Southern Pacific Efficiency Coming Back

Julius Kruttschnitt, chairman of the executive committee of the Southern Pacific, testified on June 30 to reply to criticisms of the Southern Pacific's operations made by A. C. Dixon. He said the company had always considered its operations in 1917 the most efficient in the history of the company, but for the three months, March, April and May, 1920, since the return of the property to the company, it has handled only 10 per cent less ton miles of freight than were handled in 1917 and by all tests of efficiency it had shown results substantially as good as in the corresponding period of 1917. In some respects the operation was better. As to its lines in Oregon, on which Mr. Dixon said there was a car shortage in 1917, Mr. Kruttschnitt said the Portland division in that year handled 32 per cent more ton miles than it had two years before, in spite of the reductions in its force brought about by war conditions, and that it had handled 30 per cent more carloads of forest products, whereas in five months of 1920 it has handled 25 per cent more forest products than in the corresponding months in 1917. He said there was no doubt that the company was not able to handle everything that was offered it and he admitted that perhaps it was true that there was an annual shortage of cars in the Willamette Valley, but in order to compare the efficiency of the railroad with the largest manufacturing industry in Oregon, the sawmilling industry, he had ascertained from his purchasing department that in 1914 it had paid $8.75 per thousand for ordinary rough lumber, whereas in January, 1920, the price of the lumber had increased 380 per cent. The wages of saw mill employees meanwhile had increased 99 per cent. On the other hand, the railroad in January, 1920, was selling its product, transportation, at an increase of only 25 per cent in the rate, although its labor cost had gone up 85 to 100 per cent.

Mr. Kruttschnitt also gave detailed testimony regarding the comparative cost of cars and locomotives, showing that the annual cost of owning a box car now, including interest, depreciation and maintenance, is $629.50 as compared with $199 before the war, and in the case of locomotives, including interest on the roundhouse stall, present cost per year is $18,950 as compared with $4,000 in 1916. When asked as to why so few cars were retired during federal control, Mr. Kruttschnitt said it would be necessary to ask Mr. McAdoo and Mr. Hines about that. In his opinion, many cars should have been retired, which were not, and the cars when returned were "in dreadful condition." Many of the coal cars, he said, had rusted to pieces and were almost useless. This statement, he said, was based on reports of his officers as to the Southern Pacific cars that were returned to the road and on his personal observation while traveling. The cars that remained on the Southern Pacific lines, he said, are in fair condition.

Mr. Kruttschnitt discussed at length the factors entering into railroad efficiency, saying that the secret of successful railroading is in heavy car and train loading. Chairman Clark asked whether he would prefer this to loyalty and interest on the part of the employees. Mr. Kruttschnitt replied that without loyalty on the part of the employees it is impossible to get the most efficient car and train loading. He admitted that the greatest opportunity for increased efficiency lies in the labor problem. He said that he had found the morale of men in the train service on his lines very good on the return of the property, but that, referring to shop forces, particularly the employees, are now in a state of efficiency about midway between the pre-war condition and that which existed during federal control. He said that his officers noticed a change for the better on the part of the employees when it was definitely ascertained that the railroads were to be returned and that there was another improvement when the roads were actually returned. Mr. Kruttschnitt said that his company is now preparing claims against the government for undermaintenance. For one thing, he mentioned, the government used a smaller tie, which, he said, "made a respectable fence post."

J. J. Ekin, comptroller of the Baltimore & Ohio, and M. P. Blauvelt, vice-president of the Illinois Central, offered rebuttal testimony regarding criticisms on behalf of the shippers of the railroads' statistical exhibits. The rebuttal was not completed on Wednesday according to program, but was continued on Thursday, which left some doubt as to whether the hearing would be completed this week.

Mark W. Potter, who was given a recess appointment as a member of the Interstate Commerce Commission, took the oath of office on June 25, but has not yet appeared at the hearings.

The arguments were to be presented by Francis I. Gowen, of the Pennsylvania, for the Eastern carriers; R. V. Fletcher, of the Illinois Central, for the Southern lines, and F. H. Wood, of the Southern Pacific, for the Western roads. Alfred P. Thom was to sum up for the carriers generally.

The City of Stockton, Cal., has filed a complaint with the Railroad Commission of California against the Southern Pacific, the Western Pacific and the Atchison, Topeka & Santa Fe asking that the railroad companies be required to build subways at a number of points in the city.

Motorized express companies at the beginning of this year totaled 1,956, and the average round trip per company was 121 miles. New York has 268 such lines, the largest number of any State. Pennsylvania is second with 267. Such lines are in operation in 42 states.—*New York Times-Annalist.*

Improvements on the Czecho-Slovak Railways

National Assembly Has Voted Large Sums for Rehabilitation and Extensions

THE BUILDING of nearly 1,000 locomotives and 50,000 freight cars during the next five years is one of the major parts of the plan for the rehabilitation of the railways of the new republic of Czecho-Slovakia. The national assembly on March 30, 1920, appropriated 6,481,050,000 Czecho-Slovak crowns (about $129,621,000 at the present rate of exchange of 2 cents to the crown) for the improvement of the railways. These details are contained in a communication to the Bureau of Foreign and Domestic Commerce by Trade Commissioner Vladimir A. Geringer, dated at Prague, April 30. The communication is reproduced below in part, but unfortunately Mr. Geringer does not point out whether American railway supply concerns will have an opportunity to participate in the rehabilitation work in question.

On March 30, 1920, the Czecho-Slovak National Assembly, says Mr. Geringer, appropriated 6,481,050,000 Czecho-Slovak crowns (New York exchange value about $0.02) for the improvement of the republic's railway service; remodeling and re-equipping its machine shops, workshops, railway yards and stations; putting into proper condition the roadbed and superstructure; replenishing the stores of materials exhausted by the war; replacing the locomotives and cars that were destroyed, lost, and worn out, and increasing their number to take care of the increased traffic; double-tracking the important lines; and constructing new lines 558 kilometers in length (almost 347 miles). This amount is to be expended during the five years, commencing 1921.

The plan that will be pursued in the construction of new lines is indicated in the argument of the minister of railways, Dr. Franke, accompanying the draft of the law, which was adopted with slight amendments.

In following the reasons given Dr. Franke for the important change in the general direction of the traffic it is proper to note that the republic, the area of which is over 55,000 square miles, is about three and a quarter times as long as it is wide, and extends west to east with a slight dip toward the south.

In the republic there are in all 13,362 kilometers (about 8,303 miles) of railways—i. e., 7,936 kilometers (over 4,931 miles) of state railways, and 5,426 kilometers (almost 3.372 miles) owned by private companies. Of the state railways, 1,291 kilometers (about 802 miles) are double tracked, and of the private railways, 322 kilometers (about 200 miles).

Layout of Old Austrian Railroad System

Dr. Franke stated:

The Bohemian, Moravian and Silesian net of railways was constructed as an integral part of the railways of old Austria at a time when, for political reasons, all the trade was directed to the center of the empire, Vienna; that is, from north to south. The rigid centralistic Austrian system did not allow any deviation with regard to the main traffic routes.

It was also a policy of the Austrian and Hungarian Governments to separate Slovakia from its kindred countries, Bohemia and Moravia, and firmly to bind it by a net of railways to the center of Hungary. The old government, therefore, constructed railway lines extending to Budapest, from north to south, and only here and there were tracks built in a different way, but without any connection between them, the only aim being to increase the traffic toward the Magyar center.

Characteristic of New Czecho-Slovak System

In the Czecho-Slovak republic a change has taken place in regard to the direction of our commercial policy, i. e., in favor of a west-to-east direction. It is therefore an important task to prepare the net of railways in such a way as to accomplish the connection of Moravia with the north, the center, and the south of Slovakia, and to construct in Slovakia itself a transverse main line to Rusinia (Podkarpatska Rus), to which it would be possible to join a further net of railways.

On account of the unfavorable physical characteristics of the country the construction of these lines will demand considerable outlay. Thus the expenditures for the connection with northern Slovakia will amount to about 190,000,000 Czecho-Slovak crowns, for the transverse main track to about 432,000,000 crowns, and for the southern connection to about 115,000,000 crowns; in all cases the costs are to be understood as exclusive of outlays for the reconstruction of the branch lines which are included in the reconstruction appropriation.

Northern Railroads Neglected by Old Empire

Under the empire the railroads in Bohemia, Moravia and Silesia were systematically neglected and during the war very poorly maintained, so that they are now in a very bad condition. Moreover, the railways in Slovakia have many lines of local railways with a weak superstructure, which does not allow their use for all the rolling stock and especially locomotives, whereby the entire traffic is very much hampered.

Owing to the insufficient equipment of stations, transportation can not go on as smotholy as is desirable, in consequence of which great congestions result, detaining and obstructing all traffic.

In connection with these difficulties in the service and the slow and difficult transportation, the administrative expenses are relatively higher than they would be if the traffic could be carried on without obstacles and trouble.

Through increased efficiency an increase of traffic possibilities would be attained, and consequently the increase of revenue, in case the efficiency of the railways should be increased only 20 per cent according to the present state of affairs, would amount to at least 250,000,000 crowns.

Principal Trunk Lines—Cost of Construction

The most important arteries of international passenger and freight traffic in our state will probably be the following lines: Cheb (Eger)-Plzen (Pilsen)-Praha (Prague)-Ceska Trebova-Olomouc (Olmutz)-Bohumin (Oderberg)-Zilina-Kosice (Kaschau); Podmokly (Bodenbach)-Prague-Ces. Budejovice (Budweis)-Hor. Dvoriste; Ceska Trebova-Brno (Brunn)-Breclava-Bratislava (Pressburg); Bratislava-Zilina, and Bratislava-Parkany Nana.

By way of explaining the great outlay required, it may be stated that the cost of constructing 1 kilometer (0.62 of a mile) of second track, which in 1913 varied according to the gradient from 120,000 to 200,000 crowns, must now be estimated at 800,000 to 1,500,000 crowns and even more.

To throw additional light on the expenditures planned

in the five-year program, it is stated that for the improvement of the railway conditions in Greater Prague there has been set aside an amount of 322,000,000 Czecho-Slovak crowns; for Brno (Brunn) 73,000,000 crowns; for Olomouc (Olmutz) 41,000,000 crowns; for Bratislava (Pressburg) 75,000,000 crowns, and for Kosice (Kaschau) 30,000,000 crowns. Furthermore suitable transshipping stations on the Danube at Bratislava and Komarno are comprised in the program.

Rolling Stock on Hand and Needed

At present there are about 3,500 locomotives. The total number of locomotives required for efficient traffic on the Czecho-Slovak railways would be about 4,500, which number should be available by the year 1925. It is estimated that there are about 8,500 passenger, service and mail cars, and about 65,000 freight cars. For the normal traffic of the state railways a total of 140,000 passenger and freight cars is necessary.

For the period 1921 to 1925 it has been deemed advisable to establish two plants for the building of locomotives, one of which will be situated in the vicinity of Brno and another in the vicinity of Prague. There are now two private concerns manufacturing locomotives.

Production Capacity of Czecho-Slovakia

In order that the traffic of the Czecho-Slovak state railways may be efficient it is necessary to increase the rolling stock in the shortest time by about 1,050 locomotives and 50,000 cars. This number is the minimum number, figuring in the number of cars which the State Railway Administration is demanding as its share of the former Austrian and Hungarian State Railways' rolling stock.

As to locomotives it will be necessary to utilize the full capacity of our home locomotive works, which it is to be expected can be counted upon to produce about 940 locomotives during the five-year period 1921-1925.

It will be necessary also to utilize to the fullest extent the production capacity of the car factories by placing an order for 14,000 cars in the year 1921 (the same as in 1920), and in the following years to reduce this number in such a way as to attain in the above five-year period the indispensably necessary total increase of 50,000 cars.

Detailed Appropriations for Railroad Construction

The sum of 220,000,000 crowns is to be expended for the construction of new lines in the year 1921, while the entire amount appropriated for the five-year period for that purpose is 963,950,000 crowns.

Further appropriation items for the first year and the entire period 1921-1925, respectively, for the objects named are as follows:

Items	1921 Crowns	1921-1926 Crowns
Building second, third and fourth tracks	90,250,000	365,450,000
Fixing of tracks for increased traffic and switch yards	37,180,000	182,430,000
Enlargement of stations and equipment	143,510,000	1,023,420,000
Erection, equipment and enlargement of workshops, including machinery	43,735,000	249,145,000
Supplementary work on substructures	12,700,000	42,200,000
Supplementary work on superstructures	80,000,000	386,000,000
Dwelling houses and dormitories	20,450,000	158,200,000
Administration buildings	9,000,000	31,500,000
Telephone and telegraph safety system	9,250,000	42,300,000
Minor buildings	3,500,000	17,000,000
Electric power and lighting equipment	4,600,000	24,000,000
Projection work and plans	700,000	3,500,000
Unforeseen expenditures	4,970,000	24,855,000
Rolling stock:		
Locomotives	135,600,000	764,900,000
Cars	665,600,000	2,202,200,000

Railway Construction Bonds to Be Issued

The law authorizes the issue of state railway bonds, payable in Czecho-Slovak or other currency, in such an amount as may be needed for the respective year for which bonds may be necessary. These bonds are to be exempt from the income tax. The Minister of Finance will have the right to fix the rate of interest at the time the bonds are issued. The bonds shall be retired within 30 years in annual installments commencing in 1926.

Passenger and Freight Traffic

Since the revolution of October 28, 1918, there has been an increase in the passenger traffic, both local and through. In consequence of a still limited number of trains, which in comparison with those of the pre-war period are much shorter, there is almost always overcrowding of the coaches.

Under the existing extraordinary conditions the principal commodities transported are coal (about 60 per cent of the entire traffic), ore, wood, building materials, iron and food. Among manufactured products, glass, matches and agricultural implements prevail. The traffic conditions are gradually improving.

The natural location of Czecho-Slovakia is such that after the industrial and traffic conditions of Europe have improved the Czecho-Slovak railways will carry considerable foreign-transit freight not only from north to south, but also from west to east, and vice versa.

The Coal Shortage

J. D. A. Morrow, vice-president of the National Coal Association, has issued a reply to a statement issued from the attorney general's office concerning coal shortage, which referred to an "alleged shortage of production."

"On account of the coal miners' strike last fall," said Mr. Morrow, "coal stocks were practically exhausted, and during the following severe winter they were not made up. Accordingly on April 1, the beginning of the new coal year, instead of the country having the customary stocks of 35,000,000 tons of coal, there were in the bins of consumers not over 10,000,000 tons. The new coal year, therefore, inherited 25,000,000 tons deficit from the miners' strike of last fall. On account of the switchmen's strike this spring, production and shipments of bituminous coal during April and May were between 10,000,000 and 15,000,000 tons less than current needs of the United States. Therefore, at present the output of bituminous coal in the present coal year is about 35,000,000 tons behind the needs of the country.

"This is a real shortage, but it is not a hopeless situation by any means, and there is no occasion for public alarm. We must, however, face the facts of the shortage frankly and plainly. It is nonsense to argue, from comparative figures of former years, that the country is not short of coal now. Consumers all over the Eastern part of the United States know perfectly well that their supplies are short. Shipments to the Northwest by way of the Great Lakes, are only one-third of usual shipments.

"Civic bodies and public utilities are appealing to the government for relief from the shortage. This situation is accentuated throughout the Eastern states, which are dependent upon production in the Appalachian fields. Weekly reports of the U. S. Geological Survey on coal production show entire mining districts in the Eastern parts of the United States operating at only 30 to 50 per cent of mine capacity. The failure of operators to ship coal is shown by these same official reports to be due practically entirely to lack of cars to transport the product.

"The coal shortage is due simply and solely to lack of cars in which to ship the product from the mines to consumers. Increase of cars for larger shipments which the mines have been trying for weeks to make, is the practical remedy. This has been recognized by the Interstate Commerce Commission in its service order No. 7, alluded to in the Depart-

ment of Justice statement. This is a constructive step, which has been urged both by the railways and coal producers for 6 weeks, and is proof positive of the knowledge the commission has of the existing shortage and the remedy for it.

"The effectiveness of the commission's order in the northeastern section of the country, has been interfered with by the recurrence of the switchmen's strike. If the order can be put into effect by the railways in the northeast and other parts of the country and cars are given the mines to ship their output to consumers, production will at once increase, there will be plenty of coal and an end will be put to the prices obtained by irresponsible speculators for a fragment of the current production. This is exactly the result which the responsible coal operators of the United States have been seeking to have brought about through the issuance of such an order as that of the Interstate Commerce Commission for the past 6 weeks.

"The National Coal Association and coal producers everywhere have been co-operating with the Interstate Commerce Commission, the railroads and various government agencies and departments in practical efforts to relieve the present situation, and will continue to do so. The situation merely requires the continuance of such practical measures as have already been instituted by the Interstate Commerce Commission. If effectively carried out, these orders will permit the shipment of sufficien coal to make up the present deficit and will avoid the danger of shortage next fall and winter."

Cab Signals in Europe

THE BULLETIN of the International Railway Association for April contains an article entitled "Fog Signaling," filling thirty pages, by L. Weissenbruch, the well-known secretary of the International Railway Association. His title is given here as general inspector of the Belgian State Railways. Mr. Weissenbruch has been connected with the Belgian railways for many years, and is himself the designer of numerous improvements. His article covers the field with studious minuteness and is written in excellent English; it is based, evidently, on notes taken, with careful attention to detail, through a series of years.

It begins with torpedoes, and tells how, about twenty years ago, the Belgian government adopted the English plan of employing trackmen, in times of fog, to use torpedoes at the distant signals, these men giving all-right signals by hand when the visual signals are cleared. The torpedoes used in Belgium are sealed with wax so that they do not deteriorate with age.

The use of bells has always been found unsatisfactory; sometimes they are inaudible to the engineman, and they are a nuisance to people living near the line. Electric horns, having a vibrating diaphragm, were also unsatisfactory. Torpedo machines with magazines are mentioned as having been tried in England and in France; and one, on the Eastern Railroad of France, at LaVilette, is said to have been in use since 1905. The writer sets forth the reasons why these were found unsatisfactory in Belgium.

Roadside Landmarks

Between Brussels and Antwerp, 27 miles, the Belgian roads adopted, in 1908, upper quadrant semaphores with yellow lights in the distant signals; and five roadside lights were set up to indicate the approach to each block section; three for each distant signal and two for each home signal. Approaching the distant the first light is 450 meters (1,476 ft.) short of the signal; the second 300 meters and the third 150 meters; and the arrangement at the approach to the home signal is similar. These lights are placed at the height of the engineman's eye. The Belgian roads adopted a similar plan for daylight service; a horizontal board being used as an approach indicator. This board is placed from four feet to eight feet above the rail level and is supported on two posts. It is marked with diagonal black stripes, on a white ground, somewhat like the highway crossing gates used in America; and it stands at an angle of 45 deg. to the line of the track. Each board is about 16 ft. long and 16 in. wide, and three of them are said to be sufficient to "compel" the attention of the engineman. They are useful at night as well as by day, being illuminated by the headlight. It appears that Mr. Weissenbruch himself devised this arrangement about 1902, and he described it at the Berne Congress. The State Railways of the Netherlands installed some of these indicators, and the writer says that similar boards are in use in Germany. In France, red and white rings are painted on telegraph poles to thus indicate the approach to a distant signal.

The lights used to indicate the approach to a signal apparently were in all cases electric, the lamps being of 10 candle power, using 33 volts. Current was supplied by storage batteries which were kept in a separate little building near the signal cabin. The first report on the behavior of these lights is dated in November, 1908, when, after five months, the officer in charge said that trains were able to run in dense fog at the same speed and with the same degree of safety as in clear weather. Before the introduction of these lamps overrunning of signals was a frequent occurrence, but since then these cases have been reduced practically to zero.

Cab Signals

Various experiments with cab signals are briefly described. Up to 1905 the most promising device was that of Van Braam, of Holland. This was tried on the State railways in France and in Prussia, but apparently with unfavorable final results. The Belgian State Railways tried the Sneyers apparatus in the years 1908 to 1914, three locomotives being fitted. The coming on of the war stopped all progress in this direction. The Belgian roads also tried the Miller apparatus, the same that was used for a short time in the Park avenue tunnel, New York City. This is favorably spoken of, but appears to have been dropped because of the high cost.

In 1904 the Belgian State Railways tried the electric apparatus of Vital Cesar, a Belgian, but this apparatus, working on the principle of the radio telegraph, had a very delicate relay and it was necessary to maintain constantly along the line a current of high voltage. Mr. Weissenbruch declares that no system of cab signaling based on wireless telegraphy is as yet practicable.

The author next describes the "crocodile" cab signal of Lartigue, long used on the Northern Railway of France. With this apparatus, extensively used on that road, there is used a graphic record showing on the locomotive all distant signals encountered in the adverse position. This arrangement, with slight modifications, is said to be in use also on the Paris, Lyons & Mediterranean and the Eastern of France, but to what extent is not stated. On the Eastern, the recorder shows the speed of the train and the position of all signals, whether they are clear or are set against the train. The Southern of France and the State Railways were, before the war, making experiments with the apparatus like that used on the Eastern.

It will be seen that before the war all of the great railways of France were on the road to adopt this apparatus, although it works on the open circuit principle.

Raven's apparatus, used on the North Eastern of England is briefly mentioned, and next comes that of the Great Western of England, which it is said has been tried also by the Midland of England. The Great Western apparatus gives

proceed indications and, therefore, is not open to the chief objection found in the Lartigue; but the Belgian State Railways rejected it because of the fixed ramp.

Raven's apparatus was rejected by the Belgians because deemed too complicated. It has been modified in the course of years, and is now arranged much like that of the Great Western.

The author next describes two cab signals designed by Mr. Cesar, called No. 1 and No. 2, which apparently have been subjected to brief tests. These devices were tried on several French roads with different arrangements of ramps designed to obviate difficulties with ice in winter. The author says, however, that false clear indications have not been done away with and that the adjustment of the apparatus is always a very delicate and troublesome matter.

General Conclusion

Mr. Weissenbruch, in his "general conclusions," enters into a theoretical computation of the probabilities of the failure of a cab signal, quoting Mr. Blum, a German, who speculated on this subject in 1910. Some figures are given showing that a cab signal is four hundred times as likely to go wrong as is an engineman; but this and other speculations are treated much as they are treated in America; he drops them without coming to any final conclusion and proceeds to tell what the Belgians did just before the war in the way of improving their ordinary signal apparatus. They substituted semaphores for disks, and adopted green for the night proceed indication; adopted yellow for the night cautionary indication and violet lights for the stop indication in low-speed signals. The white landmark boards, described above, were provided; signals were put on bridges, overhead, where necessary to give a good view, and some three-position signals were installed in place of signals with two arms.

The question of whether a cab signal should be visual or audible, or both, is discussed at some length. Most of the railroads that are making trials have eliminated the visual element because of the "liability that it would assume for the engineman a greater importance than the roadside signals." In France, a visual cab signal on the engine is prohibited by the Ministerial circular of November 27, 1913. On the North Eastern of England the visual indication has not been eliminated, the apparatus there used having a function of showing at diverging routes which route is set for the train.

Automatic stops have been tried in Belgium, but nothing serious is likely to be done there, or anywhere on the Continent, until there is a more general use of continuous brakes on freight trains. The Great Central of England is said to have in use a mechanical automatic stop which has been experimented with for two years.

The regulations of the French government, as laid down in the circular before referred to (November 27, 1913) require the regular use of a recording apparatus in connection with cab signals or automatic stops. Mr. Weissenbruch, however, endorsing Mr. Acfield, signal superintendent of the Midland Railway, of England, believes that the checking of such records would require an immense amount of work, and this would neutralize the value of the system.

The article ends with a statement of the recommendations apparently made by Mr. Weissenbruch to the Belgian Administration. These call for the use of the white roadside landmark, the approach lamps "on very important lines" and cab signals and automatic stops on other lines. He stipulates that all systems shall be arranged to disclose their own failures and that surprise checking should be kept up.

THE SHIPPERS have lost more by deficiency of transportation than they gained by economy in rates. If the railway profits had been larger, so would have been the shippers' gains. That is the one sure thing in a maze of uncertainties.—*N. Y. Times.*

Railway Rate Inquiry in England

LONDON.

THE RATES ADVISORY COMMITTEE of the Ministry of Transport held its first public inquiry in London on May 11. The functions of the committee are to consider the principles which should govern:

(1) The fixing of tolls, rates and charges for the carriage of merchandise by freight and passenger train and for other services;

(2) The classification of merchandise traffic;

(3) The rates and charges for parcels, perishable merchandise and other traffic conveyed by passenger train.

F. Gore-Browne was chairman of the committee and other members were Sir Walter W. Berry, representing agricultural interests; W. J. Davis, representing labor; W. A. Jepson, assistant general manager of the London & North Western; L. A. Martin, representing trade on behalf of the chambers of commerce, and W. M. Acworth, railway economist. The Railway Companies' Association was represented by Sir John Simon, Sir Lynden Macassey, Barrington Ward and R. C. Drage. The National Federation of Iron and Steel Manufacturers was represented by Roland Whitehead, the Mining Association by Jacques Abady and the Livestock Traders by G. H. Head.

Sir George Beharrell of the statistics and accounts branch of the Ministry of Transport stated that the present powers of the ministry would expire in August, 1921, but it was generally understood that the first Ministry of Transport must be followed by a second, dealing with the future of the railways. Continuing, he said it was difficult to fix suitable maximum rates at the present time and that the new increase in the price of coal would seriously affect the railways. He considered there should be much greater elasticity in tariffs and scales to suit the varying circumstances of trade, and said that a careful framing of scales would help to remove a very large proportion of the exceptional rates of the country. Rates, he said, should be based on the continuous mileage principle, which would involve the consideration of varying scales for the same class of traffic in different parts of the country. Freight cars should be used to the fullest extent. Certain costs were incurred, whether the traffic moved 5 or 500 miles, and the holding of cars at the terminals did not depend upon the length of the journey, and he thought there would have to be a charge per ton for this, irrespective of the distance the freight was carried. The scales of the future might be purely conveyance scales, to which might be added the cost of station terminals, service terminals and consignment charges.

Sir George Beharrell further stated that he did not think it was possible to fix any general scale of charges for private sidings, as it would vary with individual circumstances. Dock traffic might also have to be considered in the same way.

Sir George further submitted that the charge for traffic should be on a basis of weight. Certain traffic was conveyed at measurement or computed rates, but the time had come to consider the gross weight of all traffic carried. In certain cases difficulty might be experienced in ascertaining the real weight, but in order to insure that charges have a direct relation to weight the closest possible computation should be adopted. He stated that he did not intend to deal with passenger train traffic, though there were certain anomalies well known to the railway companies and traders. There was very little relation between the charges by freight and passenger train, and in certain cases it was cheaper to send goods by passenger train than by the slower method.

Balfour Browne, chairman of the transport committee of the Federation of British Industries, stated that the policy of the Ministry of Transport was to encourage amalgamation of railway companies and that if the 132 railway companies were greatly reduced in number there would result great economy.

Funds for Equipment and Other Facilities

Interstate Commerce Commission to Act Promptly on Recommendations of Executives' Committee

WASHINGTON, D. C.

THE ASSOCIATION OF RAILWAY EXECUTIVES submitted to the Interstate Commerce Commission on June 26 the report of its special committee making recommendations, requested by the commission, as to the applications of various carriers for loans from that part of the $300,000,000 loan fund provided by the transportation act which the commission has decided to use to aid the railroads in acquiring new equipment and for additions and betterments which will promote the movement of cars.

The report makes recommendations for the distribution among the roads of approximately $86,000,000 to be used in rebuilding and repairing 12,616 cars and locomotives and in the purchase of 898 new locomotives and 45,021 freight cars, having a total value of approximately $197,000,000 including 7,950 refrigerator cars; also of $35,050,305 for additions and betterments to promote the movement of cars. It is understood that the commission is preparing to act promptly upon the recommendations.

The railroads had already arranged to purchase and finance out of their own resources 28,000 cars and 518 locomotives costing $144,157,400. The loan fund will enable the acquisition of equipment to the value of more than the amount of the loan because it can be used as a basis of credit to make an initial payment, the balance to be paid in yearly instalments. A statement issued by the commission on June 7 set forth tentatively the principles which would guide it in making loans to the various carriers, and fixed tentatively upon an appropriation from the fund of $75,000,000 for the acquisition of freight cars, $50,000,000 for the acquisition of locomotives, $73,000,000 for additions and betterments and $50,000,000 to assist carriers in meeting maturities. The commission asked the assistance of the executives in the distribution of the loans to the various companies and also its recommendations on the various applications that had been filed.

Additions and Betterments to Existing Equipment

The committee was of the opinion that loans for this purpose should be made available immediately in order that the various carriers having unserviceable equipment which may be substantially repaired or reconstructed will be enabled to proceed with the work without delay. Such substantially repaired or rebuilt equipment will be available for service at a much earlier date than new equipment to be hereafter ordered, and will therefore be a distinct contribution to the ability of the carriers to carry the traffic of the current year. The committee recommended that the following loans should be made to the following carriers for additions and betterments to existing equipment:

Baltimore & Ohio	$2,087,000
Boston & Maine	1,036,490
Chicago Great Western	872,660
Chicago & Alton	359,400
Chicago, Rock Island & Pacific	1,257,000
Erie	168,532
Gulf Coast Lines	30,500
Hocking Valley	159,471
Texas & Pacific	1,091,000
	$7,062,053

The expenditure of the total of these recommended loans, namely, $7,062,053, will restore to efficient service the following equipment:

Locomotives	192
Refrigerators	781
Box cars	10,675
Steel Hoppers	200
Coal cars	300
Tank cars	6
Gondolas	41
Flat cars	85
Stock cars	120
Milk cars	91
Cabooses	125
	12,616

To Promote the Movement of Cars

The committee felt unable to formulate a precise and unvarying rule to determine what additions and betterments would promote the movement of cars. Different physical and operating conditions in different portions of the country call for appropriate but different treatment and make unjust any rigid and unvarying rule. Nevertheless, in general, the committee was of the opinion that all expenditures which look toward the enlargement of roundhouses and engine terminal capacity, the increase of shops, machinery and tools for the repair of equipment, the extension of sidings, additional yard tracks, interlocking devices, and heavier rail and ballast are the principal kinds of additions and betterments which would promote the movement of cars, and for the prosecution of which it would be in the public interest for the Commission to recommend loans.

The committee has not recommended loans for improvements to eliminate grade crossings, feeling that however desirable they may be in normal times, their influence in promoting the movement of traffic in present conditions was too slight to warrant the large expenditures generally involved. The committee was strongly of the opinion, in which it hopes the Commission will concur, that at a time when it is utterly impossible to raise sufficient capital to meet even the most urgent and fundamental traffic demands of the country, state and local authorities should recognize this situation and hold in abeyance their demands for the continuation or initiation of grade crossing elimination projects.

The committee has not recommended loans for increases in passenger facilities, nor for improvements to stations generally, nor for the construction of branch lines or extensions except in unusual cases, nor for numerous other classes of additions and betterments not referred to above.

The committee recommended that the loans set forth below should be made to the carriers in the belief that this total loan of $35,050,289, will definitely and specifically promote the movement of cars:

Bangor & Aroostook Shop machinery, coal storage plant, additional passing track.	$20,000
Boston & Maine Extension of yard tracks, roundhouses and engine terminal facilities.	1,814,047
Central New England Additional yard tracks, sidings and shops.	300,000
Chesapeake & Ohio Contingent on company supplying $2,500,000 additional; for double tracking, grade reduction and other work necessary to extend operation of Mallet locomotives and large capacity coal cars.	4,750,000
Chicago Great Western Yard tracks and repair shops.	150,500
Chicago, Indianapolis & Louisville Car repair shop.	100,000
Chicago & Western Indiana Completion of two yards, automatic block signals, interlockers, tools.	1,805,000
Cincinnati, Indianapolis & Western Shop machine tools.	33,500
Delaware & Hudson Elimination of tunnel, development of two yards.	2,250,000
Erie Additional yards, yard tracks, shop machinery, tools, extension of erecting shop, second track.	1,496,897
Great Northern Additional yard tracks, car shops, shop buildings, tools.	1,550,000
Gulf Coast Lines Yards and sidings, shops, shop machinery, heavier rail.	200,000
Gulf, Mobile & Northern Interlockers, heavier rail.	73,000
Hocking Valley Additional main tracks, yard tracks, sidings, shops.	1,371,305
Long Island Additional yards, yard tracks, storage tracks, interchange tracks.	500,000
Minneapolis & St. Louis Additional main tracks, yard tracks, sidings, engine terminal facilities, shops, shop machinery, ballast.	546,500
Northern Pacific Additional yard tracks, sidings, interlockers, engine houses, shop buildings, shop machinery, tools, car sheds.	2,400,000
New York, New Haven & Hartford Development of freight yards, engine terminals, shops, tools automatic signals.	8,130,000
Norfolk Southern For flattening curves, reducing grades and strengthening bridges so as to materially increase train haul of engines.	200,000
Texas & Pacific New yards, and engine facilities, additional passing tracks, shop machinery, train despatching circuits, water supply.	1,688,000
Toledo, St. Louis & Western Yard tracks, storage tracks, new roundhouses, heavier rail and ballast.	510,000

Virginian	2,000,000
Completion of double track on ruling grade.	
Wabash	977,200
Enlargement of shops, shop tools, heavier rail.	
Western Maryland	622,800
Extension of coal pier, engine terminal, freight yard, passing sidings.	
Wheeling & Lake Erie	1,461,540
Additional freight yards, engine terminals, and repair shops.	
	$35,050,289

Freight and Switching Locomotives

The committee agreed with the Interstate Commerce Commission in believing that it is important to add to the motive power of the country, particularly in freight and switching locomotives, and recommended that the following loans to aid in their acquisition be made to the carriers named:

Atchison, Topeka & Santa Fe	$2,149,450
Bangor & Aroostook	180,000
Boston & Maine	1,245,000
Central of Georgia	237,500
Chesapeake & Ohio	1,058,750
Chicago & Alton	134,000
Chicago, Burlington & Quincy	1,472,775
Chicago Great Western	276,000
Chicago, Rock Island & Pacific	879,583
Erie	1,242,500
Great Northern	1,375,000
Gulf Coast Lines	150,000
Gulf, Mobile & Northern	113,700
Illinois Central	2,987,500
Long Island	218,500
Minneapolis & St. Louis	487,500
New York Central	4,807,012
New York, New Haven & Hartford	1,750,000
Norfolk Southern	111,000
Northern Pacific	1,853,978
Philadelphia & Reading	1,033,125
Southern Pacific	1,168,256
Toledo, St. Louis & Western	375,000
Wabash	812,500
Western Maryland	750,000
	$26,868,629

The total of these proposed loans amounts to $26,868,629 and will enable the carriers to add 599 freight locomotives and 239 switching locomotives having a total value of $53,737,358.

Freight Train Cars

In its announcement of June 7 the Interstate Commerce Commission stated that funds would not be available for the purchase of other freight train cars until and unless provision has first been made for the acquisition of 20,000 additional refrigerator cars. Refrigerator cars to the number of 4,015 have been purchased by three companies without assistance of government loan. Loans have been recommended in this report to enable carriers to purchase 7,950 new refrigerator cars; loans for additions and betterments to equipment have been recommended to enable carriers to rebuild 781 refrigerator cars, making a total net addition to the available refrigerator cars of the country of 12,746.

The committee concurred in the desirability of approximating as nearly as possible an addition of 20,000 refrigerator cars to the equipment of the country. Considering, however, the inability of the railroads for the time being to meet in full the demands of the various kinds of necessary and legitimate traffic offered to them, it felt that the contribution made toward improving the refrigerator car situation is already very substantial, and that it would not be in the public interest for the Commission too rigidly to adhere to its intention to secure 20,000 refrigerator cars before making provision for other kinds of needed freight cars. Coal cars, stock cars, flat cars, box cars and tank cars are also greatly needed, and the committee recommended that without further delay loans be made to carriers to enable them to contract for the purchase of such equipment.

The following loans were recommended for the purchase of refrigerator and other needed freight train cars:

Atchison, Topeka & Santa Fe	$7,850,550
Central of Georgia	577,500
Chesapeake & Ohio	1,658,750
Chicago, Burlington & Quincy	2,973,750
Chicago, Indianapolis & Louisville	300,000
Chicago, Milwaukee & St. Paul	3,150,000
Chicago, Rock Island & Pacific	509,667
Erie	250,000
Fruit Growers Express	6,750,000
Great Northern	637,500
Gulf Coast Lines	667,063
Illinois Central	1,524,250
Minneapolis & St. Louis	1,240,000
Missouri, Kansas & Texas	300,923
Northern Pacific	1,746,022
New York Central	11,192,988
Southern Pacific	6,331,774
Western Pacific	1,000,000
Wheeling & Lake Erie	3,600,000
	$52,260,537

The total of these proposed loans, amounting to $52,260,537, will enable the carriers to add the following equipment:

Refrigerators	7,950
Box cars	14,300
Coal cars	8,978
Gondolas	6,100
Stock cars	2,894
Flat cars	1,300
Ore cars	1,000
Open top cars	500
Automobile cars	500
Tank cars	350
Cabooses	289
Other freight train cars	860
	45,021
Approximate value	$143,569,730

Reserve for Non-Member Roads

Class I roads having about 4½ per cent of the mileage of the country are not members of the Association of Railway Executives, and the committee did not attempt to pass upon their applications for loans. It suggested that there be set aside temporarily by the Commission reserves of $4,750,000 to aid in the acquisition of equipment, and $2,700,000 for additions and betterments. These sums are slightly in excess of the amounts that would be available for the above purposes, if based upon their percentage of the standard return during the period of federal control.

Reserve for Smaller Carriers Other Than Short Lines

The committee found about 35 companies—and there are doubtless others—which were either not under federal control or whose earning power was so small that their percentages of the standard return were almost negligible. For the assistance of these carriers it recommended that a reserve of $3,000,000 be set aside temporarily out of the appropriation to aid in the acquisition of equipment, and a reserve of $2,000,000 be set aside temporarily out of the appropriation for additions and betterments to promote the movement of cars. These sums are nearly four times as much as these carriers would be entitled to on the basis of their earning power.

Maturities

The Interstate Commerce Commission has set aside temporarily a reserve of $50,000,000 for the purpose of assisting carriers in meeting maturities, when necessary to protect the solvency of companies. The committee stated that if any carrier is unable to meet its maturities, and has made without success every proper effort to secure an extension of refunding without assistance, it is prepared to recommend to the Commission a loan not exceeding one-fourth of the total of the amount of the maturing obligation. In accordance with this policy the committee recommended that a loan not to exceed $5,000,000 should be made to the Great Northern Railroad Company to enable it to meet its maturing obligations of $20,000,000 on September 1, 1920.

Passenger Equipment

The committee has recommended no loans for the purchase of passenger train cars; and, except in a few instances, where the purchase of passenger locomotives would restore to freight service locomotives diverted to passenger service, the committee has as yet made no recommendations to enable carriers to acquire new passenger locomotives. This action is in accordance with the announcement of the Interstate Commerce Commission on June 7, which stated that the appropriation available to aid in the acquisition of locomotives will not be employed for passenger locomotives until and unless applications for freight and switching locomotives are met.

Summary

Summing up the committee recommended that the commission make loans as follows:

To 9 roads, for the purpose of additions and betterments to existing equipment, which will restore to efficient service 12,616 cars and locomotives	$7,062,053
To 25 roads, for additions and betterments to promote the movement of cars	35,050,289
To 25 roads, for the acquisition of 599 freight locomotives and 239 switching locomotives, having a total value of $53,737,358	26,868,629
To 19 roads, for the purchase of 45,021 freight cars of a total value of approximately $143,569,730, includng 7,950 refrigerator cars	52,260,537
It also recommends reserves from the fund as follows for smaller roads not members of the Association of Railway Executives:	
For equipment	$7,750,000
For additions and betterments	4,700,000
For reserve for maturities	50,000,000
Total	$183,691,508

General News Department

The shops of the Missouri & North Arkansas, at Helena, Ark., were destroyed by fire of unknown origin on June 23. Two locomotives being repaired were damaged; estimated total loss, $20,000.

The Forest Products Laboratory, Madison, Wis., will hold its Decennial Celebration at the laboratory on July 22 and 23, at which an instructive program outlining the activities of the laboratory and its service to producers and users of timber will be presented.

The American Train Despatcher's Association has voted to move its headquarters from Spokane, Wash., to Chicago. The next convention of the association, which claims a membership of 6,000, will be held in Kansas City, Mo., beginning June 20, 1921.

The Brotherhood of Locomotive Engineers has secured the approval of the Treasury Department to its application for a charter for the "Brotherhood of Locomotive Engineers Co-operative National Bank of Cleveland, O.," with a capital of $1,000,000. The application was filed by Warren S. Stone, grand chief of the Brotherhood.

The Car Hire Bureau of the Railroad Administration has been abolished (June 16), and the matters heretofore handled by it will be conducted by J. W. Newell, controller, to whom should be addressed all correspondence relating to the per diem accounts of the director general and all reports heretofore forwarded to the Car Hire Bureau.

In New Hampshire automobiles are required by law to limit speed to 10 miles an hour when within 100 feet of railroad grade crossings; and the State registrar of vehicles announces that the law is being rigidly enforced. The penalty for disobedience is a fine of $50, or imprisonment for three months, or both fine and imprisonment; and also the revocation of the driver's license.

The American Society of Civil Engineers, in connection with its Fiftieth Annual Convention, at Portland, Oregon, on August 10 to 12, 1920, will arrange for the entertainment of visitors desiring to return from the meeting by way of Seattle, the Yakima valley and Spokane; and it is planned to provide an automobile trip through the irrigation districts and a stop at Spokane on Saturday night and Sunday.

James C. Davis, general counsel of the Railroad Administration, has issued instructions to the railroads, that from June 25 their law departments should refer to regional counsel for approval all suits and claims arising out of personal injuries which involve the payment of more than $2,500, and all suits and claims arising out of loss or damage to freight, and fire, stock and miscellaneous claims and suits, involving the payment of more than $250.

Engineering Council, at a meeting on June 17, endorsed the plan of organization of the Federated American Engineering Societies and the American Engineering Council, which was adopted by the Organizing Conference of Technical Societies in Washington on June 3-4; and authorized its executive committee to extend such assistance as may be practicable in completing the work of the organizing conference in establishing the American Engineering Council.

The Illinois Central has created a new department in which employees who come in contact with the public will be taught uniform practices and more civil and polite dealing with the patrons of the road. The employees will attend meetings at different places along the line and questions that will bring more harmonious relations with the public will be discussed. E. H. Baker, trainmaster at Champaign, Ill., has been appointed supervisor of passenger service employees, with headquarters in Chicago.

The Caraquet & Gulf Shore Railway has been taken over by the Canadian government and will be operated as a part of the Canadian National. The line extends from Gloucester Junction, N. B., near Bathurst, eastward along the shore of Chaleur Bay to Shippigan and Tracadie Mills. The total length of road is about 100 miles, and from Gloucester Junction as far as Caraquet, 50 miles, there is a train each way daily except Sunday. For the rest of the way there is a train on two days of each week.

The Cambria Steel Company has filed suit in the Court of Claims at Washington for the recovery of $236,675.64 alleged to be due it on account of 8,846 gross tons of steel rails commandeered by the Navy Department between March 18, 1918, and February 25, 1919. The Navy Department paid $35 a ton on account and later named as a reasonable price the figures of $45 a ton for Bessemer rail and $47 for open hearth recommended by the Industrial Conference Committee. The company claims that the cost of the rails plus 10 per cent as profit ranged from $58.69 to $73.95. Later the War Department also commandeered rails for the use of the Railroad Administration.

The classification and compensation committee of Engineering Council has addressed a letter to the secretaries of approximately 100 national and local engineering and other technical societies, requesting formal indorsement or expression of opinion relative to the classification adopted by Engineering Council for grading the compensation of engineers. The committee has been reorganized and is now made up as follows: Arthur S. Tuttle, chairman, deputy chief engineer, Board of Estimate and Apportionment, New York City; Charles Whiting Baker, secretary, consulting engineer, New York City; Frederick W. Cappelen, city engineer, Minneapolis, Minn.; Philip P. Farley, consulting engineer, Brooklyn, N. Y.; O. C. Merrill, chief engineer, Forest Service, Washington, D. C.; C. A. Morse, chief engineer, Chicago, Rock Island & Pacific, Chicago; M. M. O'Shaughnessy, city engineer, San Francisco, Cal.; R. S. Parsons, general manager, Erie Railroad, New York City, and Edmund I. Mitchell, assistant secretary, New York city.

Non-Stop Flight Omaha to Lancaster

On Sunday, June 27, a Larsen all-metal aeroplane was flown from Omaha, Neb., to a point twenty miles east of Lancaster, Pa., in about eleven hours, without a stop; estimated distance 1,200 miles. The distance by railroad is about 1,270 miles. About 105 gallons of gasoline were used. The aviator had intended to fly to New York City, but was obliged to land because of a hazy atmosphere.

Director General Urges Early Settlements with Railroads

Director General Payne of the Railroad Administration recently addressed a letter to the railroads urging the importance of reaching final settlements between the Railroad Administration and the companies at the earliest possible date. "It will be my purpose," he said, "to deal as liberally as may be to the end that all proper assistance may be given the roads, but action in this regard will be in aid of final settlements, it being the definite policy to wind up the affairs of the Railroad Administration at the earliest moment possible. By final settlement is meant compensation, maintenance and claims of all kinds pro and con. If genuine co-operation is given by the roads it is hoped that final settlements may be made with reasonable promptness."

Financing the Short Line Railroads

In an editorial note appearing in the *Railway Age* last week, commenting on the fact that the American Short Line Railroad Association had been asked to act as an adviser in the apportionment of the $12,000,000 revolving fund allotted to the short lines, the director of capital expenditures of the Railroad Administration was mentioned. This should have been the director of finance of the Interstate Commerce Commission, who was the one who asked the American Short Line Railroad Association to aid in the apportionment of the $12,000,000 fund.

A. I. E. E. and A. S. M. E. to Combine Forces

Plans have been made for holding a series of joint meetings of the American Institute of Electrical Engineers and the American Society of Mechanical Engineers. The objects of the joint meetings are to secure a strong program and, as the war interrupted interest in normal engineering progress, to create a new interest in old problems which now require revised consideration under existing conditions. In general the subjects selected for these meetings will come under the following classifications: Marine engineering, engineering education, industrial installations, power generation, steam railroad electrification and industrial relations. It is intended to hold the first meeting in October, on a date to be announced later.

Regulation of Security Issues

Section 20-a of the interstate commerce act, one of the new provisions of the transportation act, giving the Interstate Commerce Commission jurisdiction to supervise the issuance of railroad securities, went into effect on June 27, 120 days from the passage of the act, and the Interstate Commerce Commission has issued a lengthy circular giving tentative directions as to the information to be filed with it in connection with applications for permission to issue securities and also periodical or special reports from the carriers showing the disposition made of such securities and the application of the proceeds. The commission holds that the provisions of the law apply to all securities not actually issued or assumed or outstanding before June 28, 1920, and that securities although nominally issued or assumed or outstanding as of that date, may not lawfully be actually issued or assumed after that date without an order from the commission.

It also holds that such securities, within the substance of definitions given in the circular, may not without an order of the commission, be sold, pledged, re-pledged or otherwise disposed of.

Federated American Engineering Societies Endorsed by Engineering Council

Engineering Council has in numerous ways expedited the creation of a comprehensive, representative body to perform for the engineers of America in a larger fashion, such functions as Council has performed for the past three years. Through its Washington office, and otherwise, Engineering Council aided the Organizing Conference of technical societies, held June 3 and 4, in Washington, D. C., and at its regular meeting, June 17, 1920, after hearing a report on the Organizing Conference, it took the following actions:

"Voted, that Engineering Council heartily endorse the plan of organization of the Federated American Engineering Societies and the American Engineering Council, adopted by the Organizing Conference of technical societies in Washington, June 3 and 4, and authorize its executive committee to proffer and perform on the part of Council such assistance as may be practicable in completing the work of the Organizing Conference and of the joint conference committee of the founder societies in establishing the American Engineering Council.

"Voted, that Engineering Council authorize its executive committee to deal with any question of co-operation with the joint conference committee of the founder societies, relating to the permanent organization of the Federated American Engineering Societies, which may come up during the summer.

"Voted, that the secretary be instructed to invite to future meetings of Engineering Council delegates of the societies participating in the Organizing Conference in Washington, June 3 and 4, and editors of technical journals who may be interested."

"Outlaw" Yardmen and Shopmen

The congestion of freight in Eastern cities, occasioning everywhere serious delays and great inconvenience, continues with not much change; but there are sufficient new developments to make a little "news"—real or imaginary—each day. The original causes, whose effects are still visible, are well known. New causes are varied and often undiscoverable. In New York the joint terminal committee, B. C. Craig, chairman, has made a strong appeal to consignees to work over-time unloading freight so as to better co-operate with the railroads in their endeavor to utilize cars to the utmost.

The Interstate Commerce Commission has denied a petition of the striking marine workers at New York harbor that it institute an investigation, with public hearings, into the matter of congestion at New York harbor.

Street railways, lighting companies and other large consumers of coal at New York and Philadelphia are still in constant anxiety over their supplies of fuel. At New York the situation has been eased, but continues critical. At Philadelphia the Interstate Commerce Commission took hold of the problem in detail and ordered that the Pennsylvania and the East Broad Top railroads "assign cars to the Rock Hill Coal & Iron Company for the transportation of approximately 12,000 tons of bituminous coal now above ground to be shipped by that company from Orbisonia, Pa., to the Philadelphia Electric Company at Philadelphia at the rate of twenty cars per day for twelve consecutive working days, beginning July 1, excluding Sundays and legal holidays, in addition to and without regard to the existing ratings and distributive shares for the mines upon these railroads."

At Brunswick, Md., the large yards of the Baltimore & Ohio were paralyzed for a time early this week by further disaffection of employees, who left their work, giving no reasons. At Baltimore considerable numbers of shopmen struck and at both Baltimore and Philadelphia loud threats were issued that thousands of shopmen would strike on the 30th; but on the 29th they changed the date to July 5. The ostensible reason for this shopmen's agitation was the refusal of the Pennsylvania Railroad to dismiss certain minor officers and foremen as demanded by the agitators. Freight-yard work at Philadelphia is declared by officers of the railroads to be nearly normal.

At Pittsburgh, Pa., shopmen employed in the Twenty-eighth Street roundhouse of the Pennsylvania went out on strike this week, but on Tuesday, June 29, were reported as having decided to return to work, following a favorable decision on their demand for the reinstatement of a man who had been discharged because of trouble with another employee.

From Harrisburg, Reading, Erie, Wilmington, New Haven, Providence and other cities incomplete reports indicate conflicting movements, but on the whole some improvement. At Mechanicville, N. Y., on the 30th, there was a strike of Boston & Maine yardmen, said to have been taken without brotherhood authority.

In the West.—In the Chicago district coal has been the paramount issue during the past week. Only 30 to 40 per cent of the required amount of coal is now being received by the dealers and the situation is not improving. Many industries are working with day to day supplies. The larger industries are accused of having bought coal at such high prices that the smaller producers are rapidly coming to the point where they cannot pay the prices fixed by competition. The "assigned car" rule has also been attacked by the operators, who state that the roads which are in need of coal have assigned cars to those coal operators who agree to furnish them with coal. Practically all the cars thus assigned are said to be loaded with coal for the carriers and consequently the big industry and retail trade has suffered. So acute is the situation that Chicago's water supply was seriously threatened for one day last week. However, railroad reports of car loadings of coal show an increase over the totals given for the similar week in 1919. The Chicago, Burlington & Quincy reports an increase of nearly 40 per cent, the Chicago

Rock Island & Pacific an approximate increase of 50 per cent, and the Chicago & North Western about 10 per cent.

Labor conditions on the railroads in the Middle West are reported to be improving, although the improvement is slight. There have been no new outbreaks of labor trouble, probably due to the fact that the employees appear fairly certain of receiving a reasonable wage award from the Labor Board.

The committees on car service in the large terminals throughout the west report a fair degree of co-operation between the carriers, although in some instances roads have not carried out the orders issued by the Interstate Commerce Commission regarding the interchange of cars. Shippers throughout the west and southwest continue to call for grain and refrigerator cars.

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings:

Air Brake Association.—F. M. Nellis, Room 3014, 163 Broadway, New York City.

American Association of Demurrage Officers.—F. A. Pontious, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.

American Association of Dining Car Superintendents.—S. W. Derr, Philadelphia & Reading, Philadelphia, Pa.

American Association of Freight Agents.—R. O. Wells, Illinois Central, Chicago.

American Association of General Baggage Agents.—E. L. Duncan, C. & E. I. R. R., 332 South Michigan Ave., Chicago.

American Association of Passenger Traffic Officers.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Next Annual Meeting, October 14-15, Chicago.

American Association of Railroad Superintendents.—J. Rothschild, Union Station, St. Louis, Mo.

American Electric Railway Association.—E. B. Burritt, 8 W. 40th St., New York.

American Electric Railway Manufacturers' Association.—C. F. J. Dell, 50 E. 42nd St., New York.

American Railroad Master Tinners', Coppersmiths' and Pipe Fitters' Association.—Otto E. Schlinck, 185 W. 5th St., Peru, Ind.

American Railroad Association.—J. E. Fairbanks, 75 Church St., New York:

Section I, Operating (including former activities of Association of Railway Telegraph Superintendents).—W. J. Fripp (chairman), N. Y. C. R. R., New York, N. Y.
Telegraph and Telephone Division.—J. F. Caskey (chairman), Supt. of Telegraph, Lehigh Valley.
Section II, Engineering.—E. H. Fritch, 431 South Dearborn St., Chicago.
Signal Division.—H. S. Balliet, 75 Church St., New York. Annual meeting, July 14-16, Alexandria Bay, N. Y.
Section III, Mechanical (including former activities of Master Car Builders' and Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago.
Section IV, Traffic.—Robert C. Wright (chairman), General Traffic manager, P. R. R., Philadelphia, Pa.
Section V, Transportation (including former activities of Association of Transportation and Car Accounting Officials.—E. J. Pearson (chairman), President, N. Y., N. H. & H. R. R., New Haven, Conn.
Section VI, Purchases and Stores (including former activities of Railway Storekeepers' Association).—J. P. Murphy, N. Y. C. R. R., Collinwood, Ohio.
Section VII, Freight Claims (including former activities of the Freight Claim Association).—Lewis Pilcher, 431 South Dearborn St., Chicago.

American Railway Bridge and Building Association.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Austin Station, Chicago. Next convention, October 26-28, 1920, Atlanta, Ga.

American Railway Engineering Association.—(Works in co-operation with the American Railroad Association, Section II.) E. H. Fritch, 431 South Dearborn St., Chicago.

American Railway Master Mechanics' Association.—(See American Railroad Association, Section III, Mechanical.)

American Railway Perishable Freight Association.—E. F. McPike, 135 E. 11th Place, Chicago. Regular meetings, 2nd Wednesday in March and September.

American Railway Tool Foremen's Association.—R. D. Fletcher, 1145 East Marquette Road, Chicago. Next convention, September 1-3, 1920, Hotel Sherman, Chicago.

American Short Line Railroad Association.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.

American Society for Testing Materials.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.

American Society of Civil Engineers.—Col. H. S. Cracker (acting secretary), Engineering Societies Building, 33 W. 39th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 33 W. 39th St., New York.

American Society of Mechanical Engineers.—Calvin W. Rice, 29 W. 39th St., New York.

American Steel Treaters' Society.—W. H. Eisenman, 154 East Erie St., Chicago.

American Train Despatchers' Association.—D. L. Darling, Northern Pacific Ry., Spokane, Wash.

American Wood Preservers' Association.—F. J. Angier, B. & O., Mt. Royal Sta., Baltimore, Md. Next annual meeting, January 25-27, 1921, San Francisco.

Association of Railway Claim Agents.—Willis H. Failing, C. R. R. of N. J., Jersey City, N. J.

Association of Railway Electrical Engineers.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago.

Association of Railway Executives.—Thomas De Witt Cuyler (chairman), 61 Broadway, New York, N. Y.

Association of Railway Telegraph Superintendents.—(See American Railroad Association, Section I, Operating.)

Association of Transportation and Car Accounting Officers.—(See American Railroad Association, Section V, Transportation.)

Bridge and Building Supply Men's Association.—G. R. McVay, Barrett Company, Chicago.

Canadian Railway Club.—W. A. Booth, 131 Charron St., Montreal, Que.

Car Foremen's Association of Chicago.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.

Car Foremen's Association of St. Louis.—Thomas B. Koeneke, Federal Reserve Bank Bldg., St. Louis, Mo. Meetings first Tuesday in month at the American Hotel Annex, St. Louis.

Central Railway Club.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 2d Thursday in November and 2d Friday in January, March, May and September. Hotel Statler, Buffalo, N. Y.

Chief Interchange Car Inspectors' and Car Foremen's Association.—J. C. Keene, General Car Inspector, Wabash R. R., Decatur, Ill.

Chief Interchange Car Inspectors' and Car Foremen's Supply Men's Association.—D. B. Wright, Lehon Company, 45th and Oakley Sts., Chicago.

Cincinnati Railway Club.—H. Boutet, 101 Carew Bldg., Cincinnati, Ohio.

Eastern Railroad Association.—D. G. Stuart, Washington, D. C.

Freight Claim Association.—(See American Railroad Association, Section VIII, Freight Claims.)

General Superintendents' Association of Chicago.—A. M. Hunter, 321 Grand Central Sta., Chicago. Regular meetings, Wednesday preceding 3d Friday in month, Room 856, Insurance Exchange Bldg., Chicago.

International Railroad Master Blacksmiths' Association.—A. L. Woodworth, B. & O., Lima, Ohio. Next annual convention, August 17-19, Tutwiler Hotel, Birmingham, Ala.

International Railway Fuel Association.—J. G. Crawford, 702 E. 51st St., Chicago.

International Railway General Foremen's Association.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn. Next convention, September 7-10, Hotel Sherman, Chicago.

Maintenance of Way Master Painters' Association.—E. E. Martin, Union Pacific R. R., Room No. 19, Union Pacific Bldg., Kansas City, Mo. Next convention, October 5-7, 1920, Detroit, Mich.

Master Boiler Makers' Association.—Harry D. Vought, 95 Liberty St., New York.

Master Car and Locomotive Painters' Association of the United States and Canada.—A. P. Dane, B. & M., Reading, Mass. Next convention, September 14-16, New American House, Boston, Mass.

Master Car Builders' Association.—(See American Railroad Association, Section III, Mechanical.)

National Association of Railroad Tie Producers.—J. J. Schafly, Potosi Tie & Lumber Company, St. Louis, Mo.

National Association of Railway and Utilities Commissioners.—James B. Walker, 49 Lafayette St., New York. Next convention, November 9, 1920. Washington, D. C.

National Foreign Trade Council.—O. K. Davis, 1 Hanover Square, New York.

National Railway Appliances Association.—C. W. Kelly, Kelly-Derby Co., Peoples Gas Bldg., Chicago.

New England Railroad Club.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting months of June, July, August and September.

New York Railroad Club.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

Pacific Railway Club.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meeting 2d Thursday in month, alternately in San Francisco and Oakland.

Railway Accounting Officers' Association.—E. R. Woodson, 1116 Woodward Bldg., Washington, D. C.

Railway Business Association.—Frank W. Noxon, 30 Church St., New York.

Railway Club of Pittsburgh.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, Americus Club House, Pittsburgh, Pa.

Railway Development Association.—D. C. Welty, Missouri Pacific R. R., Little Rock, Ark.

Railway Electric Supply Manufacturers' Association.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

Railway Equipment Manufacturers' Association.—D. L. Eubank, Galena Signal Oil Company, Richmond, Va.

Railway Fire Protection Association.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.

Railway Real Estate Association.—R. H. Morrison, C. & O. Ry., Richmond, Va.

Railway Signal Association.—(See American Railroad Association, Section II, Signal Division.)

Railway Storekeepers' Association.—(See American Railroad Association, Section VI, Purchases and Stores.)

Railway Supply Manufacturers' Association.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa.

Railway Telegraph and Telephone Appliance Association.—G. A. Nelson, Waterbury Battery Co., 30 Church St., New York.

Roadmasters' and Maintenance of Way Association.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill.

St. Louis Railway Club.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.

Signal Appliance Association.—F. W. Edmunds, West Nyack, Rockland County, New York.

Society of Railway Financial Officers.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.

Southern and Southwestern Railway Club.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

Southern Association of Car Service Officers.—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.

Supply Association of American Railway Tool Foremen's Association.—C. N. Thulin, Duff Manufacturing Company, 935 Peoples Gas Bldg., Chicago.

Track Supply Association.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y.

Traveling Engineers' Association.—W. O. Thompson, N. Y. C. R. R., Cleveland, O. Next convention, September 14-17, Hotel Sherman, Chicago.

Western Association of Short Line Railroads.—Clarence M. Oddie, Mills Bldg., San Francisco.

Western Railway Club.—J. M. Byrne, 916 W. 78th St., Chicago. Regular meetings, 3d Monday in month, except June, July and August.

Traffic News

Pullman sleeping and parlor car rates will be advanced 20 per cent in Illinois, effective July 1, to bring them up to the same basis as that of interstate rates, according to tariffs approved by the state utilities commission.

A protest against the 20 per cent increase in Pullman fares which went into effect on May 1 has been filed with the Interstate Commerce Commission, by the United Order of Commercial Travellers. The organization asked a restoration of the former rates and that the Pullman Company be directed to refund the amount of the increase to travellers that have paid it.

The Grand Trunk placed in operation on June 27 two new daily trains, between Chicago and points in Michigan. The first of the new trains, the Michigan Day Express, leaves at 11:45 a. m., central standard time, and arrives at Port Huron, Mich., via Detroit and Mount Clemens, at 11:05 p. m. The second train leaves at 9:10 p. m. and will arrive at Detroit at 7:50 a. m.

The American Railway Express Company has asked the Texas Railroad Commission for authority to make an increase of rates on intrastate traffic and a change in its merchandise classification. A similar application has been filed with the Interstate Commerce Commission, final hearing on which will be held at Washington, D. C., on June 28. When this last named hearing is concluded, the Texas commission will take action.

The Texas Industrial Traffic League and the Southwestern Industrial League, at a meeting held at Galveston, Tex., on June 11 and 12, went on record as opposing the segregation of the southwest into a separate rate making district. Other problems of the shippers and carriers were also discussed. Officers were elected for the ensuing year as follows: Ed. P. Byars, traffic manager, Ft. Worth, Tex., president; C. A. Bland, traffic manager, St. Louis Chamber of Commerce, Beaumont, Tex.; F. A. Leffingwell, traffic manager, Chamber of Commerce, Waco, Tex.; E. M. Gleason, traffic manager, Chamber of Commerce, Texarkana, Tex.; first, second and third vice-presidents consecutively, and H. C. Eargle, secretary and treasurer.

Traffic Statistics for April and Four Months

The Interstate Commerce Commission has issued a partial advance summary of traffic statistics for Class I roads for the month of April and four months ended with April, covering the operations of 196,000 miles of road. This shows that the net ton miles handled in four months of 1920 on these roads were 103,738,142,000 as compared with 86,824,145,000 the corresponding month of 1919. For the month of April the net ton miles were 21,951,000,000 as compared with 21,778,000,000 in April, 1919, reflecting the effects of the strike.

Reparation Rules

James C. Davis, general counsel for the Railroad Administration, has issued a circular prescribing rules for the government of carriers whose properties were under federal operation at the termination thereof on midnight, February 26, for the disposition of awards of reparation, as follows:

1. Informal awards made prior to March 1, 1920, against the director general of railroads shall be paid by the carrier or carriers named in such awards out of funds they hold in trust for the director general, in the same manner as such awards were paid to March 1, 1920.

2. Informal awards made on and after March 1, 1920, against the director general as agent under the transportation act, which have been served on any carrier or carriers, shall be immediately sent to John F. Finerty, assistant general counsel, United States Railroad Administration, Washington, D. C., who will arrange for the voucher and payment of such awards.

3. No formal awards of reparation, made either against the director general of railroads prior to March 1, 1920, or against the director general of railroads as agent on and after March 1, 1920, shall be paid except upon approval by the assistant general counsel.

4. Formal awards made against the director general of railroads prior to March 1, 1920, shall be sent to the assistant general counsel, and when approved by him shall be paid by the earlier or carriers named in such awards out of funds they hold in trust for the director general in the same manner as such awards were paid prior to March 1, 1920.

5. Formal awards made on and after March 1, 1920, against the director general of railroads as agent, will be vouchered and paid through the office of the assistant general counsel.

Any formal or informal awards by state commissions, either against the director general prior to March 1, 1920, or against the director general as agent on and after that date, shall be transmitted immediately to the assistant general counsel, who will issue the necessary instructions as to each award.

Grocers Urged to Help

President J. H. McLaurin, of the Southern Wholesale Grocers' Association, in a bulletin to members, urges shippers to help the railroads in the following ways: load and release cars promptly; load all cars to capacity; order cars only when actually required; reduce diversions and reconsignments to a minimum; order from the nearest available source; pool orders where practicable to insure full carloads, and in other well known ways. "What wholesale grocers most need now," says the bulletin, "is improved transportation service. The Interstate Commerce Commission has announced the immediate appropriation of $125,000,000 for the purchase of new rolling stock.

Coal Production

A break in the upward trend of recent weeks marked the production of coal during the week ended June 19, according to the weekly bulletin of the United States Geological Survey. The total output of soft coal, including also lignite and coal coked at the mine, is estimated at 9,956,000 net tons, a decrease when compared with the preceding week, of 313,000 tons, or 3.1 per cent. The average production per working day was 1,659,000 tons, a rate 10 per cent below that prevailing just before the switchmen's strike, and 20 per cent below that of October, 1919. Incomplete returns indicate a further decline during the week of June 20-26.

Production during the first 146 working days of the last four years has been as follows:

1917	257,783,000	1919	201,170,000
1918	265,547,000	1920	241,291,000

The year 1920 is thus 40,100,000 tons ahead of 1919, but is 16,500,000 tons behind 1917 and 24,250,000 tons behind 1918. The production of anthracite, like that of bituminous coal, declined during the week ended June 19. Shipments originated by the principal carriers (in part estimated) were 35,250 cars, as compared with 37,127 the week before. Total production, including mine fuel and local sales, is placed at 1,810,000 net tons, as against 1,907,000 tons during the preceding week. A year ago the output was 1,753,000 tons.

The estimates of weekly production of anthracite and bituminous coal published by the Geological Survey are based on weekly statements of cars loaded by 137 railroads carrying soft coal and 9 roads carrying anthracite, furnished through the courtesy of the American Railroad Association. As the great bulk of the coal produced is hauled by rail this furnished a solid basis on which to estimate the total production. Allowance is also made for the coal loaded by certain carriers not reporting to the American Railroad Association, for shipments by water, for coal required to produce the week's output of beehive coke for mine fuel, sales to local trade, and other items.

The production figures thus obtained, like all estimates, are subject to revision, but the margin of error is not believed to exceed two per cent. Opportunity is afforded every year to check the estimates against the actual count of production at each mine. In 1916 the sum of the weekly estimates, published January 4, 1919, was 585,883,000 net tons of bituminous and 99,473,000 net tons of anthracite. The mine canvass, completed six months later, gave a final figure of 579,386,000 tons bituminous and 98,826,000 tons anthracite. The error in the estimates was thus for bituminous 6,497,000 tons, or 1.1 per cent, and for anthracite 647,000 tons, or 0.7 per cent.

Foreign Railway News

French Railway Repair Shops to Close Down

LONDON.

It has been reported that the majority of the railway repair shops on the Orleans, Paris, Lyon & Mediterranean, Midi and French State railways, which have been closed during the strike, will not be reopened.

Belgium Short of Raw Materials

LONDON.

The Times Trade Supplement is authority for the statement that owing to the shortage of raw materials, Belgian manufacturers have been obliged to refuse large orders for railway material, locomotives and wagons needed for South America.

English Railway Deficit for the Year 1919

LONDON.

The Minister of Transport stated in the Houses of Parliament recently that the amount to be made good under the railway agreements for the operation of the railways under his control for the financial year 1919 to 1920 is estimated at $202,500,000.

Freight Cars for Belgium

LONDON.

A report from the Times Trade Supplement says that the English government has sold to the Belgian railways 13,438 freight cars of both closed and open top construction, 2,000 of which are of 30 tons capacity and 4,000 of 20 tons capacity, and in addition 1,800 German cars of various sizes. The Belgian government has also ordered from local plants 5,000 freight cars, 1,600 passenger cars and is considering placing contracts for 15,000 coal cars, 3,000 flat cars and 2,000 baggage cars.

Poland Holding Up German Freight Cars

LONDON.

According to "Berliner Tageblatt," 500 loaded freight cars despatched from East Prussia and intended for Germany are waiting at the Polish frontier for permission to pass. The Poles request the German railroad authorities to supply them with the necessary locomotives to handle these cars, claiming that the locomotives handed over to them by the Germans are not sufficient. This is due to the larger part of the former German locomotives being in a very poor condition owing to the lack of skilled workmen in the services of the Polish railways.

Two-Class System on German Railroads

LONDON.

A special commission appointed to study the question of changing the present four-class passenger service of the German State railroad into a two-class system has finished its investigations. It is impossible to state a definite date at which this change will take place, as the technical difficulties are considerable, and as Parliament and the "Reichswirtschaftsministerium" have to give their final consent. It is planned to provide for a class furnished with cushion seats and one with wooden benches. The task of setting rates to meet the needs of both railroad and public is especially complicated.

Foreign Sales of British Rolling Stock

LONDON.

In answer to a question in the English Houses of Parliament, it was stated that 5,600 freight cars have been sold to the French Northern railway company, 18,000 freight cars and 260 locomotives to the Belgian government, and a number (which is not yet known) to the Greek government. Of the above, 3,090 freight cars and 33 locomotives were captured German vehicles. Payment in respect of the sales to the Northern Railway of France has been made through army accounts. Payment by the Belgian and Greek governments is being made under arrangements sanctioned by the Treasury.

Equipment and Supplies

Locomotives

THE CANADIAN PACIFIC is inquiring for 15 locomotives.

THE COPPER RIVER & NORTHWESTERN is inquiring for 4 locomotives.

THE BALTIMORE & OHIO is inquiring for 50 Mikado type locomotives.

JOSE FERRER (Cuba) has ordered 1 locomotive from the American Locomotive Company.

THE TEXAS SOUTH EASTERN has ordered 1 locomotive from the Baldwin Locomotive Works.

THE BIRMINGHAM SOUTHERN has ordered 2 locomotives from the American Locomotive Works.

THE CENTRAL SANTA MARIA (Cuba) has ordered 1 locomotive from the American Locomotive Company.

THE ST. PAUL UNION DEPOT has ordered 1, six-wheel switching locomotive from the Lima Locomotive Works.

THE CENTRAL SAN AUGUSTIN, Cruces, Cuba, has ordered 1 locomotive from the American Locomotive Company.

THE TENNESSEE COAL, IRON & RAILROAD COMPANY has ordered 4 locomotives from the American Locomotive Works.

THE IMPERIAL TAIWAN RAILWAY has ordered 7, 2-8-0 type locomotives from the American Locomotive Company.

THE UNITED FRUIT COMPANY has ordered 4, 4-wheel, oil burning, plantation locomotives from the Bell Locomotive Works.

Freight Cars

THE MANILA RAILROAD is inquiring for 100 cane cars.

THE ATLANTIC COAST LINE is in the market for 400, 50-ton coal cars.

THE CHAMPION FIBRE COMPANY, Hamilton, Ohio, is inquiring for 50 gondola cars of 50 tons capacity.

THE BRIER HILL STEEL COMPANY, Youngstown, Ohio, is inquiring for from 50 to 100, 70-ton hopper cars.

THE GOODYEAR TIRE & RUBBER COMPANY, Akron, Ohio, is inquiring for from 100 to 200, 75-ton hopper cars.

E. W. MUDGE & Co., Pittsburgh, Pa., have ordered 240, 70-ton hopper cars from the Standard Steel Car Company.

THE DONNER STEEL COMPANY, Buffalo, N. Y., has ordered 250, 70-ton hopper cars from the Standard Steel Car Company.

THE ACAR MANUFACTURING CORPORATION, New York, has ordered 22 tank cars of 10,000-gal. capacity, from the Pennsylvania Tank Car Company.

THE EGYPTIAN STATE RAILWAYS are inquiring through Ductilh-Smith, McMILLAN & Co., 50 Broad street, New York, for 50 tank cars of 30 net tons capacity.

THE BOSTON & MAINE, reported in the *Railway Age* of May 28, as inquiring for 50 caboose cars, has ordered this equipment from the Laconia Car Company.

THE PHELPS-DODGE CORPORATION, New York, has ordered from the General American Tank Car Corporation 2 special type tank cars to have a capacity of 2,000 gal. each, for use in Mexico.

THE CARNEGIE STEEL COMPANY, Pittsburgh, Pa., reported in the *Railway Age* of June 25, as having renewed its inquiry for 500, 50-ton hopper car bodies, has ordered this equipment from the Standard Steel Car Company.

Supply Trade News

W. W. Rosser, vice-president of the **T. H. Symington Company,** Rochester, N. Y., has become associated with the **Bradford Draft Gear Company,** New York, with headquarters at Chicago.

Robert A. Bole has been appointed vice-president of **Manning, Maxwell & Moore, Inc.,** New York, but will continue his duties also as general sales manager at Pittsburgh. His election to the board of directors was announced recently.

The **Refinite Company,** Omaha, Neb., manufacturers of the Refinite water softener and the Refinite rapid pressure filter, has just acquired by purchase of the entire capital stock, ownership and control of the **L. M. Booth Company,** Jersey City, N. J., manufacturers of the Booth lime-soda water softener.

The **New York Air Brake Company,** New York, has opened an office in room 1405, Walker Bank building, Salt Lake City, Utah, which will be the headquarters for **Captain Thomas O'Leary, Jr.**, representative. Captain O'Leary has acted as representative of the company on western territory since his return from France.

Parsons, Klapp, Brinckerhoff & Douglas, consulting engineers, constructors and managers, announce the removal of their general and engineering offices from 60 Wall street to their own building, 84 Pine street, New York, also the executive offices of their subsidiary and operated corporations and properties and the Parklap Construction Corporation.

James P. Roe was appointed general superintendent of the **Reading Iron Company,** Reading, Pa., effective May 14. He was born in Wales and began work as an apprentice at the Consett Iron Works, Consett, England, subsequently serving in the pattern shop, machine shop and drafting room and later as assistant mechanical engineer of those works. At the age of 23 he came to America and held various positions with the Pottstown Iron Company and then was promoted to general superintendent. He resigned in 1890, to become general superintendent of the Glasgow Iron Company's interests, which then comprised the Valley and Glasgow mills, and in March, 1898, his authority was extended when the Glasgow Iron Company leased the plants of the Pottstown Iron Company. Mr. Roe is the inventor of the Roe mechanical puddler, which was first developed successfully at Pottstown. In 1906 Mr. Roe was one of three selected from a list of 66 to present a paper before a joint meeting in London of the American Mining Engineers and the British Iron & Steel Institute. He is known internationally as an engineer and metallurgist and is an active member of the America Iron & Steel Institute, the American Society for Testing Materials and the British Iron & Steel Institute.



J. P. Roe

The Imperial Japanese Government has conferred the Fourth Class of the Imperial Order of Meiji upon **Charles M. Muchnic,** vice-president of the **American Locomotive Sales Corporation,** New York, and invested him with the insignia of the Imperial Order of the Rising Sun pertaining to said class, in expression of the good will which it entertains towards him.

The Baldwin Locomotive Works, Philadelphia, Pa., at a recent meeting elected **Thomas S. Gates,** of Drexel & Co., to the board and to the executive committee, to succeed **Arthur E. Newbold, deceased.** A finance committee was created consisting of **Thomas S. Gates,** chairman; **Sidney F. Tyler** and **Arthur W. Sewall,** and President Vauclain, ex officio member. This committee is a subsidiary to the executive committee, to which it will report. There was no action taken on the filling of the vacancy of chairman of the board.

Albert G. Elvin, who has been elected vice-president in charge of operation and treasurer of the **Elvin Mechanical Stoker Company,** New York, as was announced in the *Railway Age* of June 25, was born on February 26, 1865, at North Vernon, Ind., and was educated in the public schools. He began railway work in 1881, serving as boilermaker and machinists' apprentice at Peru, Ind., on the Indianapolis, Peru & Chicago, now part of the Lake Erie & Western. In 1889 he went to the Pittsburgh, Cincinnati, Chicago & St. Louis at Indianapolis as a machinist, and in 1890, was put in charge of the tool shop, manufacturing all tools for the entire system. He left railway service in 1891 to become superintendent of the Indianapolis Frog & Switch Works at Indianapolis, and two years later returned to railway work as general foreman on the Chesapeake & Ohio at Clifton Forge, Va. In 1896 he was promoted to the main shop and in 1899 left the service of the Chesapeake & Ohio to go to the Grand Trunk as master mechanic at the main shops, Montreal, Que. In January, 1901, he was appointed general master mechanic on the Delaware, Lackawanna & Western at Scranton, Pa. In all of the above mentioned shops he designed and put into operation many labor saving devices. Among these, in 1896, he introduced the first pneumatically operated turntables and transfer tables in this country. Prior to 1902 he invented and put into actual service many devices. At this time the weight per square inch on driving journals of locomotives had been increased, making it very difficult to lubricate with oil, and hot journals were very troublesome. It was at this time he invented and patented the Elvin driving box lubricator, which is known today as the Franklin driving box lubricator and has been standard on the majority of locomotives in the United Sates and Canada for the past 14 years. In 1903 he went to the Franklin Railroad Supply Company, then known as the Coffin-Megeath Supply Company, and remained with the company as mechanical manager until 1916, when he retired from active work due to a breakdown in health. During the time he was associated with the Franklin Railway Supply Company he invented and patented a pneumatic firedoor, and the steam grate shaker. The latest of his devices is the Elvin mechanical stoker, which has been in successful service for the past three years on the Erie Railroad.



A. G. Elvin

The **Worthington Pump & Machinery Corporation,** New York, announces the purchase from the Platt Iron Works, Dayton, Ohio, of its drawings, patterns, jigs, templates, special tools, good-will and name, on its following lines of product: Oil mill machinery, suitable for the extraction of oil from all sorts of nut and seed products, comprising crushers, cookers, cake formers, presses, filters and pumps; hydraulic turbine and water wheel line, covering its entire line of hydraulic turbines and water wheels, horizontal and

vertical, high and low head; feed water heaters, steel and cast iron, horizontal and vertical; high pressure air compressors for torpedo and other high pressure charging, cleaning and discharging.

The consolidation is announced of **Westinghouse, Church, Kerr & Co., Inc.,** and **Dwight P. Robinson & Co., Inc.,** under the name of **Dwight P. Robinson and Company, Incorporated,** engineers and constructors, with general offices at 125 East Forty-sixth street and a downtown office at 61 Broadway, New York. The officers are: **Dwight P. Robinson,** president; **T. N. Gilmore,** first vice-president; **I. W. McConnell,** vice-president; **A. K. Wood,** vice-president and treasurer; **R. M. Henderson,** vice-president; **L. H. Bean,** vice-president; **H. H. Kerr,** vice-president, Chicago office; **W. L. Murray,** secretary; the directors include the first four officers named above and **Paul D. Cravath,** of Cravath & Henderson, attorneys; **Homer Loring,** of Loring & Co., Boston; **John P. McGinley,** chairman, Chicago Pneumatic Tool Company; **Harry T. Peters,** president, the Fairbanks Company, and **Edward R. Tinker,** vice-president, Chase National Bank.

C. H. Jackman has been appointed sales agent of the **Pressed Steel Car Company** and Western Steel Car & Foundry Company, western district, with headquarters at Chicago. Mr. Jackman was born at Crystal Lake, Ill., on May 5, 1893, and was educated at the university of Illinois, graduating in 1916. He entered the employ of the American Bridge Company at Gary, Ind., as a draftsman in the master mechanic's department. Later he was with Joseph T. Ryerson & Son, Chicago, as estimator and sales correspondent until December 10, 1917, when he enlisted in the Air Service, U. S. A. After completing the army's course for pilots, he was commissioned Second Lieutenant, R. M. A. Upon receiving his discharge from the service, he returned to Joseph T. Ryerson & Son as special steel salesman, where he remained until his recent appointment as sales agent of the Pressed Steel Car Company and the Western Steel Car & Foundry Company.

On April 2 the stockholders of **J. H. Williams & Co.,** manufacturers of drop-forgings and drop-forged tools at Brooklyn and Buffalo, N. Y., and of **The Whitman & Barnes Manufacturing Company,** makers of twist drills, reamers, wrenches and drop-forgings at Akron, Ohio, Chicago and St. Catharines, Ontario, ratified the agreement which was noted in the *Railway Age* of April 2, page 1121. The agreement provides for the consolidation of the wrench and drop-forging plants and business of Whitman & Barnes at Chicago and St. Catharines with J. H. Williams & Co. The Whitman & Barnes Manufacturing Company retains its twist drills and reamer business and will continue, as an entirely separate organization and on an extended scale, the manufacture of these tools at Akron. The business will continue to be operated by those who have been continuously identified heretofore with the business of J. H. Williams & Co. and with the Chicago and St. Catharines plants of the Whitman & Barnes Manufacturing Company, the organization being as follows: **J. Harvey Williams,** president and managing director; **A. D. Armitage,** vice-president; **W. A. Watson,** secretary and treasurer; **R. S. Baldwin,** controller; **F. W. Trabold,** general sales manager; **A. S. Maxwell,** eastern district sales manager; **W. E. Rowell,** western district sales manager; **J. C. Cotter,** Buffalo district sales manager; **A. M. Thompson,** Detroit district sales agent; **Hugh Aikman,** publicity manager; **Capt. W. N. McMunn,** general works manager; **Willard Doud,** chief engineer; **R. J. Smith,** superintendent, Brooklyn division; **T. F. DuPuy,** superintendent Buffalo division; **Barney Nelson,** superintendent, Chicago division; **J. C. Scanlon,** general purchasing agent; **J. B. Payne,** general traffic manager, and **W. J. Elliott,** Canadian manager.

American Car & Foundry Company

The annual report of the American Car & Foundry Company for the fiscal year ended April 30, 1920, issued to stockholders on June 24, shows earnings from all sources, after provision for taxes, of $14,382,565, as compared with $17,273,172 in the year ended April 30, 1919. A total of $3,981,373 was expended for renewals, replacements, etc., leaving net earnings of $10,401,192, as compared with $11,771,813 in 1919. Dividends were paid amounting to $2,100,000, or 7 per cent on the preferred stock and $3,600,000, or 12 per cent on the common stock, and $3,600,000 was added to the reserve for dividends on common stock, making a total of $9,300,000. The surplus for the year was $1,101,192. The earnings on the common stock are figured out at $27.67, as compared with $32.23 last year. In his remarks President W. H. Woodin, in speaking of the reserve for dividends on common stock, says that this now totals $10,800,000, sufficient for the payment of common stock dividends for three years at the rate of 12 per cent yearly.

Mr. Woodin also says in part:

"From time to time during the year there have arisen differences between many of the railroads and various classes of their employees, because of which the normal traffic movement throughout great sections of the country has been seriously retarded. The company, in common with other industrial concerns, has felt the effect of this in that it has experienced difficulty in moving to its plants material needed for business booked anl in course. These conditions seem now to be in process of ratification—but it is essential that means be devised to prevent their recurrence. Upon the free and uninterrupted flow of traffic, more than upon any other single factor, depends all industrial and commercial activity. The traffic of the country cannot move without cars to carry it and cars cannot be supplied unless the builders can obtain promptly as required the materials necessary for their construction.

"There has been no lessening in the demand for equipment for use outside the United States. The business done by the company in that field has been sufficiently satisfactory both as to amount and results. . . .

"The need of the railroads both for the repair of old and the acquiring of new equipment is great and insistent. Their problem is to finance the enormous expenditure necessary. Upon the successful handling of that will depend in large measure the prosperity of the country. Happily, the public and the congress are coming to a recognition of the just claims of the roads. The legislation already referred to contains provisions for governmental aid where needed. The commission is authorized to loan money to the roads, and where necessary to acquire equipment for their use. By the operation of these provisions or otherwise it is to be expected that the railroads will be financed to the extent of their necessities—and there is every reason to believe that the company will get its fair share of the resulting business."

The balance sheet follows:

Assets

Property and plant account		$68,517,847
Cost to April 30, 1919	$67,525,272	
Add: Additions during year	992,575	
Current assets		71,031,980
Materials on hand	$15,007,108	
Accounts and notes receivable	8,573,807	
U. S. certificates of indebtedness, Liberty Bonds and Victory Notes	33,737,050	
Stocks and bonds of other companies	3,679,616	
Cash in banks and on hand	10,034,399	
		$139,549,827

Liabilities

Preferred stock		$30,000,000
Common stock		30,000,000
Current liabilities		31,333,962
Accounts payable, not due; and pay rolls (paid May 16, 1920)	$15,044,106	
U. S. R. A. advances under contract	6,334,856	
Provision for federal income and war profits taxes	7,950,000	
Dividend on preferred stock (payable July 1, 1920)	525,000	
Dividend No. 71 on common stock (payable July 1, 1920)	900,000	
Reserve accounts		15,790,152
For insurance	$1,500,000	
For general overhauling, improvements and maintenance	3,785,013	
For dividends on common stock	10,800,000	
For improving working conditions of employees	405,140	
Surplus account		32,425,713
		$139,549,827

Trade Publications

BELT FASTENERS.—The Crescent Belt Fastener Company, New York, has published a new handbook illustrating Crescent belt fasteners in use on many different kinds of belting and under different conditions and giving full data regarding their use.

EXPANSION JOINTS.—The Griscom-Russell Company, New York, has published Bulletin No. 1010, an eight-page pamphlet, containing specifications for the two types of G-R expansion joints for use on low pressure steam lines to provide for expansion and contraction of the pipe.

BEARING ALLOY.—The Ajax Metal Company, Philadelphia, Pa., is distributing a small leaflet describing the composition of Ajax bull bearing alloy and its advantages as a general purpose lining metal. It is claimed to be not only cheaper than genuine and other tin-base babbitts, but to last longer and run cooler.

LOCOMOTIVES FOR LOGGING SERVICE.—Record No. 96, published by the Baldwin Locomotive Works, Philadelphia, Pa., describes the conditions which must be met by locomotives in logging service and recommends types that are best suited for the purpose. Numerous locomotives built for this kind of service are illustrated and general data is given for each.

HEATING SYSTEMS.—The Gold Car Heating & Lighting Company's modern heating and ventilating systems for railway cars are described fully in a 40-page catalogue supplement recently issued. The results of laboratory and service tests made during the past winter of the company's latest type vapor valves are also contained in the supplement.

CAR JACKS.—Bulletin No. 301, an eight-page pamphlet, is being distributed by the Duff Manufacturing Company, Pittsburgh, Pa., giving complete information regarding Duff high speed ball bearing jacks of 50 and 35 tons capacity. These jacks were designed especially for raising heavy freight and passenger cars in railway repair shops, but are also used extensively for bridge work.

VANADIUM STEEL.—The Vanadium Alloys Steel Company, Pittsburgh, Pa., has issued a small booklet covering Vasco vanadium steel, a general utility tool steel for all purposes, particularly adapted to resist shock and strain. This steel is made in six different types, each containing a different percentage of carbon. The classes of work for which each is especially suited are listed and directions are given for the heat treatment of each type.

ELECTRICAL MATERIAL.—The Electric Service Supplies Company, Philadelphia, Pa., has issued a new 608-page catalogue, No. 6. It lists and illustrates material for railroads, mines and industrial organizations, including steam and mine locomotive headlights, marine searchlights and projectors, turbo-generators and headlight switches, contact rail material for cranes and haulage systems, armature repair machinery and coil winding machinery.

WATER PURIFIER.—The Bornstead Still & Sterilizer Company, Boston, Mass., has issued a 20-page booklet describing the various types of stills manufactured by that company for distilling water. These stills are adapted to the use of either steam, gas or electricity for the vaporization of the water to be distilled and the equipment is available in types suitable for hospitals, storage battery requirements, chemical laboratories, etc. All these different types are described and in addition considerable information is presented on the nature of water and the objects to be attained by the process of distillation.

AUTOMATIC CONNECTORS.—A Performance Record of the American Automatic Connector, a booklet of 16 pages published by the American Automatic Connector Company, Cleveland, Ohio, presents the results that have been accomplished through the use of this equipment on 24 steel and 76 wooden hopper ore cars, 20 passenger cars and nine locomotives on the Copper Range Railroad. These connectors were installed more than a year ago and the trains were operated in what is possibly the worst snow region on this continent. An accurate record was kept by the railroad company of the cost of maintenance, the cause for each part renewed was determined and the results obtained through the use of the connectors were carefully analyzed. This data has now been published in the booklet mentioned.

Financial and Construction

Railway Financial News

CENTRAL OF GEORGIA.—An application to the Interstate Commerce Commission by the Central of Georgia requesting the issuance by the commission of an order authorizing the applicant to unconditionally guarantee the payment of the principal of $1,000,000 first mortgage 5 per cent gold bonds of the Ocean Steamship Company of Savannah, with the interest thereon at 7 per cent per annum has been assigned for hearing before Examiner Charles V. Burnside at the commission's office in Washington on June 30.

CHICAGO & EASTERN ILLINOIS.—To allow further time for a fianancial settlement with the government the sale of this road, set for June 15, has been postponed until October 19.

ERIE.—The New Jersey Public Utility Commission has authorized this company to issue $4,300,000 20-year 6 per cent bonds under its refunding and improvement mortgage, dated December 1, 1916, to the Bankers' Trust Company, trustee, to secure an authorized issue of bonds of a total face value of $500,000,000. The commission ordered that the bonds be sold for not less than 90 per cent of their face value, to realize net proceeds of at least $3,870,000. The proceeds are to be applied solely toward reimbursement of the treasury for moneys expended for the payment of equipment trust certificates from January 1, 1918, to March 31, 1920.

NEW YORK, NEW HAVEN & HARTFORD.—The Connecticut Public Utility Commission has authorized this company to issue $16,758,000 debentures to retire a like amount of Providence Securities Company debentures, due May 1, 1957.

NORTHWESTERN PACIFIC.—This company will expend nearly 1,000,000 in improvements according to a decision rendered by the Railroad Commission of the State of California on June 17, which authorizes the company to issue $1,008,000 of its bonds bearing 4½ per cent interest and due March 1, 1957. The Northwestern Company intends to sell the bonds to the Southern Pacific Company at 95 and accrued interest, the proceeds of the sale to be expended as follows: road, $846,509.77; equipment, $114,496; general expense, $2,943.34.

SAN DIEGO AND ARIZONA.—Application has been made by this company for permission to issue and sell to the Southern Pacific Company, at face value, its forty-year six per cent bonds to the amount of $1,000,000, for properties and reimbursing the Southern Pacific for a like amount of money advanced by the Southern Pacfic for construction of the San Diego and Arizona. To facilitate the financing permission is asked of the commission to amend the San Diego and Arizona mortgage now held by the United States Mortgage & Trust Company by increasing the authorization to $8,000,000 of bonds for construction purposes to $9,250,000 and to reduce bonds authorized to the sum of $4,000,000 for other purposes to $2,750,000. For this purpose the company has secured the consent of the holders of all outstanding bonds.

SOUTHERN PACIFIC.—The fact that all of the suits involving the "productive and valuable" oil lands of the Southern Pacific have been settled finally in favor of the Southern Pacific was mentioned in the editorial comments on the Southern Pacific's annual report in the *Railway Age* last week. Through a typographical error these lands were said to be 161 acres, whereas actually they are 161,000 acres.

SOUTHERN PACIFIC.—The Interstate Commerce Commission, Division 4, has granted a petition by the Southern Pacific Company for authority under section 20a of the interstate commerce act to continue the issuance of its common capital stock in exchange for and against the surrender and cancellation of an equal amount in par value of its 5 per cent 20-year convertible gold bonds in accordance with the terms of an indenture dated June 1, 1914, on or at any time before June 1, 1924,

but not later, or, if before that date, all but not part thereof, of said bonds at the time outstanding are called for redemption, then prior to 30 days before the redemption date. It is ordered that all of the common capital stock not issued by midnight of June 1, 1924, as provided in said indenture, shall be issued or otherwise disposed of only on order from the commission.

SOUTHERN PACIFIC.—This company recites in an application filed with the Railroad Commission of California that the company has entered into an agreement with Harry E. Righter, Andrew S. Hannum and the Commercial Trust Company under which the company leases equipment needed for its service for a consideration of $22,500,000. At this time $15,000,000 will be issued payable in annual installments of $1,250,000 each, on June 1 of each year, from 1924 to 1935, inclusive. The obligation carries with it the payment of dividends semi-annually on June 1 and December 1 of each year, at 7 per cent and payable in New York without deduction for taxes other than federal income tax. The application asserts that the company understands that the Railroad Commission has authority to pass only upon that portion of financing which concerns intrastate commerce and the approval is sought in order that the financing which will be conducted outside of the state may proceed. The petition states that the Commercial Trust Company is to be the trustee of a "Southern Pacific Equipment Trust Series E," and that the certificates are to be sold at 96½ per cent of face value and accrued dividends.

ULSTER & DELAWARE.—A board of compensation appointed by the Interstate Commerce Commission has issued a report finding that the just compensation to be paid by the government for the use of this property during federal control is $176,472 per annum. The company claimed $200,000, but later amended its application, asking for $518,556, as 6 per cent on its value. The government contended that the compensation should not exceed $125,269.

WESTERN PACIFIC.—This company has declared a dividend of 1½ per cent on the preferred stock, payable July 12 to stock of record July 2. Since May, 1919, the quarterly dividends have been 1 per cent.

Railway Construction

CANADIAN NATIONAL. This company has awarded a contract for the construction of the Acadia Valley branch to John Timothy of Winnipeg, and for the Turtleford Southeastern line to the Western Construction Company, North Battleford, Saskatchewan. Work on the Maryfield extension of this road has been suspended, pending investigations of a change in the route. Negotiations for the contract of the Prince Albert Northeasterly line are under way.

EDINBURG, FALFURRIAS & GULF.—A charter to build a 70-mile line from Beeville, Tex., to Edinburg has been granted by the Railway Commission of Texas to this company. The right of way from Edinburg, Tex., to Falfurrias, 60 miles, has been secured, but it is not known when construction work will start.

LOS ANGELES & SALT LAKE.—This company has given the contract for the fabrication of 132 tons of steel for a machine shop to be constructed at Provo, Utah, to the Omaha Steel Works, Omaha, Nebr.

MISSOURI, KANSAS & TEXAS.—A contract has been given to the List & Gifford Construction Company, Kansas City, Mo., for rearranging and extending the yards at Osage, Okla. The work includes about 70,000 cu. yd. of grading, the construction of about five miles of track, concrete trestle under the main track and six additional tracks and some minor culvert work. The improvements also include installing a new 75-ton track scale, which will be carried out by company forces.

UNION PACIFIC.—This company has awarded a contract to the Utah Construction Company of Ogden, Utah, for the grading in connection with second track construction, from Le Roy, Wyo., to Wahsatch, Utah, about 35 miles. This work has been authorized on the basis of only the grading and bridge work being done this year. The track laying is to follow at some time in the future. The grading has just been started, and all culvert and bridge work will be handled by the railroad forces.

ANNUAL REPORT

The Chesapeake and Ohio Railway Company—Forty-Second Annual Report

RICHMOND, VA., April 16, 1920.

TO THE STOCKHOLDERS:

The forty-second annual report of the Board of Directors, for the fiscal year ended December 31, 1919, is herewith submitted.

The average mileage operated during the year by the United States Railroad Administration operating the Chesapeake and Ohio Lines was 2,506.0 miles, an increase over the previous year of 26.3 miles. The mileage at the end of the year was 2,516.9 miles, an increase of 32.1 miles over mileage on December 31, 1918. See schedule on page 12.

RESULTS FOR THE YEAR

*Compensation under Compensation Contract, dated February 28, 1920	$14,588,578.73
(Increase $1,361,595.50, or 10.29 per cent)	
†Expenses of Maintaining Corporate Organization	202,048.38
Net operating income	$14,386,530.35
(Increase $1,295,356.70, or 9.89 per cent)	
Federal income taxes accrued	319,998.50
(Decrease $38,185.93, or 10.66 per cent)	
Net income, taxes deducted	$14,066,531.85
(Increase $1,333,542.63, or 10.47 per cent)	
Miscellaneous income	1,215,829.84
(Increase $97,415.38, or 8.71 per cent)	
Total corporate income	$15,282,361.69
‡Rentals and other payments	734,349.58
(Increase $450,958.94, or 159.13 per cent)	
Income for the year available for interest	14,548,012.11
(Increase $979,999.07, or 7.22 per cent)	
Interest (60.31 per cent of amount available)	8,773,843.40
(Increase $43,336.91, or 0.50 per cent)	
Net income for the year, equivalent to 9.19 per cent on capital stock outstanding	$5,774,168.71
(Increase $936,662.16, or 19.36 per cent)	
Dividends paid during year: Two dividends of 2 per cent each	2,511,264.00
Remainder, devoted to improvement of physical and other assets	$3,262,904.71

RETURN ON PROPERTY

The following table shows the amount of return to your Company, including subsidiary companies, from transportation operations only, upon its investment in road and equipment at the termination of each year of the five year period ended December 31, 1919, and the average for the five years:

	Property investment	Total operating income	Percentage of return
¶Year ended December 31, 1919	$287,864,838.63	$13,725,866.83	4.77%
¶Year ended December 31, 1918	269,914,419.76	12,871,539.79	4.77%
Year ended December 31, 1917	263,307,068.67	14,871,459.45	5.64%
Year ended December 31, 1916	250,247,098.33	15,359,715.04	6.14%
Year ended December 31, 1915	244,968,206.05	12,465,058.24	5.11%
Yearly average for five years ended December 31, 1919	263,098,326.29	13,858,727.87	5.27%

*Includes besides additional allowance made by the Director General of Railroads for years 1918 and 1919 on account of the exceptional condition of the Company during the three year test period ending June 30, 1917, the Standard Return as finally certified by the Interstate Commerce Commission. The term Standard Return as used in this report means "average annual railway operating income for the three years ended June 30, 1917," as defined by the Federal Control Act of March 21, 1918, less proportion not accrued to June 30, 1917, of one half of war taxes for that year, and the amount of adjustment of wages under the Adamson Law, not accrued prior to June 30, 1917, and paid subsequently to that date.

†By ruling of the Director General of Railroads, these expenses were required to be paid by the Company, although the corresponding expenses of the three years ended June 30th, 1917, were deducted as operating expenses in computing the Standard Return.

‡Rentals and other payments include $542,902.64, representing the difference between the amount of $295,106.71 credited account of Revenues prior to January 1, 1918, and the amount of $838,009.35 charged account of expenses prior to January 1, 1918.

¶The road having been operated in 1918 and 1919 by the United States Railroad Administration—for the year 1918, the Standard Return, as tentatively certified by the Interstate Commerce Commission, has been used; and for the year 1919, the contract compensation plus additions to the Standard Return, as finally certified, and additional allowances made by the United States Railroad Administration applicable to the year 1918, has been used, in lieu, in each case, of operating and other items corresponding with the Standard Return. In these computations, interest payable by way of compensation for additions and betterments completed during Federal control has been excluded.

FINANCIAL

Your Company undertook no new financing during the year. Since January 1, 1920, arrangements have been made with the Director General of Railroads to fund the indebtedness of your Company to the United States Government for equipment acquired during Federal control through Equipment Trust Notes, bearing interest at six per cent, and maturing serially over a period of fifteen years. The aggregate principal amount of these Notes issued to date is $11,205,000, which will be somewhat increased when the final cost of the equipment has been ascertained. All, or substantially all, of the indebtedness of your Company to the United States Government for other additions and betterments made

during Federal control, aggregating approximately $10,289,212.81, your Directors hope to fund, under the provisions of the Transportation Act of 1920, hereinafter mentioned, for a period of ten years at six per cent, with the option to your Company to pay all or any part before maturity.

Notwithstanding adverse financial conditions now prevailing, your Company must secure during the coming year for new equipment and for other additions and betterments imperatively needed, a moderate amount of new capital, a part at least of which it is hoped may be provided out of the revolving fund established by the Transportation Act.

The changes in funded debt in the lands of the public during the year were as follows:

	Retired
4 per cent Big Sandy Ry. First Mortgage Bonds	$113,000.00
4 per cent Coal River Railway First Mortgage Bonds	53,000.00
4 per cent Greenbrier Ry. First Mortgage Bonds	21,000.00
5 per cent Kanawha Bridge and Terminal Co. First Mortgage Bonds	5,000.00
4 per cent Raleigh & Southwestern Ry. First Mortgage Bonds	10,000.00
Equipment Trust Obligations	1,114,000.00
Decrease	$1,316,000.00

Other changes in obligations shown under funded debt on balance sheet of December 31, 1919, were as follows:

	Increase	Decrease
5 per cent First Lien and Improvement Mortgage Bonds	$5,258,000.00	
4½ per cent General Mortgage Bonds	487,000.00	
5 per cent Equipment Contract—Standard Steel Car Co.		$192,031.39
Net increase	$5,552,968.61	

The five per cent First Lien and Improvement Mortgage Bonds were issued during the year for additions and betterments and other capital purposes and were pledged as collateral for various loans.. The 4½ per cent General Mortgage Bonds were issued to reimburse the Company for outlays made for double track purposes and remain in your Company's treasury.

During the past year your Company acquired at par an additional $500,000.00 par amount of coupon notes of the Western Pocahontas Fuel Company, a corporation owning the Dorothy and Sarita coal properties in West Virginia, to which corporation reference was made in the report for 1917.

Your Company also acquired during the year, 9 shares of the preferred stock of the Lexington Union Station Company.

During the past eleven years your Company's increase in capital liabilities in hands of the public, its principal acquisitions of stocks and bonds of other companies, and its expenditures for equipment, branch line construction, second track and other additions and betterments, have been as follows:

Capital obligations issued or assumed	Par-value	
General Mortgage 4½ per cent Bonds	$4,793,000.00	
General Funding and Improving Mortgage 5 per cent Bonds	11,000,000.00	
First Consolidated Mortgage 5 per cent Bonds	2,000,000.00	
Convertible 4½ per cent Bonds	31,390,000.00	
Three Year 4½ per cent Collateral Trust Notes	25,000,000.00	
One Year 5 per cent Collateral Trust Notes	3,500,000.00	
Five Year 5 per cent Collateral Trust Notes	33,000,000.00	
Convertible 5 per cent Secured Gold Bonds	40,180,000.00	
Coal River Railway Co. First Mortgage 4 per cent Bonds	3,000,000.00	
Raleigh and Southwestern Railway Co. First Mortgage 4 per cent Bonds	860,000.00	
Big Sandy Railway Co. First Mortgage 4 per cent Bonds	229,000.00	
Virginia Air Line Railway Co. First Mortgage 5 per cent Bonds	900,000.00	
Kanawha Bridge and Terminal Co. 5 per cent Bonds	476,000.00	
Equipment Trust Certificates Series "N"	1,700,000.00	
Equipment Trust Certificates Series "O"	3,160,000.00	
Equipment Trust Certificates Series "P"	2,500,000.00	
Equipment Trust Certificates Series "R"	3,780,000.00	
Equipment Contracts, Various	4,809,390.00	
	$172,277,390.00	
Realizing		$163,630,314.49
Less—		
Capital Obligations Paid or Purchased:		
Six per cent Collateral Gold Notes	$5,000,000.00	
Collateral Gold 6 per cent Notes	2,500,000.00	
Peninsula Division First Mortgage 6 per cent Bonds matured January 1, 1911	2,000,000.00	
Greenbrier and New River Railroad Co. First Mortgage 5 per cent Bonds redeemed February 1, 1911	339,000.00	
General Funding and Improvment Mortgage 5 per cent Bonds	7,302,000.00	
Greenbrier Railway Co. First Mortgage 4 per cent Bonds retired November 1, 1911	2,000.00	
Three Year 4½ per cent Collateral Trust Notes	25,000,000.00	
One Year 5 per cent Collateral Trust Notes	3,500,000.00	
Five Year 5 per cent Secured Gold Notes	33,000,000.00	
Kineon Coal Co. First Mortgage 5 per cent Bonds	200,000.00	
Equipment Trust Payments	13,407,000.00	
Through Sinking Funds:		
Big Sandy Railway Co. First Mortgage 4 per cent Bonds	612,000.00	
Coal River Railway Co. First Mortgage 4 per cent Bonds	297,000.00	
Greenbrier Railway Co. First Mortgage 4 per cent Bonds	218,000.00	
Kanawha Bridge and Terminal Co. First Mortgage 5 per cent Bonds	5,000.00	
Raleigh and Southwestern Railway Co. First Mortgage 4 per cent Bonds	70,000.00	
	$93,452,000.00	
Costing		$94,110,410.84
		$69,519,903.65

Acquisitions—Stocks of—		
The C. & O. Railway Co. of Indiana	$5,998,800.00	
Elkhorn and Beaver Valley Railway Co.	30,000.00	
The Hocking Valley Railway Co.	7,671,900.00	
Cincinnati Inter-Terminal Railroad Co.	56,000.00	
Levisa River Railroad Co. (of Ky)	50,000.00	
The Levisa River Railroad Co. (of Va)	50,000.00	
The Silver Grove Land and Building Co.	200,000.00	
White Sulphur Springs, Incorporated	2,600,000.00	
First National Bank Building Corporation (Richmond, Va.)	180,000.00	
The Chesapeake and Ohio Northern Railway Co.	4,026,500.00	
Western Pocahontas Fuel Co.	1,000,000.00	
Miscellaneous	33,200.00	
	$21,896,,400.00	
Costing		$23,481,341.89
Bonds and Notes of—		
The C. & O. Railway Co. of Indiana First Mortgage 5 per cent.	$7,270,000.00	
Elkhorn and Beaver Valley Railway Co. First Mortgage 5 per cent.	1,011,000.00	
Western Pocahontas Fuel Co. Coupon Notes 5 per cent.	1,500,000.00	
Miscellaneous	382,500.00	
	$10,163,500.00	
Costing		$8,654,096.74
Properties of—		
Coal River Railway Co.	$2,304,359.88	
Raleigh and Southwestern Railway Co.	816,562.42	
Virginia Air Line Railway Co.	1,071,947.12	
Fond Fork Railway Co.	329,668.06	
Gauley and Meadow River Railroad Co.	116,767.98	
Kanawha Bridge and Terminal Co.	629,512.41	
Logan and Southern Railway Co.	306,105.73	
Piney River and Paint Creek Railroad Co.	270,000.00	
	$5,844,923.60	
Costing		$5,844,923.60
Construction of—		
Extension of Branch Lines, costing	$3,398,075.35	
Second Track (217.11 miles) and Additions and Betterments, costing	27,819,482.27	
(Excluding $2,680,955.25 expended on Chicago Line to October 31, 1917, for which securities have been acquired)		$31,217,557.62
Equipment—		
*Additional equipment acquired (less retirals)		45,187,845.19
(Excluding—Credit—$27,319.93, included in Statement of Expenditures on Chicago Line to October 31, 1917, for which securities have been acquired)		
Costing		$114,385,765.04

*Includes approximate cost of equipment allocated during Federal control by the Government and also equipment contracted for during Federal control by your Company, the cost of which has been financed by the Government.

General Remarks

Branch line extensions during the year have been as follows: Beech Creek Branch from Sharples, W. Va., to Ardrossan, W. Va., 2.84 miles. Sycamore Branch of Cabin Creek Branch, east from M. P. 30 to M. P. 31, 1.15 miles. Seth, W. Va. to Whitesville, W. Va., 13.50 miles. Elk Run Branch, Elk Run Junction, W. Va., to Eudrom, W. Va., 3.77 miles. March Fork Branch, from Little Marsh to Hazy Crook, W. Va., .63 mile. Brush Creek Branch, east from M. P. 10 Big Coal Branch to M. P. 4 Brush Creek, 4 miles. Buffalo Creek Branch, from M. P. 12 to M. P. 15, 3.07 miles. From Ward, Ky. to Alka, Ky., 3.14 miles, making a total increase in branch lines put into operation during the year of 32.10 miles.

The equipment inventory as of December 31, 1919, was as follows:

		Increase	Decrease
Locomotives owned	665	....	....
Locomotives leased	208	....	....
Locomotives contracted for by Company after January 1, 1918, title taken in 1920	25	32	....
Locomotives allocated by Director General of Railroads	25		
Total	923	32	....
Passenger train cars owned	333	....	....
Passenger train cars leased	62	....	....
Total	395	....	....
Freight train and miscellaneous cars owned	34,324	1,751	....
Freight train cars leased	15,000	....	2,000
Freight train cars allocated by Director General of Railroads	3,000	3,000	....
Total	52,324	2,751	....

Included in the above are fifteen Mallet type locomotives and ten switchers contracted for by your Company during Federal control, the payment for which the Director General agreed to assume, and five Mountain type and twenty Mallet type locomotives, one thousand 50-ton box cars and two thousand 55-ton hopper bottom gondola cars, which were allocated to your Company by the Director General. All of this equipment has, subsequent to January 1, 1920, been financed by the Director General through fifteen year Equipment Trusts, amounting to a minimum of $11,205,000.00, with interest at six per cent.

The changes during the year in the accrued depreciation of equipment account were as follows:

Balance to credit of account December 31, 1918		$8,840,294.81
Amount credited during year ended December 31, 1919, by charges to U. S. Government	$1,716,317.61	
Charged to account, for—		
Accrued depreciation on equipment retired during year—		
One passenger train car and 305 freight train and work cars	38,605.60	
		1,677,712.01
Balance to credit of account December 31, 1919		$10,518,006.82

In the Annual Report for the year 1918, you were advised that the President of the United States, by proclamation dated December 26, 1917,

took possession and assumed control of the railroad systems of the country, appointing a Director General of Railroads, through whom the operation of such transportation systems was to be conducted. Under this Proclamation and under Act of Congress of March 21, 1918 (generally known as the Federal Control Act), the railroad of your Company was, during the entire year 1919, operated by the United States Government through Walker D. Hines, Director General of Railroads. The operating and traffic statistics contained in this report relate to the operation of your property by the Director General.

	1919	1918	
Operating revenues were...	$71,475,015.88	$73,720,796.68	—$2,245,780.80
*Net operating revenues were	10,596,494.29	19,503,449.82	—8,906,955.53
Operating ratio	85.2%	73.5%	+11.7%
Tons of revenue freight carried one mile	9,633,548,642	10,729,366,446	—1,095,817,804
Revenue train loads, tons	1,091	1,099	—8
Revenue tons per loaded car	37.7	38.2	—.5

The result of operations for the year was unsatisfactory as compared with the previous year. This was due in a considerable degree to falling off in tonnage during the early months of the year following the Armistice and to interruptions in traffic due to strikes of shopmen and coal miners in the latter part of the year. Advances in wages paid to all classes of labor and in the cost of fuel and other materials and supplies resulted in increased operating expenses throughout the year.

The revenue coal and coke tonnage was 25,471,475, a decrease of 8.5 per cent; other freight tonnage was 10,126,881, a decrease of 18.4 per cent. **Total revenue tonnage was 35,598,356 tons, a decrease of 11.5 per cent.** Freight revenue was 53,073,001.73, a decrease of 4.8 per cent. Freight train mileage was 8,830,930 miles, a decrease of 9.5 per cent. Revenue ton miles were 9,633,548,642, a decrease of 10.2 per cent. Ton mile revenue [illegible] revenue per freight train mile was $6.01.0, an increase of 5.3 per cent. Revenue tonnage per train **mile was 1,091 tons, a decrease of 0.7 per cent;** including Company's freight, the tonnage per train mile was 1,151 tons, a decrease of 0.4 per cent. Tonnage per locomotive, including Company's freight, was 1,003 tons, an increase of 2.7 per cent. Revenue tonnage per loaded car was 37.7 tons, a decrease of 1.3 per cent. Tons of revenue freight carried one mile per mile of road were 3,844,193, a decrease of 11.2 per cent.

There were 8,659,602 passengers carried, an increase of 1.6 per cent. The number carried one mile was 501,637,254, an increase of 3.2 per cent. Passenger revenue was 14,158,153.29, an increase of 3.9 per cent. Revenue per passenger per mile was 2.822 cents, an increase of 0.6 per cent. Number of passengers carried one mile per mile of road was 200,174, an increase of 2.1 per cent. Passenger train mileage was 5,507,727, an increase of 8.6 per cent. Passenger revenue per train mile was $2.571, a decrease of 4.4 per cent. Including mail and express it was $2,810, a decrease of 5.0 per cent. Passenger service train revenue per train mile was $2.847, a decrease of 5.1 per cent.

There were 31,642.4 tons of new rail (1,554.9 tons 130 lb., 12.3 tons 125 lb., 25,591.3 tons 100 lb., 3,992.9 tons 90 lb., 491 tons 67½ lb.), equal to 204 miles of track used in renewal of existing track.

There were 1,095,627 cross ties used in maintaining existing tracks, a decrease of 52,434.

There were 910,582 yards of ballast (534,495 yards stone) used in maintaining existing tracks, an increase of 224,359 yards.

The average amount expended for repairs per locomotive was $6,227.43; per passenger train car $1,859.85 per freight train car $164.99.

*After deducting expense of maintaining Corporate Organization amounting to $202,048.38.

Compensation Contract

As pointed out in the Annual Report for 1918, the Standard Return of your Company and its railroad subsidiaries under the Federal Control Act for the three-year test period ended June 30, 1917, as tentatively certified by the Interstate Commerce Commission, was $13,226,983.23. Your directors, being of opinion that the sum named was inequitable as a fair measure of just compensation, in July, 1919, applied to the Director General of Railroads for a contract providing for compensation in addition to the Standard Return in the aggregate sum of $1,047,408.57. After several hearings and the submission of additional data the Director General offered your Company a contract providing for compensation in addition to the Standard Return, in the annual sum of $258,374.50 per annum, being 5 per cent upon the cost of the Chesapeake and Ohio Northern Railway. Your Company was also awarded by the Director General, for the use of its Eunice Mine, interest at 6 per cent upon the investment, plus fifteen cents per ton of coal delivered to the Director General for depletion and depreciation. In its final certificate, dated February 10, 1920, by reason of certain adjustments in your operating expenses for the test period, the Interstate Commerce Commission increased the amount of the Standard Return to $13,630,044.26. Your directors, after consideration, approved the execution of a contract for the aggregate compensation awarded by the Director General and the contract was signed and delivered by the Director General on February 28, 1920.

The corporate income figures in this report are based upon the contract compensation, including the additional income resulting from the final certificate of the Commission and from the additional compensation awarded by the contract.

Transportation Act, 1920

The above Act was approved by the President and became effective on February 28, 1920. It represents an earnest and public-spirited effort by Congress to deal constructively with the railroad problem. It is impracticable within the scope of this report to analyze the Act or even refer to most of its provisions. Of particular importance to your Company are the provisions:

(a) For the guaranty to your Company, if accepted by it before March 15, 1920, for the six months ending September 1, 1920, of a net railway operating income, computed in accordance with the Federal Control Act, equal to one-half of the return provided by your compensation contract.

(b) For funding the indebtedness of your Company to the United States for additions and betterments made during Federal control for not more than ten years, and other indebtedness for not more than two years, interest in each case to be computed at 6 per cent per annum, the amount to be funded being the balance after offsetting any sums due your Company under its compensation contract, in excess of the amount required to provide for fixed charges, taxes payable by the Company, corporate expenses and dividends accruing during Federal control and for a reasonable working capital.

(c) For loans to carriers during the two years succeeding Federal control, particularly for additional facilities, and establishing a revolving fund of $300,000,000 for this and certain other purposes.

(d) Requiring the Interstate Commerce Commission to so adjust rates as to allow to the carriers as a whole, or in regional groups fixed by the Commission, an annual net operating income equal as nearly as practicable to 5½ per cent per annum upon the value of their operating property as fixed by the Commission, with an additional allowance in the discretion of the Commission of one-half of 1 per cent per annum to provide in whole or in part for additions and betterments.

Your Directors voted to accept the guaranty provided by the Act for the six months ending September 1, 1920. This acceptance carries with it the obligation to pay to the United States any operating income in excess of the amount guaranteed.

While the rule of rate making above mentioned does not amount to a guaranty to any particular carrier of a return of 5½ per cent upon the value of its operating property, as the earnings of any particular carrier in a group may be more or less than the 5½ per cent allowed the region, your directors feel reasonably confident that a rate adjustment on the foregoing basis should afford your Company a return of not less than the average return allowed by the Act to the carriers in its regional group. One-half of any earnings above 6 per cent upon the value of your property must be paid into a general contingent fund to be administered by the Interstate Commerce Commission and the remainder may be retained by your Company in a reserve fund to meet interest and dividends in years when the return upon your property does not equal 6 per cent. After your reserve fund reaches 5 per cent upon the value of your property, one-half of the excess over 6 per cent per annum may be used by your Company for any of its lawful purposes.

Reference to the statement of Return on Property on page 4 of this report indicates that an adjustment of rates on the foregoing basis should afford your Company on the whole a slightly better average return upon its property investment than it has enjoyed during recent years. This is on the assumption that the Commission accepts your property investment accounts as fixing the property value on which a return is to be allowed. The return allowed by the Act, however, on any additions to your property hereafter made, is not sufficient under present conditions to provide for the charges which your Company must meet upon the new capital required to make such additions. Your directors, therefore, feel that while additions and betterments to existing facilities reasonably necessary to take care of your traffic must be made, it is undesirable to extend any of your lines into new territory or to encourage the further development of the coal fields now reached by them. One difficulty facing your Company is the fact that during the war, as a result of pressure by the Government for maximum coal production, the number of mines tributary to your lines was increased from 375 to 625.

Labor conditions, not only those affecting railroad employees, but those existing generally throughout the country, are unsettled, and your Company must doubtless expect further increases in its cost of operation due both to the necessity of meeting further demands for increased wages and to the difficulty of obtaining a sufficient number of competent and experienced employees. The Transportation Act of 1920 contains provisions for dealing with labor controversies affecting railroads, the workability of which has yet to be determined. It is the clear intention of the Act that increases in expenses due to increased wages and improved working conditions, adopted with the sanction of the labor adjustment tribunals established by the Act, shall be adequately provided for in the rate adjustments to be made from time to time by the Interstate Commerce Commission. The responsibilities of the Commission to the railroads, their employees and to the public, under the Act, are very great, but your directors have confidence that they are appreciated by the Commission and that it will measure up to them.

Your Directors regret to report the death on September 21, 1919, of Mr. Theodore P. Shonts, a director of your Company.

Mr. Frank Trumbull, for many years Chairman of your Board of Directors and President of your Company from July 1, 1918, resigned effective December 31, 1919. His resignation was accepted with regret and resolutions were adopted by your directors expressing their appreciation of his long and valuable service to your Company and their gratification at his willingness to continue as a member of your Board.

Effective March 1, 1920, George W. Stevens was elected President of your Company and also a Director to succeed Mr. Shonts. Effective the same date G. B. Wall was elected a Director of your Company to succeed Chas. B. Seger, resigned.

Your directors acknowledge with appreciation the faithful and efficient service of officers and employees.

By order of the Board of Directors,

GEO. W. STEVENS, President.

H. E. HUNTINGTON, Chairman.

General Income Account—(Corporate)*

For Year Ended December 31, 1919, and Comparison with Year Ended December 31, 1918—Table 2

	1919	1918	Increase or Decrease	Per Cent
†Compensation for possession, use, and control of the properties of The Chesapeake & Ohio Lines as per compensation contract dated February 28, 1920	$14,588,578.73	$13,226,983.23	$1,361,595.50	10.3
‡General Expenses (Corporate)	202,048.38	135,809.58	66,238.80	48.8
Federal Income Tax Accruals	319,998.50	358,184.43	—38,185.93	10.7
	$14,066,531.85	$12,732,989.22	$1,333,542.63	10.5
Income from Other Sources				
Interest from Investments and Accounts	$1,067,567.98	$936,890.57	$130,677.41	13.9
Miscellaneous	148,261.86	181,523.89	—33,262.03	18.3
	$1,215,829.84	$1,118,414.46	$97,415.38	8.7
Gross Income	$15,282,361.69	$13,851,403.68	$1,430,958.01	10.3
Deductions from Gross Income:				
Interest on Debt	$8,773,843.40	$8,730,506.49	$43,336.91	.5
Rental Leased Roads and Misc. Rents	98,172.08	98,260.21	—88.13	.1
Loss on C. & O. Elevator	20,866.23	23,859.04	—2,992.81	12.5
¶Miscellaneous	615,311.27	161,271.39	454,039.88	281.5
Total Deductions	$9,508,192.98	$9,013,897.13	$494,295.85	5.5
Net Income	[illegible]	[illegible]	[illegible]	10.4
Amount to Credit of Profit and Loss December 31, 1918				$8,565,726.52
Amount of Net Income for year ended December 31, 1919, transferred to Profit and Loss			$5,774,168.71	
Sundry Adjustments			32,786.27	5,806,954.98
				$14,372,681.50

DEDUCT:		
Dividend 38 Paid June 30, 1919	$1,255,632.00	
Dividend 39 Paid December 31, 1919	1,255,632.00	2,511,264.00
		$11,861,417.50
Appropriation of Surplus to Sinking and Other Reserve Funds		12,000.00
Balance to Credit of Profit and Loss December 31, 1919		$11,849,417.50

*Includes interest on unpaid balances of Compensation less loans made by Director General and balances of open accounts due Director General, but does not include Compensation for or interest on completed Additions and Betterments.

†Includes additions to Standard Return for years 1918 and 1919, and also additional allowances made by the Director General for years 1918 and 1919, account of exceptional condition of the Company.

‡By ruling of the Director General of Railroads these expenses were required to be paid by the Company, although the corresponding expenses of the three years ended June 30, 1917, were deducted as operating expenses in computing the Standard Return.

¶Includes $542,902.64 representing the difference between the amount of $295,106.71 credited account of Revenues prior to January 1, 1918, and the amount of $838,009.35 charged account of Expenses prior to January 1, 1918.

GENERAL BALANCE SHEET, DECEMBER 31, 1919.

ASSETS.

(Excluding Stocks and Bonds owned of The C. & O. Ry. Co. of Indiana and of The C. & O. Equipment Corporation.)

PROPERTY INVESTMENT.		
Cost of Road		$193,451,514.36
Cost of Equipment		82,458,495.00
		$275,910,009.36
SECURITIES OF PROPRIETARY, AFFILIATED AND CONTROLLED COMPANIES—PLEDGED.		
Stocks—See Schedule, page 20	$16,240,499.44	
Bonds—See Schedule, page 20	5,540,407.01	
	$21,780,906.45	
OTHER INVESTMENTS—PLEDGED.		
Bonds—See Schedule, page 20	1,385,000.00	
SECURITIES—ISSUED OR ASSUMED—PLEDGED.		
Bonds—See Schedule, page 20	53,213,001.00	
(Includes First Lien and Improvement Mortgage 5% Bonds $53,213,000.00. See Contra.)		$76,378,907.45
MISCELLANEOUS INVESTMENTS.		
Physical Property		379,557.33
SPECIAL FUNDS, AND FUNDED DEBT ISSUED AND RESERVED.		
R. & S. W. Ry. Co., First Mortgage Bonds—Reserved for Construction	$40,000.00	
Potts Creek Branch—Cash	50,023.00	
		90,023.00
		76,848,487.78
		$352,758,497.14
WORKING ASSETS.		
Cash in Treasury	$538,902.19	
Cash deposit—Insurance Collection Account	96,655.18	
Cash deposits to pay Interest and Dividends	1,559,360.00	
Cash deposits to pay Matured Bonds and Scrip	12,174.17	
Cash deposit to pay C. & O. Grain Elevator Insurance Claims	1,080.42	
Loans and Bills Receivable	291,806.43	
Traffic Balances	47,390.37	
Miscellaneous Accounts Receivable	208,540.80	
United States Government—Standard Return unpaid—See Schedule, page 22	14,852,961.96	
		$17,608,871.52
SECURITIES IN TREASURY—UNPLEDGED.		
Stocks—See Schedule, page 19	$4,074,723.45	
Bonds—See Schedule, page 19	866,375.50	
		4,941,098.95
DEFERRED ASSETS.		
Accounts with United States Government—See Schedule, page 22	$13,227,016.02	
United States Government—Materials and Supplies—See Schedule, page 22	6,131,266.54	
Unmatured Interest, Dividends and Rents	704,911.07	
Advances to Proprietary, Affiliated and Controlled Companies	617,870.73	
Advances, Working Funds (Fast Freight Lines, etc.)	9,146.32	
Special Deposits with Trustees, Various Mortgage Funds	165,090.19	
Special Deposit, Cash and Securities Account Liberty Loan	148,058.12	
Cash and Securities in Sinking Funds	129,516.97	
Cash and Securities in Insurance Reserve Fund	81,550.73	
Sundry Accounts	392,429.43	
		21,606,856.12
		44,156,826.59
Total		396,915,323.73

LIABILITIES.

(Excluding Stocks and Bonds owned of The C. & O. Ry. Co. of Indiana and of The C. & O. Equipment Corporation.)

CAPITAL STOCK.			
Common		$62,792,600.00	
First Preferred		3,000.00	
Second Preferred		200.00	
			$62,795,800.00
Common—The Chesapeake and Ohio Railway Co. of Indiana			1,200.00
			$62,797,000.00
FUNDED DEBT.			
First Mortgage, Terminal, etc., 6% Bonds	1922	$142,000.00	
General Funding and Improvement, 5% Bonds	1929	3,698,000.00	
Convertible 4½% Bonds	1930	31,390,000.00	
First Mortgage, R. & S. W. Railway, 4% Bonds	1936	830,000.00	
First Consolidated Mortgage, 5% Bonds	1939	29,858,000.00	
First Mortgage, Craig Valley Branch, 5% Bonds	1940	650,000.00	
First Mortgage, Greenbrier Railway, 4% Bonds	1940	1,701,000.00	
First Mortgage, Warm Springs Branch, 5% Bonds	1941	400,000.00	
First Mortgage, Big Sandy Railway, 4% Bonds	1944	4,388,000.00	
First Mortgage, Paint Creek Branch, 4% Bonds	1945	539,000.00	
First Mortgage, Coal River Railway, 4% Bonds	1945	2,703,000.00	
Convertible 5% Secured Gold Bonds	1946	40,180,000.00	
First Mortgage, Potts Creek Branch, 4% Bonds	1946	600,000.00	
First Mortgage, Kanawha Bridge & Terminal Co., 5% Bonds	1948	471,000.00	
First Mortgage, Va. Air Line Railway, 5% Bonds	1952	900,000.00	
First Mortgage, R. & A. Division, 4% Bonds	1989	6,000,000.00	
Second Mortgage, R. & A. Division, 4% Bonds	1989	1,000,000.00	
General Mortgage, 4½% Bonds	1992	48,616,000.00	
			$174,066,000.00
Equipment Trust Obligations and Contracts			7,404,000.00
			$181,470,000.00
			$244,267,000.00
First Lien and Improvement Mortgage, 5% Bonds not in hands of public (see Contra)	1930		53,,213,000.00
WORKING LIABILITIES.			
Loans and Bills Payable		$15,258,040.00	
Traffic Balances		9,409.10	
Audited Vouchers and Pay Rolls		203,976.25	
Unpaid Wages		17,934.97	
Miscellaneous Accounts Payable		147,724.76	
Matured Interest and Dividends Unpaid		1,650,989.40	
Matured Mortgage and Secured Debt Unpaid		12,174.17	
			$17,300,248.65
DEFERRED LIABILITIES			
Accounts with U. S. Government—See Schedule, page 22		$19,971,994.18	
Unmatured Interest and Rents		2,424,652.42	
Employes' Payments on Liberty Loan Bonds		28,502.44	
Taxes Accrued		684,352.84	
Accrued Depreciation—Equipment		10,518,006.82	
Sundry Accounts		12,648,315.21	
			$46,275,823.91
			63,576,072.56
APPROPRIATED SURPLUS.			
Additions to Property through Income and Surplus		$23,859,,636.38	
Reserve Invested in Sinking Funds		68,336.85	
Reserve Invested in Insurance Fund		81,860.44	
			$24,009,833.67
PROFIT AND LOSS—BALANCE			11,849,417.50
			35,859,251.17
Total			$396,915,323.73

This Company is also liable as a guarantor of the following securities:

Western Pocahontas Fuel Co. Coupon 5% Notes. Due 1918 to 1921 ($500,000 each year; this Company owns notes for $1,450,000 maturing 1918, 1919 and 1921)	$1,950,000.00
The Chesapeake and Ohio Grain Elevator Co., First Mortgage 4% Bonds due 1938	820,000.00
Richmond-Washington Co. Collateral Trust Mortgage (C. & O. prop'n 1/6) 4% Bonds due 1943	10,000,000.00
The Chesapeake and Ohio Northern Railway Co., First Mortgage 5% Gold Bonds due 1945	1,000,000.00
Louisville and Jeffersonville Bridge Co. Mortgage (C. & O. prop'n. 1/3) 4% Bonds due 1945	4,500,000.00
Western Pocahontas Corporation, First Mortgage 4½% Bonds due 1945	750,000.00
Western Pocahontas Corporation, Extension Mortgage No. 1, 4½% Bonds due 1945	97,000.00
Western Pocahontas Corporation, Extension Mortgage No. 2, 4½% Bonds due 1946	51,000.00
Norfolk Terminal and Transportation Co., First Mortgage 5% Bonds due 1948	500,000.00

Railway Officers

Executive

James G. Corbett has been appointed assistant to the president of the Central of Georgia, with headquarters at Savannah, Ga., effective June 15.

G. P. Williams, superintendent of the Texarkana & Fort Worth, has been appointed assistant to the president, with headquarters at Beaumont, Tex., effective July 1.

Le Grand Young, general superintendent of the Salt Lake, Garfield & Western, with headquarters at Salt Lake City, Utah, has been appointed vice-president and general manager of the Idaho Northern with headquarters at Weiser, Idaho, effective June 1. Mr. Young was born on November 6, 1877, at Salt Lake City, Utah. He was educated at the University of Utah, and in June, 1897, entered railway service with the Oregon Short Line in the engineering department. After 10 years of service with this company he was appointed superintendent of the Saratoga & Encampment. In 1909 he became superintendent of the Emigration Canyon. He was appointed general superintendent of the Salt Lake, Garfield & Western in 1916, which position he held until his recent appointment, as noted above.

George G. Yeomans, who has been appointed special assistant to the president of the New York, New Haven & Hartford, with headquarters at New Haven, Conn., as noted in the *Railway Age* of June 18 (page 1958), served as purchasing agent of the New York, New Haven & Hartford at the time of his recent appointment. Mr. Yeomans was born on January 11, 1860, at Trenton, N. J. He graduated from Princeton University in 1879 and began railroad work on January 2, 1882, as rail inspector for the Chicago, Burlington & Quincy. He remained in that position until 1884, between which year and 1887 he served in different clerical capacities in the purchasing department. He was then appointed chief clerk in the same department. In 1892 he was promoted to assistant purchasing agent and retained that position until 1898, when he was appointed purchasing agent. He resigned in June, 1905, to become assistant to the president of the Wabash, Wheeling & Lake Erie. In 1908 he accepted the same position with the Wabash and retained it until 1912, when he engaged in consulting work connected with supplies for various roads. He continued that work until 1915, when he was appointed purchasing agent of the New York, New Haven & Hartford. While in that position he served the United States Railroad Administration as a member of the Central Advisory Purchasing Committee from 1918 until 1919 and assistant director Division of Purchases from 1919 until 1920.



G. G. Yeomans

Operating

James J. Davitt, trainmaster of the Lake Champlain & Moriah, has been promoted to general superintendent, effective July 1.

A. A. Moffitt has been appointed trainmaster of the Charleston & Western Carolina, with headquarters at Augusta, Ga., effective July 1, succeeding **E. S. McNeill,** resigned.

C. M. Null has been appointed chief train despatcher of the Evansville, Indianapolis & Terre Haute, with headquarters at Terre Haute, Ind., effective June 16, succeeding **R. E. Farmer,** who has resigned.

G. G. Dodge, formerly assistant to the general manager of the Guantanamo & Western, has been appointed assistant general manager of the Tunas Railroad and manager of the private lines of the Manati Sugar Company.

A. M. Davidson, assistant division engineer on the Baltimore & Ohio, with headquarters at Cleveland, O., has been promoted to assistant trainmaster of the Ohio division, Portsmouth District, with headquarters at Portsmouth, O.

A. D. Carey, assistant superintendent on the Grand Trunk Pacific, with headquarters at Smithers, B. C., has been promoted to superintendent, with headquarters at Edson, Alberta, succeeding **R. M. Halpenny,** resigned to enter private business, effective June 21.

H. H. Hooper, superintendent on the St. Louis Southwestern, with headquarters at Pine Bluff, Ark., has been promoted to superintendent of transportation, with headquarters at Tyler, Tex., succeeding **W. Mosby,** who has been transferred, effective June 25. **K. C. Marshall,** superintendent, with headquarters at Tyler, Tex., has been transferred to succeed Mr. Hooper, while **D. C. Dobbins** succeeds Mr. Marshall.

C. L. Whiting, division superintendent of the Chicago, Milwaukee & St. Paul, with headquarters at Mobridge, S. D., has been appointed superintendent of terminals, with headquarters at Milwaukee, Wis., effective July 1, succeeding **B. F. Hoehn,** whose promotion to superintendent of the Kansas City division, with headquarters at Ottumwa Jct., Ia., was noted in the *Railway Age* of June 25 (page 2005).

P. L. McManus, superintendent of the former Evansville & Indianapolis, has been appointed general superintendent of the Evansville, Indianapolis and Terre Haute, formerly the Evansville & Indianapolis and now operated by the Cleveland, Cincinnati, Chicago & St. Louis. The Evansville, Indianapolis & Terre Haute will be operated as the E. I. & T. H. division and all departments other than transportation will be handled by the general department heads of the Big Four.

H. W. Nickel, joint agent of the Wichita Terminal Association, has been promoted to superintendent and joint agent, with headquarters at Wichita, Kan. Mr. Nickel entered railway service with the St. Louis-San Francisco at Wichita in June, 1905, as messenger boy in the traffic department. After successive promotions he was made cashier at Carthage, Mo. In April, 1912, he resigned this place to go to the Wichita Terminal Association, and in 1914 was appointed joint agent. The Wichita Terminal Association is owned by the Atchison, Topeka & Santa Fe, the Chicago, Rock Island & Pacific, the Missouri Pacific and the St. Louis-San Francisco. It operates about 30 miles of industrial tracks.

Frank L. Myers, superintendent of the New Mexico division of the Atchison, Topeka & Santa Fe, with headquarters at Las Vegas, N. M., has been promoted to assistant general manager of the Southern district, with headquarters at Amarillo, Tex., effective June 20. The position of general superintendent of the Northern and Southern districts at La Junta, Col., and Amarillo, Tex., respectively, have been abolished and Mr. Myers is promoted, on account of the demise of T. H. Sears. **C. H. Bristol,** general superintendent of the Northern division, has been appointed assistant general manager of the Northern district. **A. Ewing,** superintendent of the Western division, with headquarters at Dodge City, Kan., succeeds Mr. Myers; **D. S. Farley,** superintendent Plains division, with headquarters at Amarillo, Tex., has been transferred to succeed Mr. Ewing, while **O. J. Ogg,** superintendent of the Rio Grande division, with headquarters at San Marcial, N. M., succeeds Mr. Farley; **B. A. West,** assistant division superintendent, with headquarters at Wellington, Kan., has been promoted to succeed Mr. Ogg. All appointments became effective June 20.

Traffic

James J. Lawrence has been appointed assistant general passenger agent of the Ft. Worth & Denver City, with headquarters at Ft. Worth, Tex., effective June 16.

C. M. Swan, general freight and passenger agent of the Mississippi River & Bonne Terre, with headquarters at Bonne Terre, Mo., has been promoted to traffic manager, with the same headquarters.

E. J. Naylor has been appointed general western agent of the Gulf Coast Lines, with headquarters at San Francisco, Cal., effective June 1. Other appointments effective on this date are **F. W. Elder,** commercial agent, with headquarters at San Francisco, Cal.; **E. G. Warning,** general agent, with headquarters at Kansas City, Mo., and **W. Ray Wilson,** commercial agent, with headquarters also at Kansas City, Missouri.

Mechanical

Charles W. McGuirk, assistant master mechanic of the Delaware, Lackawanna & Western, has been appointed master mechanic of the Delaware & Hudson, with headquarters at Carbondale, Pa., effective July 1.

Engineering, Maintenance of Way and Signaling

Norman W. Rose has been appointed electrical engineer of the Duluth & Iron Range, succeeding **A. M. Frazee,** effective June 25.

B. Violett has been appointed general roadmaster of the Ft. Worth & Denver City, with headquarters at Ft. Worth, Tex., effective June 16.

H. N. Rodenbaugh, regional engineer of the Southern and Pocahontas regions of the Southern, with headquarters at Washington, D. C., has been appointed chief engineer, succeeding **E. Ben Carter,** who recently resigned, effective July 1.

L. C. Walters, signal and electrical inspector of the Southern, with headquarters at Washington, D. C., has been promoted to signal and electrical engineer of lines west, with headquarters at Cincinnati, O., effective June 16, succeeding **D. M. Case,** who has resigned.

Huntington Smith, division engineer on the New York, Chicago & St. Louis, with headquarters at Cleveland, O., has been promoted to office engineer, with the same headquarters, succeeding **J. W. Wilkinson,** deceased, effective June 7. **C. R. Wright,** division engineer, with headquarters at Conneaut, Ohio, succeeds Mr. Smith.

C. R. Adsit, assistant division engineer on the Baltimore & Ohio, with headquarters at Dayton, O., has been transferred to Cleveland, succeeding **A. M. Davidson,** promoted. **P. W. Elmore,** assistant engineer on the Indiana Division, succeeds Mr. Adsit. **J. W. Purdy,** assistant engineer, Ohio Division, has been appointed assistant division engineer, with headquarters at Chillicothe, O., succeeding **S. H. Pulliam,** resigned.

W. A. Murray, division engineer of the New York Central, lines east, with headquarters at Albany, N. Y., has been appointed engineer of track, with headquarters at New York; **G. N. Edmondson,** division engineer of the Pennsylvania division at Jersey Shore, Pa., has been transferred to Albany, succeeding Mr. Murray; **S. E. Armstrong,** division engineer of the Ontario division, at Oswego, N. Y., has been transferred to Jersey Shore, succeeding Mr. Edmondson; **N. W. McCallum,** electrical supervisor bridges and buildings, at New York, has been appointed division engineer at Oswego, succeeding Mr. Armstrong.

D. C. Rounseville, whose appointment as assistant chief engineer of the Chicago and North Western, with headquarters at Chicago, was announced in the *Railway Age* of June 18 (page 1958) was born at Sheboygan Falls, Wis., on October 29, 1856. He entered railway service as a chainman on location work with the Milwaukee, Lake Shore & Western in April, 1879. From April to September, 1880, he served as instrument man with the St. Paul & Eastern Grand Trunk. Upon the latter date he was appointed assistant engineer on the Milwaukee, Lake Shore & Western and four years later was promoted to locating and constructing engineer. In 1893 he was appointed division engineer. Two years later he became assistant engineer on the Chicago & North Western, and in 1897 was promoted to division engineer of the Ashland division. From 1906 to 1907 he served as resident engineer on the Manitowoc, Green Bay & North Western, returning to the Chicago & North Western as division engineer in 1907. He served in this capacity until 1909, when he was appointed resident engineer on the Milwaukee, Sparta & North Western. In 1912 he was appointed resident engineer on the St. Louis, Peoria & North Western, a position he held until 1914, when he became engineer of maintenance on the Chicago & North Western. From March, 1918, to March, 1920, he served as assistant to the chief engineer and in June of the latter year was appointed assistant engineer of maintenance of lines east of the Missouri river, which position he held at the time of his recent promotion.

Purchasing and Stores

Nathaniel M. Rice, who has been appointed general purchasing agent of the New York, New Haven & Hartford, with headquarters at New Haven, Conn., as noted in the *Railway Age* of June 18 (page 1598), served as vice-president of the Pierce Oil Corporation in charge of lubrication, with headquarters at St. Louis, Mo., at the time of his recent promotion. Formerly Mr. Rice was purchasing agent of the St. Louis-San Francisco. He was born on December 28, 1863, at Rome City, Ind., and received his early education in the public schools of that city. His first railroad work began in May, 1887, as brakeman for the Gulf, Colorado & Santa Fe. Afterwards he served in various capacities in the transportation and store departments of that company and on April 1, 1901, was appointed assistant general storekeeper of the Atchison, Topeka & Santa Fe Coast Lines. He held that position until April, 1903, when he became general storekeeper in full charge of material, fuel and stationery for the entire system. He returned to the St. Louis-San Francisco as chief purchasing agent in November, 1913, and in September, 1916, was elected third vice-president of the same road. He became vice-president of the Pierce Oil Corporation in 1919.



N. M. Rice

Special

Chester B. Floyd, who for the past two years has been connected with the Safety Department of the New York Central, has been appointed assistant general safety agent, with headquarters in New York City.

Railroad Administration

James C. Davis, formerly general solicitor of the Chicago & North Western, has been appointed general counsel of the Railroad Administration, with office at Washington, D. C., succeeding **E. M. Underwood,** resigned.

EDITORIAL
Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

The Crisis in Transportation

THE RAILROADS have made a new start. Frankly recognizing the seriousness of the transportation situation which has been created by the inadequacy of facilities, the coal mine strike, the recent railroad strikes and the failure of the railways themselves to work together as they should, their chief executive officers met in New York on July 1 to adopt new measures to deal with the conditions. It was the most important meeting of railway executives that has been held since they met in April, 1917, and created the Railroads' War Board. The plan for improving the situation which was adopted is given in detail elsewhere in this issue. Its principal features are as follows:

First, the creation of an Advisory Committee of chief executive officers, under the chairmanship of Daniel Willard, to deal with the Interstate Commerce Commission, and exercise general supervision over the handling of equipment and the movement of traffic.

Second, the creation of the office of executive manager, the principal duties of the incumbent of which will be to keep in close touch with the Interstate Commerce Commission, execute the orders of the Advisory Committee and supervise the work of the Commission on Car Service and its subsidiary committees.

Third, continuance of the Commission on Car Service with the same duties as heretofore.

Fourth, revision of the Car Service rules, and, after they have been satisfactorily revised, filing them with the Interstate Commerce Commission, thus giving them the force of law.

The plan adopted is important and constructive. It is based on a recognition of certain facts regarding the situation that stand out so prominently that it is difficult to see how any railway officer could fail to see them and realize their importance. Among these facts are, first, that the demands of commerce are and will continue to be so great that they cannot be anywhere near met during the rest of this year with existing facilities unless they are rehabilitated and operated with the utmost possible efficiency; second, that the facilities cannot be increased enough for their increase to relieve the situation much this year; third, that great increases in the efficiency of their rehabilitation and operation can be secured only by each individual railroad management doing its best, by the railway managements loyally working together and by the Interstate Commerce Commission and the shippers helping them; and, fourth, that failure to make the very best use of existing facilities available will imperil private management and the industrial and financial welfare of the country.

The principle which it is most vitally necessary that the railway managements shall frankly recognize and unwaveringly act on, is that they must carry out fully and faithfully the policies adopted and the orders issued by their Advisory Committee, their executive manager and their Commission on Car Service, absolutely regardless of individual views concerning the wisdom of these policies and orders. The railway managements themselves have created this organization voluntarily. For them to fail to do what it asks will be to stultify themselves by in effect announcing to the Interstate Commerce Commission and the public that the organization which they themselves have set up is not adapted to performing the functions for which it was created.

The chief executives of the railways could not more unanswerably indict their own intelligence and capacity than to thus announce that the organization which they themselves have created is unfit for its task. Furthermore, for them to fail to carry out its policies and orders would be to break it down without giving it opportunity to show by the results secured whether its policies and orders were wise or unwise. If individual railway managements do not like the policies adopted or the orders issued, they should carry them out first and criticize afterward. If the advisory committee does its duty it will pitilessly pillory before the railways themselves, the Interstate Commerce Commission and the public as faithless to its fellow railways and to the public any railway which fails to play the game fairly under the new rules which have been or are to be adopted.

Among the things which must be done to increase the efficiency of operation of the railways with their existing facilities are the following:

Get more cars back on the home lines.—Freight cars were scattered all over the country regardless of ownership under government control. Each railway and its shippers are entitled to the use of, roughly, the equivalent in kind and amount of the cars which the railway has provided. Since presumably each railway has provided approximately the amount and kind of equipment which it needs to handle its business, each railway will be able to render the best service and the commerce of the country as a whole will be best served when each railway has the use of, roughly, the equivalent of its own cars. Acute car shortages and congestions usually are principally due to the fact that some roads have on their rails many more and some many less than the equivalent of the cars they own.

Repair more cars.—An abnormal number of cars was in bad order when the railroads were returned to private operation, and the number of bad order cars still exceeds 7½ percent, or approximately 180,000. If great efforts are made it is possible the number of bad order cars may be reduced one-half, thereby increasing the useful supply of cars approximately 75,000. Getting cars home will tend to stimulate the repair of cars, but it is the duty of every railway management to exert itself to the utmost to repair more of the cars on its lines, whether home or foreign.

Increase the miles per car per day.—The maximum average miles per car per day ever attained was in 1916, when it was 26.9 miles. This declined to 26.1 miles in 1917, to 24.9 miles in 1918 and to 23.1 miles in 1919. Every increase of one mile per day in the average movement of all cars is roughly equivalent to an increase of 100,000 in the total available supply of cars. To improve the circulation of cars requires detailed supervision of their every

movement while in the hands of the railways themselves and the utmost co-operation by the shippers—in whose hands cars are one-third of the time—in loading and unloading them as promptly as possible.

Increase the loading of cars.—The average tons handled per loaded car increased from 22.4 tons in 1916 to 29.1 tons in 1919. It has since been declining. The loading of cars must be maintained and increased. The Interstate Commerce Commission should authorize general increases of minimum carload weights, and no effort should be spared to increase the loading of less than carload freight. A small increase in the average load per car would contribute greatly to relieving the car shortage.

Repair and modernize more locomotives.—The efficient handling of cars depends upon the available supply and condition of locomotives. No effort should be spared to improve the condition of power. The effectiveness of many old locomotives would be greatly increased by equipping them with devices of recent development.

The railways, the industries and the financial institutions of the country are in the midst of a crisis. Nothing would contribute so much toward enabling the country safely to pass this crisis as an immediate and substantial increase in the efficiency with which existing railway facilities are being rehabilitated and operated. If all who can help will do their duty to themselves and the country the crisis will be safely passed.

How it Is Done in the Postal Service

All over the country railway employees who belong to or are under the influence of the Plumb Plan League are engaged in attacking, through the press and orally to persons they meet, the management of the railways under private control. They are also charging that the officers did everything they could under government control to discredit it. The purpose of this propaganda on the part of the employees is to bring about the adoption of the Plumb plan, or at least government management. Many railway employees have been led to believe that they would be better off under government ownership. An order recently issued by Postmaster Burleson to the employees of the postal department indicates that under government ownership the railway employees would not at least have the same opportunity to spread propaganda against the management of the roads and their superior officers that they have now. In his order Postmaster Burleson says: "The attention of the department has been called to many circulars and letters issued by persons connected with the postal service which contain erroneous statements and are not based on facts. The postal service is conducted in the interest of the public, and the public is entitled to correct information at all times regarding this branch of the government service; and the department will gladly and willingly furnish such information. Employees of the postal service, in making any statement about the postal establishment or its service, who make false or slanderous statements, will be summarily dismissed from the service. Postmasters and officers of the service will be held responsible for the enforcement of these instructions." No doubt the postmaster-general and other officers of the service would be the judges of whether statements made by an employee were "false or slanderous." If such an order should be issued by the president of a railroad to its employees he would be denounced by the employees as a tyrant. The propagandists of the Plumb Plan League would make no end of capital of it. And yet every railway employee who advocates government ownership of railways is trying to force his own head and that of all his fellows into the same noose in which the postal employees now have their heads.

Cost Accounting in Railroad Shops

The fact has been emphasized many times that because of the present low state of railroad credit it is difficult to secure the capital needed for essential additions and betterments. As one prominent railway executive has said, however, "If improvements are advantageous and hence money makers, the cheapest thing that any railroad can do is to make them. If there is some improvement that will pay 25 per cent of its cost, and money is worth 6 per cent, there is 19 per cent of velvet right there." Bankers cannot be expected to finance a proposition simply because it is desirable, or a good thing, or someone else is doing it. If, however, the necessity of a proposed improvement is clearly outlined and a possible return of 25 per cent on the investment is demonstrated, it will not be long before the necessary capital is forthcoming. To demonstrate and clearly prove the money saving that will result from installing new shop equipment and tools, accurate records of labor and material costs must be kept and a proper distribution of overhead charges made. Based on cost records of similar operations in the past, it is possible to predict with accuracy how much a locomotive part, for example, will cost when manufactured by a given method. With this prediction reduced to concrete terms a shop foreman or executive can go to his superior and back up a request for additional tools by definite figures, proving what economies will be effected. Reliable cost records must be kept in railway shops and any system that is accurate and flexible, does not go too much into detail and properly distributes the overhead charges will prove a most effective aid in backing up arguments for new tools and shop equipment.

Converting Locomotives to Modern Types

The demand for heavier locomotives in recent years has led to changes in wheel arrangement with comparatively little increase in the wheel load. Nearly a decade ago the Consolidation was abandoned as the outstanding type for freight service and the Mikado took its place. Now the Mikado is giving away to the Santa Fe and Decapod. Similarly, in passenger service the Atlantic type has been replaced by the Pacific and the Mountain type is now becoming increasingly important. But while the roads have recognized the need of heavier engines and have adopted suitable wheel arrangements for new power, they have usually been content to let the existing locomotives remain as they were originally built, thus allowing these engines to sink down into the ranks of uneconomical and obsolete equipment. This practice might be justified if these engines could all be assigned to some one-train-a-day branch lines. Where they are used on heavy traffic divisions, however, they are a distinct handicap to efficient operation. Every trip these locomotives make reduces the average train load and increases the cost per ton-mile. There is no question that railroad officers appreciate that they must overcome rising costs wherever possible. Most of them realize that they can effect economies by increasing the train load, but how many have considered the rebuilding of existing locomotives, which is perhaps the cheapest way of increasing the train load? Where it has been tried, converting locomotives to modern types has proved a conspicuous success. One road changed its principal class of heavy Consolidation locomotives to Mikados. The resulting improvement in motive power conditions was without doubt an important factor in enabling it to handle the war-time traffic satisfactorily. Another road after changing Prairie type engines to Mikados was able to increase the tonnage 62 per cent. When new locomotives are put in service the operating officers are gratified to get reports of the increased train load hauled. Perhaps even

more desirable, if not so welcome, would be a report showing the loss in tonnage through failure to convert old engines to modern types.

Problems of Under-Maintenance

For two or three years preceding our entrance into the war, alternate periods of labor shortage and business depression tended to curtail maintenance of way programs. With our entrance into the hostilities all activities were subordinated to that of winning the war, and men and materials alike were diverted from normal railway uses to military activities. Following the signing of the armistice, industrial life was so disorganized and the future policy regarding railway operation was so uncertain that the decline in the condition of the railways continued during 1919. Following the termination of government control last spring it was hoped that the situation would be remedied promptly, but the season is half gone and no recovery has yet been made. With far less than a normal supply of rail, with less than one-half the normal quota of ties on many roads, and with the wide-spread shortage of labor until recently, it is becoming increasingly evident that 1920 will be a repetition of the last three years as far as maintenance is concerned. Fortunately, the construction of tracks and structures is such that repairs can in general be postponed with relative safety for a *limited* time; but maintenance officers having responsibility for this work should point out forcibly to their managements that the deferring of maintenance can be done only at the sacrifice of the factor of safety normally provided. The deterioration of property under the action of traffic and the elements is continuous and insistent. It not only must be made up some time but the longer it continues, the less is the reserve strength in the property. With the railways unable to make many of the improvements demanded at the present time because of conditions known to all, it devolves upon the maintenance departments to adopt those precautions which will enable the properties to be operated with the maximum safety until the necessary repairs can be made.

The Right Kind of Foundation

The railroads have given very little attention to the selection and training of employees. A great number of industrial organizations, on the other hand, have given a large amount of attention during recent years to the development of strong personnel departments which specialize upon these and other features relating to the handling of their employees. This has been done not in a spirit of paternalism but as a straightforward, cold business proposition. The railroads, many of them with much larger forces than most of these industrials and with the men scattered over large areas, have more to gain by the development of such departments than most of the industrial companies and yet even those roads which have made the greatest efforts in this direction have hardly more than scratched the surface. True, it is no easy task. It is a hard job, requiring patience and perseverance but promising large returns. It requires the best brains and the biggest personalities available to head it up. It must be under the direction of men of initiative and imagination. Moreover, it cannot be developed from the bottom up; it must be started at the very top, preferably by the board of directors itself, and the work should be established as a settled matter of policy and so safeguarded that it cannot be interfered with by officials, no matter what their title, who may not be in sympathy with it. If the roads had earnestly started on this work ten or fifteen years ago, the labor problem today would be very different from what it is. Railway executives have a great responsibility for the future of their properties and no time should be lost in establishing the best practices for selecting, training, handling and promoting employees. Needless to say it will be well to look carefully outside the railroad field to see what is being done by other industries in these respects.

Measure of Engine Terminal Capacity

The capacity of a locomotive, or a car, expressed in pounds tractive effort or pounds lading is a factor to be reckoned with; so is the capacity of an engine terminal, measured in the rapidity with which locomotives can be turned, the sufficiency of current repairs and the ability of the terminal to respond to any emergency. Absence of any well-defined standard by which to gage the capacity of an engine terminal may explain in part why terminal development has not kept pace with the development of the locomotive. Without a corresponding increase in terminal capacity, each increase in the number and the size of locomotives to be handled decreases the rapidity with which these new engines can be turned, the extent of current repairs and the ability of the terminal to respond to the unexpected call for more power. The capacity of an engine terminal has just as definite limitations and possibilities as any other operating factor in the make-up of the railroad. It has not merely a routine duty to perform for which the stereotyped equipment comprising a dingy roundhouse, a meagre machine shop and old locomotive boiler, scant turntable length and inadequate trackage will suffice. The purchase of a new locomotive adds available power not always in proportion to its maximum tractive effort, but invariably in proportion to the ability of the terminals to maintain this locomotive in active service. The size of the roundhouse, length of turntable, character of shop and boiler equipment, and capacity of coal and ash handling facilities are factors in the formula for terminal capacity. An improvement in any of these factors will have the same effect on the operating capacity of the railroad as an increase in any of the factors in the formula for the average tractive effort of the locomotives in service. Engine terminals have definite capacity standards which should be recognized and every terminal must measure up to the capacity of the motive power in service if the full potentialities of this power are to be realized.

Organizing the Service of Supply

Good organization is fundamental to the attainment of satisfactory results in railroad operation and one of the broadest and safest statements embodied in any of the reports recently submitted at the Atlantic City conventions was the assertion that "the officers in charge should be selected for their fitness for the organization instead of modifying the organization to fit the individual." It is organized effort that has made the service of supply what it is today, an organization capable of assuming the responsibility on any railroad for the maintenance of the necessary stocks of materials and supplies involving the investment of approximately 35 per cent of the gross earnings, and the custody of this investment. It is proper that the question of organization should be considered in advance of other matters pertaining to this section and it is likely that the work inaugurated by the general committee will be continued along the lines initiated by this committee, although the plan which recognizes an inseparable connection between the purchasing and stores department, and proposes that both these branches of the service be under the control of a single executive officer, may never be adopted by certain railroads for good and sufficient

reasons. The objections to this plan in a communication appearing elsewhere in this issue can hardly be considered as affecting in a broad way the recommendation in favor of a strongly defined organization for the service of supply. The world's work is predicated to a certain degree on the integrity of any organization and it is not likely that independent operation of the purchasing and stores department would itself safeguard the property against unscrupulous conduct of the officials in charge of the purchase and distribution of supplies. In this connection the methods pursued by the general committee in arriving at a decision in favor of a unit organization for purchases and stores are commendable. It was found by careful analysis and investigation that certain railroads in the country were procuring better results with a small investment of money than other railroads, and it is understood that the plan embodied in the report submitted at Atlantic City is patterned so far as possible after the existing organization on those railroads on which the best results were observed. While the federal regime afforded a better opportunity than may exist today for the conduct of similar comparative studies, the effort should be made to continue such investigations and revert to the same logical process of reasoning in arriving at any important decision affecting future railroad organization.

The Hocking Valley

In view of the fact that from 80 to 85 per cent of the revenue freight tonnage of the Hocking Valley consists of bituminous coal, it was to have been expected that the handicaps attendant upon the coal industry during 1919 should be clearly reflected in the earnings of the road for the period in question. Because of the labor difficulties in the coal industry, the let down in orders following the armistice and the congestion on the railroads, the bituminous coal traffic fell off nearly one-fifth, or 2,100,000 tons as compared with 1918. Other products of mines showed a decrease of 500,000 tons. The result was that the freight revenue of $9,704,000 for 1919 represented a decrease of $1,640,000, or 14.5 per cent, from 1918. The total operating revenue was $11,655,000—a decrease of $1,501,000. Federal operating expenses totaled $9,693,000—a decrease of $756,000, and the net operating revenue shown on the Federal accounts for 1919, namely $1,962,000, compared with a similar total in 1918 of $2,707,000. Railway operating income in 1919 was $1,344,000, to which was added other income bringing the total to $1,598,000, as compared with $2,592,000 in 1918. The standard return paid by the government to the Hocking Valley was $2,637,000, so that the operations of the road in 1919 resulted in a loss to the government of $1,039,000 as compared with a loss in 1918 of $45,000.

The Hocking Valley is owned through majority stock ownership by the Chesapeake & Ohio. It operates 350 miles of line, of which it owns 321, leases 21 and operates 8 under joint trackage arrangements. Its lines extend from the coal fields adjacent to Point Pleasant, New Straitsville, Logan, etc., in the southern part of Ohio, through Columbus north to Toledo. The road has no direct connection with the Chesapeake & Ohio but secures traffic from the latter over the Chesapeake & Ohio Northern between Limeville, Ky., to Waverly, and thence over the Norfolk & Western between Waverly and Valley Crossing where the line of the Hocking Valley is reached just south of Columbus. The importance of the connection in question is emphasized in part by the observation that nearly 60 per cent of the traffic of the Hocking Valley is received from connections.

The Hocking Valley is mostly single track. There are, however, stretches of double track totaling 65 miles; this including seven miles added during 1919 by projects now under way. The Association of Railway Executives has recommended to the Interstate Commerce Commission a loan of $1,371,305 for the Hocking Valley for additional main tracks, yard tracks, sidings and shops.

In view of the peculiarity of operation on the Hocking Valley, whereby it has a predominance of coal traffic, it is natural that the movement of traffic should be from the coal fields on its own lines and from its connections, north to Toledo. This is borne out by the fact that the average number of loaded cars in northbound trains in 1919 was 55.3 and of empty cars only 2.4. In southbound trains the average number of loaded cars was only 12.8, but of empty cars 46.0. The road has been noted for its ability to secure heavy loading of freight trains. Despite the great falling off in freight traffic in 1919 it was able to continue its efforts along this line and to increase its average revenue train load from 1,267 tons in 1918 to 1,465 tons in 1919. The importance that the officers of the road give this matter is brought out also by the details of operation worked out in connection with the double tracking. The plan is to use the northbound track for tonnage trains only but to run both the northbound and southbound passenger trains, of which, as it happens, the road only has a few, on the southbound track, so as not to tie up the northbound tonnage trains. The plans naturally call for plenty of siding space to use this method of operation.

The corporate income account of the Hocking Valley for 1919 shows a net income of $1,030,000. This is a reduction from the net income of 1918, namely $1,360,000. The difference between the two years was brought about principally by an increase of $93,800 in taxes, a reduction of $42,000 in "other income" and an increase of $189,000 in interest charges. During the year the company paid off $180,000 on equipment trusts and $5,000,000 six per cent notes which matured November 1, 1918, but which were extended to March 1, 1919. It issued, however, $7,500,000 five per cent notes due March 1, 1924, and for security for this issue pledged $9,600,000 new general mortgage bonds maturing in 1949. The total issue of the latter was $9,783,000, of which $183,000 has been kept in the treasury. This new financing was pursuant to an arrangement made with the director general of railroads in the early part of 1919.

The following table shows the results of operation of the Hocking Valley in 1919 and 1918 under federal operation. The figures are not combined with the corporate figures:

	1919	1918
Mileage operated	350	350
Freight revenue	$9,703,937	$11,343,613
Passenger revenue	1,228,282	1,038,843
Total operating revenue	11,654,517	13,155,861
Maintenance of way and structures	1,329,868	1,490,446
Maintenance of equipment	3,935,248	3,718,010
Traffic expenses	72,203	83,422
Transportation expenses	4,109,051	4,912,857
General expenses	248,771	248,697
Total operating expenses	9,692,605	10,448,792
Taxes	614,153	634,842
Operating income	1,343,595	2,072,112
Deficit to the government after paying rentals	1,038,910	45,143

New Books

Proceedings, American Electric Railway Association, 1917, 1918, 1919. *Five Volumes, 6x9 in., Illustrated. Published by the American Electric Railway Association, 8 West 40th Street, New York, N. Y.*

These five volumes contain the proceedings of the annual conventions of the A. E. R. A. and its subordinate sections held at Atlantic City, N. J., October 6, 7, 8 and 9, 1919. The individual volumes contain proceedings as follows: American Electric Railway Association, thirty-eighth annual convention, 334 pages; Engineering Association, seventeenth annual convention, 416 pages; Transportation and Traffic Association, twelfth annual convention, 238 pages; Claims Association, sixteenth annual convention, 140 pages; Accounts Association, twenty-third convention, 145 pages.

Letters to the Editor

The Usefulness of the Train Staff System

New York City.

To the Editor:

The collision at Firozabad, India, reported in the *Railway Age* of April 16, page 1211, constitutes a significant news item for operating officers in America. There is no very great mileage of staff operated lines in this country; but there have been actual hazards somewhat like that reported from India.

The electric train staff is a very safe proposition; but it behooves us to see that it is operated under the safest possible rules. To assume that it is infallible might get us into trouble. There was a case some years ago where an east-bound passenger train was waiting on a siding and one of the brakemen was sent into the station to get the staff by which the train could proceed eastward; but the operator assumed that the brakeman was a member of the crew of a westbound freight, and he gave him the staff for the block which the passenger train had just come out of; and the brakeman accepted it. The train was started out (with the wrong staff), but, fortunately, the freight was just approaching the station, at moderate speed, and no collision occurred. A prominent signal engineer remarked quite recently that conditions like those here illustrated were a source of some worry to the officers of his road, and that automatic signals ought to be installed in place of the staff, where that could be done.

There was a case some years ago where, during a storm, the block wires became crossed and two staffs for a given section were out at the same time, one from one end and the other from the other end. This source of danger is, of course, curable by suitable protection of the wires.

An examination of the rules for operating the electric train staff will show that there is always need of careful supervision. Besides the precaution suggested by incidents like those just recited it is necessary to keep prominent the rule that an operator shall not put a staff into the machine until the train which has just used it has passed entirely out of the block.

American roads have simplified the methods of operation by using staff cranes, but the requirement that the operator shall go out and put the staff on the crane well in advance of train time sometimes complicates matters. Our varied and sometimes inconsistent requirements in relation to running "under control" within yard limits also tend to confuse our rules. Is there any good way to work under the staff system, without providing a loop track, or short section of double track, at each station?

All American railroad officers are, of course, well convinced that automatic block signals are the only truly ideal system for safe train running; but there are many sections of railroad where the expenditure of the considerable sums necessary to provide automatics is out of the question, and where yet the reasonable requirements of safety demand the use of the space interval. And temporary conditions frequently arise, even on large roads, where the staff system is the best arrangement. It is to be remembered, too, that the staff system—absolute, not permissive—is the only space interval system under which everybody feels free to suspend the flagging rule. The retention of the flagging rule is the most archaic feature of our boasted modern efficiency.

R. Diefendorf.

Objections to Stores Organization Plan

[redacted]

To the Editor:

At the recent convention at Atlantic City, Section 6—Purchases and Stores, some discussion took place regarding the proper organization of the purchasing and stores departments.

It would appear that quite a number of railroads have an organization under which the general storekeeper reports to the general purchasing agent. Superficially it might be said that it is a matter of small import as to whom a departmental officer might report, but to the writer it would appear that there are no two departments of a railroad where it is more desirable to maintain separate and distinct organizations than with the purchasing and stores departments.

Much was said at the convention regarding the "inseparable connection" between these departments, but whether such connection is more real than that existing between the stores and the various consuming departments was not clearly set forth, and is certainly a debatable proposition. It is to be admitted that under federal control the connection was made more or less inseparable by the federal management, which issued an order to all railroads under its control to organize stores departments where such did not already exist, and at the same time placed that department under the jurisdiction of the general purchasing agents.

The main objection to any organic union of these departments arises from the danger which must exist owing to the facility afforded for improper action on the part of the officers concerned. There would be practically no check on purchases of material if the officer responsible for ordering and receiving was subservient to the officer who purchased the goods. This fact is further aggravated by the condition that a report recommending that all accounting for material be handled in the stores department was favorably acted upon at the convention. The general purchasing agent will then be responsible for the purchasing, receiving, distribution and accounting, including the making of his own vouchers for payment of invoices passed under his own control. Surely such a situation would demand the serious consideration of the railroad managements.

No reflection on the integrity and ability of general purchasing agents as a body is intended or implied; neither is it my wish to disparage the desire of general storekeepers to efficiently protect their employers' interests, and the fact should be noted that some recent appointments of general purchasing agents have been made from the ranks of the general storekeepers, than whom no class of men should be better qualified for such positions. But the duties of each department should be absolutely separate and distinct. To destroy the independence of either of them is to minimize dangers which should be most zealously guarded against.

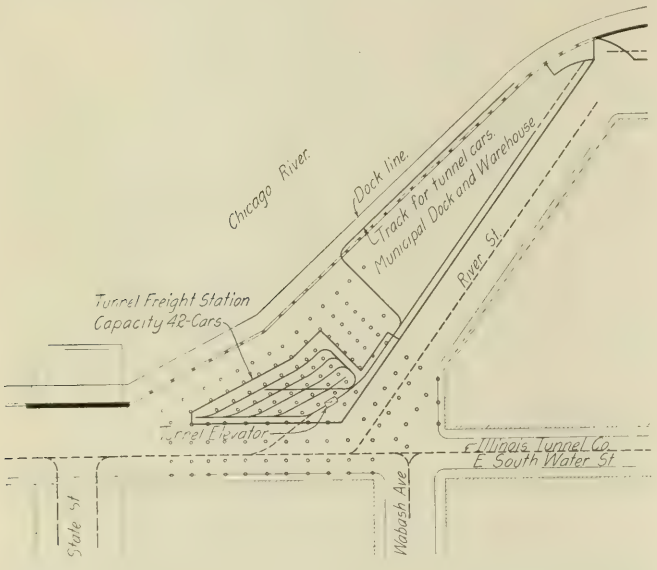
A. A. Goodchild,
General Storekeeper, Canadian Pacific.

This country could no more exist without its transportation system than the human body would without its circulatory system. Everyone knows that labor and materials have advanced out of all proportion to freight rates. The government was unable to relieve the situation without going into the public treasury for vast sums. Now that the companies are back under private ownership, the source of revenue is not open to them. The public has to pay in either case. If the money comes out of the Treasury the taxes of the people are increased accordingly. Such increase in freight rates as may be necessary would not prove burdensome, for it would provide a revenue that would come from a natural source, namely, the interests involved.—*N. Y. Commercial.*

A Plan for Expediting L. C. L. Business in Chicago

South Water Street Project Contemplates Intensive Development of Existing Utilities

THE PACKAGE FREIGHT BUSINESS in Chicago, both local and transfer, has an intimate relationship to the congestion of the streets in the heart of that city which has been brought to a sharp crisis by the enormous growth of motor car traffic. This fact is brought out most emphatically by J. R. Bibbins, supervising engineer, The Arnold Company, Chicago, in a report to the Chicago Plan Commission, on the feasibility of the so-called South Water Street project. This plan, as contemplated in the report, is also of direct interest to the railroads because it embodies provision for two universal freight stations which, it is said, would effect a considerable reduction in the teaming and trucking that now play so important a part in the street congestion. The project also contemplates the use and more intensive development of the Chicago tunnel, a 65-mile freight subway representing an investment of $15,000,000, which is now being used to but a small fraction of the



Suggested Plan for a Tunnel Freight Station at Wabash Avenue and the River

traffic capacity. The possibilities of the interchange body system of motor transport are also discussed at some length, pointing out the advantages which have accrued from this system as used in other cities, as well as the obstacles to be encountered in Chicago as a consequence of the extreme congestion of the city streets in the portion of the city where this traffic would be the heaviest.

The so-called South Water Street development is proposed extension of the recently completed Michigan Avenue improvement and like the latter, is designed primarily to separate passenger vehicle traffic from the motor and team freight traffic, as a means of ameliorating the serious street congestion in the "loop" district. The report shows that, "The most alarming feature of the city's growth is that of motor vehicles, of which there are now registered about 100,000 in the city." It shows further, that there are about as many total auto movements through the "loop" entrances daily as there are cars in the city. It is an important coincidence that this motor traffic is most concentrated in the very area in which there is the largest amount of interchange on the city streets between various freight terminals which "surround the retail and office districts within an iron band." "In no other large American city," states Mr. Bibbins, "does such an acute situation exist where two entirely different classes of business are mixed so indiscriminately as in the Chicago Loop; in fact none are so handicapped for entrance and street capacity.

"The principal group of freight terminals is now and will for many years be located in a pocket at the northwest corner, Lake front, necessitating a great volume of trucking movement across the 'loop.' The next important group, in the Twelfth street district, also requires much trucking across the 'loop,' both transfer and consigned freight, unless by-pass trucking routes are developed."

The General Plan

Briefly, the general plan embodies an extension of the Michigan Avenue double deck structure westward along the south bank of the Chicago river to Lake street. For this purpose the land between the river and South Water street, now occupied by the low class buildings, would be condemned, thus affording an upper level roadway 110 ft. in width and a lower level 135 ft. wide. The object of this arrangement is to place the trucking to and from the freight houses located at Randolph street and the lake on the lower level, where it would not interfere with the cross movement of the passenger cars occupying the upper level and crossing the several bridges over the Chicago River.

The importance of this improvement in freight trucking facilities is noted in the report, which calls attention to the fact that in 1913 over one-half of the inbound l.c.l. through freight interchange between railroads was handled by teams and trucks through the down town city streets and that over one-quarter of the outbound l.c.l. freight originating at Chicago terminal freight houses was handled by teams; also, that the majority of this class of freight is handled in houses east of the Chicago river and along the lake front.

While noting the progress made in the interchange of carload freight between the railroads through the agency of the Clearing yards, the report offers scant hope of any immediate progress in the same direction with respect to the less-than-carload freight.

Furthermore, it concludes that "no very radical change in the Illinois Central-Michigan Central terminal district at the northeast corner of the 'loop' may be anticipated for many years and it seems very unlikely that all the other local freight stations and freight handling districts could or would aline themselves automatically along the river, a condition essential to the maximum use of transfer lighterage." In consequence of this conclusion, the proposal to utilize the river as a means of interchange between the railroads is eliminated.

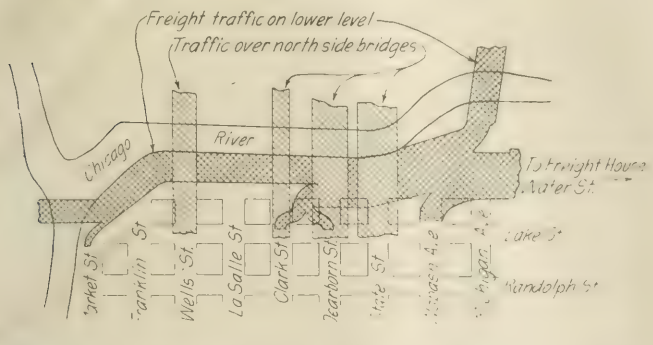
Motor Transport Facilities

The South Water street improvement and the advantage which it offers for the movement of street traffic suggests the possibility of the use of the interchangeable body motor transport for l.c.l. freight interchange and as a substitute for trap car service, as successfully instituted elsewhere. The comment of the report with regard to this is as follows:

"This contract motor transport plan has advantages, some

apparent and some real. It aims to reduce street congestion by concentrating bulk, and, with maximum loading, to reduce the number of motor trucks on the public streets required for freight service. It provides greater latitude in timing of various transport movements so that individual shipments can be handled with greater ease and less confusion at the freight houses.

"However, the fact should not be lost sight of, that any plan of motor transport, whether individual or by contract, is defective, if the downtown *public streets are used as a right-of-way* for a class of traffic which is primarily rail tonnage and should be considered as such. 'Loop' streets



How the Improvement Will Avoid Interference of Conflicting Streams of Street Traffic

are now all too few and narrow, without deliberately planning for their further use for transporting railroad tonnage."

The Chicago Freight Tunnel

It is the conclusion of the report that the Chicago freight tunnel offers the most feasible means of expediting the handling of the l.c.l. freight and an extended discussion of this tunnel property and its possibilities is embodied in the report.

"A freight transport system unique in modern terminal development exists underneath all of the principal downtown streets of Chicago on both sides of the river, which deserves special mention here. This network of tunnels is connected by elevators with all railroad stations, freight houses, important retail, wholesale and mail order houses, warehouses, coal, ash and disposal stations, and in short, with practically all the downtown industries of Chicago. The tunnel, while small in size, can handle from 70 to 95 per cent of l.c.l. freight tendered in the great majority of cases, and all freight from many of these connections. The tunnel serves four union l.c.l. stations and a large number of private commercial stations. At these union freight stations, miscellaneous freight for any number of destinations is received from a shipper on a single bill of lading, classified and routed to destination, the Tunnel Company acting as the terminal agent for the carrier road. The freight in these union stations is assembled continuously during the day in small standard cars of about five tons capacity and is hauled out in trains by electric locomotives and set off on siding at its destination, raised by elevator to the railroad's freight house floor to be loaded out in the day's inbound movement."

In accordance with this conclusion, the plan provides for two freight stations on the lower level of the South Water street improvement. One of these, with a capacity of 400 tons in an eight hour day, would be located between State street and Wabash avenue, along the general plan indicated in the drawings. Here suitable platforms would be provided for the transfer of freight from trucks to tunnel cars, with an elevator for communication with the tunnel system. The second station, with a capacity of 600 tons, is proposed for the west end of the improvement in the triangular area bounded by Lake street, Franklin street and the river. It is the idea that these two stations would serve the business houses located in the north and northwest portions of the 'loop' district, affording somewhat shorter hauls for most of the freight handled and effecting a very appreciable reduction in the street hauling. The total daily capacity of the two stations, 1,000 tons, is only about double the present tonnage, including that of the South Water street produce market, which will be removed to another locality. These stations, however, are to be regarded as distinctly 'loop' stations and all traffic originating or destined outside of the 'loop,' north or west, should, in the opinion of the report, be handled at similar stations located in these outside districts."

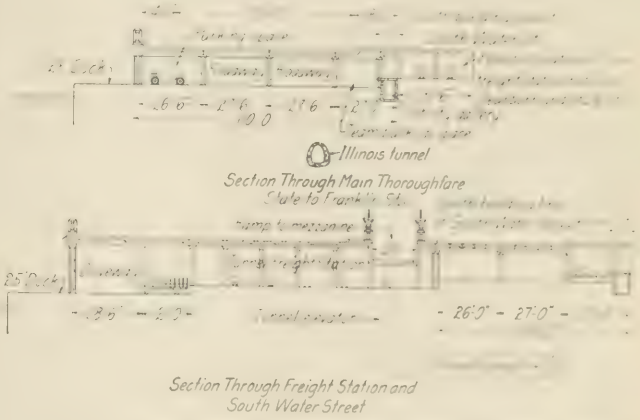
Analysis of the Present Status of the Tunnel

An extended investigation was undertaken in the course of the study to ascertain why the tunnel property was being used to such a limited portion of its actual capacity and the conclusions reached possess no little interest.

"1. The tunnel is an independent and not a railroad enterprise, although its terminal charges are now necessarily *absorbed by the carriers.* However, the competitive delivery charges by motor truck are absorbed *by the shipper,* not by the carrier. Compared with trucking, it is regarded by the freight agent as an extra charge against his department; by the railroads as a direct burden on rates. The tunnel is in fact an *extension* railroad terminal delivery service direct to and from the Chicago shipper. By nature, it must be neutral between all roads and therefore distasteful to some holding favored terminal location, until full terminal consolidation shall become effective in Chicago.

"2. The tunnel service is somewhat more expensive than trucking, although the differential is largely being removed, due to increased trucking costs.

"3. Delays in handling: The Tunnel has a much less sharp delivery peak than trucking, owing to the fact that it



Two Cross Sections Through the South Water Street Improvement

can load and transfer *continuously,* while the trucks must deliver their freight before closing hours; otherwise they will be held over to the next day. As a matter of fact, it develops that trucked freight seems to be handled much more willingly at some railroad freight houses, because of the personal assistance which the teamsters render in unloading, especially during shortages in freight handlers. In the case of tunnel cars, which must be handled by the freight house men alone, of the daily cars ready to unload, an average of *one-third or more of the cars delivered to the freight houses are held over.*

"4. Large shippers who should use the tunnel, fail to do so because of the possibility of saving over tunnel charges by using their own trucking equipment, regardless of the fact

that the additional trucking involves congestion of the streets and possibly more delay.

"5. There are some classes of bulky package freight which the tunnel cannot handle effectively or at all, amounting to from 5 or 10 per cent of the total in most cases, to 30 per cent in some.

"6. Previous to 1918, considerable inbound freight was handled by the tunnel, but during the war this was shut off largely through lack of help, so that most all of the freight movement is outbound.

"7. The duplication of checking on tunnel freight transferred to railroads appears to involve a somewhat unnecessary expense and delay. If some practicable plan could be devised to avoid the extra checking, a great improvement would be made in time and expense. *This might require the tunnel to become a quasi-railroad agency.*"

Commission on Car Service Reorganized

WASHINGTON, D. C.

PRESIDENT R. H. AISHTON of the American Railroad Association has announced a new plan of organization of the Commission on Car Service, effective on July 1, under which each of the commissioners is to have charge of a specific feature of the work and the commission as a whole is to report to the Special Committee on Car Service Matters of the Association of Railway Executives, of which Daniel Willard is chairman, through W. L. Barnes, special assistant. Mr. Barnes has been acting as assistant to the president of the American Railroad Association in charge of car service matters, but Mr. Aishton, after having spent several weeks in Washington giving personal attention to the work of the Commission on Car Service, has returned to Chicago. D. E. Spangler has been appointed a new member of the commission, succeeding C. B. Phelps. He was formerly superintendent of transportation of the Norfolk & Western and was a member of the Commission on Car Service in 1917. The plan of organization as announced in a circular issued by Mr. Aishton is as follows:

W. L. Barnes, special assistant, representing the Special Committee on Car Service Matters, Daniel Willard, chairman, will have jurisdiction in car service matters and deal with the Interstate Commerce Commission on all details relating to car service questions. He will be ex-officio a member of the Commission on Car Service and attend its conferences.

Car Service Commissioners: W. C. Kendall, A. G. Gutheim, W. J. McGarry, D. E. Spangler, and L. M. Betts.

District Organizations: M. B. Casey, Manager, Refrigerator Department, Manhattan Building, Chicago, Ill., F. E. Dewey, District Manager, New England, South Station, Boston, Mass.

The commissioners are of equal rank and will report to the Special Committee on Car Service Matters through Mr. Barnes. Each commissioner will supervise an assigned portion of the work of the commission, the necessary assistants and clerical forces to be approved by the special assistant. All orders and circulars will be issued in the name of the Commission on Car Service. Correspondence from the commission will be signed in the name of the Commission on Car Service, followed by the name of the individual commissioner assigned to handle the particular subject of the correspondence. Correspondence will invite necessary replies to be made to the Commission on Car Service.

For the present the work of the Commission on Car Service is divided and assigned to individual commissioners as follows:

W. C. Kendall, General Railroad Relations: Will handle all questions relating to car service and per diem rules and agreements, and demurrage rules. Will analyze and direct the compilation of regular and special reports and statistics other than those which relate exclusively to the work of other commissioners. Will have general charge of the work of the office manager.

A. G. Gutheim, Public Relations and Policy: Will handle relations between the Commission on Car Service and governmental departments (other than the Interstate Commerce Commission) and state, county, and municipal authorities. Will, in conjunction with the commissioner handling the particular question concerned, make a special study from time to time of such subjects as may require special attention, and handle such, as, for instance, the coal movement, the grain movement, or the movement of any other of the important and seasonal commodities.

D. E. Spangler, Open Car Distribution: Will supervise the location, relocation, and distribution of open cars, including coal, hopper, mill type and flat cars, with a view to securing the most equitable, proper and economical distribution, and to meet requirements generally.

L. M. Betts, Closed Car Distribution: Will supervise the location, relocation, and distribution of closed cars, including box, automobile, furniture, ventilated, and stock cars with a view to securing the most equitable, proper and economical distribution, and to meet requirements generally. Will also handle all questions pertaining to refrigerator cars so far as it may be necessary at Washington, the actual handling of the cars, however, to be accomplished through the Refrigerator Department at Chicago.

W. J. McGarry, Field Work: Will supervise the work of the local Committees on Car Service throughout the country, including the work of the district managers. He will also, through the medium of the chief inspector, supervise the work of the inspection force, working in individual cases, as may be necessary, with the other commissioners immediately in charge of the particular work under investigation. He will also supervise the placement, modification, cancellation and distribution of embargoes; he will supervise the receipt and filing of reports relative to accumulations and congestions, and will take the action necessary to relieve such accumulations and congestions; he will handle diversions of freight accomplished under authority of the orders of the Interstate Commerce Commission; he will have charge of the reports of bad order cars, company material under load in cars, locomotive conditions, joint utilization of facilities and the receipt and supervision of the necessary reports in connection therewith.

For the present W. C. Kendall will also act as Chairman of the commission for the purpose of preparing the docket of the commission for conferences and presiding at such conferences and at such meetings as it may be advisable for the commission as a whole to hold with representatives of the regulatory bodies, or of the carriers, or of the shipping public.

Refrigerator Department: The manager will supervise the location, relocation and distribution of refrigerator cars and will compile the proper reports and records in connection therewith, and generally secure the most equitable, proper and economical distribution possible to meet the needs of perishable freight traffic.

District Organizations: The managers in charge shall, in a general way, act as agents for the Commission on Car Service for the purpose of handling the functions of the Commission on Car Service between the railroads in the individual district to which they are assigned. Generally, relations between railroads in the individual district and other railroads will be handled by the district manager through the Commission on Car Service, and the Commission on Car Service will deal, with respect to the railroads in individual districts, through the district manager to the greatest extent possible.

Railway Executives Plan for Improving Situation

Advisory Committee Created to Deal with and Better Transportation Conditions

AT A MEETING of the Association of Railway Executives in New York on July 1, measures were adopted for the purpose of bringing about closer co-operation between the railways themselves and between them and the Interstate Commerce Commission, and increasing the efficiency of railroad operation.

The report of the Special Committee on Car Service, which was created on May 28 to study and make recommendations for the improvement of the general transportation situation, was made by its chairman, Daniel Willard. The report, with some modifications, was adopted and the following committee, to be known as the Advisory Committee, was appointed to carry out the plan adopted.

Daniel Willard, chairman, President, Baltimore & Ohio; W. H. Truesdale, President, Delaware, Lackawanna & Western; W. W. Atterbury, Vice-President, Pennsylvania Railroad; Hale Holden, President, Chicago, Burlington & Quincy; E. J. Pearson, President, New York, New Haven & Hartford; W. B. Storey, President, Atchison, Topeka & Santa Fe; B. F. Bush, President, Missouri Pacific; Howard Elliott, Chairman, Northern Pacific; C. H. Markham, President, Illinois Central.

The Advisory Committee previously in existence to deal with problems of the American Railway Association was abolished.

The Special Committee on Car Service said in its report:

"It was clearly the purpose of Congress, as expressed in the Transportation Act of 1920, that private ownership and operation of the railroads should continue to be the established policy in this country, but your committee is firmly of the belief that in the final analysis the test of private ownership which the public will apply, will be the ability of the carriers to render efficient service to the country as a whole and under all conditions. While we believe that the best results from private ownership can only be realized under conditions which permit the fullest opportunity for individual initiative and action under normal circumstances, we also believe that in order to preserve private ownership, it is incumbent upon the individual companies by voluntary action and co-operation to establish an agency authorized to deal promptly and effectively with such emergencies as contemplated in Section 402 of the Transportation Act."

The report of the Special Committee on Car Service, as adopted with certain amendments to it which were introduced at the meeting of the Association of Railway Executives, was as follows:

"The emergency which made it necessary for the Association of Railway Executives to assume direct control temporarily over matters of physical maintenance and operation having passed, your committee recommends that:

"(a) The Association of Railway Executives shall deal with questions of general policy covering public relations, legislative, corporate, financial and accounting matters, and traffic as related to rates, and questions arising out of the termination of Federal control, and the Transportation Act of 1920; and that

"(b) The American Railway Association, through its Executive and other committees, shall deal with questions of transportation, maintenance, operation and traffic as related to operation; and

"(c) The Association of Railway Executives shall have at all times executive control of all railway and railroad associations."

"3: That an Advisory Committee of nine Railroad Executives, territorially representative, be appointed by the Association of Railway Executives, to advise concerning matters relating to transportation, maintenance and operation brought to its attention by the Interstate Commerce Commission, the American Railway Association, or from any proper source. The Advisory Committee shall endeavor to establish co-operative relations with the Interstate Commerce Commission. It shall be the medium for the exchange of views and information between the Association of Railway Executives and the American Railway Association. Subordinate to the Advisory Committee there shall be Committees of Executives at leading railroad centers such as Boston, New York, Chicago, St. Louis, Atlanta, etc., to deal with questions local to the respective centers, and to secure the largest measure of co-operation between the carriers themselves, and between the carriers and the Advisory Committee.

"4. That a Car Service Commission be maintained, with headquarters in Washington.

"5. That an Executive Manager of known ability and experience, with necessary assistants and with office in Washington, be appointed by and report to the Advisory Committee. He shall supervise the operations of the Car Service Commission and deal with questions arising between the carriers and the Interstate Commerce Commission.

"6. That the American Railway Association, through its Transportation Section, take up at once a complete study and revision of the Car Service and Per Diem Rules, designing the same to deal effectively with the situation as it now exists under the Transportation Act, and to secure the return of cars to the owning roads.

"7. That when the Car Service Rules are so revised and are finally adopted by the American Railway Association, they shall be filed with Interstate Commerce Commission in the same manner as tariffs, demurrage rules, etc.

"8. The members of the Advisory Committee shall choose a chairman from their membership, who shall call the committee in conference whenever in his judgment it is necessary to do so, or upon request of three members of the committee."

A resolution was adopted setting forth that it was the sense of the Association of Railway Executives, "that to the extent it is possible, efforts shall be made in good faith by every road to send home cars to home roads wherever it can be done."

The following committee was appointed to consider the relations of the railways with the express business and Pullman company: W. B. Storey, chairman, President, Atchison, Topeka & Santa Fe; A. H. Smith, President, New York Central; J. H. Hustis, President, Boston & Maine; Howard Elliott, Chairman, Northern Pacific; Samuel Rea, President, Pennsylvania Railroad; C. H. Markham, President, Illinois Central; Carl R. Gray, President, Union Pacific, and Bird M. Robinson, President, American Short Line Railroad Association.

The Standing Committee was instructed to consider and make positive recommendations to the member-roads not later than July 23, as to the advisability of having one express company, and as to the possibility of having one contract that would be fair to all companies.

The Advisory Committee was instructed to report at the earliest possible date to the member-roads the number of cars that each railroad should provide, divided into classes of open, box, refrigerator, stock cars, etc. The resolution set forth "that this information compared with what they

have provided will show to what extent each carrier has fulfilled its duty."

The following new Articles of Organization and By-Laws of the American Railway Association were adopted:

The new articles of organization and the by-laws which become effective as of the date of the meeting include a number of changes, the outstanding features of which are as follows:

The name of the organization is again made to be the "American Railway Association" instead of "American Railroad Association" as it was during the period of federal control.

It is provided in Article 7 that the work of the association shall be conducted by a board of directors of eighteen elected members, one of whom shall be elected chairman, and one executive committee. From March 1, 1920, until the organization of the new board of directors following the annual meeting of 1920 (to be held in November), it is provided that the advisory committee of the Association of Railway Executives shall perform the duties and exercise the powers of the board of directors and the executive committee.

The by-laws call for a revision of the plan of the subordinate sections of the American Railway Association whereby there are to be, instead of the present seven sections, six organizations to be known as divisions. These are to be as follows:

Division I—Operating and transportation.
Division II—Traffic.
Division III—Engineering.
Division IV—Mechanical.
Division V—Purchases and stores.
Division VI—Freight claims.

It shall be the duty of Division I—Operating and Transportation, "to consider and report upon questions affecting operating practices, and the efficient use and interchange of equipment."

Division III—Engineering is "to consider and report upon methods affecting the location, construction and maintenance of railroads."

Division IV—Mechanical is "to consider and report upon methods of construction, maintenance and service of the rolling stock."

Conditions in the Middle West

THE transportation situation in the Central West during the past week was practically unchanged, although vigorous work on the part of the car service commissions, terminal committees and organizations of shippers has resulted in the creation of a more hopeful outlook for relief within the next eight or ten days. The principal factor in this optimistic view is the action of the Interstate Commerce Commission in ordering 27,750 empty grain cars now on Eastern lines to Western roads. The allotment of 1,800 cars to the Atchison, Topeka & Santa Fe, 1,200 to the Minneapolis, St. Paul & Sault Ste. Marie, 300 to the Wabash, 300 to the Chicago Great Western, 300 to the Chicago & North Western, and 1,200 to the Chicago, Rock Island & Pacific has met with the approval of western grain shippers. The large allotment to the Rock Island and Santa Fe is intended to help relieve the situation in the heavy grain states. It was also announced that deliveries of grain cars would be made to the Northern Pacific, the Great Northern and the Union Pacific. The number of cars soon to become available for service within the next two weeks—the time it will probably take for their proper delivery and placement—has led to the prediction that the acute grain traffic situation, which has always been more or less prevalent in Iowa and Kansas, will be substantially relieved.

The accumulation of cars in terminals resulting from the recent unauthorized strike of switchmen and switchtenders has not been greatly relieved. This is especially true in the Chicago terminal, where this accumulation affects the transportation of the whole country, inasmuch as it cannot help but interfere with the interchange movement. However, this condition has been recognized by the joint committees and strenuous efforts are now being made to dispose of the accumulated traffic.

The situation in regard to the movement of coal also remains practically unchanged, although every effort is being made by the western coal carriers to obtain cars with which to move coal from the producing to the industrial districts. Conditions at Chicago, according to Lewis T. Orr, chairman of the coal committee of the Chicago Real Estate Board, will become serious next winter unless action is taken immediately to expedite the movement of coal into this district.

According to Mr. Orr, a serious fuel shortage in Chicago may occur next winter because of the order of the Interstate Commerce Commission diverting all coal mined in the Pocahontas fields of Virginia to eastern and northwestern points, with none for Chicago. This order will mean that Chicago apartment houses and buildings, now obtaining about 80 per cent of their supply from this source, will have to depend upon Illinois and Indiana for their supply.

The whole situation in the West has been seriously affected by labor conditions. On many of the lines operating west of Chicago subordinate officers are still performing switching service and although these workers and the new men who are taking the place of the yard "vacationists" are accomplishing more work than was performed by the regular yard men, this unsettled state of organization has resulted in disturbing the ability of the roads to give the best service possible with the present equipment. It is believed that there will be a material improvement in this labor condition as soon as the Railroad Labor Board announces its award and that this should do much to end the present difficulty. While it is agreed by Western operating officers that the roads are short of equipment it is also believed that the present facilities would be sufficient to adequately handle the grain and coal movements if labor conditions were more settled.

The conditions in the West and Central West are in general indicated by the following table, which shows the number of cars loaded on several representative lines and the number of revenue cars received from connections for line movement.

WEEK ENDING JUNE 26, 1920

Road	Cars loaded on line			Cars received from connections for line movement		
	1919	1920	Inc.	1919	1920	Inc.
I. C.	22,611	24,137	1,526	14,844	18,947	4,103
U. P.	4,884	6,607	1,723	6,758	7,232	474
O. S. L.	2,526	2,722	196	4,189	4,953	764
C., R. I. & P.	14,395	16,230	1,835	10,404	11,121	717
*C., B. & Q.	98,868	128,380	29,512	49,037	69,603	20,566
*G. N.	78,668	91,279	12,611	11,644	11,779	135

*Month of June.

These figures show that these lines are handling more traffic than they have ever handled before despite the labor disturbances, the car shortages and all of the other factors which have conspired to interfere with transportation. Practically without exception, the records prepared for the Commission on Car Service of the American Railroad Association as to the number of revenue freight cars loaded and received from connections, show that increases are being maintained over the records established for the same periods in 1919. Even in this small table of western lines increases are very apparent, the Chicago, Burlington & Quincy for instance, loading approximately 30 per cent more cars in June, 1920, than it loaded in the same month of 1919 and handling approximately 20,000 more cars received from connections during June, 1920, than it did in the same period of the previous year.

The Equipment Purchases Provided by Loan Fund

Estimates Show 224 Locomotives and 23,500 Cars to Be Ordered in Addition to Those Already Placed

In last week's issue of the *Railway Age*, pages 31 and 32, there was reproduced under the title "Funds for Equipment and Other Facilities," the report of the special committee of the Association of Railway Executives making recommendations as to the use of the $300,000,000 loan fund provided in the Transportation Act. One of the most interesting features of this report, particularly insofar as it concerns equipment, is the bearing it may be expected to have on the railway supply field. With this in view this article will attempt to show insofar as possible how much business will probably be in sight if the recommendations are adopted by the Interstate Commerce Commission.

An examination of the details available leads to the conclusion that the recommendations if adopted will call for the purchase of 224 locomotives and approximately 23,500 freight cars in addition to those for which orders have already been placed so far this year.

The suggestion of the Interstate Commerce Commission, as pointed out in last week's issue, was that the Association of Railway Executives should make recommendations as to the expenditure of $125,000,000 for equipment, including $50,000,000 for locomotives and $75,000,000 for freight cars. It further suggested that the amount allotted for locomotives should be for freight and switching locomotives only and that only 50 per cent of the cost should be covered, the financing of the remaining 50 per cent to be taken care of by the carrier. As to freight cars, a rule was adopted in most cases whereby the amounts allotted in the loans were to cover only 25 per cent of the cost of the cars, the financing of the remaining 75 per cent to be taken care of by the carrier. There were some exceptions in the manner of working this out, however. The Fruit Growers Express is allotted $6,750,000, which is expected to cover 50 per cent of the cost of 3,000 refrigerator cars.

Locomotives

The recommendations of the Association so far cover loans to the value of only $26,868,629 for locomotives of the total of $50,000,000 suggested as available. This amount will probably be considerably increased when further applications are passed on. Nevertheless the loans recommended call for loans for 25 different carriers and the total amount of $26,868,629, it is hoped, will cover 50 per cent of the purchase price of 599 freight and 239 switching locomotives, or a total of 838, with a total value of $53,737,358. A considerable portion of these locomotives are already on order with the builders. Exactly how many, it is, of course, impossible to say without a careful perusal of the detailed requests of the carriers. Nevertheless, the compilation made by the *Railway Age*, as shown in Table A of this article, would indicate that the number already ordered is in the neighborhood of 614, including 465 freight and 149 switch-

TABLE A—FREIGHT AND SWITCHING LOCOMOTIVES

Road	Amount recommended	Reported in *Railway Age*					
		Inquiry		Ordered			
		No.	Type	No.	Type	Builder	Issue
Atchison, Topeka & Santa Fe	$2,149,450	..	....	30	Mikado	Baldwin	April 2.
		..	....	10	Santa Fe	Baldwin	April 2.
		..	....	10	Mountain	Baldwin	April 2.
Bangor & Aroostook	180,000	No inquiries or orders reported to date.					
Boston & Maine	1,245,000	..	....	20	Santa Fe	American	March 5
		40	0-6-0	..			March 26.
		10	4-6-2	..			March 26.
Central of Georgia	237,500	..	....	4	Mountain	American	April 30.
Chesapeake & Ohio	1,058,750	..	....	20	Mallet	American	April 9.
		..	....	5	Switching	American	April 9.
Chicago & Alton	134,000	No inquiries or orders reported to date.					
Chicago, Burlington & Quincy	1,472,775	..	....	5	Mikado	Baldwin	February 6.
		..	....	15	Mikado	Baldwin	May 14.
		..	....	15	Santa Fe	Baldwin	May 14.
Chicago Great Western	276,000	..	....	10	Mikado	Baldwin	February 13.
Chicago, Rock Island & Pacific	879,583	..	....	10	Mountain	American	April 30.
		..	....	10	Pacific	American	April 30.
		..	....	15	Santa Fe	American	April 30.
Erie	1,242,500	No inquiries or orders reported to date.					
Great Northern	1,375,000	..	....	45	Mikado	Baldwin	March 12.
Gulf Coast Lines	150,000	No inquiries or orders reported to date.					
Gulf, Mobile & Northern	113,700	No inquiries or orders reported to date.					
Illinois Central	2,987,500	..	....	50	Santa Fe	Lima	May 28.
		..	....	25	Pacific	American	May 28.
Long Island	218,000	No inquiries or orders reported to date.					
Minneapolis & St. Louis	487,500	..	....	15	2-8-2	American	June 25.
		..	....	5	4-6-2	American	July 9.
New York Central	4,807,012	..	....	82	0-8-0	Lima	April 9.
		..	....	65	Mikado	American	April 9.
		..	....	46	Pacific	American	April 9.
		..	....	15	Mallet	American	April 9.
New York, New Haven & Hartford	1,750,000	..	....	30	Mountain	American	April 9.
		..	....	10	0-8-0	American	April 9.
Norfolk Southern	111,000	..	....	3	0-6-0	Baldwin	January 30.
Northern Pacific	1,853,978	..	....	25	Mikado	American	May 7.
		..	....	20	Pacific	American	May 7.
		..	....	20	0-8-0	American	May 7.
		..	....	6	Mallet	American	May 7.
Philadelphia & Reading	1,033,125	..	....	25	Consolidation	Baldwin	June 4.
		..	....	5	Pacific	Company shops	June 4.
		..	....	5	Switching	Company shops	June 4.
Southern Pacific	1,168,256	..	....	25	Freight		
		..	....	21	Passenger		
		..	....	2	Electric		
		..	....	24	Switching		
Toledo, St. Louis & Western	375,000	No inquiries or orders reported to date.					
Wabash	812,500	No inquiries or orders reported to date.					
Western Maryland	750,000	No inquiries or orders reported to date.					

Pacific and passenger locomotives are shown in the table, but not included in the totals.

ing locomotives, leaving still to be ordered 134 freight and 90 switching locomotives: namely, a total of 224.

	Recommended.	Shown in Table A.	To be Ordered.
Freight	599	465	134
Switching	239	149	90
Total	838	614	224

Of course, it will be understood that without the detailed data at hand it is impossible to ascertain the amounts in the second and third columns of the above table with absolute accuracy. It is believed, however, that the figures shown are approximately correct and that Table A wherein they are compiled will prove of value. In this table have been entered the name of the road and the amount allotted to it value of $143,569,730. The estimate of the *Railway Age* as to the number of cars already ordered or still to be ordered as computed in Table B is that approximately 21,556 of the cars in question have already been ordered and that the remainder of 45,021—namely, 23,465—have still to be ordered. As in the case of Table A this also cannot be regarded as official, but merely as an indication from such material as is at hand to give some idea as to what is to be expected.

Table B is compiled in the same manner as Table A and shows the orders already placed, as well as inquiries that have been issued, excluding, of course, those for which orders have since been placed. An abstract of the details in Table B would show the following comparison with the to-

TABLE B—FREIGHT CARS

Reported in *Railway Age*

Road	Amount recommended	Inquiry No.	Inquiry Type	Ordered No.	Ordered Type	Builder	Issue
Atchison, Topeka & Santa Fe	$7,850,550	...	.....	500	Gondola	Am. Car & Fdy.	March 26
		...	.....	1,500	Refrig.	Am. Car & Fdy.	March 26
Central of Georgia	577,500	500	Box	...	.....	.....	July 9
		300	Gondola	...	.....	.....	July 9
Chesapeake & Ohio	1,658,750	...	.....	500	Coal	Pressed Steel	June 4
		...	.....	500	Coal	Std. Steel	June 4
Chicago, Burlington & Quincy	2,973,750	...	.....	500	Stock	Western Steel	May 14
		500	Box	Inquiry later withdrawn...		.....	March 26
		500	Gondola	Inquiry later withdrawn...		.....	April 2
Chicago, Indianapolis & Louisville	300,000	No inquiries or orders reported to date.					
Chicago, Milwaukee & St. Paul	3,150,000	No inquiries or orders reported to date.					
Chicago, Rock Island & Pacific	509,667	...	.....	500	Gondola	Bettendorf	April 9
		...	.....	2,000	Box	Inquiries later withdrawn	February 27
		...	.....	500	Stock		February 27
		...	.....	500	Gen'l Ser.		February 27
		...	.....	200	Flat		February 27
Erie	250,000	...	.....	967	Hopper bodies	Std. Steel	February 20
Fruit Growers Express	6,750,000	1,000-2,000	Refrig.	...	.....	.....	April 30
Great Northern	637,500	...	.....	500	Ore	Has. & Barker	February 20
		...	.....	500	Ore	Am. Car & Fdy.	February 20
Gulf Coast Lines	667,063	No inquiries or orders reported to date.					
Illinois Central	1,524,250	1,000	Gondola	...	.....	.....	February 20
		1,000	Refrig.	...	.....	.....	May 14
		200	Flat	...	.....	.....	May 14
		300	Stock	...	.....	.....	June 16
Minneapolis & St. Louis	1,240,000	No inquiries or orders reported to date.					
Missouri, Kansas & Texas	300,923	...	.....	300	Tank	Am. Car & Fdy.	January 2
		...	.....	150	Tie	Mt. Vernon	April 16
Northern Pacific	1,746,022	100	Caboose	...	.....	.....	April 2
		...	.....	300	Ballast	Am. Car & Fdy.	April 23
New York Central	11,192,988	...	.....	1,000	Hopper bodies	Std. Steel	January 23
		...	.....	3,500	Hopper	Std. Steel	April 9
		...	.....	1,750	Hopper	Am. Car & Fdy.	April 9
		...	.....	1,750	Box	Am. Car & Fdy.	April 9
		...	.....	500	Hopper	Pressed Steel	April 9
		...	.....	500	Box	Has. & Barker	April 9
		...	.....	500	Stock	Has. & Barker	April 23
		...	.....	494	Stock	Merchants Des.	April 23
		...	.....	30	Milk	Merchants Des.	April 23
Southern Pacific	6,331,774	...	.....	2,000	Box	Co. Shops	April 9
		...	.....	1,000	Flat	Co. Shops	April 9
		...	.....	1,000	Stock	Co. Shops	April 9
		...	.....	65	Caboose	Co. Shops	April 9
		...	.....	250	Ballast	Mt. Vernon	May 21
		...	.....	500	Auto	Std. Steel	May 21
Western Pacific	1,000,000	No inquiries or orders reported to date.					
Wheeling & Lake Erie	3,600,000	No inquiries or orders reported to date					

in the recommendations. In addition to that such orders as the road has placed so far this year or the inquiries it may have issued that have not yet resulted in orders have been supplied from the weekly reports in the *Railway Age*. This unfortunately does not have the status of an official compilation. It will be studied with interest, particularly, however, because of one important factor—it will point out the name of those roads which have not yet made the purchases covered by their requests and recommended allotments, such roads being: Bangor & Aroostook, $180,000; Chicago & Alton, $134,000; Erie, $1,242,500; Gulf Coast Lines $150,000; Gulf, Mobile & Northern, $113,700; Toledo, St. Louis & Western, $375,000; Wabash, $812,500; and Western Maryland, $750,000. The amounts given represent in each case, as noted above, one-half the purchase price of the locomotives toward the financing of which the loans are requested.

Freight Cars

In the case of freight cars the Association recommended loans to 19 roads for $52,260,537, which it is hoped will permit the purchase of 45,021 freight cars having a total of 45,021 cars included in the Association's recommendations:

	Recommendations.	Orders to date.
Refrigerator	7,950	1,500
Box	14,300	4,250
Coal	8,978	8,717
Gondola	6,100	1,000
Stock	2,894	2,494
Flat	1,300	1,000
Ore	1,000	1,000
Open top cars	500	....
Automobile	500	500
Tank	350	300
Caboose	289	65
Other freight train cars	860	730
	45,021	21,556

Refrigerator Cars

Table C deals only with refrigerator cars. It is quoted from an enclosure in the report supplied to show the re-

Table C—Refrigerator Cars.

Fruit Growers Express	3,000	Inquiry 1,000-2,000, April 30.
Atchison, Topeka & Santa Fe	2,500	Order 1,500, March 26.
Illinois Central	1,000	Inquiry, May 14.
Michigan Central	250	
Minneapolis & St. Louis	200	
Chicago, Burlington & Quincy	1,000	
	7,950, of which only 1,500 have been ordered to date.	

frigerator car situation. Of the 7,950 refrigerator cars included in the recommendations to be purchased with the proceeds of the loans, it will be noted that only three of the six items noted have been covered by orders or inquiries. The Fruit Growers Express, which is expected to purchase 3,000 cars, issued inquiries, as reported in the *Railway Age* of April 30, for 1,000 to 2,000 cars. The Atchison, Topeka & Santa Fe—2,500 cars—was reported in the *Railway Age* of March 26 as having ordered 1,500 refrigerator cars from the American Car & Foundry Company. The Illinois Central, down for 1,000 cars, was noted in the *Railway Age* of May 14 as having issued inquiries for 1,000 of these cars.

Development of Locomotive Feed Water Heating*

Limitations and Possibilities Outlined with Particular Reference to the Open Type Heater

By Thomas C. McBride

THE USE OF FEEDWATER HEATERS on locomotives dates back to the beginning of the locomotive itself. There are records of the application of an "open" or "injection" type heater to a locomotive in England in 1827, and an English patent of 1828 describes a tubular heater for the same purpose. Ross Winans of Baltimore applied tubular heaters to two types of Baltimore & Ohio railroad locomotives in 1836. It is worthy of note that the desirability of the feed-water heater for the locomotive was recognized at these early dates, although it must be appreciated that the advantages possible at that time were proportionately greater than at the present time because of the low-steam pressure then in use.

Every conceivable type of heater and all possible sources of heat, even the hot ashes, seem to have been proposed or tried, and in view of the amount of study that has been given to the subject it seems rather remarkable that locomotive feedwater heating is not now in more general use. Possibly the reason lies in the fact that it is only in comparatively recent years that the essentials of heater performance and pump operation have been understood. Furthermore, the small size of the locomotives formerly in general use limited the saving per locomotive, and the general adoption of the injector, because of its simplicity and convenience, rendered feedwater heating impossible, for injectors heat the water which they use to such an extent by live steam that there is little or no opportunity for further heating.

Practically all of the development work to date that has been at all successful has considered only the surface type. There are a great many heaters of this type in service in Europe, but there are objections to it for locomotive use. It is a complex and delicate structure; it also wastes the water condensed from the exhaust steam with its heat or raises complications as to saving it, and it requires enough exhaust steam to heat all of the feedwater. On the other hand, the open or injection type of heater necessarily recovers both the water condensed from the exhaust steam and its heat so that both are returned direct to the boiler with the water taken from the tender. Less water is therefore taken from the tender and less exhaust steam is required for the heating.

The McBride Feedwater Heater

The adoption of an open heater for the locomotive may seem a radical step, but the author has devised an open type of feedwater heater which is being manufactured by The Worthington Pump and Machinery Corporation and is fully described in the *Railway Age* of Sept. 5, 1919, in which no new elements are used. The heater itself is of a general type that has been in use in marine service for at least twenty years. The open heater with the oil separator to remove the oil from the exhaust steam before it enters the heater because of its merits has been almost universally adopted for stationary plants. One of these heater and pump units was thoroughly tested out on the locomotive test plant of the Pennsylvania Railroad at Altoona, Pa., in 1917, and has been in operation on road service since October, 1918. Three more units have been in operation for approximately a year on pooled locomotives and have given no trouble other than the usual pump maintenance. Nothing has developed indicating that the open heater as a type is not well adapted to the locomotive and the coal and water savings have been so marked as to be evident to the crew.

Advantages of Locomotive Feedwater Heating

It is not possible to make an exact general statement of the advantages to be obtained from locomotive feedwater heating, because much depends on the particular locomotive to which the heater is to be attached, the capacity at which it is worked, the temperature of the water in the tender, and the basis on which the advantages obtained are stated. We are liable to base our notions as to the advantages of feedwater heating on the results obtained in stationary practice where the coal saving is very properly considered as equivalent to the reduction in the amount of heat necessary to evaporate the water because of the higher temperature at which the water is delivered to the boiler. In the case of the locomotive, however, with its very complicated relations of the different operations that are going on, and the very wide range of capacity through which the boiler is operated, there is generally a much greater coal saving than in stationary practice. Three factors enter into the final result: 1, the reduction in the amount of heat required to evaporate the water in the boiler, which might be called the *heat saving due to the feedwater heater.* 2. The reduction in the amount of heat required results in a greater reduction in the amount of coal required because of the better efficiency of the boiler at the lower rate of combustion. These two factors give the *coal saving based on water evaporated.* 3. The exhaust steam taken by the heater from the exhaust ports of the locomotive reduces slightly the back pressure in the locomotive and should show some advantage. All three factors combined will give the *coal saving based on indicated horsepower.*

Coal Saving Based on Water Evaporated

In order to obtain the coal saving based on water evaporated it is necessary to consider particular locomotives, since this factor involves the change in the efficiency of the boiler with varying boiler capacity. For this purpose the curves of Fig. 1 have been prepared. The curves on the left marked A are on the basis of 10 per cent heat saving; those on the right marked B on the basis of 12 per cent heat saving. The upper solid curves marked "injector" are test plant results of a con-

*From a paper presented at the spring meeting, St. Louis, Mo., May, 1920, of the American Society of Mechanical Engineers.

solidation, atlantic, and mikado type locomotive respectively and show the total amount of water evaporated per hour against dry coal fired. The dotted curves marked "heater" for each of these three locomotives show the amount of water that would have been evaporated by the same amount of coal with a feedwater heater reducing by 10 per cent and 12 per cent respectively the amount of heat required to evaporate the water and superheat the steam. The vertical distances between the solid and dotted curves represent the amount of coal saved and these quantities are shown in the lower set of curves. This lower set of curves, therefore, shows the coal saving based on water evaporated due to the feedwater heater that follows a reduction of 10 per cent and 12 per cent respectively in the amount of heat necessary to evaporate the water and superheat the steam. These curves show that the feedwater heater attached to a locomotive will effect a coal saving beginning at low capacities practically identical with the heat saving, or the coal saving which we have been accustomed to in stationary practice, but which increases at first gradually and then more rapidly as the capacity of the locomotive is increased, reaching values twice or more than twice these figures as the maximum capacity of the locomotive is

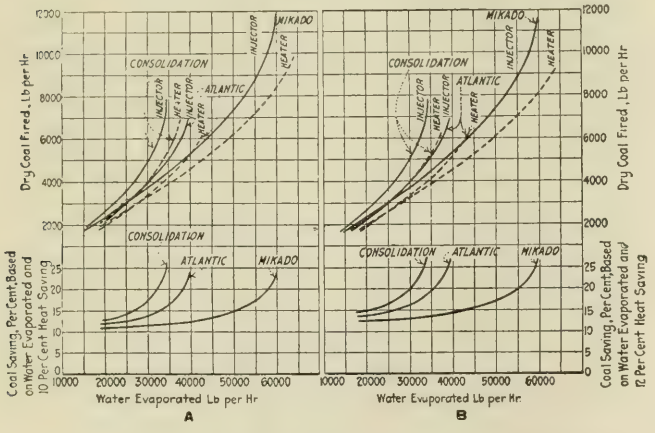


Fig. 1. Curves Showing Estimated Coal Saving with Feed Water Heater

approached. It would be difficult to credit this result were it not warranted theoretically by the second factor mentioned above, and had it not been confirmed in test plant results with a wide margin to spare. A study of the upper curves in connection with the lower curves of both figures will show that the very great coal saving possible is accompanied by an increase in steaming capacity due to the feedwater heater and that it should be possible to work the locomotive with the heater at greater steaming capacities than are possible with the injector, but how much greater would depend largely on the particular locomotive.

Coal Saving Based on Indicated Horsepower

Saturated steam locomotives should show a further gain of a few per cent from reduced back pressure. Test plant records show some reduction in this back pressure in superheated steam locomotives accompanied by a reduction in superheat and indicate that, at least until further tests are made, this factor should not be considered for superheated steam locomotives. The curves shown in Fig. 2 are based on test plant results of a mikado locomotive, comparing its operation with the injector and with the feedwater heater referred to in

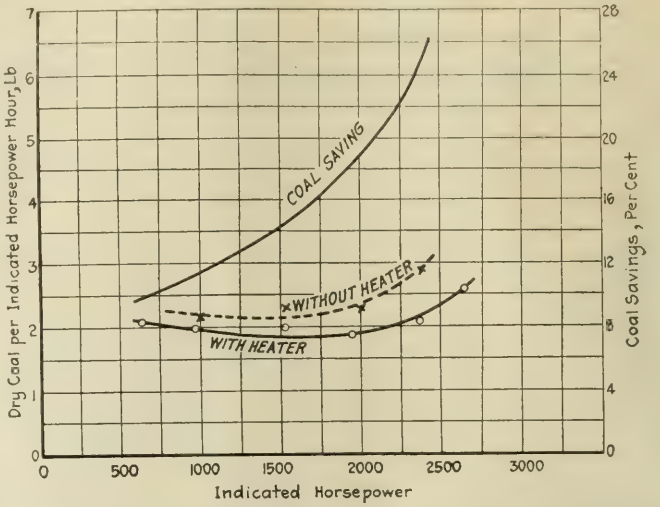


Fig. 2. Curves Showing Coal Saving Based on Test Plant Results

this paper. Table 1 shows the heat recovered by the feedwater heater and Table 2 the coal saving and increase in efficiency. They show a coal saving curve of the same general character, but slightly higher than the curve for the mikado locomotive of Fig. 1.

TABLE 1—HEAT RECOVERED BY THE FEEDWATER HEATER

Test No.	1	2	3	4
Steam to engine, lb. per min.	314.5	492.8	599.1	757.3
Steam to feed pump, lb. per min.	7.4	10.5	12.5	14.6
Steam to safety valve, lb. per min.	0.8	0.7	2.1	5.5
Exhaust steam condensed, lb. per min.	42.3	71.4	90.0	113.7
Heat in steam, B.t.u. per min. to engines	401,749	639,063	780,867	996,531
To feed pump	8,876	12,594	14,994	17,393
To safety valve	960	840	2,519	6,597
Total heat in steam	411,585	652,497	798,380	1,020,521
Heat recovered from exhaust B.t.u. per min.	50,725	85,694	108,063	136,736
Per cent of total heat	12.3	13.1	13.5	13.4

TABLE 2—COAL SAVING AND INCREASE IN EFFICIENCY WITH FEEDWATER HEATER

Test Nos.	1 and 5	2 and 6	3 and 7	4 and 8
Speed in m. p. h.	14.6	14.6	22.0	22.0
Indicated horsepower:				
Without heater	990	1549	2001	2388
With heater	965	1534	1949	2373
Coal per indicated horsepower hour, lb.:				
Without heater	2.2	2.3	2.3	2.9
With heater	2.0	2.0	1.9	2.2
Coal saving by feed heating, per cent.	9.1	13.1	17.4	24.7
Drawbar horsepower:				
Without heater	824	1289	1690	2019
With heater	783	1293	1679	2055
Thermal efficiency of locomotive, per cent:				
Without heater	7.0	6.7	6.7	5.4
With heater	7.6	8.0	8.6	7.8
Increase in efficiency with heater, per cent	8.5	19.4	28.3	44.4

Conclusions

Viewed from the standpoint of coal and water saving, the adoption of the heater becomes a question of interest on first cost, depreciation and maintenance cost against these savings. Viewed from the standpoint of increased capacity, the question becomes one as to whether the feedwater heater does not offer increased capacity at the lowest first cost, especially if, as in the case of the comparison of the consolidation locomotive with and the mikado locomotive without a heater, the adoption of the heater permits of the use of a simpler and less costly type of locomotive. The feedwater heater offers a solution of the pressing problem of these times, when so many fairly old and small locomotives have outgrown their usefulness because they are not large enough for present-day demands. The feedwater heater will not only increase the capacity of these locomotives, or what might be called their economical operating capacity, at a comparatively low cost and with little change in them, but it will also show a larger percentage of coal saving because of their full loading than would be obtained with present-day larger locomotives.

Work of the Local Committees on Car Service

An Analysis of the Results Accomplished at the Points Where Committees Have Been Active

Washington, D. C.

THE COMMISSION ON CAR SERVICE has issued a summary of the activities of the local Committees on Car Service organized at 29 of the principal terminals of the United States, who have been doing most excellent work notwithstanding the short time that has elapsed since they were established. An abstract of the report, which is dated July 1, is as follows:

"Meetings have been held with representatives of the chambers of commerce and other local trade bodies and organizations, and with the shipping public in general. In many cases representatives of the teamsters and truckers have been called into these meetings all with the view of securing a closer co-operation between all interests involved.

"Labor conditions have contributed largely to retard the efforts of the committees; however, in most cases they have been able to remove the difficulties that existed and materially reduced the accumulations of freight, and in many cases the accumulations have been entirely cleared up.

"At points where most serious accumulations and other difficulties existed, the committees have directed their efforts toward speeding up the movement through terminals and reducing the delay in loading and unloading cars by handling vigorously with all interests concerned.

"Special attention has been given at all points to the building up of solid trains for specific destinations, territories or connecting lines, and in many cases it has been found that large industries and shippers have been able to load solid trains by consolidating shipments for specific points on specific days and rotating trains between the lines interested in order to maintain a proper division of the shipments to be handled.

"Embargoed cars in large numbers have been disposed of at practically all points by trading between lines, and the diversion of cars to open routes. Reports received to date indicate that approximately 10,000 cars have been so disposed of at the terminals where these committees are operating.

"Cars held account of accumulations and inability of lines to receive and move have been diverted in large numbers under Interstate Commerce Commission Service Order No. 1, thus materially reducing accumulations on hand and releasing the equipment. Reports received to date, which do not include all of the points where committees are operating, indicate that approximately 20,000 cars have been diverted under this order through arrangement made by the committees.

"In some cases entire cargoes of freight which could not be handled at original destination export points have been diverted to other ports and, by co-operation with steamship agents, vessels furnished to handle.

"The accumulations of L.C.L. merchandise in warehouses and cars at certain points have been particularly acute. With very few exceptions this difficulty has been overcome by following up vigorously with consignees to remove freight from warehouses, and speeding up the unloading of cars by working overtime and securing voluntary forces to work on Saturday afternoons and Sundays.

"The substitution of trucks for cars in crosstown movement has been taken up at all points and worked out to the fullest extent possible, thus relieving for road movement the equipment formerly used in this service.

"The bad order situation has been particularly acute at some of the points, due to shortage of labor and material. However, at most of the points bad order cars on hand have been materially reduced by employing additional repair forces and working overtime. Notwithstanding this fact, there yet remains a great deal to be done in this direction, and this matter is receiving constant and vigorous attention on the part of the committees."

A brief statement of the principal things accomplished at the larger cities will serve to illustrate the scope of the field these committees are covering and the work they are doing, and may be of assistance in working out improvements at other points where committees have not been organized.

Atlanta—The committee at Atlanta was confronted with a strike of the yard and agency clerical forces immediately after its organization. This emergency was met by having members of the committee and other officials and employees of the roads interested go into the yards and stations and handle the work of the striking forces until they returned. The strike situation was adjusted, and all forces had returned to work on June 7.

Considerable freight had accumulated at Atlanta and outlying points due to slowing up of the movement during this period, but this has now been practically overcome, and all freight business is being handled currently with the exception of the Southern Railway movement south of Atlanta where there is slight accumulation due to lack of power caused by heavy movement of refrigerators to the peach territory.

Arrangement has been made by the committee for the Seaboard Air Line to use tracks of the Nashville, Chattanooga & St. Louis in making interchange with Atlanta joint terminals. This involves haul of 1 mile as compared with former haul of 14 miles around Belt Line. It will also eliminate one inspection of the cars so handled. It is further estimated there will be a saving of 12 engine hours per day, and a saving of approximately $70.00 per day in expense of handling.

By close inspection of the bills covering accumulation L.C.L. cars on hand for transfer, there were found 50 cars containing 20,000 to 30,000 pounds for Augusta and points beyond, with very little freight for Atlanta. These cars were sent to Augusta where they were worked into solid cars for other points and the freight for Atlanta territory consolidated into four cars and back hauled, thus eliminating the handling of these cars in the congested Atlanta terminal. One hundred seventy-five embargoed cars and 475 cars other freight were disposed of by trading between lines and diverting to open routes under I.C.C. Service Order No. 1.

Accumulation on Southern Railway at Chattanooga was handled by this committee and reduced by diverting loads to Central of Georgia and Atlanta & West Point Railroad.

Cincinnati—Baltimore & Ohio; Cleveland, Cincinnati, Chicago & St. Louis; Chesapeake & Ohio, and Pennsylvania Railroads are making up solid trains for specific points, connecting lines, and divisions. Accumulation of freight for Pennsylvania Railroad eliminated by diverting to other lines. Approximately 6,000 cars freight held under embargo, and for other causes, disposed of by trading between lines and diverting to open routes under I.C.C. Service Order No. 1. Accumulation of bad order cars reduced by forwarding to repair shops outside of Cincinnati, and to contract shops, for repairs.

Cleveland—Committee was confronted with accumulation of freight for local and switching delivery on Erie and Big Four due to these lines not placing embargoes at proper time. This has been reduced by speeding up on delivery, and trad-

ing cars wherever possible. Further accumulations prevented by applying proper embargoes, and arranging for interchange of cars outside of Cleveland switching district, and arranging for acceptance on other roads. L.C.L. merchandise situation being improved by working forces overtime and on Saturday afternoons and Sundays; and also by consolidation of L.C.L. schedules, and arranging solid cars wherever possible.

Denver—Cars loaded with automobiles and held account of consignees inability to lift bill of lading released by unloading at owner's expense. Several cars household goods on hand for which consignees could not be located, and no storage space being available, were consolidated into one car, thus releasing other cars. By speeding up the movement, an average interchange of 750 cars per day handled on an average of 3 hours and 55 minutes per car; a decrease of 1 hour and 2 minutes per car over same period last year. This resulted in saving approximately 972 car days per month on present volume of business handled.

Galveston—Accumulation of 3,700 cars freight on hand for local delivery June 1 reduced to 1,485 June 26. Two thousand seven hundred thirty-two cars of grain on hand June 1, included in above, reduced to 856 on June 25. Steamers in port to take 881 cars; room in elevators for 559 cars. This was accomplished by diverting 325 cars to Texas City to fill elevators at that point, and suspending all permits, and trading grades between consignees wherever possible. Four hundred eighty cars for Morgan Line on hand June 1, included in above, reduced to 35 cars June 26 by consolidating L. C. L. into solid cars and forwarding via all rail routes wherever possible, by unloading to ground, and by diversion of one cargo to New Orleans and arranging with steamship agent to furnish vessel to handle.

Kansas City—Accumulation on Rock Island, due to shortage of power, reduced to normal by diverting freight to Chicago, Burlington & Quincy and other lines. A number of cars on hand under load with automobiles disposed of by having shippers reconsign to other points. Accumulation of L. C. L. freight reduced to normal by working forces overtime. Bad order cars on hand reduced by forwarding to outside repair shops, and speeding up on repairs. Situation reduced to normal and all traffic moving in and out freely.

One hundred forty embargoed cars and 510 other loads disposed of by trading between lines, and diversion to open routes under I. C. C. Service Order No. 1.

New York—Reduction of 842 cars lighterage freight accomplished within period of ten days, in addition to handling new arrivals during same period, amounting to 5,209 cars. Reduction of approximately 1,000 cars in New York station freight effected by use of Jersey Shore team tracks and Brooklyn terminals; consignees agreeing to accept such delivery. Reduction in interchange traffic accomplished by use of Bay Ridge gateway, Pennsylvania Tunnel and Jersey Shore Belt Line. Transfer freight being reduced by combining cars and working forces overtime and on Sundays. One hundred embargoed cars disposed of by trading between lines and diverting to open routes. Seven hundred fifty-seven other loads disposed of by diverting from congested lines to lines in position to handle. Through co-operation of all concerned two trains of Pennsylvania Railroad freight for New England points were handled from Pennsylvania Railroad via Philadelphia & Reading at Harrisburg, and Central Railroad of New Jersey at Allentown, for movement to Jersey City, avoiding Philadelphia Terminal and congestion on Pennsylvania Railroad.

Omaha—By having inspectors in field give close attention to release of equipment and correcting conditions on ground, an increase in supply of 200 box cars was accomplished during first week of committees' activities. Arrangements made for use of portable derricks for unloading automobiles on hand in open top cars. One train of 29 cars being unloaded in an average of 10 minutes per car. Arrangements made with shippers for consolidating packing house products from South Omaha into three trains per day; two for points East of Chicago and one for Chicago and intermediate points. Trains being divided between six lines interested on consecutive days. Arrangements made for consolidation of wool shipments for Boston into solid trains or groups for delivery to the Wabash Railroad. Shipments of grain are being forwarded in solid trains daily made up in groups to various destinations so as to facilitate switching at intermediate points.

Philadelphia—Export freight reduced by unloading to ground wherever possible. Movement of freight from Philadelphia to New England points grouped into solid trains and forwarded on sailing days—being handled through New York tubes to avoid congestion. Accumulation of L. C. L. transfer freight overcome by placing proper embargoes; arranging with Philadelphia Market House to unload on Decoration Day, and the forwarding of several trains to Harrisburg Transfer for working at that point. In cases where consignees have been slow in unloading, freight has been placed in storage to release equipment. Bad order situation relieved by forwarding a number of cars to other shops in position to repair.

Pittsburgh—Accumulation on Pennsylvania Railroad, for delivery to Pittsburgh, Chartiers & Youghiogheny, disposed of by Pennsylvania Railroad taking charge of Pittsburgh, Chartiers & Youghiogheny operation. A portion of Baltimore & Ohio freight between McKees Rocks and New Castle Junction diverted over Pittsburgh & Lake Erie, permitting 50 per cent increase in train loading, and the moving of one train with 1 locomotive as compared with 4 over normal route. Emergency condition, in connection with disposition of slag and other waste material, relieved by placing embargo against delivery of shipments to roads not in position to handle, and arranging delivery of 30 cars per week to Pittsburgh & Shawmutt; 50 daily to Western Allegheny; 50 daily to Montour; 25 daily to Pittsburgh & West Virginia, and 20 cars daily to the Pittsburgh Steel Products Company.

St. Louis—All lines classifying freight in their yards and building up straight trains for interchange for lines beyond. Plan being developed for movement of oil from oil fields in solid trains so built up to avoid switching at larger gateways. Arrangements made with lines to exchange information on cars held back so movement can be made. Cars for reconsignments, and other cars held for embargoes, handled with shippers for diversion, and with committees at destination points for disposition. Through co-operation with St. Louis Chamber of Commerce special committee shippers has been appointed and meets each Monday in the office of the committee and is rendering valuable assistance in connection with elimination of trap cars, cross town service, full capacity loading, and prompt loading and unloading of cars. Situation with respect to cars set back at interchange points account of safety appliance defects analyzed, and arrangements made to clarify instructions of inspection and handling, whereby setting back approximately 800 cars per month will be avoided. Four thousand two hundred eighty-nine cars diverted from congested lines to lines in position to handle under I. C. C. Service Order No. 1.

Toledo—Arrangements made with three of the largest producers of car-load freight to group loading for specific destinations. Accumulation of L. C. L. freight overcome by working forces evenings, Saturday afternoons, and Sundays, and the closing of outbound freight houses on certain roads for three-day periods. Arrangements made for special committee of traffic representatives to handle embargoed cars. This committee has disposed of 791 embargoed cars by trading and diverting to open routes, and making special campaign with each road violating embargoes to overcome the practice. Three hundred forty cars diverted under I. C. C. Service Order No. 1.

Washington—Accumulation of freight at Potomac yards for restricted New York districts overcome by arranging with roads north to move out and store on line until movement to destinations could be made. Arrangements made for re-routing through Norfolk and Hagerstown gateways, freight normally moving through Potomac yards. Difficulty, experienced in having southern connections observe embargoes and hold orders, vigorously handled with roads at fault and arrangement made for censors to be placed at terminals south of Potomac yards to correct the situation. Accumulation of L. C. L. freight at Potomac Transfer eliminated by increasing forces, working overtime, and the diversion of 170 cars to Washington Terminal.

It is stated that conditions at Boston, San Francisco and Seattle have been practically normal, and there has been very little opportunity for these committees to report special things accomplished. However, these three committees—as well as the committees at Chicago and Detroit—have been doing excellent work, directing their efforts toward securing more prompt movement in loading and unloading of cars. Car Service Committees have recently been appointed at six additional points, viz: Columbus, Ohio; Des Moines, Iowa; Fort Worth, Texas; Grand Rapids, Michigan; Indianapolis, Indiana, and Milwaukee, Wisconsin, but the time since their organization has been too short to outline any of their activities in this report.

Priority for Railroad Orders

"PRICE AND TERMS of payment being equal railways are to have first preference in the allocation of goods where our supply is unequal to all the demands upon us."

This is a quotation from a letter to the Railway Business Association from a manufacturer who has realized the importance of putting the railways back in first class condition as soon as possible and who has adopted this policy as a part of his contribution to that work.

The letter of the manufacturer and a letter by Alba B. Johnson, president of the Railway Business Association, presenting it to manufacturers and merchants urging them also to give preference to railroad orders follow:

The Manufacturer's Letter

"We believe that a large number of manufacturers and jobbers throughout the country could profitably put in effect a policy similar to one which has just been adopted by us. For obvious reasons you are requested not to use our name, but the idea stands on the merits.

"We have given instructions that price and terms of payment being equal railways are to have first preference in the allocation of goods where our supply is unequal to all the demands upon us.

"We happen to be both manufacturers and warehousers. As warehousers we carry certain lines of material, the customers for which include both railways and others. At the present time demand upon us exceeds our stock. Non-railroad customers have represented such a proportion of purchases that following our normal custom we would be allocating practically all of our supply to them, leaving nothing for railroad customers, who on this line of goods have never bought from us very heavy tonnage.

"In a recent company conference it was made clear that the most serious problem confronting the house was car supply, both inbound and outbound. To the end that every resource within our control should be concentrated upon the rehabilitation of existing cars and locomotives and the provision of new ones, the instruction was made rigid to give preference to railway orders, even though such preference might involve disappointment to concerns which have been larger and more constant customers of ours. We have not felt that this disposition on our part ought to be extended in such a way that any advantage would be taken of it by railroads in the matter of price or of remittance terms. Hence, as stated above, the instruction to our people stands that price and terms of payment being equal they are to give preference to railroad orders until further notice. Inasmuch as our invariable terms of sale are cash, 30 days, this means that railroads prepared to place orders on 30-day cash basis at the current price will receive preference.

"We believe the Railway Business Association will act in aid of the general situation if it will suggest a similar course to its members and others."

R. B. A. Urges Dealers Give Railroad Orders Preference

President Johnson's letter follows:

"Co-operation for building up the freight car and locomotive supply is suggested in a practical form in a letter which had been received from a member of the Railway Business Association, a concern of large operations and the highest standing. The letter is published without the name of the company, since use of the name might unnecessarily involve the company in discussion with customers whose needs it is proposed to postpone temporarily in favor of railroad orders.

"Our correspondent announces that price and terms of payment being equal he will from now on until further notice give preference to railroad orders where his supply is inadequate to the total demands, even though this involves discrimination against customers who in the past have bought from him larger and more constant tonnage than have the railroads.

"It must have been long since evident to close observers that with car shortage at the root of industrial difficulties, other than labor, priorities would ultimately be essential in one form or another to enable the roads and the car and engine builders to catch up. Only one priority in the current governmental sense has thus far been resorted to—that under which coal cars are being hauled empty to the mines in order to furnish the coldest and most distant regions with their next winter's supply. It has been hoped by the Interstate Commerce Commission and by the roads that even this priority would not be necessary, and both Commission and roads are understood to view with reluctance any enlargement of the list, which they fear would precipitate an avalanche of petitions. Obviously priorities imposed for the correction of rolling stock shortage would be most appropriately directed to the provision of new rolling stock. In the meantime while the roads can only obtain the advantage of priorities in car supply through sanction from the Commission, manufacturers and merchants can within their own discretion determine which customers they will prefer in allocating a supply of material short of total demand.

"It would seem as if all concerned would concur in the conclusion that for some time to come preference not only in this matter but in every matter affecting the restoration of the roads to normal condition and service is in the public interest."

THE LEGAL DEPARTMENT of the International & Great Northern has been moved back to Houston, Tex., from Palestine.

IT IS OUR DUTY to the country to facilitate and aid in the rehabilitation of the railroads. The individual part may be small, but the aggregate is large, and the sooner each business man comes to a full realization of this fact, the better it will be for him and everybody else.—*F. M. Fuller, before meeting of the Metal Branch of the National Hardware Association.*

General Rate Advance Hearings Concluded

Increase in Passenger Fares Proposed to Help Meet Additional Advance Required by Wage Decision

WASHINGTON, D. C.

THE HEARING before the Interstate Commerce Commission on the applications of the railroads for a general increase in freight rates, which was begun on May 24, was concluded on July 6 after three days had been allowed for final arguments, five hours to the carriers and ten hours to the shippers and state commissioners. The case was submitted with a general expectation that whatever increase the commission shall decide to allow on the basis of the facts presented in this proceeding will have to be increased when the Railroad Labor Board renders its decision on the wage demands of the employees and the carriers have proposed that to assist in taking care of the further increase an advance be made in passenger fares also. In this proceeding they have confined their applications to increased freight rates.

Just before the opening of the argument Mr. Thom made a statement to the commission that, bearing in mind that a percentage increase in rates may disturb commercial relations to some extent, the carriers desire to ask the commission to hold the case open on the docket after the decision is announced, in order to enable the commission to supervise and promptly bring about such readjustment of the rates as may be necessary after a percentage increase is put into effect.

Mark W. Potter, formerly president of the Carolina, Clinchfield & Ohio, took his place as a member of the commission at the hearing on July 2, and heard the arguments.

Argument for Eastern Roads

Francis I. Gowen, general counsel of the Pennsylvania Railroad, presented the argument for the Eastern railroads. He referred to the importance of the commission treating the case as a nation-wide proposition, saying that there had been a tendency on the part of the shippers to place too much stress on conditions pertaining to only a few roads. The testimony in this case, he said, shows that adequate service rather than low rates is the desideratum of the shippers and that too low rates produce a service which in the long run is more costly to shippers than a proper level of rates. He pointed out that Congress knew when it passed the transportation act that the commission in readjusting rates at this time would not have before it all the elements of a complete valuation of the railroads and that it would have to use such information as is available. For this reason he contended that the property investment accounts should be accepted as a conservative basis of value, because, while they have been shown to be open to criticism in some respects, there is much evidence that as a whole they are very conservative.

Mr. Gowen also pointed out that during the first four months of 1920 the Eastern railroads have sustained a deficit of $63,000,000 as compared with a net operating income of $10,000,000 in the corresponding months of 1919. Therefore, he said, it was not necessary to answer the argument that the amount of increase which the railroads have asked should be reduced because of the prospect of a large increase in traffic in 1920 as compared with 1919, because the first four months of the year have reflected not only the increased traffic but also the increased expenses.

Argument for Southern Carriers

In opening the argument for the Southern carriers, R. V. Fletcher, general solicitor of the Illinois Central, said that the commission would have a true picture of the situation which confronted the Southern carriers at the end of federal control, if it would bear in mind that, comparing 1916 with 1919, the operating revenues in that period had increased 58.87 per cent, while operating expenses increased 110.88 per cent; that the operating ratio had gone from 66.63 per cent in 1916 to 88.44 per cent in 1919; that net income in this period had decreased 62.88 per cent, and that the rate of return on property investment had fallen from 5.90 per cent in 1916 to 1.88 per cent in 1919.

He stated that these problems were before the commission:

1. To determine the grouping of the carriers.
2. To fix a valuation for the property in each group.
3. To determine the rate of return.
4. To adjust rates so as to yield that return.

He dismissed the subject of the grouping in a few words, saying that there was little or no controversy on the subject.

On the question of the value of the property, Mr. Fletcher insisted that the carriers do not contend that the property investment account represents the exact value; on the contrary, he asserted that the property is worth much more than is shown in these accounts. He went into a detailed examination of the valuation exhibit submitted by Thomas W. Hulme, vice-chairman of the railroads' valuation committee, showing that in the only two roads in the South, so far reported on by the commission's Bureau of Valuation, having over 1,000 miles of line, viz., the Central of Georgia and the Nashville, Chattanooga & St. Louis, even the depreciated reproduction value at 1914 unit prices, without allowing anything for appreciation or going concern value, exceeded the book cost of road and equipment.

Passing over the question of rate of return, which Mr. Fletcher said was largely a general question, he entered upon a discussion of what rate increases were necessary to insure a six per cent return upon the value of the property. He first discussed the propriety of selecting the year 1919 as a typical year. He referred to statistics of revenue ton miles and revenue passenger miles for each of the years 1911 to 1919, inclusive, to show that only two years of that period, 1917 and 1918, showed greater revenue ton miles, and that 1917 was only slightly in excess; that only one year, 1918, showed greater passenger miles.

"The testimony that has been presented here to show that the railroads in making their estimates should have allowed for a large increase in the volume of traffic because the early months of 1920 show better results than the corresponding months of 1919 is fallacious," said Mr. Fletcher. "It is based on the assumption that because there has been an increase so far this year over that part of last year when traffic was at a low ebb the same proportion of increase will continue through the latter part of the year in comparison with the months of last year when traffic was heavy. If there should be such an increase in traffic the railroads could not handle it."

He analyzed statistics for the first four months of 1920, showing that in this period such expenses as increased cost of fuel and increases in taxes were not in effect. His argument was that when allowance is made for increased fuel costs not effective until April 15, for increases in allowances to private car lines not yet effective and other items, the carriers' estimate as to a constructive year is justified.

Mr. Fletcher said the shippers of the South are not gen-

erally opposed to an advance in revenues for the carriers, the principal exception to this being "a class of gentlemen who appear more concerned in supporting a theory than with actual business conditions." Most shippers, he said, want the commission to be liberal and that raises a question as to how the commission can be liberal under the law.

Commissioner Aitchison, when the proposal of capitalizing the standard return was under discussion, asked whether rental contracts voluntarily entered into by the carriers were entitled to any weight as an indication of value. Mr. Fletcher replied that they could hardly be said to have been entered into voluntarily and Mr. Thom said that there was a special reservation in the contracts that they should not be taken as evidence of value.

Southwestern Lines Argument

C. S. Burg, general attorney of the Missouri, Kansas & Texas, presented the argument for the Southwestern lines that are asking that they be segregated into a district separate from the other Western lines and that they be allowed an increase in rates of 33 per cent, instead of the 24 per cent asked by the Western lines as a whole. He said the executives of all Class I roads had adopted a resolution that the Southwestern lines should be segregated either now or later but that there was a division of opinion between counsel as to whether the separation was practical to be made now and as to whether it would not delay the decision in the general case. If the commission should make but one group of the Western lines, Mr. Burg said, the effect of the transportation act will have been defeated so far as the Southwestern lines are concerned. The Southwestern lines have no more in common with the Northwestern lines, he said, than the Southern lines have with the New England lines. In reply to a question by Commissioner Eastman as to the extent to which the Southwestern lines derive their revenue from divisions of through rates, Mr. Burg said that the volume of interterritorial traffic is not sufficient to make it possible to get the needed revenue by increasing divisions in the way the New England lines could. It is a matter of common knowledge and the commission has found in several cases, Mr. Burg continued, that the Southwestern lines for a series of years have been less prosperous than any other group of roads in the country, with the possible exception of New England, yet they are just as indispensable to the communities they serve as any other roads and the commission should put them on a self-sustaining basis.

Argument for Western Roads

"The fact that the present net revenues of the Western lines are inadequate is clearly recognized by all," said F. H. Wood, commerce counsel of the Southern Pacific, in the argument for the Western lines, showing that they have steadily declined each year since 1916. For the calendar year 1919 the decrease in net operating income as compared with 1916 was 43.18 per cent, while for the constructive year ending October 31, 1919, adjusted to reflect increases in expenses and other factors that were in effect at the end of the year, the decrease was 60.65 per cent. Mr. Wood also showed that if the results for the first four months of 1920 be taken as the basis for an estimate of the results for the full year the net operating income of the western lines would be only $101,436,550, as compared with $181,103,000 for the adjusted year ending October 31, 1919, on which the roads have based the estimates of their requirements and as compared with $261,456,000 actually earned in the calendar year 1919. In 1916 the net operating income of the Western roads was $460,181,522.

"Recognizing fully the inability of anyone to predict the future with certainty," said Mr. Wood, "and making due allowance for all controversial questions, the results of operation so far realized in the year 1920 indicate clearly that the figures submitted as the basis of the carriers' proposals are conservative.

"It has been suggested that no allowance has been made for possible increase in traffic, possible increase in efficiency with a consequent decrease in expenses, or for a possible decrease in wages or prices. It may be said in reply that no allowance has been taken for possible decrease in traffic, a possible further unsettlement of labor conditions, or a possible increase in prices. The traffic handled in 1919 was greater than in any previous year save the abnormal years of 1917 and 1918, with which no fair comparison can be made.

"If normal conditions are to be assumed and only normal growth considered, the traffic handled in 1919 far exceeded any justifiable prediction which might have been based on the annual growth of traffic with the world at peace, as demonstrated by the tendencies of prior years. Traffic has its ups and downs. There are those who believe that in post-war adjustments there will be a period of great commercial depression, and if this be so it may be safely predicted that the traffic for the year beginning March 1, 1920, will be less than in 1919. Neither the commission nor the carriers can safely assume the risk of failing to realize the net income required by the statute by relying upon a possible increase in traffic to make up the deficit which the figures clearly demonstrate will exist if their speculative predictions in this regard are not fulfilled. Neither can they assume the risk of failure by relying on a hypothetical increase in efficiency or of decreased operating costs per unit of traffic handled.

"The transportation machine has been worked to death. It has failed to receive the additions and improvements normally made in normal times and without which it cannot for long continue to render a service satisfactory either to owners or patrons.

"The outstanding purpose of the new law is to insure adequate transportation. All other considerations sink into insignificance as compared with this great purpose, which is even more necessary in the interest of the nation than in the interest of the railroads or their security holders.

"Adequate transportation requires three things: First an adequate plant; second, efficient and intelligent management; and third, efficient employees. The inadequacy of the existing plant is clearly demonstrated and a matter of common knowledge. Correction of this is the immediate concern of the commission. Efficient and intelligent management we have. Whether the rank and file are as efficient as they ought to be, as they could be, or as they were before the war is a subject on which much could be written. If they are not it is a condition that time alone can cure. There is a condition of unrest all over the world that has affected all industry. With these problems neither this case nor the commission has any function to perform. Neither can it with safety regulate its judgment in the solution of the problem before it by indulging in speculation as to the time when normal conditions will be restored or the effect thereof on the cost of operation. With these results accomplished transportation will continue to be inadequate unless an adequate plant is provided. Such provision depends solely upon the restoration and maintenance of confidence in railroad investments and upon the restoration and maintenance of railroad credit, all of which in turn are dependent upon the receipt of adequate revenues for these purposes.

"Much has been said of making the best of existing facilities and this will be done. But this is not enough. The railroads must catch up and must not only catch up but go ahead. It is to the interest of the nation that the western railroads as rapidly as possible should again be placed in a position where they may pursue a policy of building ahead of the development of the country rather than lagging behind it."

"A net railway operating income equivalent to 6 per cent on the aggregate property investment account of the carriers will not yield more than a fair return on the present value of the roads," said Mr. Wood, answering the arguments of representatives of shippers who have urged the commission to adopt a valuation based on cost of reproduction as calculated on 1914 prices or upon the standard return based on the pre-war years. "The property investment account is the only available aggregate figure as the basis of the values to be used for the purposes of this proceeding. Neither the cost of reproduction nor the property investment accounts include any allowance whatsoever for appreciation, going concern value, or cost of reproduction at the present level of prices. The testimony shows that the present cost of reproduction is 212 per cent of cost of reproduction at the prices of 1914.

"The carriers are not claiming the full benefit of these prices. They may not, however, be ignored either in determining cost of reproduction or present value, particularly in a case in which the rate of return fixed by the statute is placed not at the current worth of money, but at the value of money in the pre-war period. If the carriers are to receive a fair return upon their properties as related to the return on other classes of property, current values and current interest rates may not both be ignored and each be stated in terms of a pre-war period which may never return.

"The most that the commission can do is to apply the statutory rate to a value reflecting present prices. We have not asked it to do more. On the contrary we have asked it to do less. The sum demanded is materially less than would be yielded by applying a present reasonable rate of return to the lowest possible basis of pre-war values.

Shippers' Arguments

Joseph N. Teal, representing the West Coast Lumbermen's Association and the California Redwood Association, did not oppose an advance in freight rates, but argued that northwestern lumber can stand but little increase. He urged the commission to lay a part of the increased rate burden on passenger traffic. He also objected to the property investment as a basis of value.

J. F. Shaughnessy, of the Nevada Railroad Commission, said that without increased efficiency in operation the expenditure of money for more cars would merely increase the congestion. He asked that the commission temper the rate increase to the mining companies of his state.

J. Van Norman, representing Southern hardwood interests and coal operators, urged that a larger share of the increase in rates should go on finished products and less on raw materials. He also urged the passenger fare increase.

Edgar J. Rich, representing the Associated Industries of Massachusetts, and other New England interests, said the shippers of his region recognize that some rate increase is necessary, but felt that the plan of a horizontal increase is wrong and urged that the increase should be greater on finished products and less on raw materials.

John S. Burchmore, representing vegetable, oil and soap interests, said that nearly every section and industry had agreed to increases on all rates but their own. His clients were prepared to see rates materially increased, but wanted the same basis applied to all.

C. E. Cotterill, representing the Southern Traffic League, urged the commission not to put a premium on inefficiency, saying that the condition of the Southern Railway, which is operating without a guaranty, is an indication of what the railroads could do if they were compelled to. He also urged that part of the increase be placed on the passenger fares.

R. C. Fulbright, representing Texas shippers, objected particularly to any higher percentage of increase for the southwestern roads than is applied to the rest of the western roads.

Luther M. Walter, representing cement and sugar interests, insisted that if any increase is granted on cement rates it should be in fixed cents per 100 pounds so that rate relationships will be preserved and he took the same position as to sugar rates.

C. E. Elmquist, appearing on behalf of the Northern Pine Association, The Western Pine Association, and the California White Pine and Sugar Pine Association, said the shippers are willing to see some measure of increase, but not an unreasonable one. He urged something less than the percentage advance on northwestern lumber.

W. A. Wimbish, representing shippers at Atlanta and in North Carolina, Tennessee and Alabama, said his clients favor some relief for the carriers and that there should be enough of an increase to forestall another application in the near future.

F. B. Dow, representing oil refineries in C. F. A. territory, stressed the importance of preserving differentials that will continue rate relationships, although he said that certain outworn rate structures which have been held sacred should be changed and he opposed the amount of the proposed increases on the products of the refineries.

W. H. Wheeler, representing furnaces in the Buffalo district, asked for differentials on ex-lake ore, which would preserve to Buffalo the advantage of its geographical position.

Charles D. Drayton, representing the Coca Cola Company, criticized the inefficiency of the railroads and said that the railroads should be required to introduce economies in service.

J. E. Benton, solicitor for the National Association of Railroad and Utilities Commissioners, vigorously attacked the program proposed by the carriers. He objected to the proposed basis for determining the temporary value, said that the railroads are wrong in estimating their expenses on a war level, and that the figures used by the railroads in presenting their case would lead to an excessive amount of increase.

A. E. Helm, of the Kansas Commission, objected to the railroads' application as unreasonably high, said that the carriers are not performing the duties imposed upon them, and he warned them that the state commissions will not disregard old rules as to the reasonableness of rates.

Glenn E. Plumb, appearing for the railway employees, said that an increase in rates is imperative but he objected to the amount asked by the railroads and said that the percentages reached by Mr. Thorne are the maximum that can be allowed from the evidence before the commission. He also asked that the increase be put upon both freight and passenger rates, objecting to having the passenger fare increase associated in the public mind only with the wage increase because, he said, "the obvious result would be to incite public resentment against the employees."

Frank Lyon, representing the northwestern dock operators, took the position that a percentage advance is the proper method by which to increase rates, saying it will encourage the production of goods at the points nearest to the markets, but he urged that the increase be applied to the lake coal rates in effect prior to General Order No. 28.

W. E. Lamb, representing the California Citrus League, attacked the property investment accounts and read a statement by R. S. Lovett before the Senate committee in which he criticised them severely. Chairman Clark asked him what he would suggest as a basis and Mr. Lamb said that Congress had asked the commission to do the impossible. Commissioner Meyer referred to the number of roads that are not earning operating expenses and asked if that were not evidence that they need an advance in rates. When Commissioner Daniels referred to the present cost of refrigerator cars at $4,300 while the older cars are included in the accounts at $1,000 to $1,500 and asked if that would not offset some depreciation Mr. Lamb insisted that the original cost should be taken into consideration. Commissioner Daniels said he was then

placing his own interpretation on the meaning of the word value and taking it as synonymous with cost. "Isn't it possible," he asked, "that the war has so increased values, as measured in dollars, that figures that were once unfairly high are now conservative?"

Clifford Thorne, who entered an appearance in the case as representing several farmers' organizations and 412 oil companies, but who, according to a press notice of his statement issued by the American Farm Bureau Federation, "may be said to represent the public since he attacks the general basis on which the rates are figured rather than seeking to secure special favors for any particular class of shippers," made a statement asking for reductions in the amount of the proposed increase on grain and oil, and then a general statement somewhat similar to that which he had made as a witness. He described his method of calculating that the railroads could get along on a freight rate increase of 22.62 per cent, and an increase in passenger fares, even if labor gets one-half of what it is asking.

"It is our belief," he said, "that the commission should recommend unified operation of the railroads of the United States under some plan analogous to that created by the railroads in 1917. In that way, and in that way only, will the carriers be able to function. Railroads and shippers have condemned government operation; they have said it was extravagant and a costly burden. And yet within three months after getting these properties back the railroad corporations have fallen down in operation. And they are here begging for the most stupendous rate increase ever known in this or any other country on the face of the earth. Further, they state that they have reached a place in their operations which might be called a condition of 'saturation,' where more business means a loss in net revenue instead of a gain. That is the most astounding confession of inefficiency that I have ever heard from the lips of a railroad man in recent years. Frankly, I don't believe it. I think that counsel in his zeal to win a case has made a most grievous mistake.

"Private operation is on trial. If the railroads cannot function the people will be forced to take them back. We do not want to take them back; but they will have to make good. We hope and we believe that they will succeed.

"If you folks want to sound the death knell to private operation, grant these demands in their entirety; and, after you have done that, then please watch the effect on American industry, and watch the effect on the thought of the rank and file of the American people.

Closing Arguments for Railroads

The argument was closed on behalf of the railroads on July 6 by Alfred P. Thom, counsel for the Association of Railway Executives, after brief rebuttal statements had been made by Mr. Gowen, Mr. Wood, and by C. C. Rixey, of the Southern Railway, on behalf of the Southern district lines. Mr. Thom elaborated on the necessity for restoring a proper equilibrium between the means of production and distribution, saying that if transportation facilities are inadequate production must languish and the public will suffer. He emphasized the public character of the problem, saying that some shippers have endeavored to give the case the aspect of a private controversy by referring to the "demands" of the railroads. He said the railroads are making no demands. The issue is not between the railroads and the shippers but it is between those who would provide the public with transportation facilities and those who would imperil the transportation system. However, he said, very few shippers have taken that position.

Mr. Thom argued that the commission should resolve all doubtful questions in favor of the public interest. If the railroads are not given an opportunity for improved credit and to increase their facilities the public will suffer. With few and negligible exceptions public opinion is convinced that an adequate increase in rates is imperatively demanded and that inadequate service is more costly than adequate rates. In reply to the suggestion that a basis of value be reached by capitalizing the standard return Mr. Thom pointed out that this would make no allowance for the value of the property of the roads that were not taken over by the government or that had a deficit in place of a standard return. He was in some doubt as to whether it had been actually suggested that the market value of railroad securities be used as a possible basis of value, but that manifestly the use of such a basis at this time would be begging the whole question. "The commission is sitting here," he said, "to rescue the carriers from a situation which has been declared by the President and by Congress to be insecure. To use the market value as a basis would be to chain the future of transportation to the dead corpse of its past."

Commissioner Eastman asked Mr. Thom if, in his opinion, the transportation act gives the carriers any more than is allowed them by the Constitution. "The Constitution gives you nothing," replied Mr. Thom. "The Constitution is merely a protection. No public tribunal should guide its course in such a way as merely to escape the line of confiscation." He took the position that the commission should allow the full 6 per cent return instead of only 5½ per cent, but that the one-half per cent should not be specifically ear-marked for additions and betterments because a part of the net operating income must be used for that purpose even if the commission should allow only 5½ per cent.

In replying to the criticisms which have been made of the property investment accounts Mr. Thom said that the increased value of all railroad property at the present time will much more than take up any possible overstatement in the individual accounts.

There has been an almost unanimous concurrence in this case, he said, in the necessity for a general advance in rates, a willingness to have the advance made and a willingness to leave the amount of the advance to the commission. Shippers have disagreed as to the method of treating differentials and the only real difference is as to the method by which the advance should be applied. The case has developed more difference between shippers than between railroads and shippers.

At the conclusion of his argument Mr. Thom announced that when the Railroad Labor Board announces its decision the railroads will have a plan to propose for taking care of the additional amount of increased revenues required which they will submit to the commission. The plan, he said, is somewhat dependent upon the amount of the increase but the roads will propose that part of the increased revenue be raised by an increase in passenger fares. Thus far in the case they had taken the position that freight rates only be raised because they felt that the value of commodities at present bore so much greater relation to the cost of transportation than formerly that they could properly bear an increase, but an additional increase would change the situation.

C. C. Rixey, in his rebuttal argument, discussed the showing made by the Southern lines for the first three and four months of this year. Commissioner Eastman asked him if he was willing to say, as counsel for the Southern, that it had deferred maintenance to the extent of $2,000,000 since March 1, which representatives of some of the southern shippers had taken as an evidence of efficiency. Mr. Rixey said that he would not say that maintenance had been reduced to an unsafe standard but that it had been deferred temporarily because the company did not have the money to spend.

Railroad Rebuttal Testimony

Testimony on behalf of the shippers, which was completed last week, was followed by two days of rebuttal testimony on behalf of the railroads, largely as to controversies

that have arisen regarding the statistical exhibits introduced by the roads or by shippers. The railroads paid little attention to the details of rate adjustments discussed at such great length by some of the shipper witnesses, taking the position that they had little place in a general rate case of the emergency character of this one.

W. H. Groverman, representing the upper lake coal dock operators, was called as a witness for the Western roads on coal prices, saying that several companies selling to the railroads had told him the price this year would be 50 to 70 per cent, or $2.50 to $3.50 a ton, greater than last year, and that while the roads would use some Illinois and Indiana all-rail coal, instead of eastern coal via the lakes, at a lower price than the eastern coal, the difference would be largely made up by the greater tonnage required and the higher freight rate.

George W. Lamb, assistant comptroller of the Louisville & Nashville, presented corrections of the exhibits introduced on behalf of the Southern Traffic League to show that the Southern roads in three months of this year had earned more than in the constructive year ending October 31, 1919. Mr. Lamb said that if the exhibit had been properly constructed it would have shown that the Southern roads earned only $8,276,705 in the first three months of 1920, instead of $17,000,000, and that on this basis they might be expected to earn $32,000,000 for the year, after making proper allowances for increased fuel cost, income taxes, etc., whereas they need $136,000,000 to give a 6 per cent return. In connection with the discussion of the earnings of the Southern group of roads it was stated that there should be taken into consideration $2,047,700 of deferred maintenance on the Southern Railway for March and April, because this road, after declining the government guaranty, had drastically reduced its maintenance expenditures.

A. F. Cleveland, of the Chicago & Northwestern, testified on behalf of the lines in the northern peninsula of Michigan to show that they are entitled to the 24 per cent advance asked by the western lines generally on their iron ore rates. Some of the shippers had asked that there be no increase in the ore rates on the lines from the mines to the upper lake ports on the ground that the Railroad Administration in advancing the ore rates had placed all of the 30 cent advance on the proportion of the northern lines. Chairman Clark called Edward Chambers, formerly director of traffic of the Railroad Administration, to the stand to explain why the Railroad Administration had made the advance in that way. Mr. Chambers said that it was a "tough job" to divide the increase between the various lines and as it was desired to get the revenue as quickly as possible it was decided to place the 30 per cent increase on the northern lines as all of the revenues went to the government.

George H. Burgess, chairman of the valuation committee of the Delaware & Hudson, and a member of the maintenance of way committee of the Corporate Engineers' Association, testified in reply to assertions by some of the shippers that some of the western lines had been over-maintained during federal control. He presented the preceding table showing quantities of some of the principal materials used on the western lines:

Commissioner Eastman tried to draw out the witness' opinion as between the so-called accounting method, which the Railroad Administration seems to favor in the controversy as to the sufficiency of maintenance during federal control and the engineering method, favored generally by the carriers in the preliminary discussions of the subject. Mr. Burgess asked to be excused from expressing an opinion beyond saying that the accounting method is simpler and shorter.

In connection with some telegrams regarding the cost of coal to the railroads, Commissioner Aitchison brought out and expressed some surprise that most of the Northwestern lines have not yet placed contracts for the fuel coal which ordinarily is shipped via the lakes, although a large part of the season of navigation is gone. Mr. Wettling said that they are getting some coal from Illinois "at a good round" price, and also paying $2.55 a ton freight on it. The Northern Pacific had bought some eastern coal at $7.75 a ton. Mr. Aitchison asked if the roads still expected to get their coal across the lakes. Mr. Wettling said he thought they were perhaps only hoping to. Mr. Wettling also gave some statistics regarding the crop movement, showing that from July 1, 1919, to May 30, 1920, the roads had moved 17,000,000 bushels more of grain than in the period July 1, 1918, to May 30, 1919. In view of the estimate of 570,000,000 bushels of storage capacity in the country, he said he thought there could be "no enormous amount of grain lying around on the ground," and he showed that the farm price of wheat had increased from 97½ cents to $2.58 during the war. Mr. Wettling also showed that the western lines in four months of 1920 have earned only $25,635,541 or on the basis of $101,000,000 for a year, as compared with $181,000,000 for the constructive year.

MATERIALS USED IN MAINTENANCE FOR WESTERN DISTRICT AS REPORTED BY FEDERAL OFFICERS

	Test period average	1919	Increase or decrease	Per cent increase or decrease
Treated ties.....Number	15,328,997	20,145,110	4,816,113	31.4
Untreated ties...Number	30,091,671	18,799,770	d11,291,901	d37.5
Total ties....Number	45,420,668	38,944,808	d6,475,788	d14.2
Sw. and bridge ties. Ft.B.M.	71,525,482	56,286,175	d15,239,307	d21.3
New rail.....Tons	549,556	607,347	57,791	10.5
Relay rail.....Tons	303,997	256,365	d47,632	d15.7
Total rail.....Tons	853,553	863,712	10,159	1.2
Stone ballast.....Cu. yd.	865,180	618,943	d246,237	d28.5
Gravel ballast.....Cu. yd.	3,892,520	3,333,860	d558,660	d14.3
Other ballast.....Cu. yd.	3,055,560	3,018,187	d37,373	d1.2
Total ballast..Cu. yd.	7,813,260	6,970,990	d842,270	d10.8
Miles of road			133,574	
Miles of road reported			133,574	

NOTE.—Figures for 1919 include an estimate for 30 per cent of mileage in Northwestern Region, figures from which were not obtained prior to compiling of this report.
d—Decrease.



Photograph from Underwood & Underwood, N. Y.

Brienzer Rothorn Railway in the Swiss Alps

Laws in Two States Require Car Repair Sheds

Minute Provisions of Minnesota Statute Are Carried Out in Northern Pacific Structures

RECENT STATUTES passed by the states of Minnesota and North Dakota require railroads or other concerns doing car repairing to provide suitable houses so that the men engaged in this work are protected from the weather. The Minnesota law requires that such buildings shall be constructed wherever there are six men engaged at one time in the repairing of cars, car trucks, etc., while in North Dakota the minimum is five men. Exception is made in the case of repairs to cars enroute as part of a train.

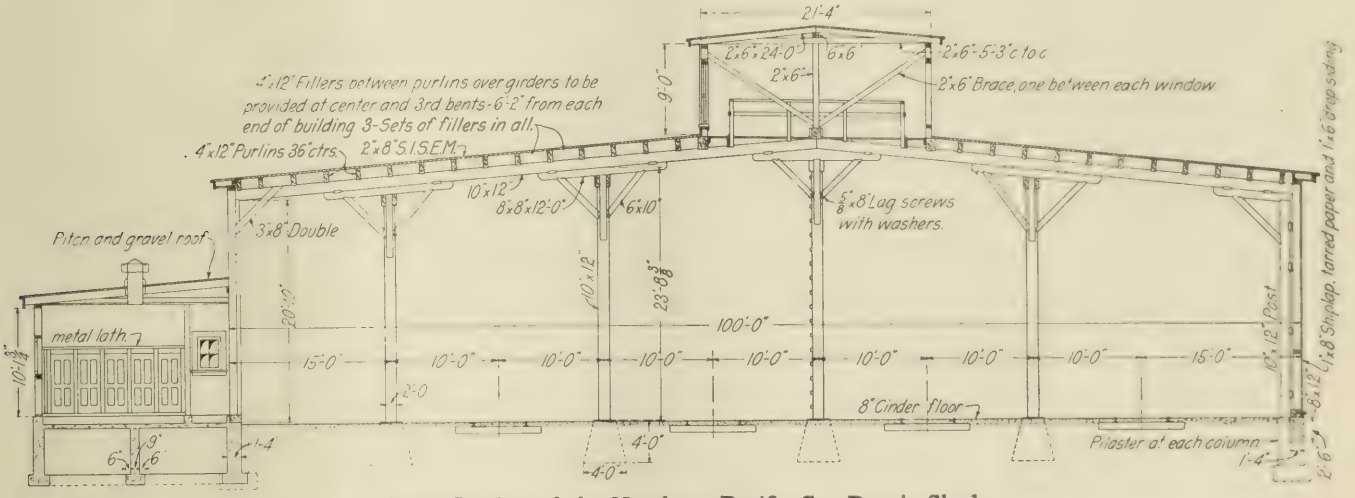
The Minnesota law goes into minute detail as to the character of the building and leaves very little of the design to be determined by the railway company's architects or engineers. The specifications as given in the statute are as follows:

"In buildings that cover more than one track the distance between the inside rails of each track shall not be less than 12 ft. Between the walls of the building and the outside rails there shall be a distance of 10 ft. The building or buildings shall not be less than 20 ft. high at the eaves. Each building shall be enclosed from roof to ground and shall have glass windows on each side not to exceed 12 ft. apart. The side windows shall not be less than 9 ft. high and not less than 4 ft. wide. Windows shall be in three sections and each section shall be equipped with pivot and opening device. The building shall be equipped with side and end doors. The end doors shall be not less than 6 ft. wide and 16 ft. high, and there shall be two such doors for each track covered by the building. The side doors shall be the same width and height as the end doors and shall be not to exceed 40 ft. apart. The roof shall be provided with a cupola the entire length of the building and be equipped with side windows of not less than three feet in width and six feet in height, having pivot and opening device that shall be at all times operative. A similar cupola shall be provided for each two additional tracks in width of such building.

"The buildings shall be equipped with necessary heating facilities and shall at all times have drainage that will keep them in a clean and sanitary condition. They shall be equipped with sanitary drinking fountains where clean, wholesome drinking water can be obtained. A sufficient number of sanitary lavatories shall be provided for said employees. Such toilets shall be properly partitioned and there shall be at least one for each 15 persons employed. All scaffolding used in such buildings shall be made of clear lumber free of all knots and shall be kept in first-class condition at all times. The use of paint spraying machines shall not be permitted inside such buildings."

The execution of the law is imposed on the Railroad & Warehouse Commission of Minnesota which shall determine as soon as practical where and what buildings are to be built by the railroads and issue orders accordingly. Penalty for failure to comply with the provisions of the statute is a fine of not less than $100 or more than $500 for each offense, and each day or part of the day that failure continues constitutes a separate offense.

The manner in which railroads are complying with these statutes is indicated by the drawing of a structure designed by the Northern Pacific for construction at Watertown, N. D. This is a frame shed, 100 ft. by 250 ft., supported by 10-in. by 12-in. posts, spaced 20 ft. center to center transversely, and 21 ft. longitudinally. The roof consists of 2-in. planks carried on 4-in. by 12-in. purlins and covered with pitch and gravel roofing. The walls are composed of a layer of 1-in. by 8-in. shiplap covered by 1-in. by 6-in. dropsiding with tarred paper between. The foundations are of concrete and the floor of cinders. Tracks are provided at 20-ft. centers. The monitor is 21 ft. wide by 9 ft. high and is equipped with corrugated-iron curtain walls at intervals of about 62 ft. as barriers to spreading fires. Toilet facilities are provided in a lean-to 18 ft. by 22 ft. in the middle of one side.



Cross-Section of the Northern Pacific Car Repair Shed

A MILLION DOLLAR FIRE in the Hawthorne (Chicago) yard of the Chicago, Burlington & Quincy on the evening of June 28 destroyed 166 freight cars standing at the freight transfer station. Of these cars 135 were loaded with merchandise and food stuffs. The cause of the fire is not definitely known, although investigation indicates that spontaneous combustion was responsible. The explosion of oil tanks and a high wind caused rapid spread of the fire. Damage to fixed property was limited to the destruction of several covered transfer platforms.

Train Accidents in April*

THE FOLLOWING is a list of the most notable train accidents that occurred on the railways of the United States in the month of April, 1920:

COLLISIONS

Date	Road	Place	Kind of accident	Kind of train	Killed	Injured
6	Atlantic C. L.....	Jesup	rc	P. & F.	2	3
16	Louisv. & N.....	Pinchora	6c	P. & P.	3	3
†29	Chi. & N. W.....	Sanborn	6c	P. & P.	5	3

DERAILMENTS

Date	Road	Place	Cause of derailment	Kind of train	Killed	Injured
2	Pennsylvania	Glen Rock.....	d. eq.	P.	1	3
4	Missouri Pacific...	Kansas City...	unx.	P.	1	4
11	Southern	Macon .....acc.	obst.	P.	0	2
20	Pennsylvania	Morrow	slide	P.	0	4
23	C. C. C. & St. L..	Benton Harbor.	unx.	P.	0	11

The trains in collision at Jesup, Ga., on the night of the 6th of April, were northbound passenger No. 86, and a preceding freight. The freight train, standing in the yard, was run into at the rear by the passenger, and three freight cars and the caboose were wrecked. The engine was damaged and the engineman and fireman were killed. The collision was due to disregard of the speed restrictions within yard limits. Three passengers were injured.

The trains in collision at Pinchora, Ala., 25 miles north of Mobile, on the 16th, were southbound passenger No. 3 and northbound passenger No. 2. The engineman, express messenger, and a porter of the northbound train were killed, and two trainmen and one passenger were injured. The collision occurred about 2 a. m., in a blinding rain and electrical storm. Engineman of No. 3 had overlooked an order to meet No. 2 at Pinchora.

The trains in collision near Sanborn, Minn., on the 29th, were westbound passenger No. 517, and eastbound passenger No. 516. Both locomotives and four cars were wrecked. Two passengers and three trainmen were killed and 12 passengers were injured. The collision occurred at about 3 a. m. and was due to failure of an operator to deliver a meeting order.

The train derailed near Glen Rock, Pa., on the afternoon of the 2d of April was southbound passenger No. 544, the Harrisburg express, bound for Washington. Running at about 45 miles an hour the train struck a landslide and the two engines and three leading cars were derailed, the engines being overturned. One engineman was killed, and three trainmen were slightly injured. The derailment was due to the breaking of a spring hanger on one of the engines, relieving the weight on a front driving wheel, so that it mounted the rail at a curve.

The train derailed on the Missouri Pacific near Kansas City, Mo., on the 4th was a southbound passenger. The two engines drawing the train, together with the first two cars, were thrown off the track while running at about 40 miles an hour. The fireman was killed and four other trainmen were injured. The cause of the derailment was not determined.

The train derailed at Macon, Ga., on the morning of the 11th, about 3 o'clock, was southbound passenger No. 7. Moving at about 25 miles an hour the locomotive was overturned, and the fireman was injured, but only slightly. The derailment was due to the disarrangement or obstruction of the track at a switch by a piece of a car coupler which had fallen from a freight train.

The train derailed near Morrow, Ohio, on the 20th, was a southbound local passenger. The engine and the baggage car were thrown off the rails at a point where the track had been covered with earth by reason of heavy rain and were overturned. The engineman, fireman, and two other trainmen were injured.

The train derailed near Benton Harbor, Mich., on the 23d was southbound passenger No. 39. Running at 25 miles an hour, the train was thrown off the track at a switch and two coaches were overturned and ditched. Seven passengers and four trainmen were slightly injured.

*Abbreviations and marks used in Accident List:

rc, Rear collision——bc, Butting collision——xc, Other collisions——b, Broken——d, Defective——unf, Unforeseen obstruction——unx, Unexplained——derail, Open derailing switch——ms, Misplaced switch,——acc. obst., Accidental obstruction——malice, Malicious obstruction of track, etc. ——boiler, Explosion of locomotive on road——fire, Cars burned while running——P. or Pass., Passenger train——F. or Ft., Freight train (including empty engines, work trains, etc.)——Asterisk, Wreck wholly or partly destroyed by fire——Dagger, One or more passengers killed.

Political Views on the Railroad Problem

THE FOLLOWING are the railroad "planks" in the platforms adopted by the Democratic and Republican parties. They are self-explanatory and are placed side by side without comment that "he who runs may compare."

DEMOCRATIC

"The railroads were subjected to federal control as a war measure. Labor was treated with an exact justice that secured enthusiastic cooperation. The fundamental purpose of the federal control was achieved fully and splendidly. Investments in railroad properties were not only saved by government operation but government management returned these properties vastly improved.

"The Esch-Cummins bill went to the President in the closing hours of Congress and he was forced to a choice between the chaos of a veto and acquiescence in the measure submitted, however grave may have been his objections to it.

"There should be a fair and complete test of the law until careful and mature action by Congress may cure its defects and insure a thoroughly effective transportation system under private ownership without governmental subsidy at the expense of the taxpayers of the country."

REPUBLICAN

"We are opposed to government ownership and operation or employee operation of the railroads. In view of the conditions prevailing in this country, the experience of the last two years, and the conclusions which may fairly be drawn from an observation of the transportation systems of other countries, it is clear that adequate transportation service both for the present and future can be .furnished more certainly, economically and efficiently through private ownership and operation under proper regulation and control.

"There should be no speculative profit in rendering the service of transportation, but in order to do justice to the capital already invested in railway enterprises, to restore railway credit, to induce future investments at a reasonable rate, and to furnish enlarged facilities to meet the requirements of the constantly increasing development and distribution, a fair return upon actual value of the railway property used in transportation should be made reasonably sure, and at the same time to provide constant employment to those engaged in transportation service, with fair hours and favorable working conditions at wages or compensation at least equal to those prevailing in similar lines of industry. We indorse the transportation act of 1920 enacted by the Republican congress as a most constructive legislative achievement."

The Present Difficult Transportation Problem

Why the Railroads Are Not Able to Meet All the Requirements of Commerce. Need for Co-operation

By Daniel Willard
Chairman, Advisory Committee, Association of Railway Executives.

IT IS UNDOUBTEDLY TRUE that under existing conditions the railroads as a whole are not able to furnish, or at least they are not furnishing, the transportation necessary to meet the present requirements of the commerce of the United States, and this situation presents a serious and difficult problem which must be dealt with; but like all other problems, it can be dealt with more effectively if first of all there is a full understanding of the entire situation. It may be helpful in that connection to review some of the things that have happened to the railroads in the somewhat recent past.

Equipment Deteriorated

When the government of the United States took possession and assumed control of the railroads on the first of January, 1918, the carriers so taken over owned at that time approximately 2,260,000 freight cars, of which number 5.7 per cent or 128,780 were reported as in bad order and unfit for service. During the 26 months' period of federal control the government purchased roundly 100,000 freight cars and 2,000 locomotives, which was somewhat less than the number of freight cars and locomotives which the same railroads had been in the habit of buying during each 12 months' period previous to federal control. At the termination of federal control, on March 1, 1920, the same railroads reported ownership of 2,362,000 cars or about 103,000 more than at the beginning of federal control. They also reported 6.7 per cent equal to 153,727 as in bad order, or 25,000 more bad order cars at the end than at the beginning of federal control. During the period of federal control the government did not retire as great a number of cars as the companies had been in the habit of retiring during similar periods of time in the past, because of obsolescence and for other reasons.

Previous to the period of federal control it was customary for the railroads generally to be governed by the Master Car Builders' Rules in connection with the interchange movement. During the period of federal control this practice was changed and cars were exchanged freely between the carriers, providing the running gear, safety appliances, air brakes and draft gears were in good shape, regardless to a large degree of the condition of the cargo carrying box. The result was that the general condition of the freight cars when considered as carriers of freight was perceptibly lower at the end of federal control than at the beginning, and much lower even than was indicated by the condition reports which I have already quoted. Investigation made since the termination of federal control has developed that thousands of cars are running today and reported currently as in good order—meaning that they are safe to run—while at the same time they are unfit to perform the service for which they were designed. This fact is particularly noticeable in connection with the box car equipment. One large western carrier has recently reported that at the beginning of federal control there were on its lines 15,000 box cars suitable for carrying grain, while at the end of federal control there were only 3,000 box cars on its line suitable for that purpose. It is the general impression among railway officers, based upon a somewhat incomplete survey, that from one-fifth to one-third of the box cars in this country have been permitted to deteriorate from the floor upwards to such an extent that they are actually unfit to carry a general merchandise business, such as grain and flour, etc. The same condition obtains, but probably to a less extent, as regards open top equipment, and particularly coal carrying cars.

At the beginning of federal control the records showed that each of the railroads in the United States had upon the average about 44 per cent of its own cars upon its own line, while at the end of federal control the reports showed that each railroad had only about 22 per cent of its own cars on its own lines.

For the reason above mentioned, that is to say, because of the relatively small number of home cars on the individual railroads, it has been impossible for the different companies during the short period that has elapsed since federal control, to find out definitely the actual condition of their own cars. One of the eastern coal carrying roads has recently developed that it had on its own line upwards of 1,000 of its own coal carrying cars reported as in good order, but which were actually unfit to carry coal or heavy material, and were so marked. These cars, it is true, were safe to run with a light load such as cinders, but were unfit to carry the business for which the cars were designed.

The last monthly report submitted by the carriers shows 7.4 per cent bad order cars in the United States as against 5.7 per cent at the beginning of federal control, an increase of 50,000 cars unfit for use and actually out of service. The increased percentage of bad order cars shown on last report is probably due in large part, if not entirely, to the recent re-establishment of Master Car Builders' interchange and inspection rules. It should ordinarily be possible to keep the number of bad order cars below 4 per cent of the total number owned, and if that condition could be brought about today, it would result in immediately making effective on the railroads as a whole in the United States more than 75,000 cars that are now out of service because unfit to run. This is one of the first and most important problems confronting the carriers at the present time.

Efficiency of Car Repair Forces Reduced

This particular phase of the problem has been made more difficult because of certain things that happened during the period of federal control. To be specific, previous to federal control much of the freight car repair work on the railroads in the United States was done on a piece work basis. During the period of federal control piece work practice was discontinued on all of the railroads by order of the director general, and it is commonly believed that this change in practice has had the effect of reducing the efficiency of the car repair forces and plant by at least 30 per cent.

During the period of federal control national agreements were entered into between the director general and the different crafts employed in the railroad service, and the agreement which applies to men employed on freight car repairs contains certain limitations and restrictions which interfere seriously with the employment and efficiency of the

*Statement before the Interstate Commerce Commission at the hearing at Washington, on July 8, 1920.

workmen in that department. This also has cut down the capacity of the railroads to repair cars.

However, the outside car building companies in the past have generally been organized on a piece work basis and are so organized today, and they are free from the restrictions of the railroad national agreement above referred to, and not having new work sufficient to keep their plants in full operation, they are in position to undertake repair work for the railroads, and many thousands of freight cars are now being repaired by such outside concerns. This arrangement will result in making fit for service much more quickly than would otherwise be the case, many of the cars now unfit for service, and for the reasons above mentioned, at a considerably lower cost than if the same work were to be done by the railroads themselves. Notwithstanding every effort that can be made it will probably be six months or a year before it will be possible to get the existing equipment of the railroads in as good and serviceable condition as it was at the beginning of federal control, or in as good condition as it ought to be under existing circumstances.

Miles Per Car Per Day Should Be Increased

Another important phase of the problem is the use that is actually made of the car when it is in condition fit for service. It is customary to measure the use of railroad cars by the average load carried and by the average miles per day which the cars travel. The low average miles per car per day made by the American railroads in the past has invited constant criticism on the one side with unsatisfactory efforts to explain on the other side.

During the fiscal year ending December 31, 1916, the freight cars on all the railroads in the United States as a whole made an average of 26.9 miles per car per day. This was the highest annual average miles per day shown for the American railroads as a whole at any time within the last ten years. I have not examined the records previous to that date. During 1918, under federal control, the average miles made by freight cars per day was 24.6, and in 1919 it was 23.1. No reports have been submitted since the termination of federal control.

While upon the face of it an average movement of only 27 miles per car per day seems inexcusably small, especially in times of car shortage, like all other questions, there are also two sides to this. When we say that a car makes 27 miles per day, we mean that if the total miles made by any given car during a year should be divided by the number of days in the year, the result would be 27. Not infrequently it has been said, in criticism of the railroads, that a man could walk faster than the average movement of a freight car. Of course, such comparisons are without justification and misleading, and are certainly not helpful. The average freight car is probably loaded at least 25 times each year. Under the rules generally in effect the shipper is permitted 43 hours free time in which to load a car, dating from 7 a. m., following the hour of actual placement. The free time so allowed does not include Sundays and holidays, and there are more than 60 Sundays and legal holidays each year. After a car is loaded it is taken from the loading track to some terminal, put into a train and started on its way. If the movement is all on one railroad there ought not to be much delay in transit, but sometimes the car moves over several different railroads, and there are always some delays incident to the transfer between the different lines. When the car has finally reached its destination the consignee is also given 48 hours free time in which to unload it, and if the car is loaded with coal for tidewater or the Lakes, an average of 5 days free time is permitted, and if it is loaded with export freight for tidewater points a free time allowance of 10 days is permitted. Owing to the nature of the service cars are frequently damaged in transit or when switching, and occasionally, if not frequently, the load must be transferred from one car to another, and then the damaged car must be placed on the proper track for repairs. Customarily no repairs are now made on Sundays, or holidays, and the repair forces are all now upon an eight hour basis.

Calculations that have been made in the past would seem to indicate that the average freight car is actually in a train moving between one terminal and another 2.6 hours out of the 24, or about 11 per cent of the time; that it is actually placed at the service of the shipper or receiver about 37 per cent of the time, and that the rest of the time it is in the process of being moved to or from the place where loaded or unloaded, to the terminal where it is put into trains, or is on transfer tracks or being repaired, etc.

Undoubtedly much can be done by the railroad itself to bring about a better use of the cars that are actually fit to run, but the railroad alone cannot do all that is possible to be done in that connection. The maximum efficiency of freight cars can only be realized by means of effective and sympathetic co-operation between the railroad and the user. While the highest annual average movement per car per day upon the railroads as a whole during the past 10 years was only 26.9 miles, I believe it should be and really is possible to obtain an average movement of 30 miles per day under normal circumstances. Some railroads do make as high as 40 miles per car per day, but it seems hardly probable that such results can be obtained immediately on all roads and particularly by the railroads serving the large industrial centers and the coal mines, but I do believe that as a whole an average movement of 30 miles per day is or ought to be attainable. To accomplish this the individual railroads should first of all keep their cars in the best possible condition, and this is desirable from every point of view for reasons of economy as well as of efficiency. I believe it is possible to keep the total bad order cars as low as 4 per cent, certainly as low as 5 per cent of the total number owned.

Shippers Must Co-Operate

It is important, especially in times of car shortage, that the shippers should load cars as quickly as is economically possible and practicable after they are received. The shipper also should furnish prompt and definite billing instructions, and the instructions so furnished should take the car if possible to its ultimate destination. Much delay is caused by the practice of billing cars subject to order or re-consignment in transit, and numerous other devices that have come about from time to time. All arrangements of this kind serve to retard the movement of cars. All arrangements of this kind are in effect a special privilege aside from the service of transportation, and in times of car shortage such privileges are at the actual expense of those whose business is interfered with because of their inability to ship at all.

Railroad statistics show that the average car load on all the railroads in the United States is only about 70 per cent of the carrying capacity of the car, and in addition to that about 32 per cent of the total car mileage is made with empty equipment. A great deal can be done towards getting a more effective use of cars by increasing the car load, and this is a matter almost entirely within the control of the shipper, and serious consideration should be given among other things to the revision of minimum car load regulations, to the end that a more effective use be made of all cars.

It is of course incumbent upon the railroads to do everything that is economically possible and practicable at all times to reduce all delays to a minimum. I need not at this time discuss in detail what the railroad can and ought to do, but I am sure if the carriers and the shippers will all co-operate very great benefit will result therefrom. The extent of the benefit may be indicated somewhat by the fact that an average increased movement of one mile per car per day for all of the cars in the United States, based upon present performance, would in effect add 100,000 cars to the available equipment, and an average increase of one ton per each

loaded car would also add in effect 80,000 cars to the available equipment.

Assuming that the carriers will do all that they can to put the existing equipment in serviceable condition as soon as possible, and assuming that the carriers and the shippers together will do everything they can in co-operation to make the best possible use of the equipment available, there will still be a shortage of cars for some months to come, and until such time as the railroads can provide, by purchase or construction, the number of cars and engines necessary to take care of the peak-load—what else ought we to do to meet the situation? Fortunately under the new Transportation Act of 1920 the Interstate Commerce Commission is authorized to deal promptly and effectively with emergencies of the kind just mentioned, and I would suppose that the commission would be governed by the desire at all times to follow such a course as would seem to promise the greatest good to the greatest number. Of course, such a test is only relative, although in times of emergency it ought not to be difficult to decide, if there is only one car available, whether it should be used to move foodstuffs and fuel which may be immediately needed, or something else of less immediate importance to the welfare of the public as a whole. The commission, being fully informed, it will undoubtedly use its best judgment under any given circumstances.

The Labor Situation

There is one other phase of the problem which I have not so far referred to, but which has had a very definite bearing on the situation during the last three months. I refer to the numerous strikes of railroad men that have been taking place since early in April. There are, I suppose, approximately 2,000,000 men employed by the American railroads. I do not know how many men have actually been on strike at any one time, or, as they have preferred to put it, on vacations, since the movement started in April, but I should judge from such reports as I have seen that probably at no time have more than 15 or 20 thousand, perhaps 30 thousand, employees been out of service, a relatively small percentage of the total number employed. It so happens, however, that the strikes have occurred chiefly in terminals and at other points where a minimum number of men, by withdrawing from the service, would cause the maximum amount of inconvenience. One effect which the strike in Chicago had is clearly shown by figures kept by the Car Service Commission in Washington. When the railroads were turned back to the owners at the end of federal control, reports showed that in the United States as a whole about 100,000 cars were awaiting movement. At the end of March the number so held had been reduced to 90,000. The Chicago strike began early in April and by the middle of that month the number of delayed cars awaiting movement in the country as a whole had reached the unprecedented figure of 288,000. These cars were not only unnecessarily delayed, but they were in effect absolutely withdrawn from service. It is true that since the middle of April the number so held has been gradually reduced until today it is substantially the same as it was the first of March, but even so, the number of cars now held awaiting movement is 60,000 or 70,000 greater than it ought to be, and in my opinion greater than it would be if the labor difficulties which have interfered so seriously with the freight movement for the last three months should be cleared away.

You are all more or less familiar with the labor situation and I need not discuss the matter in detail. It may be fairly hoped, I believe, that when the award is announced by the Labor Board, now sitting in Chicago, the difficulties that have confronted the railroads in this respect will disappear, and if thereafter the yardmen and other employees having had their pay and working conditions satisfactorily adjusted, will then take hold and work as well as American railroad men know how to work when they want to, I am hopeful that the railroads will be able to make the existing equipment, by virtue of increased mileage, much more efficient and in that way gradually bring about a normal condition.

In the meantime the fullest possible co-operation should be had between the railroads and the shippers. The railway managers appreciate the responsibility that rests upon them under existing circumstances. I myself believe that the institution of private ownership and operation of the railroads is at stake, and that the test which the public will apply to the question of whether or not private ownership is to continue will be the test of service. The railway managers are willing to meet that test. They appreciate that the railroads as a whole must furnish the transuortation needed by the country as a whole, and that it will not satisfy the requirements if some of the railroads furnish ample transportion while others are not able to do so. It is the definite purpose of the railroads, by voluntary effort and co-operation, to see that in times of emergency all facilities are used in the most effective manner, in order that the public as a whole may realize the greatest measure of transportation service.

It should, however, be kept in mind that at the present time the railroads are called upon to move an unprecedented amount of business with an impaired and insufficient plant. I do not wish to be understood as criticising the government because of the condition of the railroads; I prefer rather to think that their condition is one of the by-products of the war. In any event, if the war had not happened, I believe the railroads would have been able to perform the transportation service of the country as well today as they did generally before the war, but, regardless of the cause, the problem confronting us, as I see it, is this—with a certain limited amount of transportation plant under the conditions of private ownership, how can that plant as a whole be used so as to perform the greatest amount of transportation in the public interest? I believe it can be done by systematic and active co-operation between the shippers and the railroads, and I believe further that for a time it will be necessary for the Interstate Commerce Commission in the exercise of the emergency authority given it under the act to order priority of service in favor of certain commodities. I do not think it will be necessary to wholly curtail the movement of any particular kind of business. I do think it will be necessary for a time, however, to give preference to certain particular kinds of business more important than others from the public standpoint. I also believe that if a way can be found so that the railroads can in the near future place orders for such additional cars and engines as seem necessary and so that the new equipment will be available for next year's business, that by another Spring the railroads will be able to take care of all the business of the entire country. This, they understand, is what they will be expected to do. This is what they are attempting to get in shape to do.



Photo from Underwood & Underwood, N. Y.

A Tractor Proves a Useful Emergency Switching Locomotive

General News Department

The International Railroad Master Blacksmiths' Association will hold its annual convention on August 17, 18 and 19, at the Hotel Statler, Detroit, Mich., instead of at Birmingham, Ala., as had been previously planned.

Sixty thousand dollars was stolen from the express car on a train of the Charleston & Western Carolina, near Augusta, Ga., on the morning of June 30. A single robber intimidated the messenger and an armed guard, and then, chloroforming them, threw the two safes containing the money out of the car and, presumably, carried them off in an automobile. The messenger and two other men have been arrested on charges of collusion—one of the men, a "jitney driver," being the robber—and are said to have confessed.

The Senate special committee on reconstruction and production, of which Senator Calder of New York is chairman, is conducting a general investigation of the effect of a shortage of transportation facilities on the housing shortage. The committee is especially interested in stimulating construction work of all kinds, including housing, and has found that progress in this work has been seriously interfered with both by the coal shortage, which affects the ability to produce construction materials, and by the car shortage, particularly in view of the priority given to coal. Senator Calder has been conferring on the situation with members of the Interstate Commerce Commission and railroad officers and he proposes to hold a series of hearings in New York during July, and later in the principal cities throughout the country.

The strikes of yardmen at Philadelphia, Baltimore and other places in that vicinity have died out, and freight has been moving in nearly normal volume since July 1. Officers of the Pennsylvania on that day declared the strikes of yardmen and the threatened strike of shopmen "closed incidents"; and conductors were given the names of 225 former employees whose season passes were no longer to be accepted for transportation. The Baltimore & Ohio and the Western Maryland reported the coal mines on their lines as having been furnished with nearly normal supplies of cars. At New York City the Merchants' Association repeats its assertion of a week ago that the automobile trucks put in operation by the merchants to thwart the obstructive acts of the union truckmen had fully succeeded in clearing up the congestion of freight on the steamship piers.

Engineering Council, which, in connection with the American Institute of Architects and the Associated General Contractors of America, has been studying the matter of Payment for Estimating, adopted on June 17 the conclusion in a report of a special committee to which the report of the conferees had been referred, as follows: "Whenever in the execution of work, competitive bids are called for on detailed plans and specifications, those invited to bid should be provided with such an estimate of the quantities involved in the work as the surveys, plans and specifications permit to be made. The intent of this requirement is that a single estimate of quantities should be made by or for the engineer, architect or other representative of the owner, so that each separate bidder will not be put to the expense of making up a separate schedule for estimates. This latter practice not only means a needless waste in the carrying on of contract work, but also discourages bidders and causes needless repeated handling of official plans and specifications in making up separate schedules of estimates."

The Industrial Cost Accountant Association, with headquarters in the Peoples Bank Building, Pittsburgh, Pa., was organized at a meeting held at Chicago, on June 18. Representatives from a number of national industrial associations and numerous industries were present. M. F. Simmons, supervisor of costs for the General Electric Company, was elected president; C. H. Smith, director of clerical operations of the Westinghouse Air Brake Company, was elected first vice-president; Roland H. Zinn, chief of the cost accountant bureau of the Tanners' Council, second vice-president; and A. A. Alles, Jr., secretary of the Fawcus Machine Company, Pittsburgh, secretary and treasurer. The object of the association is given in article II of the constitution, as follows: Its object shall be the standardization of accounting and cost terminology and the adoption of standard governing principles; the promotion of active co-operation and interchange of experiences between representatives of manufacturers engaged in similar activities; the education of the members and their business associates in complex economic problems of industry; to assist standardization committees in each line of industry in establishing uniform accounting and cost practices; to act as a clearing house in distributing to all members the development in cost-accounting practices to the end that uniformity, once established, may be maintained.

Railroad Administration Announces First Complete Settlement

The Railroad Administration announced on July 6 that it had completed its first final settlement with a railroad company covering all claims arising out of the operation of its property by the government during the period of federal control. Under this settlement the Spokane, Portland & Seattle will receive $1,600,000 in cash as the sum remaining after the balancing of all claims of the company against the government and of the government against the company. The figure is a round one, adopted as a basis of settlement, and does not exactly represent the sum of the various items. The greater part of it represents the compensation due the company, but an item for under maintenance is also included.

Labor Leaders to Pass on Wage Award

General chairmen of the "Big Four" railway brotherhoods will meet in Chicago on July 19 to pass on the wage award of the Railroad Labor Board, according to a recent announcement by President W. G. Lee, of the Brotherhood of Railroad Trainmen. Mr. Lee stated that the meeting was called for July 19 on the assumption that the Board would not hand down a decision before the "dead line" date which has been set at July 20 by Judge R. M. Barton, chairman of the Board. The members of the "Big Four" brotherhoods will be represented by four men from each road, the number of general chairmen totaling about 1,000. The action of the board in announcing a date on or before which its award will be made public has resulted in alleviating much of the unrest among railway employees and all of the organizations, with the possible exception of the outlaw "vacationists," have adopted a policy of watchful waiting until the general leaders have approved or disapproved of the board's final decision.

Injunction Against Assigned Car Rule

The National Coal Association announced on June 30 that Judge Dayton, in the United States Circuit Court at Philippi, W. Va., had granted a temporary injunction on June 29 against the Baltimore & Ohio to restrain it from pursuing the practice of assigning cars for railroad fuel at various coal mines along its route. Other injunction suits against other railroads are pending in different states, in an effort to break up what the operators characterize as a "vicious" practice. The injunction was issued at the instance of the Lambert Run Coal Company, Fairmont, W. Va. It was alleged that the Baltimore & Ohio, which serves 750 bituminous coal mines in Pennsylvania, West Virginia, Maryland, Ohio and Indiana, has furnished an ample supply of cars to certain mines which have supplied it with railroad fuel, while other mines, which have been endeavoring to carry out contracts to individual customers, have had only a meager supply.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF APRIL, 1920

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of—Way and structures.	Maintenance of—Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Arizona Eastern	378	$206,226	$51,454	$281,589	$70,617	$49,234	$2,081	$141,675	$20,238	$285,978	101.56	—$4,839	$25,676	—$30,065	$4,931
Atlanta & W. P.	93	121,998	83,747	231,116	24,841	33,421	5,042	85,007	9,129	161,429	69.84	69,686	8,928	60,758	7,696
Carolina C. & Ohio	283	566,302	35,324	609,226	76,597	121,688	16,734	169,011	17,043	400,947	65.81	208,279	28,830	179,423	152,278
Cent. of New England	301	294,437	28,354	349,939	151,492	99,135	2,677	248,241	15,209	516,907	147.71	—166,968	16,538	—183,505	119,743
Copper Range	142	51,562	12,486	67,839	18,884	18,325	2,268	34,324	2,800	76,602	112.91	—8,762	6,824	—15,586	—3,216
East St. Louis Connecting	3	.....	.....	36,593	13,172	18,210	294	56,807	4,731	93,215	254.73	—56,622	2,800	—59,422	—44,800
Great Northern	8,176	6,535,736	1,459,233	8,953,850	1,946,092	1,812,021	80,178	3,581,730	234,748	7,785,437	86.95	1,168,413	794,571	369,148	410,527
Louisiana Western	207	271,262	101,014	395,307	100,911	76,667	4,575	102,981	13,738	302,183	76.44	93,124	20,320	72,757	—39,078
Kansas City Terminal	27	.....	.....	86,548	21,113	26,103	.....	45,244	2,833	97,320	112.44	—10,772	27,350	—38,122	—30,311
Midland Valley	389	226,316	100,612	337,572	82,222	53,542	3,740	122,722	20,083	182,309	54.01	55,263	7,183	48,077	8,123
Green Bay & Western	252	58,955	19,564	87,267	26,007	19,737	926	40,878	2,307	89,855	102.96	—2,588	6,824	—9,412	—2,715
Morgan's La. & Texas R. R.	401	557,114	172,351	785,673	255,029	158,333	7,120	262,883	25,508	712,438	90.67	73,236	42,938	29,964	51,602
N. Y., Phila. & Norfolk	122	370,084	84,800	513,067	73,689	154,328	8,788	365,415	13,755	630,796	122.94	—117,729	24,101	—141,868	—229,197
Penn. R. R. Co.	7,259	20,753,593	9,619,730	34,003,252	7,759,920	11,477,398	309,399	19,971,259	1,065,657	41,315,881	121.51	—7,312,630	1,573,436	—8,889,428	—11,076,244
St. Louis Merchants' Bridge Terminal	9	.....	293	157,381	45,754	51,864	833	149,435	10,624	258,510	164.25	—101,129	9,845	—110,974	—22,677
St. L. S. W.	968	1,172,584	172,192	1,408,492	189,926	261,868	41,542	396,508	46,761	942,585	66.92	465,907	54,694	411,212	172,834
St. L. Transfer	6	.....	.....	44,523	7,166	13,035	195	30,940	2,874	54,211	121.75	—9,688	272	—9,960	—21,817
Southern Pacific	7,087	5,976,395	4,171,051	11,498,408	2,305,529	3,082,832	140,723	5,052,262	432,574	11,370,003	98.88	128,408	828,073	—700,383	—1,905,793
Term. R. R. of St. Louis	37	657	.....	225,072	67,232	56,099	—873	100,714	12,843	241,281	107.21	—16,208	39,276	—55,484	—48,200
West Jersey & Seashore	361	215,784	530,800	808,452	212,064	189,493	9,144	540,058	26,051	983,965	121.71	—175,513	53,173	—228,687	144,040
Western Ry. of Ala.	133	123,348	66,711	208,665	21,652	43,271	4,822	77,490	7,712	158,783	76.09	49,882	7,175	42,707	—22,608
Wichita Falls & N. W.	129	116,668	45,294	173,487	69,289	39,451	422	103,326	7,743	220,232	126.94	—46,745	10,596	—57,392	4,608
FOUR MONTHS OF CALENDAR YEAR 1920															
Arizona Eastern	377	977,474	214,551	1,304,999	257,114	197,698	14,947	457,248	65,252	1,001,684	76.75	303,316	95,800	207,353	11,013
Atlanta & W. P.	93	269,924	169,796	488,719	53,529	77,005	10,632	177,195	20,134	343,156	70.22	144,553	20,810	123,743	—98,896
Bessemer & Lake Erie R. R.	217	2,481,529	143,807	2,755,682	307,994	1,241,241	44,065	1,161,814	104,895	2,885,807	104.72	—130,126	59,400	—159,542	—192,661
Bingham & Garfield Ry.	36	565,829	6,940	582,539	124,056	149,745	6,641	139,377	13,299	439,584	75.46	142,956	29,700	113,249	141,818
Birmingham Southern	31	123,921	.....	176,784	17,259	27,735	3,980	112,634	13,628	175,237	99.12	1,546	7,017	—5,488	—64,460
Boston & Maine	2,273	14,282,341	6,725,318	23,981,912	4,013,207	5,921,095	161,627	15,182,519	807,007	26,192,327	109.21	—2,210,415	926,936	—3,140,717	—2,643,598
Brooklyn Eastern District Terminal	9	131,202	.....	145,998	26,736	24,189	543	104,639	9,288	165,395	113.21	—19,397	11,946	—31,343	142,769
Buffalo & Susquehanna R. R. Corp.	296	857,679	28,066	907,322	148,757	394,223	8,994	348,962	38,368	939,244	103.51	—31,922	13,100	—45,022	70,977
Buffalo, Rochester & Pittsburgh Ry.	589	4,761,662	524,281	5,512,143	758,396	2,099,963	55,879	2,662,359	136,699	5,723,325	103.83	—211,182	120,000	—331,834	51,669
Canadian Pacific Ry. (Lines in Maine)	233	875,336	273,327	1,198,792	178,055	302,020	11,876	833,067	14,001	1,339,018	111.69	—140,226	48,800	—189,026	—109,704
Carolina C. & Ohio	282	1,986,177	129,681	2,187,447	295,194	550,762	35,832	676,439	54,074	1,609,644	73.58	577,803	62,844	514,873	252,204
Central of Georgia Ry.	1,924	5,221,367	2,021,021	8,422,337	1,367,548	1,570,064	164,322	3,532,212	263,291	6,911,384	82.06	1,510,953	304,803	1,206,126	921,689
Cent. of New England	301	1,426,847	99,729	1,635,423	578,256	575,089	11,063	1,181,852	62,398	2,409,080	147.31	—773,657	72,988	—846,653	—657,883
Central R. R. Co. of New Jersey	686	9,469,476	2,420,110	13,071,705	1,733,097	4,492,302	91,687	7,477,295	359,852	14,226,726	108.83	—1,155,020	974,494	—2,129,646	—2,423,017
Central Vermont Ry.	413	1,285,823	339,605	1,878,255	296,224	603,067	41,127	1,416,881	75,811	2,442,098	130.01	—563,843	69,600	—633,483	—324,675
Charleston & Western Carolina Ry.	342	868,717	202,004	1,136,560	222,978	263,544	16,851	584,225	9,905	1,097,501	96.56	39,059	40,250	—1,191	—121,865
Chesapeake & Ohio Ry.	2,517	19,902,174	3,036,676	25,056,831	3,313,993	6,745,079	189,865	10,176,383	528,872	21,068,163	84.08	3,988,668	939,240	3,148,509	400,555
Chicago & Alton R. R.	1,950	5,556,435	1,896,344	8,469,267	1,070,442	2,410,139	103,445	4,081,979	232,927	7,947,538	93.83	521,728	269,047	252,173	122,766
Chicago & Eastern Illinois R. R.	1,131	6,178,424	1,571,289	9,154,083	905,874	2,968,235	83,572	3,903,387	242,890	8,149,769	89.02	1,004,314	370,000	634,555	1,515,472
Chicago, Detroit & Canada Gd. Trk. Jct.	62	386,933	64,276	546,835	53,253	116,884	4,648	277,638	12,385	464,768	84.99	82,067	17,338	64,710	104,565
Chicago, Ind. & Louisville R. R.	469	2,603,426	232,865	3,238,866	342,017	660,105	48,257	1,933,234	109,685	3,108,323	95.98	130,043	157,737	—27,966	—25,769
Chicago & North Western Ry.	8,290	29,376,419	16,842,889	46,233,257	5,930,375	11,166,516	344,795	24,095,244	1,170,678	43,120,131	93.26	3,113,127	2,575,621	582,647	736,767
Chicago, Great Western R. R.	1,446	4,796,999	1,699,545	7,433,359	1,234,986	1,910,945	111,417	3,623,004	205,259	7,150,283	96.19	283,071	241,665	41,120	183,507
Chicago, Indianapolis & Louisville Ry.	654	2,965,466	930,224	4,496,082	499,566	1,446,579	90,668	2,013,227	117,157	4,223,185	93.93	272,897	196,966	76,891	—376,588
Chicago Junction Ry.	12	.....	.....	1,035,735	182,846	214,779	1,304	909,039	33,624	1,341,592	130.79	—315,857	11,739	—327,597	108,066
Chicago, Milwaukee & St. Paul Ry.	10,675	33,953,747	8,999,609	51,122,216	6,919,171	13,136,567	392,544	25,524,527	1,476,189	47,735,668	93.38	3,386,547	2,580,261	806,286	1,636,690
Chicago, Rock Island & Gulf Ry.	463	1,349,294	365,784	2,149,874	2,319,850	331,461	27,949	824,779	51,157	1,550,541	72.12	599,333	63,701	535,466	430,476
Chicago, Rock Island & Pacific Ry.	7,607	26,567,111	9,587,879	40,918,704	6,716,771	9,571,459	430,977	18,682,738	896,652	35,974,001	87.91	4,946,704	1,595,601	3,347,777	2,514,458
Chicago, St. Paul, Minn. & Omaha Ry.	1,749	6,331,000	2,528,394	9,900,357	858,993	1,818,861	88,781	4,689,402	284,181	7,823,703	79.02	2,076,654	505,976	1,568,551	661,475
Chicago, Terre Haute & Southeastern	374	1,404,046	95,089	1,551,659	203,298	563,359	17,666	697,337	42,947	1,531,682	98.71	19,977	75,000	—55,023	—107,750
Cinn., Indianapolis & Western R. R.	321	906,894	200,087	1,355,904	198,321	505,225	28,602	632,446	63,984	1,432,498	105.64	—76,594	51,179	—127,778	43,210
Cincinnati Northern R. R.	251	561,719	76,156	1,008,548	112,099	197,471	12,657	379,918	21,539	773,662	71.75	284,886	40,160	244,723	85,749
Cleveland, Cinn., Chicago & St. Louis Ry.	2,305	18,199,228	5,359,273	26,890,048	2,182,959	5,148,675	394,461	10,855,255	487,135	19,247,481	71.58	7,642,557	826,305	6,817,607	3,834,198
Colorado & Southern	1,099	3,268,069	763,422	4,491,330	534,191	915,373	40,314	1,553,498	158,464	3,230,809	71.93	1,260,521	221,563	1,037,787	344,015
Colorado & Wyoming	43	67,261	3,464	269,261	43,569	66,256	978	135,900	16,211	262,914	97.64	6,347	10,000	—3,653	—76,292
Copper Range	141	221,607	31,317	289,487	78,093	69,550	8,063	153,278	12,567	321,549	111.08	—32,062	24,015	—56,077	—47,196
Delaware & Hudson Co.	388	9,425,966	881,739	11,159,740	1,192,830	3,663,575	90,603	5,836,371	384,021	11,351,896	101.72	—192,156	318,142	—510,737	311,496
Delaware, Lackawanna & Western R. R.	370	14,237,431	3,575,833	20,913,874	2,264,535	5,247,064	279,512	11,236,168	534,983	19,775,364	94.56	1,138,510	1,354,167	—215,743	3,387,913
Denver & Rio Grande R. R.	1,885	8,674,141	1,946,907	11,555,788	1,386,544	2,741,252	124,394	3,890,350	300,996	8,542,749	73.92	3,013,039	480,000	2,597,787	1,748,819
Denver & Salt Lake R. R.	255	568,880	81,917	695,400	209,362	380,187	3,307	482,777	31,414	1,157,247	166.41	—461,847	42,382	—504,228	70,018
Detroit & Mackinac Ry.	378	367,341	133,200	564,711	91,804	171,935	10,843	311,690	38,313	625,423	111.14	—62,702	24,997	—87,701	56,781
Detroit, Grand Haven & Milwaukee	195	925,548	169,585	1,304,522	185,087	349,516	18,493	886,329	44,486	1,480,711	113.51	—176,189	18,789	—194,978	311,645
Detroit, Toledo & Ironton R. R.	454	1,171,370	54,306	1,434,670	247,530	323,562	18,813	756,069	55,710	1,403,103	97.84	30,912	35,283	—5,126	240,000
Duluth & Iron Range R. R.	292	438,966	90,351	615,363	93,800	105,306	1,489	504,560	63,719	1,273,416	206.93	—658,054	36,978	—695,032	—1,430,[illegible]
Duluth, Missabe & Northern Ry.	307	535,078	187,535	862,771	542,550	630,586	10,855	688,646	75,357	1,954,712	226.56	—1,091,941	51,161	—1,143,103	—1,0[illegible]
Duluth, South Shore & Atlantic	614	865,548	349,698	1,441,973	243,654	308,124	21,168	853,110	47,038	1,493,550	103.58	—51,577	82,069	—133,645	—38,176

REVENUES AND EXPENSES OF RAILWAYS

FOR FOUR MONTHS OF CALENDAR YEAR 1920—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Duluth, Winnipeg & Pacific Ry	178	$666,826	$114,665	$794,898	$99,658	$153,662	$12,218	$375,073	$34,038	$674,654	84.87	$120,244	$41,468	$78,775	$10,609
East St. Louis Connecting	3	.....	.....	419,350	55,056	151,333	1,071	330,127	15,307	552,895	131.84	—133,545	9,600	—143,145	- 48,974
El Paso & Southwestern Co	1,027	3,401,783	885,679	4,659,793	890,978	867,574	47,074	1,224,870	136,631	3,197,488	68.61	1,462,305	321,659	1,140,515	204,935
Elgin, Joliet & Eastern Ry	832	6,002,543	18	7,035,770	609,728	1,779,255	25,594	2,939,561	130,827	5,484,676	77.95	1,551,094	206,882	1,344,212	- 511,436
Erie R. R.	1,989	21,935,659	3,838,743	29,258,043	3,593,793	10,720,697	294,772	16,021,089	847,650	31,717,599	108.41	—2,459,557	980,565	—3,460,484	—288,437
Florida East Coast Ry	764	2,617,599	1,791,504	5,103,255	507,461	724,288	37,948	1,723,043	89,315	3,122,161	61.17	1,981,094	157,933	1,822,822	1,445,086
Fonda, Johnstown & Gloversville R. R.	31	137,553	265,311	422,740	53,765	38,503	1,793	160,808	20,890	275,759	65.23	146,982	19,950	127,032	26,096
Ft. Smith & Western R. R.	253	438,023	114,226	591,336	148,215	146,642	16,710	262,120	26,997	605,464	102.38	—14,127	20,000	—34,674	- 58,585
Ft. Worth & Denver City Ry	454	2,428,659	1,261,848	3,924,656	624,070	873,585	23,240	1,758,690	121,560	3,416,162	87.04	508,495	90,000	417,929	—342,070
Ft. Worth & Rio Grande Ry	235	361,653	239,432	652,371	158,121	103,438	7,455	350,764	24,514	644,292	98.76	8,079	15,140	—7,077	118,705
Galveston Wharf	13	.....	.....	393,570	104,360	8,923	1,226	155,634	8,949	337,393	85.72	61,178	53,400	7,778	—3,506
Georgia R. R.	328	1,421,746	528,967	2,107,186	235,929	443,890	41,075	1,134,078	73,419	1,929,218	91.55	177,968	23,800	154,163	—316,470
Georgia & Florida Ry	405	301,615	88,612	445,262	235,844	94,102	15,993	325,465	29,319	700,723	157.37	—255,462	24,943	—280,702	—150,354
Grand Trunk Western R. R.	350	3,495,518	754,449	4,726,953	422,001	1,412,913	61,246	2,270,562	151,065	4,344,959	91.91	381,994	182,443	199,695	—444,472
Great Northern	8,176	22,348,829	5,738,058	34,071,721	6,367,163	7,609,216	255,128	15,587,584	747,712	31,076,471	91.21	2,995,251	2,883,297	101,946	—975,611
Great Northern Ry	8,175	22,348,827	5,738,058	34,071,721	6,367,163	7,609,216	255,129	15,587,583	747,712	31,076,471	91.21	2,995,251	2,883,297	101,947	—975,611
Green Bay & Western	252	281,458	76,427	389,102	56,610	96,258	4,306	182,652	10,625	350,445	90.06	38,656	27,520	11,136	—16,691
Gulf & Ship Island R. R.	307	643,324	173,103	914,100	244,365	228,004	20,739	372,739	44,607	912,151	99.78	1,949	45,967	—44,184	20,810
Gulf, Colorado & Santa Fe Ry	1,922	5,745,148	1,894,744	8,485,564	2,068,985	1,680,255	85,157	3,481,407	210,341	7,502,184	88.41	983,380	345,866	636,835	112,873
Gulf, Mobile & Northern R. R.	469	862,996	210,776	1,192,181	333,852	268,937	38,844	498,380	49,887	1,189,901	99.80	2,280	44,212	—42,372	79,640
Hocking Valley Ry	350	3,479,529	384,714	4,093,556	466,018	1,416,634	44,022	1,634,820	107,424	3,662,861	89.47	430,696	275,334	155,362	752,978
Illinois Central R. R.	4,799	31,077,454	8,115,897	43,887,695	7,098,715	11,302,892	408,318	17,980,764	988,153	38,122,834	86.86	5,764,860	2,190,820	3,565,967	3,620,821
Illinois Terminal	24	260,059	.....	276,388	14,950	34,190	2,945	75,182	18,572	145,841	52.76	130,547	4,631	125,907	—71,360
Indiana Harbor Belt R. R.	120	.....	.....	2,369,481	403,460	539,687	9,638	1,696,410	71,734	2,720,930	114.83	—351,449	40,959	—392,554	—154,441
International & Great Northern Ry	1,159	3,933,042	1,007,929	5,536,790	1,362,504	1,427,076	68,549	2,916,281	179,887	5,979,091	107.98	—442,301	130,003	—575,768	146,800
Kanawha & Michigan Ry	176	1,106,179	188,119	1,370,164	219,496	537,432	10,221	558,705	48,218	1,374,076	100.29	—3,911	100,000	—103,913	52,290
Kansas City, Mexico & Orient R. R.	272	389,644	64,697	499,090	176,803	170,434	11,959	261,858	37,340	658,394	131.91	—159,304	30,815	—190,167	42,501
Kansas City, Mex. & Orient Ry. of Tex.	465	400,068	84,819	545,194	225,314	183,607	12,022	294,166	41,243	756,353	138.73	—211,159	25,169	—236,656	42,539
Kansas City Southern Ry	779	4,170,523	914,016	5,655,469	826,395	1,324,627	110,019	2,183,436	217,015	4,659,882	82.39	995,587	253,079	741,174	568,143
Kansas City Terminal	27	.....	.....	458,304	79,036	125,913	.....	269,852	9,327	493,739	107.73	—35,436	116,321	—151,756	—99,123
Lake Erie & Western R. R.	741	2,651,462	245,550	3,134,881	371,726	884,386	60,601	1,415,859	96,218	2,828,747	90.23	306,135	170,000	134,333	229,810
Lake Superior & Ishpeming Ry	34	22,274	1,088	27,727	75,883	76,352	932	41,551	10,050	204,768	73.85	—177,041	17,636	—194,677	—20,476
Lake Terminal R. R.	12	.....	990	384,991	53,308	106,696	.....	277,793	198	437,995	113.76	—53,004	23,417	—76,421	—89,198
Lehigh & Hudson River Ry	96	603,286	13,944	658,012	95,611	178,706	6,483	387,865	28,729	697,394	105.98	—39,382	34,751	—74,161	—143,746
Lehigh & New England R. R.	230	1,211,187	9,434	1,276,987	149,838	313,371	28,202	501,664	48,882	1,039,828	81.42	237,160	51,326	185,834	108,873
Lehigh Valley R. R.	1,435	15,946,863	2,013,893	19,855,401	3,121,190	6,378,459	202,597	11,431,418	434,828	21,650,863	108.87	—1,795,463	764,000	—2,560,480	—2,730,319
Long Island R. R.	398	1,762,105	3,635,280	6,198,526	1,067,662	1,572,985	47,067	4,278,030	211,025	7,227,380	116.59	—1,028,854	411,860	—1,442,339	—1,509,926
Los Angeles & Salt Lake R. R.	1,168	3,420,332	1,654,138	5,683,782	799,924	1,093,255	74,480	2,035,731	139,641	4,319,354	75.99	1,364,429	312,180	1,051,451	—29,096
Louisiana & Arkansas	302	1,131,775	201,407	1,407,618	229,438	185,606	18,188	456,926	30,825	919,589	65.32	488,029	65,036	422,884	451,476
Louisiana Ry. & Navigation Co.	343	1,100,189	159,853	1,328,257	331,681	229,176	17,202	556,377	43,865	1,178,300	88.71	149,957	56,000	93,875	214,947
Louisiana Western	208	1,121,989	421,360	1,661,888	356,934	301,344	23,915	414,190	49,543	1,156,179	69.57	505,709	80,231	425,141	36,956
Louisville & Nashville R. R.	5,040	27,047,911	7,673,109	38,577,083	6,274,307	10,148,873	674,799	16,689,865	871,229	34,861,231	90.36	3,715,852	1,153,665	2,559,499	846,619
Louisville, Henderson & St. Louis Ry.	199	320,475	104,760	475,753	122,018	50,819	8,251	138,856	17,091	337,036	70.84	138,717	14,430	124,284	—10,852
Maine Central R. R.	1,216	3,699,301	1,330,294	5,616,445	1,252,768	1,514,063	41,140	3,428,667	168,522	6,406,434	114.07	—789,988	356,966	—1,147,100	- 462,883
Md., Del. & Va. R. R.	82	195,693	74,839	290,154	29,834	134,831	2,353	242,877	9,373	419,268	144.49	—129,113	8,000	—137,113	115,465
Michigan Central R. R.	1,862	16,318,835	5,643,660	25,177,489	2,586,713	6,249,189	255,956	11,355,643	475,480	21,328,748	84.71	3,848,741	993,000	2,853,271	—1,018,664
Midland Valley	388	1,005,534	393,429	1,482,969	301,775	314,308	14,476	603,961	61,077	1,295,592	87.36	187,377	28,734	158,321	—35,403
Minn. & St. Louis R. R.	1,646	3,727,673	887,139	5,058,285	603,782	1,339,049	62,414	2,552,332	135,243	4,694,467	92.81	363,818	237,665	125,512	620,705
Minn., St. Paul & Sault Ste. Marie	4,243	8,520,692	2,419,903	12,446,532	2,058,290	2,782,189	121,901	6,386,119	356,528	11,775,954	94.61	670,578	1,119,735	—450,213	—1,248,202
Mineral Range R. R. Co.	101	209,590	1,233	217,982	52,222	75,023	969	120,698	4,089	253,002	116.06	—35,020	14,400	—49,420	—53,293
Minnesota & International	194	298,301	118,972	450,442	52,108	80,245	1,996	227,038	14,920	376,307	83.54	74,136	22,556	51,576	56,332
Mississippi Central	164	196,598	80,244	306,665	129,531	128,597	7,752	183,264	33,594	482,738	157.41	—176,073	14,615	—190,850	—128,293
Mo. & North Ark. R. R.	365	381,306	168,714	614,607	213,298	127,782	10,846	299,723	32,098	683,747	111.24	—69,140	24,268	—93,442	166,236
Mo., Kan., & Tex. R. R.	1,715	7,996,117	2,527,489	11,826,472	2,053,750	3,332,426	131,433	4,132,671	379,101	10,094,822	85.35	1,731,650	442,289	1,287,923	944,84.
Mo., Kans. & Tex. R. R. of Tex.	1,767	5,393,281	2,811,108	9,240,717	2,107,918	1,894,290	104,118	5,272,322	318,149	9,803,977	106.10	—563,260	238,207	—803,069	—640,896
Mo., Okla. & Gulf Ry.	329	637,975	86,573	766,415	180,224	234,252	8,066	413,940	36,952	874,311	114.07	—107,897	48,566	—156,629	143,562
Mo. Pac. R. R.	7,299	24,936,764	6,325,272	35,534,089	6,795,470	7,769,884	460,502	14,670,295	954,580	30,830,309	107.79	4,703,780	980,581	3,709,271	3,420,143
Mobile & Ohio	1,053	4,718,501	716,246	5,975,337	962,862	1,832,208	116,750	2,734,332	182,264	5,831,902	97.58	143,434	242,303	—99,178	493,388
Monongahela Ry.	108	977,153	91,531	1,099,099	391,173	228,770	2,227	457,189	26,314	1,105,675	100.60	—6,575	22,586	—29,161	- 255,565
Monongahela Connecting R. R.	7	.....	.....	990,497	93,740	148,579	2,237	442,108	25,013	711,677	71.85	278,820	11,877	266,943	354,018
Montour R. R.	56	257,899	5,476	292,549	75,894	175,509	4,609	128,773	29,520	422,134	144.29	—129,585	9,471	—139,056	—28,984
Morgan's La. & Texas R. R.	400	2,297,637	691,364	3,266,613	679,059	599,286	42,713	1,049,215	90,421	2,471,365	75.66	795,248	158,971	635,303	532,026
Nashville, Chatt. & St. Louis Ry.	1,247	5,237,183	1,607,344	7,717,748	1,103,590	2,215,328	205,877	3,197,236	194,262	6,955,669	90.13	762,079	177,000	584,101	807,145
Nevada Northern Ry.	166	544,703	38,223	604,987	113,203	112,109	3,703	165,411	17,399	412,369	68.16	192,618	33,069	159,549	40,441
New Jersey & New York	47	53,638	297,986	384,766	38,133	69,598	6,234	245,520	8,901	368,387	95.74	16,379	9,582	6,785	45,293
New Orleans Great Northern	284	619,455	167,127	822,333	164,483	182,584	13,132	332,744	36,799	731,398	89.05	90,935	46,336	44,541	28,885
New Orleans, Tex. & Mexico R. R.	191	559,751	155,554	764,130	197,158	140,384	15,437	250,765	30,251	634,283	83.01	129,846	46,333	83,426	91,885
New York Central R. R.	6,070	57,193,895	25,796,148	102,083,560	10,559,479	24,739,434	957,464	51,900,358	2,679,743	92,518,888	90.63	9,564,671	3,669,167	5,883,289	—1,070,447
New York, Chgo. & St. Louis	574	7,541,629	317,718	8,209,629	805,129	1,564,288	142,586	3,630,574	250,113	6,410,140	78.08	1,799,489	170,000	1,627,534	—186,933
New York, New Haven & Hartford	1,965	14,518,395	14,394,411	34,918,646	5,274,518	8,737,757	189,816	19,199,805	1,219,855	35,284,415	101.05	—365,769	1,356,000	—1,729,591	—1,595,402
New York, Ontario & Western	569	1,872,658	437,848	2,904,726	580,478	881,204	36,386	1,805,132	100,965	3,404,162	117.19	—499,437	98,183	—597,622	—301,908

REVENUES AND EXPENSES OF RAILWAYS

FOR FOUR MONTHS OF CALENDAR YEAR 1920—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of—										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
New York, Philadelphia & Norfolk	121	$1,756,402	$343,543	$2,329,321	$239,226	$682,657	$42,219	$1,416,278	$48,959	$2,482,534	106.58	—$153,214	$87,104	—$240,455	—$592,552
New York, Susquehanna & W.	135	820,007	240,047	1,226,422	178,956	319,336	10,648	1,019,540	35,030	1,563,509	127.48	—337,087	90,609	—430,687	—331,031
Newburgh & South Shore Ry.	7	.....	.....	515,293	57,554	127,543	.....	337,865	17,102	540,064	104.81	—24,772	30,675	—55,446	—128,462
Norfolk & Western	2,202	19,480,911	2,647,425	23,876,952	3,627,399	8,570,373	197,662	10,072,199	537,573	23,124,410	96.84	752,541	1,420,000	—669,538	—3,863,369
Norfolk & Southern	965	1,842,879	566,798	2,641,001	500,685	481,722	43,368	1,218,856	100,688	2,345,773	88.82	295,228	65,332	229,357	320,121
Northern Pacific	6,648	24,540,702	5,847,167	34,423,651	6,215,469	6,847,318	306,282	13,995,474	824,526	28,631,824	83.17	5,791,827	2,800,203	2,986,347	—1,680,450
Northwestern Pacific	538	1,068,402	692,090	2,042,053	478,327	299,606	20,038	946,954	59,405	1,813,737	88.81	228,316	102,365	125,491	182,699
Oregon Short Line	2,347	10,182,156	2,199,965	13,898,885	1,537,020	2,213,334	103,610	4,409,823	446,696	8,979,714	64.60	4,919,171	985,095	3,933,345	1,999,838
Oregon-Washington R. R. & Nav. Co.	2,221	7,311,375	2,095,325	10,589,245	1,482,237	1,728,086	123,764	4,345,693	448,415	8,252,514	77.93	2,336,730	621,717	714,738	1,077,758
Panhandle & Santa Fe	77	1,826,516	526,143	2,588,743	566,144	888,788	15,914	1,204,864	65,729	2,739,769	105.83	—151,026	81,745	—232,704	322,873
Pennsylvania R. R. Co.	7,259	96,904,249	36,156,092	149,870,927	26,289,272	51,859,005	1,563,025	81,009,129	4,047,885	167,642,339	111.85	—17,771,412	5,659,025	—23,455,560	—25,394,258
Peoria & Pekin Union Ry.	19	121,771	16,877	529,925	54,819	142,098	857	325,187	18,228	541,191	102.26	—11,266	38,000	—49,266	114,936
Pere Marquette Ry.	2,230	7,515,524	1,820,840	10,869,327	1,411,152	2,852,840	158,082	5,808,770	364,827	10,639,344	97.88	229,984	240,596	—11,888	—1,341,128
Perkiomen R. R.	41	314,747	34,823	377,605	31,326	16,600	58	160,349	1,298	209,774	55.55	167,831	7,242	160,589	16,606
Phila., Bethlehem & N. Eng. R. R. Co.	10	.....	.....	348,686	54,334	62,165	1,681	294,711	6,194	419,147	120.21	—70,460	4,120	—74,580	—104,180
Philadelphia & Reading Ry.	1,126	21,825,184	3,334,979	26,894,558	2,615,928	8,578,900	186,174	13,891,558	651,313	26,007,641	96.70	886,917	551,195	333,995	1,854,257
Pittsburgh & Lake Erie R. R.	224	8,490,723	901,887	10,191,203	1,601,571	3,787,945	72,318	3,852,748	215,983	9,538,681	93.59	653,122	453,141	199,612	—772,987
Pittsburgh & Shawmut R. R.	103	483,219	20,716	508,341	93,988	123,663	5,763	195,601	19,914	438,931	86.34	69,410	441	68,968	170,989
Pittsburgh & West Virginia Ry.	63	428,422	36,256	531,285	131,522	254,625	6,313	248,197	32,173	706,198	132.92	—174,912	56,724	—232,174	47,496
Pittsburgh, Shawmut & Northern R. R.	209	424,728	27,941	463,703	89,534	212,522	8,623	238,434	39,350	588,476	126.91	—124,773	7,553	—132,843	—21,313
Port Reading R. R.	21	463,539	.....	636,852	61,691	58,003	80	409,191	10,375	539,339	84.68	97,513	20,764	76,748	—164,967
Richmond, Fredericksburg & Potomac	116	1,666,046	1,278,450	3,800,267	303,222	587,144	29,869	1,481,647	93,389	2,528,828	66.54	1,271,439	114,169	1,157,211	—435,273
Rutland R. R.	415	903,818	416,115	1,650,218	269,604	406,105	19,940	914,691	55,607	1,672,328	101.33	—22,110	74,815	—96,935	24,233
St. Joseph & Grande Island	258	773,320	151,582	1,017,155	228,679	171,714	8,292	549,938	50,099	1,014,819	99.77	2,335,000	45,600	—43,301	71,407
St. L. S. W.	947	5,324,323	662,242	6,317,249	829,921	1,196,026	128,377	1,653,435	164,486	3,991,144	63.18	2,326,106	195,356	2,130,632	1,692,276
St. L. Transfer	6	.....	.....	450,613	35,569	85,651	741	227,957	9,841	359,759	79.83	90,854	765	90,089	62,852
St. Louis, Brownsville & Mexico	548	1,485,228	692,198	2,376,484	546,570	416,810	33,054	803,139	89,606	1,885,134	79.32	491,350	44,200	446,631	20,911
St. Louis Merchants' Bridge Terminal	9	.....	2,892	1,192,286	193,015	278,361	3,096	889,248	31,901	1,395,620	117.05	—203,334	36,191	—239,525	102,717
St. Louis San Francisco Ry.	4,757	19,133,639	7,208,537	28,029,005	4,122,134	6,254,047	237,484	11,522,722	825,762	22,915,265	81.75	5,113,739	902,233	4,206,333	1,289,735
St. Louis, San Francisco & Texas	134	450,837	73,773	535,063	116,406	103,425	7,140	323,006	24,415	574,392	107.35	—39,329	7,530	—46,859	18,577
San Antonio & Aransas Pass	736	921,548	343,111	1,453,783	506,496	417,094	25,227	284,652	73,010	1,805,950	124.22	—352,166	60,000	—412,435	—3,168
San Antonio, Uvalde & Gulf	317	252,990	167,845	446,328	199,390	91,902	8,565	225,019	19,559	544,377	121.96	—98,048	8,979	—107,116	26,946
Seaboard Air Line	3,562	10,960,917	3,336,545	16,803,275	2,584,247	3,750,685	325,513	8,080,531	474,246	15,432,614	91.84	1,370,662	600,000	768,206	37,040
Southern Ry.	6,077	32,124,489	10,526,902	48,921,787	6,555,937	9,065,633	617,538	21,328,402	1,192,073	39,235,943	80.20	9,685,944	1,569,490	8,111,374	6,136,066
Alabama Great Southern	320	2,354,103	683,569	3,350,355	381,847	846,122	69,437	1,238,518	81,645	2,640,787	78.82	709,568	117,515	591,577	285,878
Cinn., New Orleans & Texas Pacific	338	4,428,251	1,218,037	6,242,972	724,103	1,687,618	168,991	2,283,759	145,439	5,004,602	80.16	1,238,370	194,005	1,043,338	226,781
Ga. Sou. & Florida	402	1,114,863	557,312	1,871,973	248,948	419,354	29,043	837,828	44,744	1,590,030	84.93	281,943	73,500	207,249	116,040
New Orleans & Northeastern	207	1,729,019	391,700	2,424,593	374,959	538,798	42,678	935,167	59,462	1,967,488	81.14	457,142	147,142	309,543	383,353
Northern Alabama	110	419,278	55,465	513,026	97,327	23,624	6,329	227,788	6,389	361,459	70.46	151,567	16,544	134,974	159,214
South Buffalo	11	171,570	.....	409,956	25,674	57,596	1,777	252,501	6,159	343,708	83.84	66,248	14,320	51,928	54,941
Southern Ry. in Mississippi	278	384,795	200,040	657,588	178,406	97,276	11,952	341,585	22,929	652,149	99.17	5,439	39,200	—33,778	27,431
Southern Pacific	7,956	32,871,748	16,075,701	55,947,470	9,358,104	12,200,181	517,544	21,893,002	1,315,502	46,575,842	83.24	9,371,629	2,994,796	6,365,761	1,992,353
Spokane International Ry.	156	407,786	69,755	491,623	62,844	44,806	9,288	155,438	20,591	293,872	59.77	197,750	20,029	177,684	132,851
Spokane, Portland & Seattle Ry.	538	1,835,351	561,106	2,637,187	460,602	329,318	23,566	895,614	89,514	1,820,459	69.03	816,727	335,602	490,782	263,000
Staten Island & Rapid Transit	23	290,068	272,413	616,411	115,215	147,287	4,835	400,576	37,621	705,534	114.45	— 89,124	60,000	149,124	16,486
Tennessee Central	243	690,264	171,477	956,624	169,459	213,054	18,459	446,161	39,982	887,099	93.31	63,525	21,585	41,939	210,786
Terminal R. R. of St. Louis	36	.....	8,481	1,380,026	254,040	287,340	3,972	636,249	31,072	1,228,161	88.99	151,865	144,000	7,865	148,249
Texarkana & Ft. Smith	93	464,852	86,859	619,427	82,862	67,092	3,444	171,493	16,992	343,875	55.51	275,552	55,667	219,928	165,781
Texas & Pacific	1,946	7,665,812	3,889,968	12,797,081	2,348,908	2,845,142	138,944	5,614,061	335,999	11,448,227	89.45	1,348,854	465,800	881,188	786,733
Toledo & Ohio Central	469	2,763,399	251,536	3,196,839	365,222	1,029,793	41,339	1,557,042	76,208	3,081,870	96.40	114,969	149,843	—34,900	—57,234
Toledo, Peoria & Western	247	335,897	197,706	604,389	83,653	136,306	8,615	321,620	23,914	573,509	94.89	30,880	37,000	—3,120	58,691
Toledo, St. Louis & Western	474	2,846,934	124,262	3,179,844	455,115	642,139	33,397	1,377,521	46,681	2,554,789	80.34	625,054	134,000	500,759	254,770
Trinity & Brazos Valley	368	485,960	76,420	603,381	297,186	188,837	5,998	200,229	33,908	816,158	135.26	—212,777	33,980	—246,851	9,963
Ulster & Delaware	118	159,484	60,354	334,330	65,754	81,231	6,820	233,675	25,607	415,061	124.15	—80,740	20,000	—100,738	15,005
Union R. R. of Pennsylvania	40	.....	.....	2,564,693	290,069	766,828	1,095	1,761,361	31,109	2,850,461	111.14	—285,768	28,912	314,680	5,640
Union Pacific R. R.	8,613	25,362,861	6,136,779	36,995,016	4,463,466	7,163,582	228,324	11,413,473	1,091,509	25,244,526	68.23	11,750,490	1,577,371	10,225,497	1,188,401
Utah Ry.	58	508,511	2,258	602,563	51,530	113,751	768	142,770	9,764	318,584	52.87	283,980	18,733	265,357	158,777
Vandalia, Short Line & Pacific	171	946,936	368,930	1,443,332	167,663	244,972	25,038	552,739	41,455	1,046,516	72.50	396,816	51,161	345,655	224,741
Virginian	543	4,100,007	231,103	4,848,589	526,494	1,037,115	22,734	1,973,772	95,523	3,655,848	75.41	1,192,741	314,123	878,611	1,118,778
Wabash	1,471	13,358,967	3,051,804	16,457,876	2,836,905	4,685,653	281,821	8,774,733	550,858	17,235,251	118.26	—777,424	506,095	—1,283,513	—283,680
West Jersey & Seashore	391	1,0[illegible]	1,843,497	3,132,199	948,316	833,997	40,700	2,086,422	92,979	4,029,604	128.65	—897,405	264,381	—1,161,842	53,871
Western Maryland	743	4,095,879	310,760	5,426,568	968,451	2,049,368	145,029	2,181,100	175,457	5,570,475	102.65	—143,907	186,400	—330,307	182,744
Western Pacific	1,031	3,[illegible]904	603,369	4,128,361	738,768	753,355	93,265	1,415,542	120,319	3,203,663	77.60	924,598	234,513	689,813	755,765
Western Ry. of Ala.	133	794,186	135,639	943,179	61,946	90,132	9,992	157,247	17,133	341,476	77.06	101,653	16,480	85,103	87,158
Wheeling & Lake Erie	511	3,[illegible]883	237,264	4,336,390	606,706	1,170,973	46,583	1,967,831	109,386	3,914,526	90.48	411,864	230,800	181,064	534,958
Wichita Falls & N. W.	208	6[illegible]111	18,[illegible]58	858,664	222,777	123,837	4,684	453,056	55,205	859,557	100.10	—893	41,341	42,234	67,127
Western Valley R. R.	156	40[illegible]068	134,776	596,924	114,405	34,601	281	250,965	77,048	467,516	68.26	189,408	21,386	167,781	170,741
Yazoo & Mississippi Valley	1,381	6,825,331	1,961,512	9,452,835	1,864,957	2,213,878	91,081	3,597,483	230,477	8,015,348	84.79	1,437,487	314,633	1,119,[illegible]	140,345

Traffic News

Sixty-five thousand is the number of passengers from Philadelphia carried to the seashore by the Philadelphia & Reading in three days, July 3, 4 and 5.

The return of 2,000 freight cars and 120 passenger cars to the Mexican National Railroads by military chiefs in various parts of the republic has been reported, following the order of the Secretary of War and Marine that the military authorities release rolling stock belonging to the Mexican National Railroad in order to aid in better service.

The Missouri Public Service Commission has authorized increases in Pullman rates in Missouri on the Chicago, Burlington & Quincy, the St. Louis Southwestern, the St. Louis-San Francisco and the Wabash, effective July 1. The increases allowed are 20 per cent except as to minimum rates, which are to be advanced from 75 cents to $2 for berths and 25 to 59 cents for seats.

Hearing on Coal-Car Distribution

Acting on numerous informal complaints, the Interstate Commerce Commission has announced a hearing to be held before Division 5 in Washington, on Thursday, July 8, "on the existing rules, regulations and practices of the railroads as to the supply, exchange, interchange and return of open top equipment within the territory east of the Mississippi river to see if any change or addition shall be made in such regulations, etc., or in Service Order No. 7 of the commission relative thereto."

The chief complaints were from the sand, gravel, cement and similar interests regarding the priority order giving coal the preference in the use of open-top cars.

Railway Officers—Traffic

The Canadian National, announcing the consolidation of freight and passenger offices consequent on the merging of the Grand Trunk and the Canadian Northern, gives the addresses of twelve offices at each of which the business of the two former systems will be transacted by a single organization, with the following agents: Montreal, M. O. Dafoe, city passenger agent, and H. A. Carson, city freight agent; Toronto, W. J. Moffatt, city passenger agent; Ottawa, P. M. Buttler, general agent, and R. G. Reece, city passenger agent; E. J. Hilliard, division freight agent; Hamilton, Ont., James Anderson, city passenger agent, and R. J. S. Weatherston, division freight agent; Quebec, S. J. Nestor, city passenger agent; New York, A. B. Chown, general agent of the passenger department; Boston, C. J. Pierce, general agent of the freight department, and W. R. Eastman, general agent of the passenger department; Buffalo, N. Y., Ira W. Gantt, assistant general freight agent.

Crop Movement Presents Problems

The railroads are facing a big problem this year in connection with the handling of the crops. The reports of the Department of Agriculture forecast a good crop this year, while considerably smaller than that of the last two years, but they also show that an unusually large percentage of the last year's crop was still on the farm on March 1. Railroad reports show considerable progress made during the last few weeks in reducing the accumulations in storage at the principal markets and a considerable increase in grain loading on the lines in the grain territory, but the roads are entering upon the season for handling the new crops without some of the preparations for it that were made last year. A year ago, following several months during which there was a heavy surplus of cars, approximately 27,000 grain cars were being held in storage in the Central Western region, 27,000 in the Southwestern region and 4,000 in the Northwestern region, awaiting the grain movement. This was made possible by the fact that the Eastern roads had been clogged with idle cars and were glad to have the Western lines take them off their hands. This year the unusual demand for cars of all kinds and the slowing up of movement incident to the strike and the general labor situation, has made it impossible to store cars in the west and it has been necessary to force box cars into the grain territory by arbitrary car relocation orders issued by the Interstate Commerce Commission and the Commission on Car Service ordering the movement of empty cars westward.

Service Order No. 3, issued by the Interstate Commerce Commission, directed the movement of approximately 20,000 serviceable empty box cars of western road ownership from eastern to western railroads during a period of 30 days beginning May 25. This order has been practically completed. On its expiration the Commission on Car Service issued additional similar orders for approximately 28,000 box cars on a 30-day schedule, or 935 cars a day, and recently it has placed additional orders covering 9,000 cars, or 300 cars a day, so that 1,235 box cars a day are now on their way to the Western grain loading roads. Particularly heavy movements have been ordered to the Union Pacific, Santa Fe, Rock Island, Great Northern and Northern Pacific.

Coal Production

Responding to the service orders directing complete priority for coal mines in the use of open-top cars, the production of soft coal during the week ended June 26 increased 377,000 tons, or 3.7 per cent, according to the weekly bulletin of the United States Geological Survey. The total output, including lignite and coal made into coke at the mines, is estimated at 10,454,000 net tons, as against 10,077,000 tons during the preceding week, and 10,355,000 tons in the week of June 12. The increase was effected in spite of a recurrence of the switchmen's strike on roads serving central Pennsylvania and the Somerset, Cumberland-Piedmont and Fairmont fields.

Production during the first 152 working days of the last four years has been as follows:

1917	269,229,000	1919	210,640,000
1918	277,877,000	1920	251,953,000

The year 1920 is thus 17,250,000 tons behind 1917, and nearly 26,000,000 tons behind 1918, but is 41,300,000 tons ahead of 1919. Shipments of anthracite originated by the nine principal carriers of hard coal amounted to 35,430 cars during the week ended June 26. This was an increase of 324 cars over the preceding week's loading.

In the second week of operation of the pool reconstituted by the Interstate Commerce Commission Service Order No. 5, lake shipments showed an increase of 90,000 tons over the first week, but were still 350,000 tons short of the rate maintained at this time last year. The week's dumpings amounted to 571,692 net tons of cargo coal and 24,388 tons of vessel fuel, a total of 596,080 tons. The total dumpings in the corresponding week of 1919 were 995,000 tons. The tonnage for the season to date now amounts to 3,519,000 tons. In the corresponding period of 1918 it was 7,699,000 tons, and in 1919, 9,130,000 tons. The present season is therefore, in round numbers, 4,180,000 tons behind 1918 and 5,600,000 tons behind 1919.

At the request of the United States Bituminous Coal Commission, and largely with the help of funds provided by the commission, the Geological Survey conducted a rapid canvass of stocks of coal in the hands of representative consumers. Inquiries were sent out to a selected list of consumers, most of them large, including by-product coke ovens, iron and steel plants, other industrial consumers, coal-gas plants, electric public utilities, and retail coal dealers well scattered over the entire country. Because of the limited time available it was impossible to secure figures from all of the ninety-odd commercial consumers in the country. By addressing a limited list of about 5,500 plants it has been possible to practically complete the survey within a month. While a number of the consumers addressed have not yet furnished returns, the proportion received has been sufficient to justify the publication of preliminary figures for the gas and electric utilities and for industrial consumers other than steel and by-product plants.

Foreign Railway News

Electrification of Swedish State Railroads

The Swedish parliament, writes Vice-Consul Orsen N. Nielsen to Commerce Reports, from Goteborg under date of May 28, has now definitely approved of the electrification of the State Railways between Stockholm and Goteborg and has appropriated for the work 23,000,000 crowns (normally $6,164,000). It is expected that the conversion from steam to electrical operation will be completed by 1925.

Deficit on Italian Railways

LONDON.

A news item from the Times Trade Supplement states that the position of the Italian State railways is very serious. According to a recent report there is estimated for the year 1919-1920 a deficit of 1,000,000,000 lire ($200,000,000). The annual charge arising from the compensation due to private companies conducting secondary lines and tramways amount to another 500,000,000 lire ($100,000,000). Wages absorb the whole income, the average wage of the railwaymen now being about 8,000 lire ($1,600) per annum. To the increased expenditure for higher wages must be added the increase in the cost of fuel. Tariffs have been doubled and in certain cases trebled.

England's Exports of Railway Materials

LONDON.

According to the Board of Trade returns, the exports of railway material for the four months ended April 30, 1920, as against the corresponding figures for the same period of 1919, are as follows:

	Four months ended April 30, 1920	Four months ended April 30, 1919
Locomotives	£1,287,245	£219,017
Rails	522,531	252,268
Carriages	398,632	83,729
Wagons	1,794,741	242,571
Wheels and axles	611,430	97,200
Tires and axles	406,397	296,002
Chairs and metal sleepers	143,738	33,536
Miscellaneous permanent way	669,443	215,730
Total permanent way	2,396,391	516,150

The weight of rails exported for the four months ended April 30, 1920, was 29,747 tons, as against 13,996 tons for the same period of the year 1919, and of "chairs and metal sleepers" 6,783 tons for the four months ended April 30, 1920, as against 2,011 tons for the same period of the year 1919. During April alone locomotives to the named value were sent to the following countries:

Argentine	£93,920
India	185,008
Straits Settlements	31,500

Switzerland Will Raise and Spend $25,000,000 in U. S. for Electrification

A syndicate of bankers, including Lee, Higginson & Co., the Guaranty Trust Company, A. Iselin & Co., the National City Bank and others, on Tuesday announced the offering of $25,000,000 of Government of Switzerland 20-year 8 per cent bonds at par. The entire proceeds of this loan, according to the announcement, are to be spent in the United States and "is part of a program," to quote the announcement, "for the gradual electrification of the government railway systems of Switzerland."

It is explained that it was found advisable by the Swiss government to create New York funds by means of the loan rather than to attempt to pay for purchases in this country through the normal operations of exchange. Regarding the new issue, a circular issued by the syndicate gives this information:

"This loan is part of a program for the gradual electrification of the Government railway system of Switzerland. The country has estimated water power resources of 2,700,000 horse power. The progressive utilization of this water power will effect large economies by substituting hydro-electric power for fuel which Switzerland now has to buy at high prices."

France to Pool All Net Receipts from Railways

LONDON.

The French President on May 18 signed a bill for the reorganization of the railways. The French railway system is based on minimum profits being guaranteed by the State. War conditions have caused this to be a great drain on the country and the lines are now to be co-ordinated so as to form a great national system. For the present, the railways are to be run under their existing managements, but subject to a council on which the companies, the men, and the users of the railways will be represented. All the net receipts are to be pooled. Over and above the sums which are to be guaranteed the companies there will be paid premiums to those which do well in the amount and operation of traffic; two-thirds of these premiums are to be divided among the employees.

Railway Notes from China

May 18, 1920.

The Peking Suiyuan line is making extensive additions to the trackage in the yard at the Peking Hsichimen station. Two wings have been added to the station building, more than doubling its capacity. A new round house has been put into commission, and new quarters for the shop and runnning staff have been opened in connection.

* * *

On May 17 the second engineering conference under the auspices of the Railway Technics Commission began its sessions. The first session, held in February, was preliminary only, and dealt with questions of program. The subjects which were chosen for consideration at this conference, and which are now under discussion, are:

1. Standard specification for steel bridges.
2. Standard cross section of railway.
3. Permanent way.
4. Standard construction gage.
5. Switches and crossings.
6. Super-elevation.
7. Transition of curves.
8. Vertical curves, at changes of grade.
9. Compensation of curves on grades.
10. Lay-out at stations.

* * *

The colony of foreign advisers at the Ministry of Communications continues to grow. One of the most picturesque additions is Gen. Horvath, formerly director of the Chinese Eastern. With the taking over of ostensible control of that line by the Chinese, the general was appointed adviser to the Ministry and is now in Peking. That the explanation is not just what it appears to be on the surface is attested by the fact that for some weeks it was given out by the press of a "certain country" that Gen. Horvath would take up his residence in Tsing Tau.

The other addition to the advisory ranks is T. Ohmra, formerly connected with the Technical Commission on the Trans-Siberian line. It appears that the Japanese Minister was not satisfied that Japanese prestige was properly acknowledged by the presence of Baron S. Hirai among the advisers to the commission on Railway Technics. Baron Hirai has been an adviser, without definite assignment, ever since the days of Sun Yet Sen in 1912. Since new advisers were being employed at this time from France, England and America, Japan must also be recognized, by an additional appointment. Hence Mr. Ohmra.

* * *

The financial difficulties of the Government have become so acute that another cabinet re-organization is under way. The Anfu Club, the dominant political group, is urging Tsao Ju-lin for Minister of Communications. As reported in these notes, Tsao was the Minister of Communications, who, about a year ago, was set upon by students, who burned his house, and, in the end, compelled his resignation. He figures as one of the three "traitors" who negotiated the secret treaties of September, 1918, with reference to Shantung. However, the proposal of Tsao by the Aufu Club is probably merely a manœuvre. Having centered the opposition on Tsao, they will

yield, providing another of their number is appointed; whereas, if they had proposed their real choice in the first place, the natural party opposition would force a compromise of some other sort. In this way they expect to obtain complete control of the Cabinet.

* * *

The plan to link up the mineral resources of Shansi—the Pennsylvania of China—with Tsing Tau and Japan by means of the Shih Chia Chuang-Tehchow line of railway was noted at length in the last issue of these notes. Another link in the chain of evidence on the point has now been discovered. Those "in the know" say that the Chinese Government has mortgaged the Ching Hsing mines—just west of Shih Chia Chuang, on the Cheng Tai railway—to Japanese private capitalists, probably the Okura interests. It is known that these interests have been picking up small private holdings in the vicinity of these mines for the past year. The Ching Hsing mines were formerly a Chinese-German enterprise of which the notorious Von Hannecken was the director. When war was declared by China against Germany these German interests were confiscated by the government, and it is this interest which is now mortgaged. If the report be true, the rumored redemption of the Cheng Tai line from the French, the subscription to the domestic loan by Japanese through Chinese "dummies," and the change of terminus for the connecting line from Tsangchow, near Tientsin, to Tehchow, near Tsinan, is all "one piece of cloth."

* * *

The rumor is persistent that an attempt is to be made by Liang Shih Yi to raise domestic funds for the redemption of the British loan on the Peking Mukden line. The rate of exchange is now so favorable that only six or seven million dollars would be necessary, and this would get rid of the quasi-control now exercised by the British. The "joker" in this proposition is that there would still remain the Japanese second mortgage, and the way would then be open for the Japanese advance from Mukden to Peking. More probably, the immediate object is to get away from a certain provision in the British contract which gives the British administration the right of construction of all branch lines and of all parallel lines within eighty miles of the Peking Mukden line. However, almost simultaneous reports of second mortgages on the Pu-Sin route and the Lung-Hai line give rise to the suspicion that Liang Shih Yi believes that the time has now arrived when British and French interest should be more actively aroused against the Japanese, and that he is taking this indirect method of doing it.

* * *

The departure of Thomas W. Lamont and party on May 1 has not resulted in any loss of interest in the Consortium. It is no secret that Government officials are bitterly disappointed at not being able to "touch" Mr. Lamont for a substantial loan. This feeling was both concealed and revealed, depending upon one's understanding of the situation, by the taunting remarks which were passed concerning Mr. Lamont's "failure" in China. That was given a sudden hush by the news of the actual formation of the Consortium, which arrived while Mr. Lamont was still en route to Japan. The reservations of certain branches of the South Manchurian railway from the scope of the Consortium is rather serious, and furnishes a handle by which the Chinese opposition to the Consortium can take hold. Nor is it likely that the militaristic party in Japan will cease its effort to embarrass the Consortium through Chinese mediums. This party has given abundant evidence of its independence of the civil government of Japan in Siberian affairs. So it must not be thought for a moment that now the Far Eastern question is settled. However, the Manchurian reservations are not so serious but what a vigorous policy of administration on the Chinese Government railways, harmonious working with the Consortium on the part of Chinese authorities, and a fair degree of support from abroad on the Shantung question, will permit the Chinese to work out their own destiny.

* * *

H. Van Alstyne, vice-president of the American Locomotive Company, is staying in Peking for some months. F. M. Titus, the American Locomotive Company's representative during the past four years will soon return to the states.

Equipment and Supplies

Locomotives

The Minneapolis & St. Louis has ordered 5 Pacific type locomotives from the American Locomotive Company.

The Bangor & Aroostook has ordered 6 Consolidation type locomotives from the American Locomotive Company.

The Netherlands Government, Colonial Department, is inquiring for 82 locomotives for use on the State Railways of Java.

Mitsui & Co., 65 Broadway, New York, is inquiring for 3 Pacific type locomotives, to have 20 in. by 26 in. cylinders, for use on the Shantung Railway.

Freight Cars

The Chicago & North Western is inquiring for 250 refrigerator cars.

The Pennsylvania Railroad is asking prices on a number of freight cars.

The Mineral Point Zinc Company, Chicago, is inquiring for 25 tank cars.

The National Tube Company, Pittsburgh, Pa., is inquiring for 300, 70-ton hopper cars.

The Central of Georgia is inquiring for 500 ventilated box cars and 300 gondola cars.

The Chicago, Milwaukee & St. Paul is inquiring for 1,000 box and 2,000 gondola cars.

The Illinois Central has ordered 1,000 refrigerator cars from the Pullman Co., Chicago, Ill.

The Universal Portland Cement Company, Chicago, is inquiring for 300, 50-ton box cars.

The Elgin, Joliet & Eastern is inquiring for 500 to 1,000 70-ton gondola and 1,500 hopper cars.

The Fruit Growers' Express, Washington, D. C., has renewed its inquiry for 1,000 refrigerator cars.

The Donner Steel Company, Buffalo, N. Y., is considering the purchase of additional hopper cars.

The Lehigh Valley is having repairs made to 200 freight cars at the shops of the Buffalo Steel Car Company, Buffalo, N. Y.

The Zayas-Abreu Commercial Company, Havana, Cuba, has ordered two locomotives from the American Locomotive Company.

The Struthers Furnace Company, Cleveland, Ohio, has ordered 20 70-ton hopper cars from the Pressed Steel Car Company.

Mitsui & Co., 65 Broadway, New York, is inquiring for 400, 40-ton capacity gondola cars for use on the Tientsin-Pukow Railway, China.

The West India Sugar Finance Corporation, 129 Front street, New York, has ordered 45 flat cars from the American Car & Foundry Company.

The Whitaker-Glessner Company, Wheeling, W. Va., has ordered 140, 55-ton hopper cars and 50 gondola cars from the Pressed Steel Car Company.

The Cuban-American Sugar Company, New York, has ordered 4, 3,000-gal. car tanks and 3, 4,500-gal. car tanks from the General American Tank Car Corporation.

The Railway Equipment Company, Second and Stark streets, Portland, Ore., is in the market for 10 second-hand flat cars, 36 or 40 ft. long, of 60,000 lb. capacity or over.

The Erie Railroad is having repairs made to freight cars in outside shops, as follows: Greenville Steel Car Company, 2,000 coal cars; American Car & Foundry Company, 900 composite gondolas; Western Steel Car & Foundry Company, 1,000 composite gondolas; Illinois Car Company, 500 coal cars; Standard Steel Car Company, 1,000 coal cars to be equipped with new bodies, also 1,000 box cars to be equipped with new bodies. This makes a total of 6,400 cars, of which 1,457 have been repaired and delivered up to July 1.

Passenger Cars

The Manila Railroad is inquiring for 25 cars for passenger train equipment.

The Pennsylvania Railroad is asking prices on a number of passenger train cars.

The Texas & Pacific will be in the market soon for cars for passenger train equipment.

The Pittsburgh & Shawmut has ordered 2 passenger coaches and 2 passenger and baggage cars from the American Car & Foundry Company.

The Virginian Railway, reported in the *Railway Age* of April 30 as being in the market for 1 club car, 10 passenger coaches and 4 mail and baggage cars, has ordered this equipment from the Pullman Company.

Iron and Steel

The Sorocabana Railway (Brazil) is inquiring for 4,000 tons of 75-lb. rail and accessories. There will be 110,000 lineal meters of rail, 10 meters each long; also 21,100 splice bars, 48,000 nuts, 380,000 spikes and 18 switches.

The Netherlands Government, Colonial Department, has divided an order among the Consolidated Steel Company, the LaBelle Iron Works and the Inland Steel Company for 2,000 tons of steel plates, sheets and bars for use in the Dutch East Indies.

Miscellaneous

The Netherlands Government, Colonial Department, is inquiring for all the material for 19 tugboats for export to Holland.

Signaling

The Guantanamo Railroad of Cuba has awarded a contract to the A. G. A. Railway Light & Signal Company, Inc., Elizabeth, N. J., for eight grade crossing signals to be installed in the city of Guantanamo, Cuba.

The Canadian National Railways have placed an order with the Union Switch & Signal Company, Swissvale, Pa., for a 16-lever Saxby & Farmer interlocking machine and other mechanical fittings to be installed by railroad forces at Neepawa, Ontario.

The Canadian Pacific has placed an order with the Union Switch & Signal Company, Swissvale, Pa., for a 48-lever Saxby & Farmer interlocking machine together with other necessary material for rebuilding and enlarging the mechanical interlocking plant at Hamilton Junction, Ontario.

A Continuous Grade Crossing.—Much indignation is felt at the killing of 187 persons in New York state by vehicles during the month of June, an unusually high record. But there seems to be no agreement as to what more can be done to protect life. The trouble is that every highway has come to be one continuous grade crossing, and anyone who watches the chances that are constantly being taken is likely to wonder that the casualties are not even more numerous.—*Springfield Republican.*

Supply Trade News

Clark T. Dickerman, sales agent for the **American Car & Foundry Company,** with headquarters at New York, has been transferred to the Chicago office.

G. M. Calmback, welding supervisor of the Kansas City Southern, has been appointed welding advisory engineer of the Geist Manufacturing Company, Atlantic City, N. J.

T. E. Spence has left the service of the Vacuum Oil Company, New York, to become manager of the recently established district sales office of the **Reading Iron Company,** Reading, Pa., at 161 Devonshire street, Boston, Mass.

"Blawnox" is the new name conferred upon the town of Hoboken, Pa., the home of the Blaw-Knox Company, following the granting of a petition signed by the people of the town asking the postoffice name to be changed to Blawnox.

Sidney G. Johnson has resigned as vice-president and director of the General Railway Signal Company, Rochester, N. Y., which position he has occupied for the last six years, to become president of the **Signal Service & Supply Corporation,** New York.

Dewitt Clinton Grove, vice-president of the Technical Publicity Association, has been appointed advertising manager of the **Blaw-Knox Company,** Pittsburgh, Pa., succeeding **George Land,** who resigned on July 1 to become head of the Technical Publicity Company, Pittsburgh.

B. M. Jones & Co., Inc., New York, distributors for Double Mushet high speed steel and Taylor's Best Yorkshire iron, announce that they are now being represented in the southeastern territory by the W. S. Murrian Company, 605 Fourth street, Knoxville, Tenn. W. S. Murrian for a number of years was connected with the mechanical department of the Southern Railway, but during the war period he was associated with the United States Railroad Administration, Railway Board of Adjustment No. 2. His son, John H. Murrian, has recently been discharged from the army, having served with the American Overseas Air Force and being the possessor of three distinguished foreign decorations.



W. S. Murrian

F. V. Green, who left the service of the Westinghouse Air Brake Company some time ago to become associated with the Baldwin Locomotive Works, has now opened his office in the Standard Bank building, Johannesburg, South Africa. Mr. Green is export manager for the Baldwin Locomotive Works, in charge of South African territory.

F. C. Lavarack, vice-president of the **Signal Accessories Company,** Utica, N. Y., has resigned, effective July 15. He is consolidating a number of his interests in the railroad field and has organized a new company under the name of the Railroad Accessories Corporation, of which he is president, with offices at 30 Church street, New York. Mr. Lavarack is also president of the Duplex Channel Pin Company, New York, and of the Signal Construction Company, Albany, N. Y.

The Air Reduction Sales Company has just completed the construction of a new acetylene plant at 560 Broadway, Gloucester, N. J. The buildings making up this new unit in the Airco service system consist of a gas house, carbide storage building and a generator house. The gas house is the main building of the plant and contains the compressors and filling lines. It has a brick addition which is used as a locker room and heating plant. All the buildings are built of fabricated steel and are supported on concrete foundations and have concrete floors.

W. R. Stinemetz, who is manager of the heavy traction section of the **Westinghouse Electric & Manufacturing Company,** East Pittsburgh, Pa., as was announced in our issue of June 25, graduated from Lehigh University in 1893, as electrical engineer. In 1897 he became associated with the Westinghouse Electric & Manufacturing Company in the engineering school, leaving in 1899, to become electrical assistant to chief engineer of the Third Avenue Railroad Company, New York. In 1900 Mr. Stinemetz went to Mexico as electrical engineer for Braniff & Co. and after spending some time there he became engaged in making some special studies of motor flashing on the lines of the Boston Elevated Railway Company. During 1903 and 1904 he was engaged in construction work in the installation of motors in the Pittsburgh Glass Company's plant. In 1905 he was sent to Atlanta, Ga., to superintend the installation of one of the early single-phase roads. The following year he was sent to Europe as a consultant with Westinghouse European engineers in Italy and France on single-phase railway installations. On his return in 1909 he was placed in charge of installations for the Westinghouse Company of the United States Government power house and substation for the Capitol building and grounds, Washington, D. C. In 1912 he became associated with the railway sales department.



W. R. Stinemetz

L. E. Summers, on June 1, was appointed works manager of the **Keller Pneumatic Tool Company's** factory at Grand Haven, Mich. Mr. Summers is one of the pioneers in the mechanical department of the pneumatic tool industry, having started his career in 1894 with Joseph Boyer, St. Louis. He then went to the Boyer plant of the Chicago Pneumatic Tool Company, at Detroit, where he was assistant manager for nine years, and then was works manager for eight years. He resigned in 1918, since which time he has been employed by various interests on the Pacific Coast, until he joined the Keller organization on June 1 of this year.

Trade Publications

DUMP CARS.—The Western Wheeled Scraper Company, Aurora, Ill., has issued catalogue No. 51, an 80-page book describing the construction and use of its dump cars, spreaders and other construction equipment. The book is profusely illustrated with photographs of the equipment in service.

INSULATING MATERIALS.—Miniature Catalogue No. 5-A-1, listing insulating materials and supplies, has just been issued by the Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa. Included in the list of products described are: mica, Micarta and Bakelite Micarta plates and tubing, treated and untreated cloths and papers, insulating and soldering compounds, insulating oils and tapes.

Financial and Construction

Railway Financial News

KANSAS CITY, MEXICO & ORIENT.—The Interstate Commerce Commission, Division 4, has denied an application of this company, its receiver, William T. Kemper, and of the Kansas City, Mexico & Orient of Texas, for a loan from the revolving fund of $3,500,000, for the purpose of paying outstanding receivers' certificates to the amount of $1,420,000, to enable the companies to meet fixed charges and operating expenses after September 1, and to complete the laying of track on an extension to Sonora, Texas, 61 miles. The report states that the commission is unable, upon the record, to find that the proposed loan is necessary to enable the applicant properly to meet the transportation needs of the public or that the prospective earning power and the character and value of the securities offered are such as to furnish reasonable assurance of ability to repay the loan within the time fixed. The application stated that it would be impossible for these railroads to continue in operation after September 1 unless the requested loan is granted and representatives of various communities along the lines supported the application for that reason. The commission says, however, that the line cannot be abandoned without its approval and that it is evident from the testimony that the Orient does not require a loan from the United States to enable it properly to meet the transportation needs of the public. With the exception of the provision for the extension and a comparatively small allowance for additions and betterments, included in a supplemental but not in the original application, the report says, the companies have clearly had in mind private advantage rather than the transportation needs of the public. The application is particularly for the purpose of clearing the title to the property, which would be a great benefit to security-holders who have refused to advance any further funds for the protection of the property of their investment, but it is not apparent that the failure to do this should or would prevent the proper service to the public which the roads are now capable of giving. Failure to discharge the receiver's certificates might result in a receiver's sale, but, the report says, such a sale might well prove a benefit to the operation of the property "by scaling down the present top-heavy capitalization."

HOCKING VALLEY.—See editorial elsewhere in this issue.

LAKE TAHOE.—This company was authorized by the Railroad Commission of the State of California on June 25, to increase the interest rates on $50,000 of notes, which it has outstanding, from 6 per cent to 6½ per cent per annum upon a showing by the company that such notes would either have to be paid or increased interest paid thereon.

SAN DIEGO & ARIZONA.—This company was authorized on June 22 to sell to the Southern Pacific, at par value, $1,000,000 six per cent bonds for the purpose of reimbursing the Southern Pacific for money previously advanced.

ST. LOUIS-SAN FRANCISCO.—A banking syndicate composed of Hemphill, Noyes & Co., Colgate, Parker & Co., A. B. Leach & Co., Low, Dixon & Co., West & Co., Hitt, Farwell & Park and others has been formed to take over from Speyer & Co. the block of St. Louis-San Francisco 6 per cent income bonds which Speyer & Co., in company with the Guaranty Trust Company, recently purchased from the French Government. These bonds will be offered to the public at the day-to-day price established on the Stock Exchange, where they are already listed. The block of bonds, which is said to represent about $5,000,000 par value, constitutes practically all of the bonds of this description originally received by French investors in exchange for the St. Louis-San Francisco general lien 5 per cent bonds at the time of the reorganization of the property in 1916.

Railway Construction

ST. LOUIS-SAN FRANCISCO.—This company has awarded the contract for the construction of a six-mile cutoff near Lebanon, Mo., to Scott & White, of St. Louis, Mo.

ANNUAL REPORT

The Hocking Valley Railway Company—Twenty-first Annual Report

COLUMBUS, OHIO, May 20, 1920.

To the Stockholders:

The Twenty-first Annual Report of the Board of Directors, for the fiscal year ended December 31, 1919, is herewith submitted.

The average mileage operated during the year was 350.2 miles, an increase compared with the previous year of .5 miles. The mileage at the end of the year was 350.2 miles. See schedule on page 12.

RESULTS FOR THE YEAR

*Standard Return	$2,637,167.48
†General Expenses (Corporate)	73,766.90
(Increase $5,259.33 or 7.68%.)	
	$2,563,400.58
War Taxes	108,000.00
(Increase $93,800.00 or 660.56%.)	
Remainder	$2,455,400.58
(Decrease $99,059.33 or 3.88%.)	
Miscellaneous Income	201,077.36
(Decrease $81,409.05 or 28.82%.)	
	$2,656,477.94
Rentals and Other Payments	166,119.36
(Decrease $39,083.12 or 19.05%.)	
Income for the year available for interest	$2,490,358.58
(Decrease $141,385.26 or 5.37%.)	
Interest (58.65% of amount available)	1,460,490.57
(Increase $188,576.07 or 14.83%.)	
Net Income for the year	$1,029,868.01
(Decrease $329,961.33 or 24.26%.)	
Dividends paid during the year:	
Two dividends of 2% each, aggregating	439,980.00
Balance, devoted to improvement of physical and other assets	$589,888.01

*See note below.
†See note below.

RETURN ON PROPERTY

The following table shows the amount of return to your Company, from transportation operations only, upon its investment in road and equipment at the termination of each year of the five year period ended December 31, 1919; the road having been operated in 1918 and 1919 by the United States Railroad Administration, the Standard Return has been used for those years in lieu of the operating and other items corresponding therewith:

YEAR ENDED DECEMBER 31	PROPERTY INVESTMENT	TOTAL OPERATING INCOME (including hire of equipment and other items)	PER CENT OF RETURN
1919	$49,036,318.18	$2,425,691.11	4.95
1918	48,057,539.03	2,598,474.64	5.41
1917	46,237,480.24	3,060,174.97	6.62
1916	45,198,144.03	3,052,123.37	6.75
1915	44,802,665.64	2,041,149.36	4.56
Average	$46,666,429.42	$2,635,552.69	5.65

FINANCIAL

The changes in funded debt shown by balance sheet of December 31, 1919, as compared with December 31, 1918, consisted in the payment of $180,000 on equipment trusts, in the payment of $5,600,000 face amount Six Per Cent Coupon Gold Notes maturing November 1, 1918, but extended to March 1, 1919, and in the issue and sale of $7,500,000 face amount Five-Year Six Per Cent Secured Gold Notes due March 1, 1924. There were also issued $9,783,000 face amount 6% General Mortgage Bonds maturing January 1, 1949, of which $9,600,000 face amount were pledged as security for the Five-Year Six Per Cent Secured Gold Notes mentioned above, and the remaining $183,000 face amount are held in your Company's treasury. Particulars regarding the extension and payment of $5,000,000 Six Per Cent Coupon Gold Notes, the sale of $7,500,000 Five-Year Six Per Cent Secured Gold Notes, the creation of a new General Mortgage, and the issue under the latter of $9,783,000 6% General Mortgage Bonds of which $9,600,000 were used as security for the above mentioned $7,500,000 Five-Year Secured Notes, were given in the report for 1918.

Reference was made in the last annual report to the allocation of five hundred 55-ton coal cars to your Company by the Director-General of Railroads. This allocation was accepted by your Company and an arrangement has been made with the Director General since January 1, 1920, by which these cars, as well as twenty Mallet locomotives contracted for by your Company during Federal control, were financed by the Director General through fifteen-year equipment trusts amounting to a minimum of $2,812,500, with interest at six per cent.

Your Company and The Toledo & Ohio Central Railway Company endorsed, in 1901, their several guarantees upon certain 5% First Mortgage Bonds of the Kanawha & Hocking Coal & Coke Company, due 1951, of which bonds there were outstanding at the close of the year 1919 $2,842,000 face amount. In 1902 the same railway companies similarly guaranteed certain 5% First Mortgage Bonds of the Continental Coal Company, due 1952, of which at the close of the year 1919 there were outstanding $1,569,000 face amount, less a credit on foreclosure of $506.75 per $1,000 bond. The enforceability of these alleged guarantees has been in litigation for several years. Since the close of the year 1919 a settlement of this litigation has been arranged, pursuant to which, in consideration of your Company assuming one-half of the unpaid liability upon the bonds of the Continental Coal Company, it has been relieved of any liability in respect of the bonds of the Kanawha & Hocking Coal & Coke Company. All of the outstanding bonds of each issue, together with the guarantees thereon, have been duly discharged and cancelled pursuant to this settlement, and mutual releases between the Railway Companies, the Coal Companies, and the bondholders have been exchanged, thus finally disposing of this liability.

An analysis of the property accounts will be found on pages 18 and 19, by reference to which it will be seen that additions and betterments were made during the year to the net amount of $978,779.15 of which $964,967.22 was added to cost of road, and $13,811.93 was added to cost of equipment.

During the past eleven years your Company's net addition to property accounts has been as follows:

Equipment	$4,231,657.00
Additions and Betterments	6,524,912.48
	$10,756,569.48

GENERAL REMARKS

The equipment in service December 31, 1919, consisted of:

Locomotives owned	133	No change
Locomotives leased under equipment trusts	8	No change
Total	141	No change
Passenger train cars owned	72	No change
Freight train and miscellaneous cars owned	12,941	Decrease 140
Freight train cars leased under equipment trusts	1,999	No change
Freight train cars under special trust	47	No change
Total freight train and miscellaneous cars	14,987	Decrease 140

The changes during the year in accrued depreciation of equipment account were as follows:

Balance to credit of account December 31, 1918		$2,709,150.53
Amount credited during year ended December 31, 1919, by charges to U. S. Railroad Administration		$421,203.26
Charges to account for:		
Accrued depreciation on equipment retired during year—142 freight and work cars	$20,799.62	
Accrued depreciation on cars changed in class during year	1,012.77	
	21,812.39	
		399,390.87
Balance to credit of account December 31, 1919		$3,108,541.40

Facilities, referred to in last year's report, for handling engines at terminals were greatly improved by the completion of the following: Walbridge, addition of 9 stalls to engine house, and 500-ton capacity concrete coaling station; Marion, new 5-stall engine house and 100-foot turntable; Parsons Yard, addition of 12 stalls to engine house, and 500-ton capacity concrete coaling station; Logan, increased length of 5 stalls of engine house, and 100-foot turntable replacing 60-foot turntable; Nelsonville, new 10-stall engine house, 100-foot turntable, machine shop, sand house and oil house. The 500-ton capacity concrete coaling station at Carey, and the two steel girder bridges replacing iron bridges on the River Division between Hawks and Minerton, mentioned in last year's report, have been completed.

Seven miles of additional second track were placed in service on the Toledo Division, 4.7 miles between Owens and Marion being new construction, and 2.3 miles between Crawford and Carey being conversion of track formerly used for siding purposes. A passing track one mile in length was constructed north of Marion. At South Shops, Columbus, steam heat was installed in the two machine shop buildings and in one 5-stall section of the engine house; at Oldtown, steel water tank of 100,000 gallons capacity was erected; iron bridge No. 518, south of Logan, was replaced by a greater capacity modern steel bridge. The use of this bridge, together with the two steel girder bridges mentioned above, now opens the entire River Division for use of the heaviest locomotives in service. In connection with the flood protection plans of the City of Columbus the city authorities are widening the channel of the Scioto River, making it necessary to lengthen two of your Company's bridges; this bridge work was commenced during the year and it is expected will be completed during the coming summer.

OPERATION BY UNITED STATES RAILROAD ADMINISTRATION

In the Annual Report for 1918 you were advised that the President of the United States, by proclamation dated December 26, 1917, took possession and assumed control of the railroad systems of the country, appointing a Director General of Railroads through whom the operation of such transportation systems was to be conducted. Under this proclamation and under the Act of Congress, approved March 21, 1918 (generally known as the "Federal Control Act"), the railroad of your Company was, during the entire year 1919, operated by the United States Government through Walker D. Hines, Director General of Railroads. The operating and traffic statistics contained in this report relate to the operation of your property by the Director General.

The result of operations for the year was exceedingly unsatisfactory, even as compared with the unfavorable showing of the previous year. The net railway operating income of the Director General was less by $104,239.93 than the amount of the interest, rentals, taxes and other fixed charges payable by your Company after applying thereto its other income, as shown by Combined Corporate and Federal General Income Account on page 15. This unfavorable showing was due not only to falling off in tonnage but to interruptions in traffic due to labor disturbances, both in transportation and industry, as well as to advances in wages paid to labor, and in the cost of materials and supplies, which resulted in increased operating expenses throughout the year. Increases in wages of employees made by the Director General of Railroads during the year increased the year's cost of operation approximately $338,000. These increases are in addition to the increases of $625,000 in 1917, and of $1,762,000 in 1918, mentioned in last year's report.

The revenue coal and coke tonnage was 9,618,539 tons, a decrease of 18.5%; other revenue freight tonnage was 2,966,053 tons, a decrease of 13.9%. Total revenue tonnage was 12,584,592 tons, a decrease of 17.5%. Freight revenue was $9,703,937.36, a decrease of 14.5%. Freight train mileage was 1,025,545 miles, a decrease of 31.4%. Revenue ton miles were 1,502,582,153, a decrease of 20.6%. Ton mile revenue was 6.46 mills, an increase of 7.8%. Revenue per freight train mile was $9.462, an increase of 24.6%. Revenue tonnage per train mile was 1,465 tons, an increase of 15.6%; including Company's freight, the tonnage per train mile was 1,496 tons, an increase of 14.9%. Tonnage per locomotive, including Company's freight, was 1,249 tons, an increase of 17.7%. Revenue tonnage per loaded car was 43.2 tons, a decrease of 1.1%. Tons of revenue freight carried one mile per mile of road were 4,290,640, a decrease of 20.7%.

There were 1,170,466 passengers carried, a decrease of 9.5%. The number of passengers carried one mile was 43,897,829, an increase of 3.2%. Passenger revenue was $1,228,282.01, an increase of 18.2%. Revenue per passenger per mile was 2.798 cents, an increase of 14.6%. The number of passengers carried one mile per mile of road was 125,351, an increase of 3%. Passenger train mileage was 581,644, an increase of 6.1%. Passenger revenue per train mile was $2.112, an increase of 4.9%; including mail and express it was $2.375, an increase of 8.5%. Passenger service train revenue per train mile was $2.455, an increase of 8.6%.

There were 1,155 tons of new 100-lb. rails, equal to 7.35 track miles, and 39 tons of new 90 lb. rails, equal to .28 track miles, used in the renewal of existing main tracks.

The average amount expended for repairs per locomotive was $6,398.34, a decrease of 15.6%; per passenger train car $1,197.80, a decrease of 4.3%; per freight train car $162.65, an increase of 18.8%.

COMPENSATION CONTRACT.

As stated in the Annual Report for 1918, the office of your Company, pursuant to authorization by your directors and stockholders, made application to the Director General of Railroads for a compensation contract for the use of your property during the period of Federal control, in the amount of $2,637,167.48, being the amount of the Standard Return of your Company as tentatively certified by the Interstate Commerce Commission. After prolonged negotiation the contract was finally executed by the Director General of Railroads under date of December 6, 1919. The corporate income figures in this report, are based upon the compensation payable to your Company under this contract. Federal control terminated March 1, 1920, but statement of the accounts of your Company with the Director General has not yet been completed, and it will doubtless be some months before a final settlement can be made.

TRANSPORTATION ACT, 1920.

The above Act was approved by the President and became effective on February 28, 1920. It represents an earnest and public-spirited effort by Congress to deal constructively with the railroad problem. It is impracticable within the scope of this report to analyze the Act or even to refer to most of its provisions. Of particular importance to your Company are the provisions:

(*a*) For the guaranty to your Company, if accepted by it before March 15, 1920, for the six months ending September 1, 1920, of a net railway operating income, computed in accordance with the Federal Control Act, equal to one-half of the annual return provided by your Compensation Contract.

(*b*) For funding the indebtedness of your Company to the United States for additions and betterments made during Federal control for not more than ten years, and other indebtedness for not more than two years, interest in each case to be computed at six per cent. per annum, the amount to be funded being the balance after off-setting any sums due your Company under its Compensation Contract in excess of the amount required to provide for fixed charges, taxes payable by the Company, corporate expenses and dividends accruing during Federal control and for a reasonable working capital.

(*c*) For loans to carriers during the two years succeeding Federal control, particularly for additional facilities, and establishing a revolving fund of $300,000,000 for this and certain other purposes.

(*d*) Requiring the Interstate Commerce Commission to so adjust rates as to allow to the carriers as a whole or in regional groups fixed by the Commission an annual net operating income for the ensuing two years equal as nearly as practicable to five and one-half per cent. per annum upon the value of their operating property as fixed by the Commission with an additional allowance in the discretion of the Commission of one-half of one per cent. per annum to provide in whole or in part for additions and betterments.

Your directors voted to accept the guaranty provided by the Act for the six months ending September 1, 1920. This acceptance carries with it the obligation to pay to the United States any operating income in excess of the amount guaranteed.

While the rule of rate making above mentioned does not amount to a guaranty to any particular carrier of a return of five and one-half per cent. upon the value of its operating property, as the earnings of any particular carrier in a group may be more or less than the five and one-half per cent. allowed the region, your directors feel reasonably confident that a rate adjustment on the foregoing basis should afford your Company a return of not less than the average return allowed by the Act to the carriers in its regional group. One-half of any earnings above six per cent. upon the value of your property must be paid into a general contingent fund to be administered by the Interstate Commerce Commission and the remainder may be retained by your Company in a reserve fund to meet interest and dividends in years when the return upon your property does not equal six per cent. After your reserve fund reaches five per cent. upon the value of your property, one-half of the excess over six per cent. per annum may be used by your Company for any of its lawful purposes.

Reference to the statement of return on property, given above in this report, indicates that an adjustment of rates on the foregoing basis would afford your Company a somewhat smaller average return upon its property investment than it enjoyed during the two years immediately preceding Federal control, but slightly better than its average return for the past five years. This is on the assumption that the Commission accepts your property investment accounts as fixing the property value upon which a return is to be allowed. The return allowed by the Act, however, on any additions to your property hereafter made is not sufficient under present conditions to provide for the charges which your Company must pay upon any new capital which it must raise to make such additions. Your directors, therefore, feel that a conservative policy in the matter of increasing your investment should be pursued until financial conditions materially improve.

Labor conditions, not only those affecting railroad employees but those existing generally throughout the country, are unsettled, and your Company must doubtless expect further increases in its cost of operation due both to the necessity of meeting further demands for increased wages and to the difficulty of obtaining a sufficient number of competent and experienced employees. The Transportation Act of 1920 contains provisions for dealing with labor controversies affecting railroads, the workability of which has yet to be determined. It is the clear intention of the Act that increases in expenses due to increased wages and improved working conditions, adopted with the sanction of the labor adjustment tribunals established by the Act, shall be adequately provided for in the rate adjustments to be made from time to time by the Interstate Commerce Commission. The responsibilities of the Commission to the railroads, to their employees and to the public, under the Act, are very great but your directors have confidence that they are appreciated by the Commission and that it will measure up to them.

Mr. Frank Trumbull, for many years Chairman of your Board of Directors, and from June 20, 1918, President of your Company, resigned effective January 1, 1920. His resignation was accepted with regret and resolutions were adopted by your directors expressing their appreciation of his long and valuable services to your Company.

Effective March 1, 1920, Mr. George W. Stevens was elected President and a director of your Company, to succeed Mr. Trumbull. Effective the same date Mr. Frank M. Whitaker was elected a director of your Company to succeed Mr. Randolph S. Warner, resigned.

Appreciative acknowledgment is hereby made to officers and employees for their efficient services during the year.

By order of the Board of Directors.

GEO. W. STEVENS,
President.

H. E. HUNTINGTON,
Chairman.

GENERAL BALANCE SHEET, DECEMBER 31, 1919. (Corporate)

ASSETS.

PROPERTY INVESTMENT.		
Cost of Road	$32,637,580.01	
Cost of Equipment	15,784,171.21	
		$48,421,751.22
SECURITIES OF PROPRIETARY, AFFILIATED AND CONTROLLED COMPANIES—PLEDGED.		
Stocks	$108,288.66	
Bonds	450,000.00	
		558,288.66
SECURITIES OF PROPRIETARY, AFFILIATED AND CONTROLLED COMPANIES—UNPLEDGED.		
Miscellaneous		46,899.60
OTHER INVESTMENTS.		
Miscellaneous Investments—Securities—Pledged		590,000.00
SECURITIES—ISSUED—PLEDGED.		
General Mortgage 6% Bonds (see Contra)		9,600,000.00
		$59,216,939.48
WORKING ASSETS.		
Cash	$2,697,634.07	
Traffic Balances	390.37	
Miscellaneous Accounts Receivable	34,128.16	
United States Government:		
Unpaid Standard Return Accrued	2,945,228.96	
Interest Accrued on above	177,367.49	
Other Working Assets	13,527.08	
		$5,868,276.13
SECURITIES IN TREASURY—UNPLEDGED.		
Stocks	$501.00	
Bonds	183,800.00	
		184,301.00
(Includes $183,000.00 General Mortgage 6% Bonds, see Contra.)		
DEFERRED ASSETS.		
Advances to Proprietary, Affiliated and Controlled Companies	$56,278.30	
Advances, Working Funds	2,442.10	
Insurance paid in advance	517.99	
Cash in Sinking Funds	650.74	
Special Deposit with Trustee—Mortgage Fund	436,130.02	
Cash and Securities in Insurance Reserve Fund	49,787.92	
United States Government	5,060,793.44	
Other Deferred Debit Items	73,896.17	
		5,680,496.68
		$11,733,073.81
Total		$70,950,013.29

LIABILITIES.

CAPITAL STOCK		$11,000,000.00
FUNDED DEBT.		
First Consolidated Mortgage 4½% Bonds, 1999	$16,022,000.00	
First Mortgage C. & H. V. R. R. 4% Bonds, 1948	1,401,000.00	
First Mortgage Cols. & Tol. R. R. 4% Bonds, 1955	2,441,000.00	
Five Year 6% Secured Gold Notes, 1924	7,500,000.00	
		$27,364,000.00
Equipment Trust Obligations		800,000.00
		$28,164,000.00
		$39,164,000.00
General Mortgage 6% Bonds, not in hands of public (see Contra) 1949		9,783,000.00
WORKING LIAPILITIES.		
Loans and Bills Payable	$1,450,000.00	
Traffic Balances	1,840.58	
Audited Vouchers and Wages Unpaid	7,260.14	
Miscellaneous Accounts Payable	8,628.82	
Matured Interest, Dividends and Rents Unpaid	382,123.50	
Other Working Liabilities	11,342.00	
		$1,861,195.04
DEFERRED LIABILITIES.		
Unmatured Interest, Dividends and Rents Payable	$285,256.62	
Taxes Accrued	110,866.71	
Accrued Depreciation—Equipment	3,108,541.40	
United States Government	5,992,185.33	
Other Deferred Credit Items	185,132.86	
		9,681,982.92
		$11,543,177.96
APPROPRIATED SURPLUS.		
Additions to Property through Income since June 30, 1907	$181,409.11	
Funded Debt Retired through Income and Surplus	131,331.90	
Reserve Invested in Insurance Fund	49,787.92	
Other Reserves	37,047.54	
Appropriated surplus against contingent liability for freight claims	120,000.00	
		$519,576.47
PROFIT AND LOSS—BALANCE		9,940,258.86
		$10,459,835.33
Total		$70,950,013.29

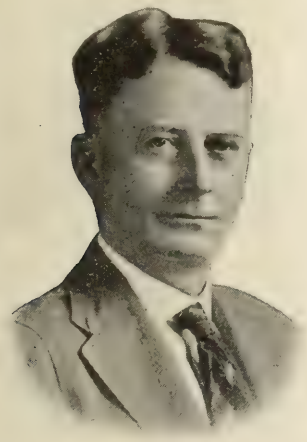
As to guarantor's liability on bonds of the Kanawha & Hocking Coal & Coke Company and the Continental Coal Company (not included in above General Balance Sheet), see above.

Railway Officers

Executive

Norman S. Meldrum, chairman of the Texas & Pacific and a member of the firm of Blair & Co., New York, has been elected president of the Carolina, Clinchfield & Ohio, effective June 24, succeeding **Mark W. Potter,** resigned.

William H. Tobin, whose appointment as assistant to the president of the Trans-Mississippi Terminal, with headquarters at Dallas, Tex., was announced in the *Railway Age* of June 4th (page 1591), entered railway service as a brakeman on the Missouri, Kansas & Texas in 1884. During the next twelve years he served this road successively as brakeman, switchman, freight conductor and passenger conductor. In 1896 he became a conductor on the Kansas City, Pacific & Gulf. Later he was appointed trainmaster and then promoted to inspector of transportation. He was appointed assistant to the general manager of the Texas & Pacific in May, 1917, and in January, 1919, was promoted to assistant general manager. This was the position he held at the time of his recent appointment, which he continues to hold in addition to his duties as assistant to the president of the Trans-Mississippi Terminal.



W. H. Tobin

Operating

C. G. Trotter has been appointed assistant trainmaster of the San Joaquin division of the Southern Pacific, with headquarters at Bakersfield, Cal., effective June 1.

G. M. Archibald, trainmaster on the Los Angeles division of the Los Angeles & Salt Lake, has been promoted to assistant to the general manager in charge of all wage schedule matters, effective July 1.

F. S. Rosseter has been appointed acting superintendent of the Sudbury division of the Canadian Pacific, with headquarters at Sudbury, effective July 1, succeeding **T. A. Wilson,** who has been granted a leave of absence for one month.

L. P. Hopkins has been appointed acting district supervisor of transportation of the Southern district of the Southern Pacific, with headquarters at Los Angeles, effective June 20, succeeding **H. R. Hughes,** assigned temporarily to other duties.

Victor B. Fisher, superintendent of the Shamokin division of the Philadelphia & Reading, with headquarters at Tamaqua, Pa., has been appointed general superintendent of the same road, with headquarters at Reading, Pa., succeeding **William H. Keffer,** deceased.

E. F. Rummel, trainmaster of the River division of the Chicago, Milwaukee & St. Paul, with headquarters at Minneapolis, Minn., has been promoted to assistant superintendent of the Chicago Terminals division, with headquarters at Chicago, effective July 1, succeeding **J. E. Hills,** who has been transferred to succeed Mr. Rummel.

N. H. Fuller, trainmaster on the Chicago, Milwaukee & St. Paul, with headquarters at Mobridge, S. D., has been promoted to superintendent of the Trans-Missouri division, with the same headquarters, effective July 1, succeeding **C. L. Whiting,** whose promotion to superintendent of terminals, with headquarters at Milwaukee, Wis., was announced in the *Railway Age* of July 2 (page 45).

Traffic

O. L. McKay has been appointed executive general agent on the Mobile & Ohio and the Southern Railway in Mississippi, with headquarters at Meridian, Miss., effective July 1.

L. P. Hopkins has been appointed acting district supervisor of transportation of the Southern district of the Southern Pacific, with headquarters at Los Angeles, Cal., replacing **H. R. Hughes,** who has been temporarily assigned to other duties.

Roy Pope, who has been appointed assistant general freight agent of the Atlanta, Birmingham & Atlantic, with headquarters at Atlanta, Ga., as noted in the *Railway Age* of June 11 (page 1698), served as chief clerk prior to this promotion. Mr. Pope was born at Hooker, Ga., on March 18, 1888, and was educated in the public schools of that city, finishing in the high school at Tullahoma, Tenn. He began railroad work in 1906 as stenographer in the mechanical department of the Queen & Crescent. He was promoted to secretary to the general freight agent, with headquarters at Cincinnati, Ohio, in 1907 and in 1909 he became rate clerk in the same office. In May, 1916, he entered the employ of the Atlanta, Birmingham & Atlantic as executive rate clerk in the general freight office. Appointed chief rate clerk in September, 1917, he was promoted to chief clerk in July, 1918.



Roy Pope

Mechanical

George F. Hess, whose appointment as superintendent of motive power of the Wabash, with headquarters at St. Louis, Mo., was announced in the *Railway Age* of June 11 (page 1699), was born in Fort Wayne, Ind. He entered railway service as a messenger boy in the mechanical department of the Pennsylvania in 1886. After a short service as machinist apprentice in the Pennsylvania shops at Fort Wayne, he entered the employ of the Cleveland & Pittsburgh at Wellsville, Ohio, as a machinist. He was later employed by the Cleveland, Canton & Southern, at Canton, Ohio, by the Atchison, Topeka & Santa Fe, at Raton, N. M., and by the Wabash, at Ashley, Ind. In 1897, he was promoted to roundhouse foreman at Montpelier, Ohio, and shortly after was transferred to Delray, Mich. He entered the service of the Grand Trunk as general foreman at Detroit, Mich., in 1899, and was later transferred to Battle Creek, Mich. In March, 1901, he was appointed engine house foreman on the Chicago, Rock Island & Pacific at Pratt, Kan. He was later transferred to Caldwell, Kan., where he remained until promoted to general foreman at the 47th St. (Chicago) shops. He entered the service of the Baltimore & Ohio in March, 1903, as a master mechanic, with headquarters at Lorain, Ohio, and served in the mechanical department of this road during the next eight years. In August, 1911, he was appointed superintendent of machinery on the Kansas City Southern, with headquarters at Pittsburgh, Kan., which position he occupied at the time of his recent appointment.

Engineering, Maintenance of Way and Signaling

C. N. Campbell has been appointed assistant valuation engineer of the Southern Pacific, Texas and Louisiana Lines, with headquarters at Houston, Tex.

T. S. Bond, assistant engineer of the International & Great Northern, with headquarters at Palestine, Tex., has been appointed assistant chief engineer, with the same headquarters, effective June 4.

E. E. Mayo has been appointed assistant division engineer of the Salt Lake division of the Southern Pacific, with headquarters at Ogden, Utah, effective July 1, succeeding **W. F. Turner,** promoted.

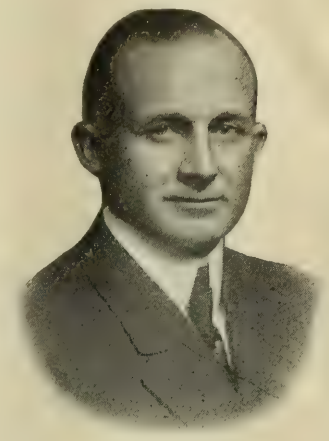
Frank D. Nash, whose appointment as assistant valuation engineer of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., was announced in the *Railway Age* of June 11 (page 1699), was graduated from the Louisiana State University in the class of 1896. He entered railway service in the same year as an instrument man on the St. Louis, Peoria & Northern. In June, 1899, he was appointed assistant resident engineer on the Minnesota & St. Louis and in February, 1900, was appointed resident engineer on the Burlington, Cedar Rapids & Northern, now part of the Rock Island. From December, 1900, to September, 1905, he served on the Chicago, Burlington & Quincy as assistant engineer on location, construction and maintenance work. Upon the latter date he became locating engineer for the Paul's Valley and after one year of service with this road was appointed engineer for the Philippine railways, which position he held until February, 1907. During the following year he served as locating engineer for the Pan American in Uruguay, South America. In July, 1914, he became draftsman on the Chicago & North Western and from April, 1915, to June, 1916, served in this capacity for the Chicago, Rock Island & Pacific. In August, 1916, he was promoted to pilot engineer on this road and in October of the same year was appointed pilot engineer on the St. Louis-San Francisco. He left the last named position in July, 1917, to enlist in the army and from July, 1917, to January, 1919, served as an officer in the American Expeditionary Forces in France. Here he saw service in the construction of the first light railway on the Somme battle front and later on standard-gage railway work for the Railway Transportation Corps. In February, 1919, he was appointed chief engineer for the receiver of the Missouri & North Arkansas, the position he held shortly before his appointment, as noted above.



F. D. Nash

Samuel Rollo Young, who has been appointed assistant chief engineer of the Atlanta & West Point, with headquarters at Atlanta, Ga., as noted in the *Railway Age* of March 12 (page 801), was born at Coatesville, Pa., on March 3, 1887. He graduated from the West Chester State Normal School in 1904, and from Lehigh University in 1909. In May, 1910, he entered railway service on the Sunbury division of the Pennsylvania, having previously served as axeman, rodman and transitman with the Consolidation Coal Company, of Van Lear, Ky. He was engaged in farming from 1912 to 1914. From 1915 to May, 1916, he was engineer of construction with the Midvale Steel & Ordnance Company at Coatesville, Pa. From May, 1916, to November, 1918, he served alternately as assistant engineer and division engineer on the Atlanta & West Point, the Western Railway of Alabama, and the Georgia Railroads. In November, 1918, he was appointed district engineer of these roads. From December, 1919, to March, 1920, when he was promoted to his present position, he was district engineer in charge of engineering and roadway departments of the Georgia Railroad, at Augusta, Ga.

Chester T. Dike, whose promotion to engineer of maintenance of way of the Chicago & North Western, with headquarters at Chicago, was announced in the *Railway Age* of June 18 (page 1958), was born August 13, 1871, at Woodstock, Ill. Mr. Dike was educated at Cornell College, Iowa, where he graduated in 1893. He entered railway service as a rodman in the engineering department of the Northern Pacific in March, 1890, and was employed there during vacations while attending college and for one year after graduation. In 1894 he was appointed city engineer of Mason City, Ia., and two years later became chief engineer of the Mason City & Clear Lake. He was appointed chief engineer of the Iowa, Minnesota & North Western in 1898, and in 1899 became resident engineer on location and construction work for the Chicago & North Western. In 1907 he was appointed superintendent of the Pierre, Rapid City & North Western, a subsidiary of the North Western, and one year later he was appointed engineer and superintendent of construction on the North Western. In 1910 he was promoted to general superintendent of the Minnesota & Dakota divisions and in 1918 was appointed assistant general superintendent of the lines in Iowa. He was promoted to assistant general manager of lines west of the Missouri river in 1919, the position he held at the time of his recent appointment.



C. T. Dike

Obituary

Harry C. Burnett, assistant general freight agent of the Lehigh Valley, with headquarters at New York, died on July 3.

A. M. Williams, supervisor on the Pennsylvania, with headquarters at Columbia, Pa., died suddenly of heart disease on June 30.

Axel Carl Ekstrom, consulting electrical engineer of the Delaware & Hudson, died Thursday at his home in Ballston Spa, N. Y.

John J. Lane, division freight agent of the Delaware, Lackawanna & Western, with headquarters at Newark, N. J., died in Summit, N. J., on July 6.

William H. Keffer, general superintendent of the Philadelphia & Reading, with headquarters at Reading, Pa., died on July 1 at his home in Reading at the age of fifty-seven. Mr. Keffer was born in Frackville, Pa., and began railroad work on April 1, 1880, as telegraph operator for the Philadelphia & Reading. Afterwards he held other clerical positions and in 1889 was appointed train despatcher at Mahanoy Plane, Pa. In 1892 he was appointed traveling despatcher on the Shamokin division, and in 1897 trainmaster of that division at Tamaqua. He became assistant to the general superintendent at Reading on October 19, 1904. In February, 1905, he was promoted to assistant superintendent in charge of transportation of the Reading division, with headquarters at Reading. The following October he was appointed superintendent, and in 1916 was advanced to the position he held at the time of his death.

EDITORIAL
Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

It Can Be Done; It Must Be Done!

THE CONDITIONS existing in the United States demand a large increase in the amount of freight transported by the railways. There is special need for this increase to be secured throughout the remaining months of the year 1920. It could easily be secured if there could speedily be provided large additional railroad facilities. But it is too late now to add much to the facilities this year. If a large increase in the freight handled is to be made this year it must be accomplished almost entirely with the locomotives, cars, tracks and terminals already in existence. Can it be done?

In the spring of 1917, when the United States entered the war with Germany, the railways, then as now under private operation, were confronted with a similar problem. They had handled in 1916, and were still handling, much the largest freight traffic ever known. The participation of this country in the war was sure greatly to increase and complicate the demands upon them. It was evident that to meet all the demands the railways must individually work more efficiently than ever and that they must co-operate as never before.

They created the Railroads' War Board to bring about the needed increase of individual and collective efficiency. Regardless of all that has been said to the contrary, a greater increase in railroad efficiency was achieved during the nine months the War Board was in charge than in any other equal period, before or since. The record-breaking freight movement of 1916 was completely surpassed. The government had to build cantonments for its soldiers at once, and in a few weeks the railways assembled and delivered 150,000 carloads of materials for this purpose, one of the greatest transportation achievements in history. Under the Railroads' War Board was adopted the system of moving troops which was used throughout the war with such success.

Confronted at present with a problem similar to that they faced under private operation in 1917, the railways have adopted similar plans to solve it. The Advisory Committee they recently have created is similar to the Railroads' War Board in personnel and purposes. Can the railways under this new organization secure improvements in operating results comparable to those of 1917?

The need for increasing the freight handled is almost as great now as it was then. It was needed then to help in winning the war. It is needed now to prevent a coal shortage that would result in many people, especially in the Northwest, suffering severely next winter. It is needed to make possible an increase of production which is essential to prevent very serious social, industrial and financial consequences. It is needed to prevent attacks upon the railroad companies which might destroy confidence in private management and result in government ownership.

The difficulties in the way of increasing the amount of freight transported are even greater than they were three years ago. There has been very little increase in railroad facilities since then. Tracks and equipment, especially freight cars, are in much worse condition. Labor is not as efficient and loyal. The disparity between the amount of traffic actually being handled and the amount demanding transportation is greater.

To say, however, that the amount of freight handled with existing facilities cannot be increased would be to indict the present officers of the railways as incompetent compared with their predecessors and as having lost the ability they themselves have in the past demonstrated. Year by year throughout the history of private operation in this country the railways, always when there was a large traffic, increased the amount handled per locomotive, car, employee, mile of track and mile of line. They can renew this increase of transportation efficiency if they will put into their work the same enthusiasm and initiative, and more than the same amount of co-operation, as in the past.

Daniel Willard is one of the most experienced and able railway operating men in the United States. He said before the Interstate Commerce Commission last week that the average miles per car per day on the railways can be increased to 30 miles. The average in February, the last month of government operation, was only 22.3 miles, and yet with this low car mileage the railways handled 27.6 per cent more freight than in February, 1919. An increase in the average car mileage to 30 miles per day would amount to 35 per cent. This would cause an increase in the available car supply which would revolutionize existing transportation conditions. Mr. Willard set an extremely high standard for the railways; but an improvement in car circulation one-half as great as he named would improve the situation immensely.

As Mr. Willard pointed out, an increase of one mile per car per day would enlarge the available supply of cars by 100,000. An increase of one ton in the amount of freight loaded in each loaded car would enlarge it by 75,000. A reduction of one-half in the number of bad order cars would increase it another 75,000. Probably it is practicable for the railway managers, with the co-operation of labor, the shippers and the regulating commissions, to effect this great improvement. But it will require herculean efforts. Every railway management will have to cause repairs to be made as rapidly as possible to bad order cars. Every railway management will have to inspire the utmost initiative and enthusiasm on the part of all its operating officers in carrying out the detailed supervision of the work of everybody concerned with the movement of cars which will result in keeping every car moving whenever it is practicable for it to move. Every railway management will have to obey the orders of the Commission on Car Service so that the needed redistribution of cars will be secured—there will be no great increase of car efficiency while some railways have excessive amounts of equipment on their lines and others are woefully short of it. Finally, every method that enthusiasm and ingenuity can devise will have to be used to secure the co-operation of regulating bodies, and of shippers and receivers of freight, in causing heavier loading and prompter loading and unloading of cars.

One question which will arise in the mind of every operat-

ing man in connection with this matter will be as to whether it will be possible to get enough labor to do the work needed and whether labor will do the work for which it is paid. The award of the Labor Wage Board will be made in a short time. There is a reason to believe it will be such as to stop interferences with efficient operation by labor disturbances unless there is actually a conspiracy being engineered from some source to prevent efficient operation.

In the absence of labor disturbances the efficiency with which the railways are being operated and the amount of freight that they are moving can be increased. Since it can be, it must be. The future welfare of the railways and of the country imperatively demands it.

Maintenance Costs for Track and Equipment

Even a superficial consideration of the relation between track conditions and wear and tear on equipment will show that poor track is reflected in increased car maintenance. The roadbed may not be bad enough to cause derailments, yet the repeated shock of uneven rails will cause more rapid failure of the car parts. The constant pounding causes waste to settle in the bottom of the journal box and may also cause the babbitt lining in the bearing to spread. These are two important factors in the development of hot boxes. The shocks are transmitted to other parts of the car and necessitate more frequent renewal or readjustment. The reciprocal relation between the expenses for maintenance of way and maintenance of equipment is borne out in the costs reported by roads on which conditions are comparable. At the present time many roads are handicapped by having an unusual number of bad order cars and also a great deal of poor track. There is no question that track conditions are in part responsible for the poor performance of the equipment. While the suggestion that car maintenance could be lessened by giving more attention to the roadbed may be superfluous, it is well to keep in mind that operating conditions during the winter will be very difficult if uneven and icebound track causes an abnormal increase in the necessary repairs to cars.

Put Your (Round) House In Order

Undoubtedly the most unsatisfactory condition created by increasing demands upon impoverished facilities will be found in the engine terminal situation as it exists today on many railroads. How often have mechanical men been called to account for the engine failures that can be traced to inadequate terminals? There is something pathetic in the figure of the roundhouse foreman who sees the locomotives assigned to his care increase in size and complexity year after year without a single new or enlarged facility being added to his roundhouse. The situation of the mechanical officer who must explain failures that are the direct result of inadequate terminal facilities is no less tragic, nor is it at all improved by the fact that he may have pleaded for improved terminal facilities in advance of larger locomotives. On more than one occasion where Mallet locomotives have proved an operating failure and inadequate terminal facilities were wholly to blame, mechanical men were criticised. Locomotive design and even the builders may share the blame for the unsatisfactory performance of a new lot of locomotives when the lack of facilities to provide the necessary care and attention was largely responsible. In justice to mechanical men, in fairness to the operating department and in the best interests of the railroads executives must authorize improvements that will keep the terminals fully abreast of the motive power.

The (Fuel) Saving Grace

Eternal vigilance is the price of fuel economy and it is the fuel bill that may make or break your railroad within the next 12 months. This is far from exaggeration with many railroads facing an actual shortage during the very season that it has been customary to stock coal for the coming winter and with fuel prices that have already soared to the seventh heaven. What are the railroads doing to perpetuate the excellent work of the Fuel Conservation Section? Can any railroad say that it is making as great if not a greater effort to conserve fuel than it did during the days of the Railroad Administration? In the reaction that has followed the return of the railroads to their owners it is a fact that the fuel conservation movement lacks its former punch. Do the railroads appreciate the tremendous significance of fuel efficiency? Do they realize that eternal vigilance is the price of fuel economy?

Try the Torch Test

More than one superintendent of motive power who is under the impression that his locomotives are being maintained in a condition to make a perfect fuel record would get a rude shock if he happened into a roundhouse unawares and held a lighted torch to several of the joints where outside steam pipes emerge from the smokebox of locomotives on which the blower may be open. The chances are that so many of these joints would be found leaking that the torch would be quickly snuffed out. Wherever these leaks exist locomotive nozzles must be restricted to create a draft that will overcome them, and wherever locomotive nozzles are restricted there is fuel waste and diminished locomotive capacity. This experiment was recently tried in an eastern terminal with the result that some 29 out of 32 locomotives selected at random developed air leaks in the front end. The railroad in question has rather prided itself on the condition of its motive power, but in this instance had resorted to the use of cement in place of maintaining either a well-packed or well-designed joint. If you believe this incident to be the exception rather than the rule, try the torch test on several of your own locomotives and the chances are that you will have occasion to refer to some of the constructive suggestions for improving this condition that are published in an article on this subject appearing in this issue.

Equipment for Swiss Electrification

Announcement was made last week that the Swiss Government was to float a $25,000,000 issue of 20-year, 8-per cent bonds in the United States, the proceeds of which are to be spent in this country for material for the gradual electrification of the government railway systems of Switzerland. In so far as scientific development of apparatus is concerned, there is probably little to be learned from this source for American railroads. Swiss trains are comparatively light and the equipment for hauling them would not find an application in the United States. Furthermore, from 15 to 25-cycle alternating current power is used in Switzerland while present tendencies indicate that 60-cycle power will be used generally for transmission systems in this country. The urge behind the Swiss program is due largely to the long tunnels, the heavy grades and the pressing need for fuel. Since the signing of the armistice, the Swiss railroads have not been able to obtain their customary supply of German coal and have had to resort to wood which is at best expensive and ineffective. It is significant of the improvements they ex-

pect to realize that they are willing to pay 8 per cent, a high rate for a long term loan. Other striking features are that the United States is looked upon as a desirable place to purchase this material and that the money is raised in this country which overcomes the objections of the Swiss supply companies to sending money out of Switzerland and obviates the difficulties of the present exchange situation.

Economy in Eliminating Compounds

During the past few years practically the only compound locomotives built have been those of the Mallet articulated type. The supremacy of the simple engine using superheated steam is clearly shown by the discontinuance of the use of compounds in Europe and particularly in France. Clearance limitations are a handicap to proper design and compound locomotives have proved expensive to maintain. The fuel economy attained under favorable conditions is not secured in every day operation. The cross-compound has the least mechanical complication and should be as economical in fuel as any type of compound engine, but roads that have converted them to simple locomotives with superheaters have found the results justified the change. In one case comparative tests showed that the simple engine would handle a larger tonnage in proportion to its tractive effort and used 13 per cent less coal per thousand ton-miles. Reduction in maintenance troubles, increased hauling capacity and greater fuel economy combined form a powerful argument for the conversion of existing compound locomotives.

Intensive Training of Employees

It was found necessary during the war to provide means for intensive practical training on a large scale in order to assure a sufficient supply of efficient workmen and mechanics for our army. The plans were made and put into effect in record-breaking time. Men were given the training quickly in large numbers and with excellent results. The railroads in the present crisis are trying to operate with many employees who have had little training or preparation for the work that they are trying to do. Why not tackle the bull by the horns and install measures for giving these men an intensive practical training which will enable them in a very short time to do much better and more effective work? The army authorities in looking about for experts who could head up the movement called upon several men in the railway and railway supply field. Would it not be well in the present emergency for the American Railroad Association to call upon these men to develop quickly such educational measures as will meet the present situation on the railroads? Eventually such a commission could also advise as to a permanent policy which should be adopted by the railroads for the selection and training of all their employees.

Why the Railroads Should Advertise

Webster's Dictionary defines the verb "advertise" as "to inform, appraise or notify, hence to warn." Accept this definition and the railroads of the nation today have much to "advertise." Under present-day usage "advertising" ordinarily connotes a portion of printed matter circulating through the medium of the press, and many persons think it should be carried on only when one has a commodity the supply of which exceeds the demand. The demand for transportation now far exceeds the supply. These persons might conclude, therefore, that to "advertise" at present would be a mistake. On the contrary, the duty of the carriers to "advertise" is increased. It is important for the railroads to attempt to equalize supply and demand through advertising when the former exceeds the latter; but it is even more important for them to advertise when the demand for such a vitally essential commodity as transportation exceeds the supply, the principal function of advertising at such times being to tell why the demands cannot be met and what efforts are being made to remedy the condition. The railroads should "inform, appraise or notify, hence warn" the public regarding the true facts of the present transportation situation in every way possible. Without such informing and warning of the public false impressions will become prevalent. Widespread public impressions dictate history in a democracy.

Need of Improvement in Block Signaling

The article by W. P. Borland, printed in this issue, is in response to our recent suggestion that he ought to put increased vigor into the publicity campaign which he conducts in the interest of safer methods of block signaling, particularly manual signaling. What he really says, however, is that the railroads themselves know what needs to be done and that they ought to do it. This is true. But the sixty months' record that is here set forth so impressively has been an open book to the whole railroad world; and so far as can be judged by the outside observer, the manual block practice of our railroads generally was no better in the sixtieth month than it was in the first one. Mr. Borland does not say whether he is or is not speaking for the Interstate Commerce Commission; or what, if anything, the Commission plans to do under the sweeping authority in this field granted to it by Section 26 of the Transportation Act of 1920. It would be a very reasonable inference, however, that the article is meant as a warning: clean your own house and thus avoid the embarrassment of having outsiders tackle the job. Government investigations are troublesome and costly, whether embarrassing or not. Mr. Borland calls upon the railroads to do two things: (1) to discover bad practices and (2) supplant the bad with good. This, he says, should not be difficult; a very obvious fact. Moreover, there is only one thing to do, since the first one of the two can be considered as already done.

Trading Locomotives for Oil

Once more the American trader has displayed some of that business acumen which has long been attributed to him as a Yankee trait. Years ago a good pocket knife and a shot gun were the only requirements necessary to complete a bargain. Now, locomotives are bartered by the Baldwin Locomotive Works for quantities of Roumanian oil. The American trader has come to realize that he has something to offer foreign countries and that it will be profitable for him to make considerable effort to build up a large commerce and establish close business relations with European countries, for even though their present financial condition is not all that might be desired, raw materials which find a ready market are quite as valuable as the actual gold and silver. However, beyond this mere completion of a business deal, wherein both sellers have profited, there is also a spirit of co-operation, a willingness to depart from the usual cold and impersonal tactics employed in American business. This was not an affair to be cast aside through fear that a country, struggling to regain its feet after the war, would be unable to pay. A much broader viewpoint was taken: a keener eye saw many possibilities, with the result that Roumania will exchange a part of her abundant wealth in

raw commodities for equipment which at present is necessary to her existence, and will look with friendly eye on the American concern in future dealings. A point worthy of note in the contract regards the possible variation in the price of oil. A sum has been fixed for oil per gallon and Roumania will redeem her treasury bonds given as security according to this price, so that if the price of oil goes higher, which is more than likely, Roumania will be the one to profit. It seems apparent that such an agreement can only be looked upon as exceedingly fair and one in which the bargain driver has loosened his grasp somewhat to permit others to share his gains.

Replacing Obsolete Machine Tools

From June, 1912, to the beginning of government operation the amount of money spent for railway shop machinery in the United States was abnormally low. During the first year of government control a step in the right direction was taken by scrapping a considerable number of worn out machines and replacing them by modern productive tools. Records of the Railroad Administration show, however, that only a small proportion of the recommended renewals were actually made and during the last year of government control, practically no money was spent for this purpose. The cost of making up the deficiency was estimated in an article published in the January 2 issue of the *Railway Age* at slightly over $44,000,000. Competent authorities say that anywhere from 5 to 35 per cent of the machine tools and equipment of almost every railroad shop in the country are obsolete and inefficient. Under such a handicap what commercial manufacturer could hope to meet a competitor's prices! One factor in the solution of the problem, as already intimated in these columns, is to establish reliable cost accounting systems in railway shops; analyze the work done on old machines; and present to the proper authorities accurate figures of present costs and possible savings by replacing worn out equipment. The president and board of directors do not understand mechanical details, but will be vitally interested in net returns. It is up to mechanical department officers to demonstrate the possible returns clearly and forcefully. If, as is often the case, the installation of a new tool replacing an old one will actually save 10 to 20 per cent on the investment after deducting interest and depreciation charges, there are not many railroad officers who will pass up such an opportunity to reduce maintenance of equipment costs.

Henry Ford's New Railroad

Henry Ford has secured such an unenviable reputation as an embryo statesman and publicist that the announcement of the Ford purchase of the Detroit, Toledo & Ironton will be received in different circles with varying reactions. No doubt the occurrence will supply material for every paragrapher and jokesmith on every newspaper in the country, except possibly the Dearborn Independent, which, unlike most of its contemporaries, takes Mr. Ford seriously. Nevertheless, the purchase merits more than mere facetiousness. The Detroit, Toledo & Ironton is an important railroad. It operates a total of 457 miles, of which it owns 418 and operates 39 under trackage rights. Its main line extends from Detroit south to Ironton, Ohio, where connection is made with the Norfolk & Western and Chesapeake & Ohio. Inadequate terminals at Detroit and the fact that it traverses highly competitive territory have, however, prevented it from making the most of this strategic position. The traffic of the road amounts to from 3,000,000 to 4,000,000 tons yearly, of which about 70 per cent is products of mines and about half is received from connections. The road has by no means been a dividend payer and has been in the hands of receivers on more than one occasion, it having been reorganized in 1905 and again in 1914. The reports as to the purchase are to the effect that Mr. Ford expects to rehabilitate the property and use it as an assistance in getting coal to his Detroit plants. The humorists add to this that Mr. Ford will no doubt try out on it some of his ideas as to gasoline motive power and the use of alloy steel for freight cars. Nevertheless, while Mr. Ford seems to have a strong predilection for talking about his fads and fancies, he does have a reputation as an able manufacturer. No doubt he will be able with the immense resources at his disposal to make the road over into a first-class property within a fairly short time, but we fear that he will learn many things about the problems of the railway manager that he has failed to appreciate in the past.

A Great Leak

A shipper, in testifying before the Interstate Commerce Commission, stated that 65 per cent of the freight bills received from the railroads were incorrectly figured. An important road in checking up 1,350 way bills at one of its stations over a period of 45 days detected mistakes with an aggregate undercharge of $4,310. In one month the same company handled approximately 5,255 overcharge claims at an estimated cost of $2,600 and involving the refund of approximately $75,000. Vice-President Green, of the Southern Railway, emphasizes the fact in the June Service Bulletin of that road that the mistakes upward cannot be relied upon to counterbalance or offset the mistakes downwards, since the overcharges are practically always detected by the shippers and must be refunded, while undercharges are seldom reported unless detected by the railroad company. "The careless writing of a name," says Mr. Green, "rendering it illegible or misleading, an error in a route, an omission of 'order notify'; in fact any failure to make an accurate, clear and full record of the shipment may cause serious loss and delay. The failure to transcribe the rate, divisions and extensions correctly will surely cause loss. Misplacing a decimal point may decrease the company's revenue 90 per cent. A perfect way bill is a work of art. You will need to be an artist to make one, but you cannot afford to be less than an artist in anything you do. The company needs artists where you are, and higher up." To develop such artists it is necessary first carefully to select the right kind of men when they enter the service, and then to see that they are thoroughly trained and coached in their work. Is your road doing its full duty in these respects?

Popularize Sound Railroad Investments

Not the least interesting suggestion recently appearing in the editorial columns of the Saturday Evening Post is for popularizing sound investments. The idea is not new, but it is constructive and is particularly applicable to railroad investments because, after all the vicissitudes of late years, railroad investments are sound investments. Some appreciation of this fact is reflected in the steadily increasing number of individual holders of certain railroad stocks and it will be found that much ground has already been broken towards popular-

izing such investments. The subject is timely because, as pointed out by the Saturday Evening Post, the wages of many workers are now too large for saving bank investment only. Nothing is more opportune than the conservation of capital and nothing is more essential to the railroads today than additional capital, or the money with which to refund maturing obligations. Why not supplant the decorum of the investment business and the frigid formality of financial advertising with the same sort of propaganda that has decided us to "see America first." A local bank may spend a lot of money this fall advertising the fact that it is a sound financial institution and that it will pay four per cent interest on deposits. In selecting this bank as a depository for his savings, a mechanic or farmer may be influenced by the bank's street car ad at the very time that this bank is buying the notes of the principal railroad serving the community on a basis to yield seven and a half to eight per cent. It is not suggested that dependence upon underwriting syndicates is a thing to be avoided even if the railroads had the facilities for reaching the individual local subscriber, but it is certain that if sound railroad investments are to be popularized the railroads must do it. It might have been said before the war that this could not be done, but if it was possible to popularize a twenty-billion-dollar investment at less than five per cent, should it not be possible for many railroads to popularize at least a small portion of their investment offerings at current interest rates?

Repairs in Outside Shops

Readers of the *Railway Age* have noticed from time to time in the Equipment and Supplies column, items to the effect that this or that railroad has arranged to have a considerable number of locomotives or cars repaired in builders' shops. The reason for doing this has not been far to seek. No one can deny, nevertheless, that Daniel Willard, chairman of the advisory committee of the Association of Railway Executives, has performed a real service in bringing the matter to the attention of the Interstate Commerce Commission, and to the public, in his pointed remarks (*Railway Age,* July 9, page 71) before that body on July 8. Mr. Willard showed that on March 1, the carriers that had been under federal control reported 6.7 per cent or 153,727 of their cars in bad order, an increase of 25,000 over the number at the beginning of federal control. He also showed that many more cars were in service that were not in proper condition for general merchandise business because of the deterioration of their upper structure. He then drew particular attention to the fact that it was proving better to have the cars repaired in outside shops rather than in railroad shops, where wages were higher, hours shorter and the standard of efficiency much lower because of the abolition of piece work. As he pointed out changes in hours and conditions of employment made under government control have seriously reduced the capacity of the railroad shops. Many railroads are not appreciative of just how much work of this kind has been contracted for by their neighbors in the past few months. The *Railway Age* has reported so far this year orders placed for repair work in builders' shops for no less than 13,400 cars and over 200 locomotives. This is not an entirely new venture for the railroad managements, for they have frequently had cars fitted with steel center sills and locomotives rebuilt in builders' shops in the past. However, under present conditions we are likely to see considerably more of it as the other railroads come to realize how completely Mr. Willard is correct in pointing out the advantages to be gained in getting the work done in this way at this time.

Economizing in Labor

The scarcity and high cost of labor has more and more focused attention upon the necessity of installing machinery for the mechanical handling of materials of all kinds. The application of such machinery has been developed to an extremely high degree in some industries, and with remarkable results in increased production and the lowering of unit costs. There are many fields of endeavor, however, where its possibilities are as great, or even greater, but in which very little progress has been made up to this time. It is significant that the engineering fraternity is awakening to the necessity of a more widespread use of material handling machinery. One evidence of this is seen in the proposed formation by the American Society of Mechanical Engineers of a professional section on material handling. Although only a small proportion of the membership of the society has yet been approached, almost 400 members have expressed a desire to become affiliated with the new section. The railroads should be particularly interested because of the many ways in which such equipment can be used to advantage in their various departments. One of the most spectacular recent applications of material handling equipment in the railroad field was the installation at Cincinnati, Ohio, of a scheme for interchanging l. c. l. freight promptly and economically between the different roads entering that city. This is believed by many to be only the beginning of a large development in this direction. Equally important applications may be made for loading and unloading freight at terminals and in various other ways in several of the departments of the average railway.

Tie Shortage Creates Problem

The maintenance of tracks without adequate materials constitutes a problem of large proportions. This is the problem which the maintenance of way department has faced for several years and is still facing. In no particular has the deficiency in materials been more acute than in ties. The renewals immediately preceding federal control were below normal, while during the two years of government operation the deficiency of renewals exceeded 25 per cent. Now, owing to the disorganization common to all industries, aggravated by that incident to the transition to private management with the decentralization of purchases, tie production is far below normal and many roads, particularly in the Central States, are facing another year of greatly decreased tie renewals. At the same time, the demands of the country for transportation are larger than ever and require that tracks shall not be allowed to deteriorate to the point where speed and safety shall be endangered. Maintenance officers are therefore confronted with the two necessities of (1) securing the maximum possible life from each tie and (2) augmenting their supply by increasing the production of ties locally where possible. The first expedient requires increased supervision to see that ties are not permitted to deteriorate because of unnecessary abuse in handling or in service and that they are not removed prematurely. The possibilities of increased production locally for short periods were demonstrated by the accomplishments of the Railroad Administration in certain areas where it was shown that local officers can frequently increase production greatly by coming in personal contact with owners of wood lots along their lines. Pending the receipt of more ties, traffic must be carried expeditiously and safely. This places an added responsibility on maintenance officers, who must insure that every precaution is taken to prevent undue weakening of the track structure.

Business Handled by Railroads Still Increases

THE NEWSPAPERS are full of reports regarding industries that are operating at much less than their maximum capacity, or are on the verge of having to close down, because of the inability of the railways to handle all the traffic offered to them. Reports continue to be received regarding hundreds of millions of bushels of grain which are being held on the western farms and in the country elevators because the railways cannot haul it away.

The uninformed might conclude from these reports that, as the advocates of government management charge, the railways have "broken down." Meantime, the incontrovertible facts continue to show that the railways, in spite of strikes and other disturbances, have been almost continuously in the year 1920, and still are, moving more freight than in the year 1919. For the first time since the roads were returned to private operation it is possible this week to give statistics regarding the amount of freight handled for a considerable period by all the large railways in the country. Statistics regarding freight movement which we recently have published have not included the returns from the Pennsylvania and a few other large systems. The figures now available, which are based on reports made by the individual railways to the Commission on Car Service, show that in the week ended June 19 the number of cars of revenue freight loaded was 869,142, as compared with 807,907 in the same week of 1919. In the week ended June 26 the number of cars of revenue freight loaded was 869,350, as compared with 845,684 in the same week of last year. In the four weeks ended June 26 the total number of cars loaded was 3,405,500, as compared with 3,237,406 in the corresponding weeks of 1919.

The statistics of the United States Geological Survey regarding the movement of coal tell the same story. The number of tons of coal produced and moved by the railroads from January 1 to June 26, 1919, was 210,640,000, while in 1920 it was 251,953,000, an increase of 41,313,000 tons.

The railways this year have had many things to contend with, including a series of strikes in their terminals, and an excessive number of bad order cars which are a heritage from government operation. Nevertheless, in the first six months of the year they moved more freight of all kinds than ever before in the first six months of any year except 1917 and 1918. In January, February and March the amount of freight moved broke all records for those three months, and probably the same thing would have been true in April, May and June if it had not been for the railroad strikes. When all the statistics are available the indications are they will show that even in May and June, in spite of the strikes, the roads handled within ten per cent as much freight as the largest amount they ever moved in those two months.

Why, in the face of these facts, are the industrial operations of the country being seriously interfered with and its financial stability threatened by insufficient transportation? There can be only one rational answer to that question. The present conditions are partly due to the strikes, but they are mainly due to the fact that for years the productive capacity of the country has been rapidly increasing, while the facilities and capacity of the railroads have been increasing hardly at all.

Many persons, including some government regulating officials and business men, are now criticising the railways because they don't handle more business. We believe there is some ground for criticism. We believe the railway managements, by co-operating better together and more intensively supervising operation, can, and should handle more business. But present conditions are principally chargeable to governmental authorities and business men, who, throughout the years from 1906 to 1917, by fighting to keep the rates and net earnings of the railways on the lowest possible level, did all they could in their respective ways to make it impossible for the carriers to handle the country's commerce. Apologies for what they did to create the present conditions would come with much better grace from them than criticisms of what the railway managers are doing, or failing to do. If they had given some heed to the facts presented, and the arguments and predictions made by the railway managers in the past, the transportation conditions of the present would not exist.

Yard Operation and Freight Car Efficiency

THE RAILWAYS are facing the necessity of increasing the efficiency of their operation to the point that they will be able to handle with the equipment now available a business considerably heavier than that with which they are now struggling. This means securing increased service from every car. The average daily mileage secured from all freight cars in 1919 was only 23½ miles. In his statement before the Interstate Commerce Commission last week (published in the *Railway Age* of July 9, page 71) Daniel Willard said this can be raised to 30. The importance of such an improvement can best be seen when it is realized that each mile added to the average freight car movement of the country is equivalent to placing 100,000 additional cars in service. The needed increase in miles per car per day can be secured only by the use of various means which we plan to discuss from week to week.

It cannot be secured to any considerable extent by running trains faster on the road, for although some improvement may be made here, the average freight car spends only one hour per day in road movement and is standing still the remainder of the time on shipper's sidings, on public team tracks, in shops, or in yards. While in yards, the car is exclusively in charge of the railways, and they are responsible for any delays in its movement that occur there. That improvement in yard movement is possible has been made evident in a striking manner in nearly every large terminal in the country during the recent outlaw strikes by the fact that in numerous instances volunteer crews of inexperienced men, usually undermanned, have handled more cars than regular crews. This result cannot be charged alone to malingering by the regular employees. It also reflects a lack of supervision and of efficient planning of operations to secure the desired results with the minimum effort. When inexperienced men, unfamiliar with the routine of yard operation, can effect such improvements, the possibilities of expediting operations by thorough, analytical studies to eliminate lost motion, supplemented by experienced forces, is evident.

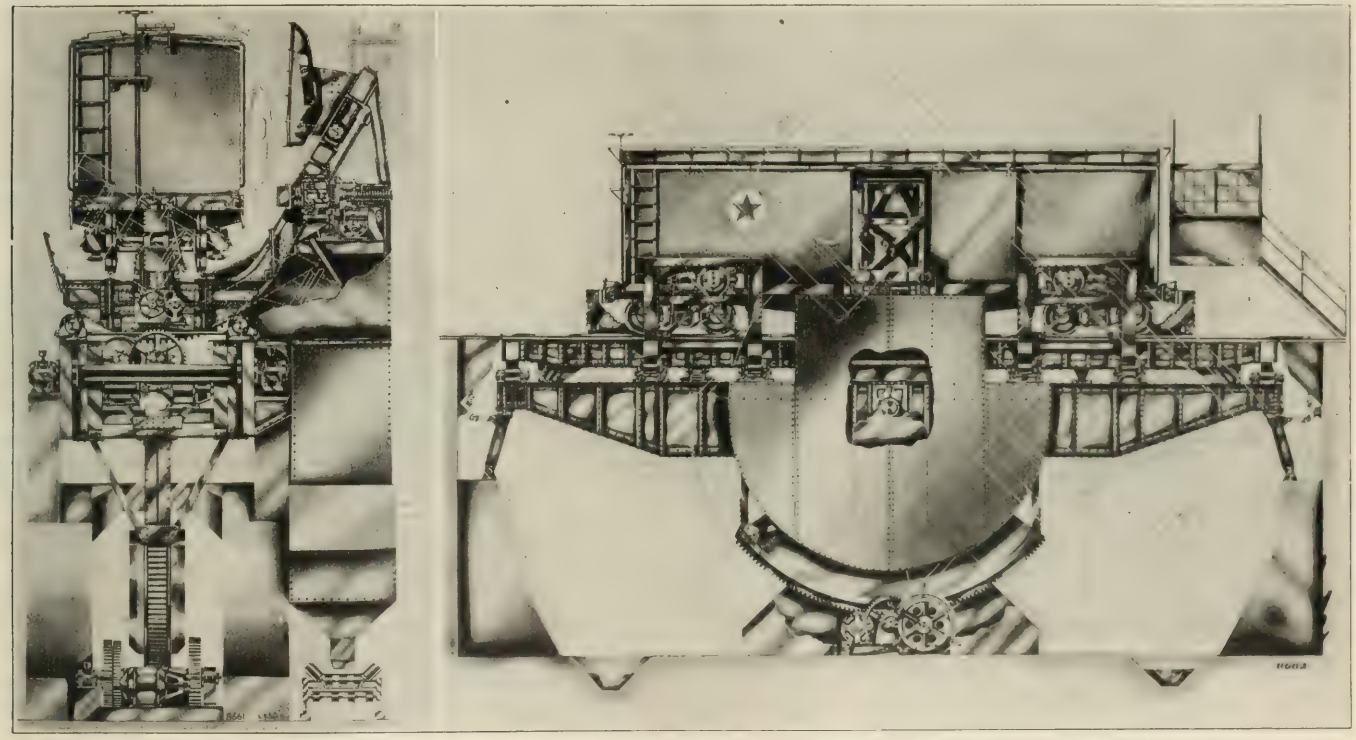
One difficulty has been that neither terminal facilities nor supervision has kept pace with the increase in traffic, with the result that those in immediate charge of operations have become deluged with details in handling an overworked plant and have been forced to follow the lines of least resistance. The evils of inadequate facilities cannot be corrected in any large measure in the immediate future, but supervision can be increased and improved. The terminals are now the points of congestion and the places which principally limit the capacity of the roads. The ability of the carriers to handle more traffic depends largely on faster movement of cars and the place where their movement can be most stimulated is in the yards. No operating officer can say that he has done his utmost to help solve the present acute railway problem until he has personally assured himself that the terminals under his supervision are being operated with maximum efficiency. Nothing will contribute more to increased car mileage than this.

New Grain Unloader Saves Time at Elevators

This Labor Saving Facility Also Opens Car Doors Without Injury or Any Loss of Time

TAKING THE suggestion from the car tippers for unloading and loading coal and coke, the James Stewart Company and the Link-Belt Company of Chicago, have developed a machine that will empty box cars loaded with grain quickly and with a minimum amount of labor. Four machines of this type, which are known as the Stewart-Link Belt grain car unloaders, have been installed in the new Northern Central elevator of the Pennsylvania Railroad at Baltimore.

Heretofore in unloading grain, the grain car doors have been removed by hand, the grain shoveled out of the cars with power shovels and the car then swept out. The unloading of the average car required the services of four men for approximately 45 minutes during which operation approximately one-third of the grain car door is destroyed in removing by means of pinch bars and axes.



Two Diagrammatic Views of the Grain Car Dumper, Indicating the Tilted Positions by Dotted Lines

The new machine embodies an appliance for opening the grain doors automatically. With the new car unloader the grain door is forced inward and clear of the grain while the car is being tipped sidewise, without any loss of time or injury to the car or the grain door. The fact that grain doors can be removed without injury is of no small importance to a railroad since it is estimated that the average loss through lumber destroyed in opening a grain door according to prevailing methods is from $1 to $2.

The machine consists of a sidewise-tipping cradle mounted on an endwise tipping table. A third feature of the device is the grain receiving hopper placed on one side of the tipping table. The object of the equipment is to tip the car on its longitudinal axis 30 deg. toward the side on which the receiving hopper is located and force the door open. This causes the grain near the car door to run out; then, with the car still in this position, it is tipped endwise 45 deg. by the table, first with one end up and then the other, so that the grain in the ends of the car will run out.

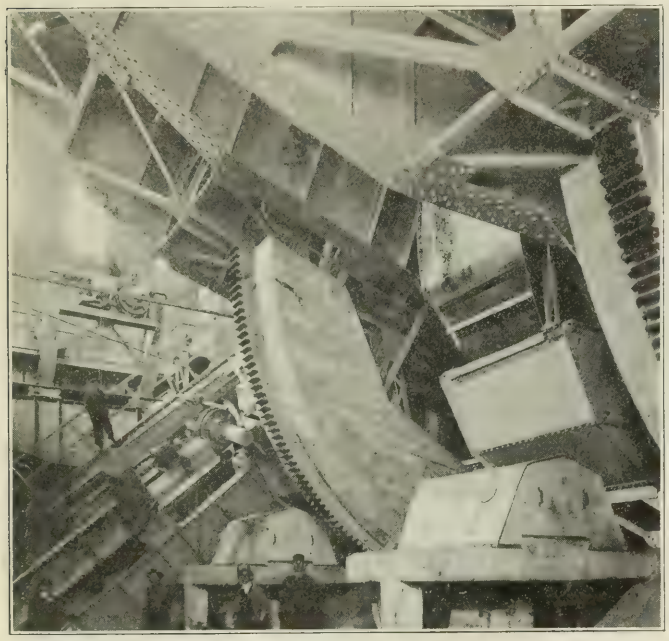
The tilting cradle consists of two structural steel girders to support the track rails, these girders in turn being carried on rocker-shaped supports which rest on trunnions attached to the top of the end-tilting table. The end-tilting table consists of structural steel girders supported on the transverse center line by a 13-in. steel shaft mounted on concrete piers, this shaft and its fittings being of sufficient strength to support the table, cradle and loaded car as they are being tilted about the axis. To hold the table in the horizintal position for the purpose of running the car on the cradle, it is equipped with end supports in the form of structural steel struts which are released and thrown clear of the table by means of the toggles shown in the illustration. Attached to the underside of the tilting table by means of structural steel framing is a large circular segment equipped with a rack which meshes into a pinion connected by a train of gears to a motor for operating the table. A similar arrangement operates the side-tilting cradle.

The side-tilting cradle mentioned above is equipped with a number of auxiliary devices which play an important part in the operation of the car unloader. One feature is a pair of end clamps which engage the couplers of the car for the purpose of taking the thrust of the draft rigging when the car is up-ended. Another important function of these clamps is to center the car automatically on the table. When not in use those end clamps drop into a depression between the two track girders of the cradle. There are also two side bolsters to take the side thrust of the car when it is tipped sidewise. These consist of structural steel framework, em-

bodying extensions of two of the rocker frames. Each of these supports a motor-operated screw jack or ram placed in a horizontal position and capable of exerting a pressure against the frame of the car.

The grain door opener is mounted on top of the receiving hopper on the end-tipping table and moves with it. It is essentially a ram mounted on a suitable frame designed to push against the grain door. It consists of a main frame containing the operating mechanism which moves the main frame towards or away from the car door. On the face of this frame is mounted the door pusher frame. This is the device that engages the car door. It is hinged onto the main frame at a point about 4 ft., 6 in. above the level of the car floor. The face of the door pusher is studded with small steel points which hold the door firmly.

Attached to and a part of the pusher door frame is the deflector which consists of two sector plates mounted vertically on the back and in the center of the door pusher frame with a third plate running in guides between the two sector plates. This third deflector plate is counterweighted. The door pusher frame is also counterweighted so that when



View of the Four Unloaders Installed at the Pennsylvania Elevator in Baltimore

enough grain has run out of the car to clear the grain door, the door pusher frame will swing inward and upward and the third deflector plate will drop to the car floor. When the car is brought back to normal this third deflector plate is raised automatically to its upward position by the motion of the car. The use of this deflector plate enables the machine to be operated more rapidly as it causes all the grain in the upper end of the car to run out of the doorway.

The receiving hopper has a capacity of 1,000 bu. of grain and consists essentially of a steel plate drum of semicircular shape, the axis of the tipping table. This drum, being designed to turn with the table, is arranged to fit inside of a second stationary hopper that has an outlet at the bottom directly over a grain belt, the object of this arrangement being to deliver the grain accurately and continuously to the belt, no matter in what angular position the receiving hopper may be.

Five electric motors are provided to actuate the various functions of the apparatus, the controllers of these motors being located in an operator's house placed over the receiving hopper and are interlocked so that they must be operated in the proper sequence. After the car has been run on the cradle, Motor No. 1 brings the end clamps in contact with the couplers. Then Motor No. 2 actuates the jacks of the side bolsters until the head of each is in contact with the side frame of the car. The third motor then brings the grain door opener in contact with the door, with its lower edge resting on the floor of the car in the doorway. When this operation is completed the fourth motor tips the cradle so that the car is tipped sidewise.

In the meantime the grain door opener has held the door (and the grain immediately behind it) in the same position as when the car was still vertical. The effect of this was to move the car away from the door or, in other words, push the door into the car. After enough grain has run out to clear the grain door, the pusher swings the door about its hinge and brings it near a horizontal position inside the car. The deflector plate drops in the car underneath the door with the bottom of the deflector in contact with the inclined surface of the car floor. When this operation is completed, Motor No. 5, attached to the rack on the end-tipping table, is brought into action, elevating one end of the car. As the grain in this end of the car flows to the center it strikes the deflector and pours out of the door. When the grain in the high end is gone the motor is reversed, tipping up the other end of the car.

After all the grain has run out, the car is brought to the level position and a man enters the car with an air hose and dislodges the grain from the lining and sweeps it out. The door opener is withdrawn, this action releasing the grain door and causing it to fall to the floor of the car. Following this operation the first and second motors are reversed, releasing the clamps so the car may be run off the table.

The entire operation of unloading a car with this unloader takes less than 10 min. An empty car will go through the cycle of operation in 3 min. Only three employees are required to operate the unloader and attend the car during the process. One controls all operations from the operator's cage, one is stationed at the car door and the third attends to the coupling and uncoupling of cars. In other words, this machine will accomplish as much in 10 min. with three men as will require four men 45 min. with the use of a power shovel.

The delivery of the cars to the unloader is accomplished with the use of a Barney which will handle 15 loaded cars in either direction. The empty cars are run away from the machine by gravity. Each Barney is operated by means of endless cable and winding drums and has a standard car coupler attached to the front end. The Barney is run into a pit so that the 15 loaded cars can be run in ahead of it and the Barney coupled to the last car.



Photograph from Underwood & Underwood, N. Y.

Traveling on the Trans-Siberian

Manual Signal Statistics and the Accident Record

Impressive Five-Year Record of Collisions—Railroads Called Upon to Take Action

By W. P. Borland,
Chief, Bureau of Safety, Interstate Commerce Commission

An editorial entitled "Block Signal Mileage 1920" in the *Railway Age* of June 11, commenting upon the annual table of block signal statistics recently published by the Interstate Commerce Commission, says that there has been a gratifying increase in the use of automatic block signals during the war period, but that further increase is uncertain and retarded by existing unsettled conditions; and that non-automatic block signals are often operated under inadequate or loosely administered rules. A suggestion previously made in the editorial columns of the *Railway Age* is repeated, namely, that the commission should—

"report more in detail concerning the use of the block system on American railroads, what practices are good, what are bad; and how, and where, and to what extent good practices are driving out the bad. The reports which have been made on numerous collisions have indicated the need of such a study and review. The annual statements are illuminating as regards quantity; let us turn for a time to the question of quality."

To some extent the desired information is already available. In one table in the statistical bulletin referred to, the practices employed in the operation of the non-automatic block system are classified, particularly with reference to permissive blocking. The report shows that the non-automatic block system was in use on 63,915 miles of road January 1, 1920; that on 4,235 miles of road permissive signaling was forbidden by the rules, for all trains, various methods being employed for authorizing permissive movements in the remainder of non-automatic block territory. The tables indicate that permissive signaling is allowed on 59,680 miles of road operated by the non-automatic block system; but on approximately 36,890 miles is not permitted for movements involving passenger trains.

The American Railway Association defines "block system" as "a series of consecutive blocks;" according to the Signal Dictionary it is "the method of regulating the movement of railway trains, so as to maintain an interval of space between trains moving in the same direction (on the same track)." In the Commission's orders calling for annual block signal statistical reports the term "block system" is defined as any method of maintaining an interval of space between trains, as distinguished from the time-interval system.

From an operating standpoint the practice of permissive blocking cannot be condemned wholesale; but when the practice is followed indiscriminately and without proper safeguards, the block system itself is virtually nullified. As suggested in the editorial referred to, railroad officers themselves, in compiling their reports, are sometimes in doubt whether the methods and practices followed on their lines in the operation of trains constitute the block system; and each year, in the compilation of these statistics inquiries are necessary in some cases to determine whether as a matter of fact the block system in any form is used, or whether the method of operation reported as the block system has been modified by rules, bulletins and operating practices to such an extent that the reporting carrier cannot properly be credited with having the block system in use on its lines. And in accident investigations conducted by the Bureau of Safety it is necessary to devote considerable attention to rules and practices found to be in effect under the non-automatic block system. In certain cases these investigations have disclosed the existence of unsafe rules and authorized methods of operation which, to say the least, are questionable; as well as the prevalence of practices contrary to the rules which have grown up in service; and, also flagrant disregard of block signal rules.

The suggestion is timely that attention be centered upon the quality of the block system employed by each carrier on its line. But this should be done in the first instance by the carriers themselves, not only for the purpose of determining what practices are good and what bad, but also for the purpose of supplanting undesirable by safe and efficient practices. That dangerous conditions and practices exist under the non-automatic block system has too often been demonstrated by the occurrence of disastrous collisions. It should not be difficult for responsible supervising and operating railroad officers to ascertain accurately the practices followed on their lines, and promptly to correct dangerous conditions or practices which investigation may disclose.

A large volume of illuminating information bearing on this subject is already available in the form of accident investigation reports which are made public by the Commission from time to time and published in condensed form in the quarterly accident bulletins and summaries. The accompanying tabulation sets forth instructive facts with reference to certain collisions occurring in non-automatic block territory which have been investigated by the Bureau of Safety. Since this work was begun in 1911 the Commission has investigated about 60 collisions of this class. The reports concerning cases which happened since January 1, 1915—five years—are abstracted in the table. The column headed "cause" affords an indication of the circumstances and practices which led to these accidents.

Some of the more recent accidents of this character may be referred to somewhat more in detail as follows:

1.[1]—Rear collision of freight trains; caused by failure of engineman to operate his train under proper control while running on a caution card. The following train entered the block section, which was 24.5 miles in length, 1 hour and 5 minutes behind the first train, with a caution card stating that the block was not clear. The only definite information conveyed to the engineman of the following train by this caution card was that at that particular time there was a train ahead within a distance of the length of the block, 24.5 miles.

2.[2]—Rear collision of freight trains; caused primarily by failure of engineman to operate his train under proper control within yard limits. Under a manual block rule, when a preceding train has been reported as inside the outer switches of certain stations named in the time-table a clear signal may be given to any following train except a passenger train; a passenger train entering the block under such circumstances is required to have a permissive card, form C, which reads "Proceed, expecting to find a train in the block between this station and ———." Under this rule a train may receive a clear signal indication or a clearance card stating that the block is clear when as a matter of fact at certain stations the block may be clear only

[1] N. Y., N. H. & H., Pomfret, Conn., April 10, 1918.
[2] C., M. & St. P., Farmington, Minn., March 4, 1920.

NOTES ON CERTAIN COLLISIONS OCCURRING IN NON-AUTOMATIC TERRITORY, INVESTIGATED SINCE JANUARY 1, 1915

Explanation of heading: C, Kind of accident, Rear collision (rc), Butting collision (bc) or Crossing collision (xc). KT, Kind of train, Freight (F) or Passenger (P). K, Killed. I, Injured. T, Number of main tracks.

Date	Road	Place	C	K.T.	K.	I.	T.	Causes
1915								
Feb. 2	Pennsylvania	Irving, N. Y.	rc	F&F	1	6	1	Failure of conductor and flagman properly to protect train; failure of engineman properly to control speed after exploding torpedoes when running on permissive signal indication.
Mar. 5	Wabash	Garber, Ill.	bc	F&Work	1	10	1	Failure of crew of extra and of despatcher to keep train clear of main track on time of superior train; extra running against opposing superior train without proper protection; wires being down, despatcher instructed crew to run carefully prepared to stop if any opposing trains appeared.
Jan. 27	Chic. R. I. & P.	Platte River, Mo.	bc	F&F	4	1	1	Failure of conductor and engineman to keep their trains clear of main track on time of superior train; failure of two operators to comply with manual block rules.
Jly. 29	C. R. I. & P.	Mickles, Ark.	rc	P&F	2	6	1	Failure of conductor to know that freight train was properly protected; crew of passenger train had received block-restriction card advising them of time two freight trains entered block.
Aug. 1	C. R. I. & P.	Waveland, Ark.	bc	F&F	..	8	1	Failure of crew to obey a wait order; failure of crew of other train to clear superior train 5 minutes; both trains in block under clear signal.
Aug. 12	B. & O. S.W.	Orient, Ohio.	rc	P&F	6	125	1	Failure of engineman of freight train to have train under control while following passenger train in block; failure of conductor and flagman of passenger train properly to protect same.
Sep. 24	Missouri Pac.	Plattsmouth, Neb.	bc	F&F	3	25	1	Failure of crew of passenger train to obey meet order at station within limits of block section.
Oct. 19	Kansas City So.	Kansas City, Mo.	bc	2 Locos	3	3	1	Engine allowed to enter occupied block, due to error of despatcher or of operator.
Nov. 2	Ches. & Ohio.	Keswick, Va.	rc	F&F	3	..	1	Failure of crew to run in occupied block as required by caution card, and their failure to observe time-card speed-limit rule when engine was moving backward.
Nov. 26	Wabash	Morris, Ind.	rc	F&F	2	2	1	Failure of engineman properly to control speed while running in occupied block under a caution card.
Dec. 24	T., St. L. & W.	Veedersburg, Ind.	bc	P&F	4	21	1	Failure of operator to copy train order correctly; operator gave passenger train caution card, stating that block was clear, without first communicating with operator at other end of block.
1916								
Feb. 15	Seaboard A. L.	Franklinton, N. C.	rc	P&F	1	35	1	Failure of conductor and engineman to keep engine clear of main track on time of superior train; failure of brakeman properly to deliver to engineman instructions entrusted to him by conductor.
Mar. 4	Ch.St.P.M.&O.	Mtn. Lake, Minn.	rc	F&F	4	3	1	Failure of engineman to have train under control approaching station, running on caution card.
Jun. 15	Hocking Valley.	Fostoria, Ohio.	xc	Ex&F	1	..	1	Failure of engineman to have train under control a sufficient distance from crossing of another railroad to prevent his train from striking train occupying crossing.
Jly. 21	Norfolk & W.	Belspring, Va.	rc	F&F	2	5	1	Failure of engineman to have train under control; failure of conductor and flagman to protect by flag; error of operator in issuing clearance card indicating block to be clear.
Aug. 9	Southern	Croswell, S. C.	bc	P&F	1	4	1	Failure of trainmaster, acting as engineman, to have freight train under control approaching meeting point.
Aug. 15	Balt. & O.	Washington, Pa.	bc	F&F	3	8	1	Failure of crew to obey train order fixing meeting point within limits of block section.
Oct. 15	Chi. Bur. & Q.	Smithfield, Neb.	rc	F&F	11	14	1	Failure to protect by flag; following train received caution card upon entering block 72 miles in length.
1917								
Jun. 13	N.Y.,N.H. & H.	Westfield, Mass.	rc	F&F	1	3	1	Failure of engineman properly to control speed of his train within yard limits; was running on caution card.
Jun. 13	A., T. & S. F.	Flynn, Okla.	bc	P&F	2	72	1	Failure of crew of passenger train to obey meet order at point within block section.
Jun. 30	Seaboard A. L.	Kittrell, N. C.	bc	F&F	4	2	1	Failure of operator to display stop signal and deliver train order changing meeting point.
Jly. 16	L. & Nash.	Nashville, Tenn	rc	F&F	1	..	2	Failure of flagman properly to protect train; failure of conductor to see that train was properly protected; question as to whether caution block signal indication was displayed.
Aug. 1	Norfolk & W.	Rippon, W. Va.	bc	F&F	2	41	1	Failure of engineman to obey meet order; error on part of operator in changing block signal from stop to clear position.
Aug. 8	N. Y. Central.	Geneva, N. Y.	xc	2 Locos	1	1	1	Failure of engine crew to obey signal indications; fixed signal so arranged as to make hand signals frequently necessary.
Aug. 16	M., Kan. & Tex.	Watauga, Tex.	bc	P&F	2	12	1	Failure of crew to provide proper protection when occupying main track on time of superior train; failure of passenger engineman to operate train under proper control when running on caution card.
Aug. 23	C.C.C. & St. L.	Mansfield, Ill.	rc	P&F	1	24	1	Failure of engineman to stop train at crossing as required by special order and his failure to observe and obey stop signals given by Flagman due to being asleep; block system not used at night.
Sep. 1	Great North.	Havre, Mont.	bc	F&F	2	4	1	Despatcher permitted train to enter block already occupied by another train; staff system.
Dec. 12	Col. & South'n.	S. Denver, Col.	rc	P&YdEn	..	20	1	Switch engine occupied main track without authority or proper protection; failure of engineman of passenger train to obey rules regulating speed within city limits.
Dec. 14	Southern	Calhoun, S. C.	bc	P&P	2	18	1	Failure of operator to deliver copy of right of track order; failure of despatcher to have operator make sufficient copies of order and obtain conductor's signature; misunderstanding between block operators.
Dec. 19	C. R. I. & P.	Amity, Mo.	rc	F&F	2	1	1	Failure of conductor properly to protect rear of train; failure of conductor to make sure it was properly protected; operator allowed train to enter occupied block without caution card.
1918								
Jan. 30	Norfolk & W.	Dublin, Va.	bc	F&F	4	4	1	Failure of conductor properly to check train register; error in issuing clearance card to extra train, permitting it to occupy block without notifying operator at next block.
Apr. 10	N.Y.,N.H. & H.	Pomfret, Conn.	rc	F&F	4	3	2	Failure of crew to operate train under control after receiving caution card stating that block was not clear; block 24 miles in length.
Apr. 25	C. B. & Q.	Bayard, Neb.	rc	F&Wk	6	2	1	Failure of flagman of work train properly to protect; failure of engineman of freight train to have train under sufficient control, to obey stop indication of train-order board.
Aug. 4	Balt. & Ohio.	Bridgeville, Ohio.	bc	F&F	1	1	1	Error of operator in copying train order and improper acceptance of order by conductor and engineman; meet order did not include words, "Take Siding."
Sep. 10	C. B. & Quincy.	Birdsell, Neb.	rc	P&Wk	11	4	1	Work train occupying main track on time of superior train; passenger train not running under control in occupied block.
Oct. 4	Erie	Red House, N. Y.	rc	F&F	2	2	2	Failure of engineman to operate train under control after passing signal in caution position.
Nov. 23	Pennsylvania.	Dewart, Pa.	bc	F&F	6	5	2	Failure of operator to deliver train order.
1919								
Jan. 11	Balt. & Ohio.	Maynard, Ohio.	bc	F&F	1	8	1	Failure to obey a wait order; block card as received by engineman was not legible and he did not have copy of meet order; conductor forgot order.
Feb. 26	Gr. Rap. & Ind.	Cadillac, Mich.	bc	P&F	2	23	1	Failure of engineman to observe and obey stop signals given by flagman; block system applies to following movements only.
Mar. 1	N.Y.,N.H. & H.	Touisset, R. I.	bc	P&Wk	1	34	1	Failure of flagman of work extra to obey instructions to hold all trains; block system applies to following movements only.
Mar. 6	Pennsylvania.	Heaton, Pa.	rc	F&F	4	2	2	Failure of engineman to operate train in occupied block under proper control; failure of flagman properly to protect his train.
Sep. 1	Del. & Hudson.	Carbondale, Pa.	rc	F&2 Eng	1	..	2	Failure of leading engineman to operate engine under proper control rounding sharp curve in occupied block.
Dec. 22	Wabash	Huntsville, Mo.	rc	P&F	1	15	1	Freight train occupying main track on time of superior train without proper flag protection; failure of engineman of passenger train to operate train under proper control in an occupied block.

as far as the outer switch, with a train occupying the main line inside of the outer switch, still within the limits of the block section for which a clear indication has been given; furthermore, under the rules in effect the question of whether the block is considered clear or occupied depends on the classification of the train which is about to enter the block.

3.[3]—Rear collision between a freight and a passenger train; caused by the freight train not being properly protected by flag and by the passenger train not being operated under proper control when running on a caution card. The freight train had entered the block running on a caution card, and near the leaving end of the block was flagged by a preceding freight train. In the meantime the passenger train was authorized by the despatcher to enter the block, also on a caution card; was run at an average speed of 50 miles an hour, and collided with the freight train when that train reduced speed on account of having been flagged. The manual block rules of the railroad on which this collision occurred provide for an absolute block ahead of and behind passenger trains except in closing up at stations "or for other equally good reasons, and then only under safe conditions." The despatcher stated that the provision made by rule for an absolute block was required to be observed only in the case of a train following a passenger train. The accident occurred on the 22nd day of the month and during this period of 22 days the average number of caution cards issued daily had been nearly 40.

4.[4]—Rear collision of two freight trains; caused primarily by failure of engineman to operate his train under proper control during foggy weather after receiving a caution signal indication. A manual block rule required use of caution cards, but the despatcher stated it had been decided that a caution card was not necessary in addition to the block signal indication and in order to avoid congestion of traffic the use of caution cards was abandoned. Specific instructions had been issued by the superintendent, on account of a previous accident, that the use of permissive block-signal indications in foggy weather was strictly contrary to instructions and that under no circumstances was an operator to allow a train to enter an occupied block during a fog unless in possession of a message signed by the train despatcher. At the time the two trains involved in the accident entered the block it was occupied by a third train and although there was a question as to whether the despatcher was at that time advised of the weather conditions, he stated that he usually left to the enginemen the matter of proceeding under a caution block signal indication in foggy weather, as they were better acquainted with the existing weather conditions.

5.[5]—Butting collision between an equipment train and a mail and express train; accident caused primarily by equipment train being authorized to run against the current of traffic in an occupied block; contributing causes were failure of assistant yard-master and a switchman to furnish proper flag protection. The northbound main track at the station was obstructed, making it necessary for northbound trains to use the southbound track to a crossover near the yard limit board. The southbound mail and express train, which was superior to all trains regardless of class or direction, had entered the block section under a clear signal indication and with no knowledge that the track at the end of the block was being used by opposing trains, although the fact that it was going to be used by the northbound equipment train involved in the accident was known for about 50 minutes before the mail and express train entered the block. The northbound train was operated against the current of traffic a distance of nearly 1 mile on the time of the superior train without any attempt to comply with a manual block rule that when a train is to obstruct the other track the signalman shall notify the trainmaster and obtain authority to issue a crossover card; this crossover card requires the crew of the train receiving it to protect by flag before making the crossover movement. Movements of the kind involved in this accident were not uncommon, but the evidence indicated that crossover cards were not used, while the officers, including the superintendent and the general superintendent, believed that the issuance of caution cards to either train was unnecessary, the only safe way of making such movements being under "proper" flag protection.

6.[6]—Butting collision between a passenger train and a work train; accident caused by work train occupying the main track on the time of the passenger train without flag protection. At the entrance to the block the crew of the passenger train received a caution card stating that the block was not clear, and a permissive card directing them to proceed expecting to find a train in the block, which was 11.5 miles in length. The passenger train attained a speed of 45 miles an hour, which was the speed limit for passenger trains, and according to the speed recorder was traveling at the rate of 34 miles an hour at the moment the collision occurred. The engineman's understanding as to how to operate his train under a permissive card was that the engine crew would keep a sharp lookout, and keep the train moving in good shape. The accident, however, occurred in a cut on a curve which led to the left for the passenger train and the fireman was engaged in shoveling down coal in the tender. The engineman's understanding of the purpose of the permissive card was that it merely gave notice of a train being in the block and he said that he would look for a flag or some other indication of that train. The engineman also stated that fomerly when running under a permissive card it was customary to reduce speed at points where the view was obscured; but this resulted in losing time and instructions were issued to proceed and watch out for a flag. There was nothing in the rules of this railroad company which stated how a train should be operated when running under authority of a permissive card.

Many of the practices referred to are not believed to be isolated or exceptional; similar practices and conditions can no doubt be found in effect on many lines at the present time, and corrective measures should be taken promptly. A considerable number of the accidents referred to in the foregoing may properly be classed as preventable, and it is entirely reasonable to expect that proper action at this time by responsible railroad officers will avert similar disastrous accidents in future.

[3]Wabash, Huntsville, Mo., December 22, 1919. (*Railway Age*, March 26, 1920, page 1023.)
[4]Erie, Red House, N. Y., Oct. 4, 1918.
[5]Missouri Pacific, Texarkana, Ark., March 18, 1920.
[6]C., B. & Q., Birdsell, Neb., Sept. 10, 1918 (*Railway Age*, Dec. 6, 1918, pages 985 and 1018).



The Italian Railway Strike—Locomotive Guarded by Soldiers

Railroads Handling Large Volume of Freight

WASHINGTON, D. C.

THE WEEKLY REPORTS received by the Commission on Car Service of revenue freight loaded and received from connections continue to show large increases in the volume of traffic handled by the railroads as compared with the corresponding weeks of 1919, although the totals are still behind those for 1918. Whereas the reports heretofore published have been incomplete because the Pennsylvania system and several smaller roads failed to report their figures, reports are now being received from practically all roads, and the figures have been revised to include the Pennsylvania back to the first week in June. For the four weeks ending June 26 the showing is as follows:

	Cars revenue freight loaded			Received from connections		
	1920	1919	1918	1920	1919	1918
June 5	788,974	776,610	933,007	573,852	524,731	725,622
June 12	878,041	807,205	974,840	647,777	563,838	728,709
June 19	869,142	807,907	974,840	640,594	574,895	728,709
June 26	869,350	845,684	947,841	622,007	591,200	729,157

The report for the week ended June 26 is as follows:

Commission Working on Rate Case

WASHINGTON, D. C.

MEMBERS of the Interstate Commerce Commission have been concentrating this week on a study of the rate case data with a view to announcing an early decision after the award of the Railroad Labor Board, promised before July 20, makes it possible to determine how much additional revenue will be required to pay for wage advances to the employees. The commission cancelled all hearings for this week which had been scheduled to be held before the commissioners themselves, in order that they might devote themselves to the general rate case. This included oral arguments in three rate cases but did not affect the hearings conducted by examiners.

While there has been, of course, no word from the commission as to when a decision may be expected, there is a very general hope among those who have followed the hearings closely that it may be announced very shortly after the wage award is known and not much later than August 1. It is the intention to make the rates effective on September 1, when the guaranty to the roads provided in the transportation act expires, and it is believed that the commission will

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS; COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO—FOR WEEK ENDED SATURDAY, JUNE 26, 1920

District	Year	Grain and grain products	Live stock	Coal and coke	Forest products	Ore	Miscellaneous	Total revenue freight loaded: This week 1920	Corresponding week 1919	Corresponding week 1918	Received from connections: This week 1920	Corresponding week 1919	Corresponding week 1918
Eastern	1920	6,289	2,634	56,349	9,070	8,198	132,313	214,853	.....	.....	235,672	.....	.....
	1919	6,449	2,953	52,369	8,269	7,629	133,885	.....	211,554	213,650	.....	229,154	245,824
Allegheny	1920	1,769	2,240	62,952	3,818	8,470	86,865	166,114	.....	.....	114,866	.....	.....
	1919	1,974	2,383	58,100	4,840	10,912	97,928	.....	176,137	222,123	.....	129,709	203,872
Pocahontas	1920	129	162	21,990	2,046	193	9,882	34,402	.....	.....	22,056	.....	.....
	1919	107	125	25,221	2,098	240	9,416	.....	37,207	41,129	.....	18,528	24,140
Southern	1920	3,087	2,320	24,368	17,578	2,089	72,775	122,217	.....	.....	77,362	.....	.....
	1919	2,893	2,268	22,656	17,932	2,594	67,929	.....	116,272	120,984	.....	59,780	70,451
Northwestern	1920	9,333	7,309	10,059	17,251	46,773	60,802	151,427	.....	.....	55,617	.....	.....
	1919	9,109	8,386	7,393	18,104	43,966	64,021	.....	150,979	175,152	.....	52,617	75,029
Central Western	1920	9,220	9,954	21,785	6,219	2,057	71,934	122,069	.....	.....	70,521	.....	.....
	1919	6,318	9,928	16,515	5,258	3,364	60,709	.....	102,092	118,351	.....	60,625	66,210
Southwestern	1920	3,826	2,835	5,809	7,986	217	37,595	58,268	.....	.....	45,913	.....	.....
	* 1919	2,626	2,346	4,904	7,387	180	34,000	.....	51,443	56,452	.....	40,787	43,631
Total all roads	1920	33,653	27,354	203,312	63,968	68,897	472,166	869,350	.....	.....	622,007	.....	.....
	1919	29,476	28,389	187,158	63,888	68,885	467,888	.....	845,684	.....	.....	591,200	.....
	1918	.....	.....	.....	.....	.....	.....	.....	.....	947,841	.....	.....	729,157
Total increase	1920	4,177	.....	16,154	80	12	4,278	23,666	.....	.....	30,807	.....	.....
Total decrease	1920	.....	1,035	.....	.....	.....	.....	.....	102,157	.....	.....	137,957	.....

*Not reported 1920 and 1919: Missouri & North Arkansas; Natchez & Southern.

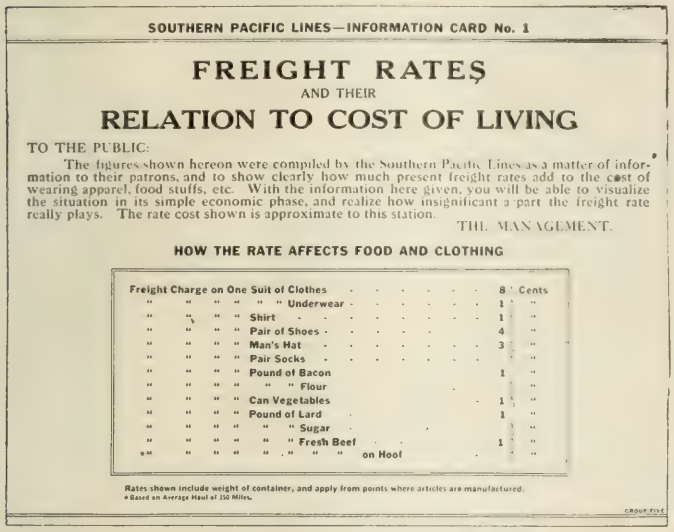
Accumulations of freight cars, which had been reduced to 105,000, or about the number reported as of March 1 when the railroads were returned to private management, had increased during the week ending June 25 to 121,529, as a result of the recent recurrence of strikes at several eastern terminals. The weekly car shortage reports also continue to show increases. The average of deferred car requisitions for the week ending June 23 was 125,458, including both the United States and Canada, or 118,263 excluding Canadian roads. Of the total, 39,925 were coal cars.

THERE IS GOING TO BE freight congestion in this country until the railways are returned to the same condition of efficiency as before the government took them over, and made a reputation by momentum from the excellences of private operation, and by suspension of the laws which it had required the railways to obey. The quickest relief to the railway situation could come from the source which needs it most—that is, from the shippers. They could put a car a day on the tracks for each day they hastened it out of the terminals. They could increase the efficiency of the cars as much as they increased the proportion of the carload, now only 70 per cent. They could make the railways prosperous by paying an increase of rate cheerfully, instead of by obstructing it.—*New York Times.*

The award of the Railroad Labor Board might be framed in such a way that some time would be required to calculate, from the detailed schedules of rates, the annual amount of increase in money that would be added to the payrolls, but there seemed to be a general agreement at the close of the hearing last week that one rate adjustment should be made to cover both the wage increase and the amounts needed to put the railroads on a 5½ or 6 per cent income basis which were estimated in the carriers' applications. It is regarded as certain that a part of the additional rate increase needed to meet the wage advance will be placed upon the passenger fares, as the railroads announced at the close of the hearing that that will be their proposal and several of the commissioners, as well as a large number of shippers at the hearing, indicated a belief that all of the advances should not be borne by the freight traffic. The carriers have promised to file with the commission a detailed proposal for dealing with the wage advance as soon as its amount is known.

Freight Rates and the Cost of Living

THE SOUTHERN PACIFIC LINES in Texas and Louisiana are now carrying on an extensive campaign with a view to informing their patrons as to the relation between freight rates and the cost of living. The campaign has been worked out along lines similar to that of the Pacific Lines of the Southern Pacific, described in the *Railway Age* of May 28 (page 1524). It differs from the other campaign, however, in that whereas the Pacific Lines adopted the idea of posting placards relating to individual



SOUTHERN PACIFIC LINES—INFORMATION CARD No. 1

FREIGHT RATES
AND THEIR
RELATION TO COST OF LIVING

TO THE PUBLIC:

The figures shown hereon were compiled by the Southern Pacific Lines as a matter of information to their patrons, and to show clearly how much present freight rates add to the cost of wearing apparel, food stuffs, etc. With the information here given, you will be able to visualize the situation in its simple economic phase, and realize how insignificant a part the freight rate really plays. The rate cost shown is approximate to this station.

THE MANAGEMENT.

HOW THE RATE AFFECTS FOOD AND CLOTHING

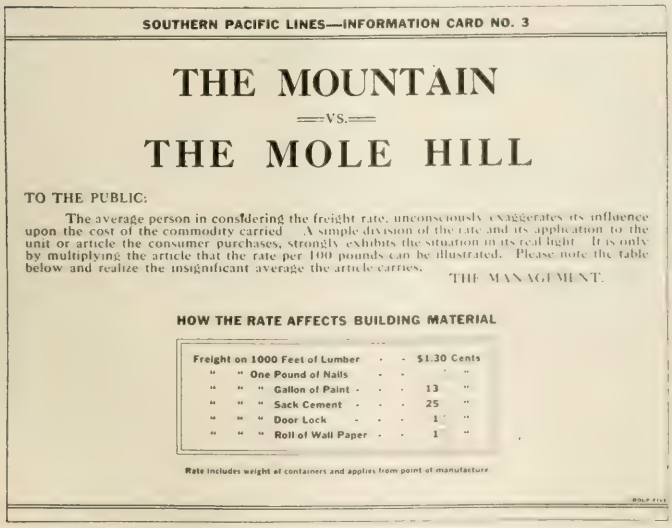
Freight Charge on One Suit of Clothes	8 Cents
" " " " " Underwear	1 "
" " " " Shirt	1 "
" " " " Pair of Shoes	4 "
" " " " Man's Hat	3 "
" " " " Pair Socks	"
" " " " Pound of Bacon	1 "
" " " " " Flour	"
" " " " Can Vegetables	1 "
" " " " Pound of Lard	1 "
" " " " " Sugar	"
" " " " " Fresh Beef	1 "
" " " " " " on Hoof	"

Rates shown include weight of container, and apply from points where articles are manufactured.
+Based on Average Haul of 350 Miles.

GROUP FIVE

commodities at individual stations, the Louisiana and Texas lines are posting placards showing related commodities to groups of stations.

The cards number six in all and each card is seggregated into five different groups according to the relation of the territory in each group to the freight rate. In this article there are reproduced two of the cards which have been used in



SOUTHERN PACIFIC LINES—INFORMATION CARD NO. 3

THE MOUNTAIN
—VS.—
THE MOLE HILL

TO THE PUBLIC:

The average person in considering the freight rate, unconsciously exaggerates its influence upon the cost of the commodity carried. A simple division of the rate and its application to the unit or article the consumer purchases, strongly exhibits the situation in its real light. It is only by multiplying the article that the rate per 100 pounds can be illustrated. Please note the table below and realize the insignificant average the article carries.

THE MANAGEMENT.

HOW THE RATE AFFECTS BUILDING MATERIAL

Freight on 1000 Feet of Lumber	$1.30 Cents
" " One Pound of Nails	"
" " " Gallon of Paint	13 "
" " " Sack Cement	25 "
" " " Door Lock	1 "
" " " Roll of Wall Paper	1 "

Rate includes weight of containers and applies from point of manufacture

GROUP FIVE

group five. Card No. 1 headed "Freight Rates and their Relation to the Cost of Living" gives rates on thirteen items of food and clothing. Card No. 3 headed "The Mountain and the Mole Hill" deals with rates on building material. Similarly other cards show the rates on simple home necessities, on some luxuries, etc. The rates named on each card are noted as including the weight of the containers and as applying from the point of manufacture. The figure given in each case represents the maximum cost on the unit in question to any station in the territory or zone covered by the group.

To carry the intended lesson to the reader, each card contains a brief message, as will be noted in the illustrations. The cards are posted in each station near the bulletin board and follow each other in sequence every two weeks. They are of different colors and about 11 by 14 in. in size.

Medals for Pennsylvania Patriot-Employees

THE DIRECTORS of the Pennsylvania Railroad Company in recognition of the patriotism and devotion of 27,128 employees who served in the armed forces of the United States during the World War, and "in appreciation of the honor reflected upon the company by their actions" has presented bronze medals to each of such employees now living or to the relatives of those who died in the military or naval services. These latter number 610. Most of the presentations were made on Saturday afternoon, July 10, at gatherings at division headquarters and other appropriate places, each presided over by a superintendent or other officer.

Each medal was accompanied by a letter from President Samuel Rea.

Mr. Rea said:

"Appreciating the unselfish patriotism and devotion to



The Medal Presented to Employees of the Pennsylvania Who Were in Military Service

ideals and duty shown by the unusually large number of officers and employes of the Pennsylvania System who made great personal sacrifices to serve with the armed forces of our country during the World War, the board of directors desires to commemorate the service so freely given and the duty so well done, and has, therefore, authorized and directed the preparation and distribution of a suitably engraved medal to each officer and employee so serving between the 6th of April, 1917, and the 11th of November, 1918.

"The medal is presented to you herewith, and the hope is expressed that it will ever recall the faithful and effective service rendered by you in the greatest conflict ever waged in the defense of right. In distributing these medals, I take pleasure in adding a word of personal thanks and congratulations to each of you, of whom, it is unnecessary to add, I am justly proud."

The medal bears on its face a figure of a soldier, shown in the act of dedicating his life to Liberty. Liberty, though saddened by thoughts of sacrifice which her request imposes, serenely looks down upon her beloved son, proud of him who

will not falter in his duty as an American. Above them a new service star has arisen. The soldier's attitude presages victory. With head thrown back, and fist clenched, he has firmly raised the gun, consecrating his all to the great cause.

In the distance are the scenes of the peace-time occupation of this citizen soldier; railroad trains and vessels on the water; while silhouetted against the Palisades is the Pennsylvania station, New York City, the scene of millions of soldier farewells. On the left is Broad Street Station, Philadelphia, and farther inland appear railroad shops. The reverse side of the medal shows the victors returning on army transports, battleships, destroyers and other vessels, manned by American sailors, while the flagship "Pennsylvania" is flying the homeward bound pennant.

On either side of the ribbon bearing the name of the recipient are placed semaphores; the first, set at "Stop" or "danger" symbolizes the earlier days of the war, while the other, set at "Clear," signifies that the enemy has been vanquished, and that the wheels of commerce may again be set in motion.

Commission Approves Loans for Equipment and Other Improvements

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION has certified to the Secretary of the Treasury its approval of the making of loans to the railways of the country—under Section 210 of the Transportation Act, 1920—aggregating $16,593,275.

Aransas Harbor Terminal

For the Aransas Harbor Terminal Railway a loan of $135,000 was approved on June 22. The line of this railway, extending from Aransas Pass, Texas, to the Gulf of Mexico at Port Aransas, Texas, was damaged by a hurricane to such an extent that it is necessary to reconstruct a considerable portion of the line and it is proposed to rebuild with an improved type of construction. It is a condition of this loan that no payment is to be made by the United States until a total of $270,000 shall have been subscribed and paid in toward the reconstruction cost by the security holders of the railway and the communities interested therein, and the money advanced by the United States is to be used for capital expenditures only. The reconstruction of the road will make available a port on which the United States has expended several millions of dollars and will afford a more direct and expeditious route for shipments of oil from Mexico upon which a large section of Texas is increasingly dependent.

Carolina, Clinchfield & Ohio

A loan of $2,000,000 to the Carolina, Clinchfield & Ohio was certified on June 26, to assist the carrier in financing its immediately pressing maturities. Before making this loan the commission required that the carrier should effectively finance its other obligations by the sale to its stockholders or others of its income debentures at an amount not less than $5,000,000, to bear not more than 6 per cent and to be sold or exchanged at not less than par without other cost to the carrier. The conditions imposed by the commission were accepted and complied with by the carrier and its undertaking to dispose of its debentures on a 6 per cent basis has been underwritten by a responsible banking house. The Carolina, Clinchfield & Ohio occupies an important place in railway transportation in the Southeast. A heavy coal tonnage is its chief traffic characteristic.

Bangor & Aroostook

For the Bangor & Aroostook a loan of $200,000 was certified on July 6. This was to aid the carrier in obtaining six freight locomotives the total value of which is $360,000, and also to enable the carrier to provide itself with necessary shop machinery and tools, a coal storage plant and passing tracks at a cost of about $20,000. This carrier has undertaken itself to finance one-half the cost of the locomotives and $58,000 for other necessary additions and betterments. The Bangor & Aroostook handles a very large tonnage of wood pulp which is manufactured into news-print paper and for which there is universal consumption. This carrier is also called upon each year to transport a crop of from 20 to 25 million bushels of Irish potatoes—of which 35 to 40 per cent is distributed throughout the country for seed purposes. The locomotive power of this carrier has for some time been taxed to the limit with the heavy traffic it has been called upon to handle.

Illinois Central

A loan of $4,511,750 was certified to the Illinois Central on July 8, 1920, to aid it in acquiring 75 locomotives, 1,000 refrigerator cars, 200 flat cars, 200 stock cars and 52 caboose cars. The total value of this equipment will be approximately $12,072,000. The notable features of this loan is the inclusion therein of 1,000 refrigerator cars. Such cars are urgently needed throughout the country for the transportation of perishable food products. The contribution to be made by the Illinois Central to meet the government's loan of $4,511,750 is a large one, about $7,560,300.

Chicago, Burlington & Quincy

A loan of $4,446,523 to the Chicago, Burlington & Quincy was approved July 9, 1920. The loan will assist the carrier in obtaining 45 locomotives, 500 stock cars, 1,000 refrigerator cars, 1,000 box cars and 1,000 gondola cars, the aggegate value of which will be about $14,840,550 of which the carrier itself is contributing $10,394,025. This loan, like the one to the Illinois Central, will put into general circulation a large number of refrigerator cars for which there is a pressing demand.

Salt Lake & Utah

The commission approved, on May 24, 1920, a loan to the Salt Lake & Utah of $64,600 to aid it in acquiring new equipment, and has just approved an additional loan of $235,400 to the same carrier to assist it in making other additions and betterments and in financing its pressing maturities. To meet the loan of the government the carrier has itself undertaken to finance, for new equipment $213,563, for other additions and betterments $78,600 and for maturities $43,336. The tonnage of sugar beets on the line of this carrier is large and its local traffic—both freight and passenger—is relatively important.

Atchison, Topeka & Santa Fe

For the Atchison, Topeka & Sante Fe a loan of $5,493,600 has been approved, to aid the carrier in acquiring 2,500 refrigerator cars, 500 gondola cars and 50 heavy freight locomotives. The total value of the refrigerator cars is about $11,875,000, gondola cars $1,501,500, and freight locomotives $4,298,900. The contribution required of the carrier to meet the loan of the government is $12,-181,800. The making of this loan will put into general circulation 2,500 refrigerator cars which are urgently needed, and will aid the carrier in bringing its quota of locomotives, gondola and refrigerator cars to a point where it can handle with efficiency the heavy transportation demands of every character that are being made upon it.

Fuel Loss Caused by Front End Air Leaks

Good Design and Eternal Vigilance Required to Prevent Fuel Losses From This Source

It is questionable if the serious effects of front end air leaks are fully appreciated and whether adequate measures are being taken to prevent their bad effects. The direct result of air openings in the front end is to reduce the vacuum in the smokebox and lessen the draft on the fire. This in turn necessitates the use of a smaller nozzle area to produce the desired draft. A reduced nozzle increases the back pressure in the cylinders, from which it is apparent that the efficiency of the locomotive is directly affected by air leaks in the smokebox.

It has been pointed out that these air leaks do not usually develop suddenly and that their effect on the draft is gradual. Consequently as the steaming qualities of the locomotive are gradually impaired the nozzle is invariably bushed down or a bridge is required. If these front end air leaks occurred suddenly their effect would be so noticeable that they would unquestionably be investigated and corrected.

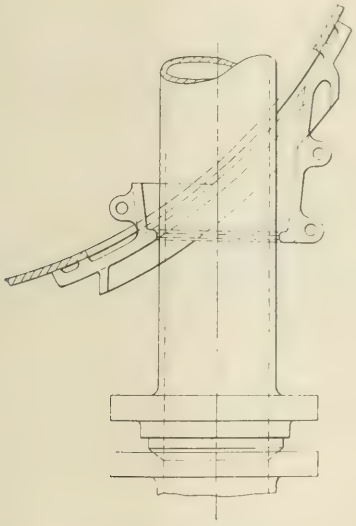


Fig. 1—Usual Type of Joint Between Smokebox and Outside Steam Pipe

The harmful effect of a front end air leak often remains after the leak itself has been stopped up, for after a nozzle has been bushed down or bridged to counteract the effect of an air leak in the front end, it is not always enlarged to its former dimensions as soon as the air leak has been closed. In fact, it is quite common for locomotives that have required a reduction in nozzle size, for some cause or other, to keep on running with the reduced nozzle long after the immediate cause has been removed. Only the strictest supervision over this matter will result in the elimination of needlessly restricted nozzles.

Principal Cause of Front End Air Leaks

Outside steam pipes are not the only cause for front end air leaks but they can doubtless be regarded as the principal cause. The most troublesome point in connection with this construction has been to close the aperture in the smokebox shell through which the steam pipes pass to the cylinders. Obviously these pipes cannot be rigidly connected to the boiler shell at this point and must be allowed freedom of movement to allow for contraction and expansion. Outside steam pipes possessed so many advantages and adapted themselves so readily to superheater installations that the difficulty of maintaining a tight joint between the smokebox and the steam pipes was somewhat overlooked and the earliest joints intended to prevent air leaks have proved more or less inadequate from this standpoint.

Fig. 1 shows an arrangement that has been applied to a large number of locomotives. The gland is packed, preferably with asbestos rope, and if this packing is carefully maintained the joint will remain tight. However, it must be observed that the pressure on this packing, resulting from a vacuum in the front end, tends to loosen rather than compress the packing, and it will usually work loose so as to admit air, unless frequently attended to between shoppings. The use of any cement in this gland as a substitute or makeshift to reduce the time and expense of frequent repacking is not a desired expedient. The cement soon develops cracks through which air is admitted to the smokebox, and often crumbles and drops out of the gland altogether. This is due to the fact that the cement contains moisture at the time the joint is packed, which invariably dries out, causing

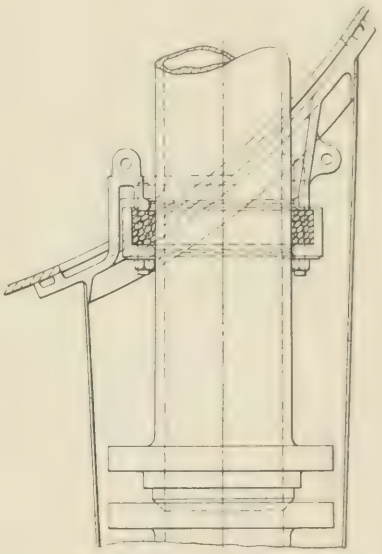


Fig. 2—Improved Type of Joint for Outside Steam Pipe

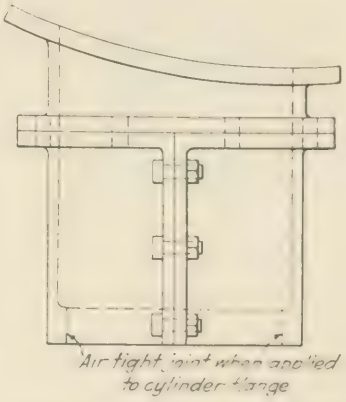


Fig. 3—Early Design to Prevent Air Leaks

the packing to shrink around the steam pipes. The use of cement for this purpose cannot be too strongly condemned.

Improved Construction to Prevent Leaks

The use of a packing gland with means for maintaining the packing in place as shown in Fig. 2 is one of the most practical and certainly the most substantial means for obtaining a joint which, if properly packed, will remain tight from shopping to shopping. This form of construction was applied to quite a large number of locomotives, including all of the locomotives built for the Railroad Administration. The application of this or an equivalent device to existing locomotives, as well as to all new power, cannot be too strongly urged. The use of cement, as has been pointed out, is altogether unsatisfactory and the application of other material without means for holding it in place will necessitate frequent inspection and repacking.

Front end air leaks around the steam pipes may be corrected on a large number of locomotives on which this has been a source of trouble, by redesigning or inserting an effective packing gland to protect this joint. Fig. 3 illustrates a device that was designed to prevent air leaks around the outside steam pipes, but has never proved very satisfactory from this standpoint. In this arrangement a flanged casing is attached to the smokebox and a casing formed from two halves bolted to the lower flange of this casing. The lower end of the casing is designed to fit closely over a flange in the steam pipe immediately above the cylinder casting and the two surfaces in contact are machined to make a tight fit. This, however, does not always result and on locomotives so equipped it would be better to discard all of this casing, except the flanged piece attached to the smokebox, and substitute a stuffing box and packing gland as

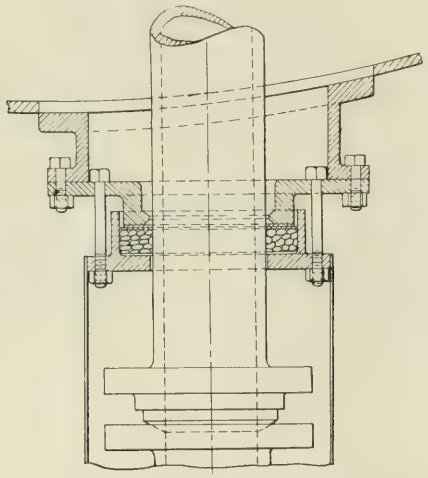


Fig. 4—Application of Stuffing Box and Gland to Design Shown in Fig. 3

shown in Fig. 4, which can be easily accomplished with the addition of two castings.

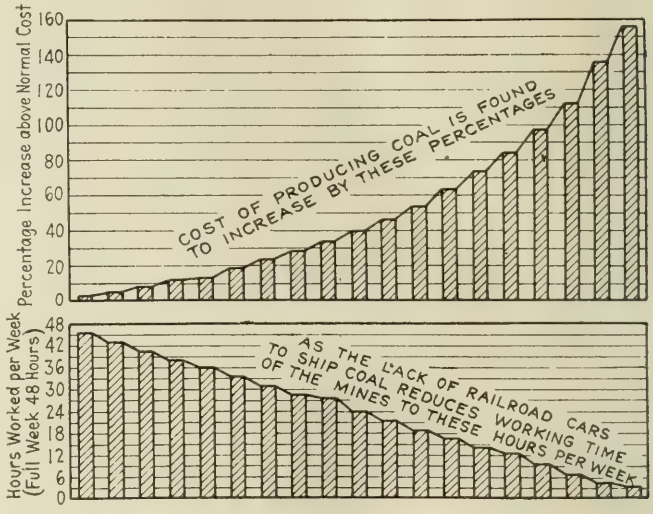
Good Design and Maintenance Essential

The problem of avoiding leaks at outside steam pipes is one that requires not only persistent attention in the engine terminal and shop, but should be carefully considered by mechanical engineers in designing new locomotives and improving old locomotives as they go through the shops. It is safe to say that wherever outside steam pipes are in use, a large percentage of locomotives will be found to have air leaks around the steam pipes, unless special precautions are taken in design as described in the foregoing, or unusual care is exercised with respect to this detail of locomotive maintenance. It is entirely possible that the design of an air-tight joint can be further improved, but it is of greater importance that the application of some of the improved designs already available be made more universal.

Individually, the front end air leak is never too small a matter to be overlooked and in the aggregate the loss in locomotive efficiency and capacity occasioned by front end air leaks will approach a surprising total on almost any railroad.

Effect of Car Shortage on Cost of Producing Coal

THE ENGINEERS' COMMITTEE of the Fuel Administration issued a report which contained figures showing the effect of lack of cars on the cost of mining coal. This information is being circulated in a diagram published



How Lack of Cars Increases Cost of Coal

by the National Coal Association. A reproduction of the chart is shown herewith through the courtesy of Coal Age.

Making Wood Fire Resistant With Paint*

FIRE-RETARDENT PAINTS are the most practical means so far discovered by the Forest Products Laboratory by which small amounts of wood can economically be made fire resistant. The only other known methods of decreasing the inflammability of wood are to keep it wet, or to inject into it certain chemicals under pressure. These methods, though more effective than painting, are usually either impracticable or too expensive to be considered.

Ordinary calcimine or whitewash has proved in tests to be as fire resistant as any paint covering tried. It is cheap and convenient to use. Although it will not prevent the burning of wood exposed continuously to a high heat, a good coat of calcimine on wood will decrease the danger of a blaze spreading from burning cigarettes, sparks, matches, and similar small sources of fire. Calcimine is, of course, more effective for inside than for outside use.

For exterior use numerous patented fire retardent paints are available. An effective outdoor paint which has been developed at the Forest Products Laboratory consists of linseed oil, zinc borate, and chrome green. This paint has maintained its fire-resisting properties through more than three years of exposure to the weather.

*From Technical Notes No. 106 issued by the United States Forest Products Laboratory, Madison, Wis.

Coal Order Modified and Extended

Shippers in Wrangle Over Comparative Importance of Products That Move in Open-Top Cars

WASHINGTON, D. C.

AS THE RESULT of the hearing held before the commission on July 8, 9 and 10, the Interstate Commerce Commission on July 13 issued Service Order No. 9 extending its previous order, Service Order No. 7, which gave priority to the use of open-top cars for bituminous coal loading east of the Mississippi river for 30 days beginning June 21, for 30 additional days. The new order also amended the previous order to provide that the words "coal cars" as used in the order shall not include or embrace flat bottom gondola cars with sides less than 36 inches in height, inside measurement, or cars equipped with racks or cars which on June 19 had been definitely retired from service for the transportation of coal and stenciled or tagged for other service. This is to meet the complaints of steel and ore shippers that certain railroads had interpreted the order to include such cars as coal cars and thus to prevent their being used for steel and ore shipments.

The provision in Order No. 7 authorizing the placing of embargoes against consignees who fail to unload coal cars within 24 hours was extended to provide for an embargo against the placement of open-top cars for consignment to any consignee who shall fail or refuse to unload coal or other freight transported in coal cars and placed for unloading within 24 hours after which placement until all coal or other freight so transported and so placed has been unloaded by the consignee.

An additional provision was inserted providing that until August 19 railroads east of the Mississippi river are authorized to place, furnish and assign cars to coal mines for the transportation of coal to the extent that may be necessary in order that public utilities, including street and interurban railways, electric power and lighting plants, gas plants, ice plants, water and sewer works, also hospitals, schools and other public institutions may be kept supplied with coal for current use, but not for storage. This may be done in addition to and without regard to the existing ratings and distributive shares for mines, provided no cars shall be supplied without written application therefor from the public utility, concurred in by the delivering railroad, showing that such coal is needed for current use, and not for storage, in order that the applicant may continue in daily operation. It is also provided that such coal shall not be subject to reconsignment except to public utilities or public institutions and that a written report of the cars placed shall be promptly made to the commission by the railroad placing the cars.

In a letter to Daniel Willard, chairman, Advisory Committee, Association of Railway Executives, chairman of the commission explained that following the hearing certain features of the situation seemed to need clarification or correction of Service Order No. 7. "It will be noted," the letter said, "that no especial recognition is given to the lake cargo situation. It is understood that this is the subject of detailed discussions among the coal operators themselves, to be followed immediately by a conference with various railroad executives, and that we will be advised as to the determinations reached. We have not thought it proper to attempt to deal with this situation by order until we know the result of such deliberations.

"There is one feature of the situation as to which we entertain no doubt and which we desire to call to your attention on behalf of the carriers, which seems to us to require immediate and careful consideration with a view to action which will remedy abuses abundantly shown to exist. We refer to the provisions contained in tariffs of the carriers permitting the general promiscuous reconsignment of cars under load with coal. As an emergency proposition, it seems to us that the carriers should at once take steps to bring this practice down to the unavoidable minimum. We are not prepared to say that all reconsignment of coal should be prohibited; but it seems to us that it would be a very unusual situation in which more than one reconsignment should be permitted during the existing transportation emergency.

"The privilege of reconsignment of coal is one which is carried in the tariffs of the carriers. Without discussing or deciding whether the commission has power, under the emergency provisions of the Transportation Act, to require the restriction or suspension of this privilege, with the myriad situations which exist in the country it is obvious that the carriers should themselves bring forward promptly proposals to the commission for a suitable amendment to their tariffs on short notice in harmony with the views here expressed.

"We will thank you if you will see that this is called to the attention of the carriers represented in your association."

At a conference of leading bituminous coal operators held at Washington on Monday and Tuesday for the purpose of discussing the entire coal transportation problem, a committee of seven, headed by President D. B. Wentz of the National Coal Association, was appointed to meet with the Advisory Committee of the Association of Railway Executives at New York on Wednesday. The conference was arranged with Mr. Willard, chairman of the committee. According to a statement issued by Mr. Wentz the committee of operators has authority to act for the bituminous operators of the United States and "is prepared to take definite and drastic action in connection with the railroads to relieve the fuel shortage."

At the operators' meeting the problem of supplying the northwest with fuel via the lakes and of furnishing an adequate supply for New England was the principal topic of discussion and various plans were considered. Proposals that the zone system be re-established were not approved, and, according to statements made to newspaper men after the meeting, there was some criticism of the railroads for failure to carry out the commission's priority order in some instances. On Tuesday the operators' committee conferred with the shippers who have contracts for coal for movement to the lake docks and to New England, and attention was also given to the emergency requirements of New York, Philadelphia and other large eastern cities whose fuel supply for public utilities is reported to be critical, but the position was taken that failure to fulfill contracts was caused entirely by the car shortage.

According to a statement issued by the coal association after the meeting, the way to relieve the existing coal shortage would "be plainly pointed out to the railroad executives" at the meeting in New York, but the remainder of the statement indicated that its idea of the way to relieve the coal shortage was to relieve the car shortage and that the way to relieve a car shortage is to furnish more cars, which leaves several factors in the problem still to be considered.

Resolutions were adopted stating that Service Order No. 7 as applied by the railroads is not improving the car supply at coal mines to any appreciable extent and demanding the

amendment and enforcement of the order "in such manner as may be necessary to supply all coal mines and coke operations of the country with sufficient cars to run full time until the coal supply of the country may be definitely and adequately assured." It was also demanded that priority be given in the movement of coal and coke over all other commodities except food, livestock and perishables, with which coal and coke should move on a parity, and it was recommended that the Interstate Commerce Commission limit the privilege of reconsignment of coal to the greatest extent possible in order to eliminate existing abuses.

Another resolution was adopted stating that the dock interests of the Northwest have written and enforced contracts for sufficient tonnage to supply their requirements and that if the recommendations of the meeting relative to car supply are carried out the Northwest will be amply supplied with the coal that has already been purchased. It was stated also that the meeting is satisfied that if these recommendations are carried out there will be ample coal for all other parts of the country, including New England.

Hearing on Open Top Car Distribution

An alarming picture of the hampering effect of inadequate transportation service was drawn at the hearing before Commissioners Clark, Aitchison and Potter, sitting as Division No. 5 of the Interstate Commerce Commission, on July 8, 9 and 10, on the question of the distribution of open-top cars with particular reference to the commission's Service Order No. 7, giving priority for 30 days from June 21 to bituminous coal east of the Mississippi river. The picture was drawn principally by the shippers and consumers of products other than coal that move in open cars, whose business has been materially restricted by the temporary priority order and who complained that they were being discriminated against, while the shippers and users of coal, who have been benefited by the order, had not had their advantage for a sufficient period since it went into effect to be able to inject much encouragement into the view of the situation.

As a result the hearing developed largely into a wrangle as to the comparative shortage and comparative essentiality of various commodities and the remedies suggested ranged all the way from a demand that the commission abolish the order and allow all interests an equal chance at the available cars, to recommendations that it or some other authority set up a complete system of priorities for apportioning the cars between essentials. Other suggestions were that the order be modified to allow a greater share of the cars for the use of construction and road-building materials and ore, on the one hand, and that it be extended or strengthened for the purpose of meeting the most critical fuel situations on the other hand.

Daniel Willard, chairman of the new advisory committee of the Association of Railway Executives, began the testimony with a frank statement that there would not be enough transportation to go around for another year, unless there shall be a slackening of business, and of the reasons for that condition. Mr. Willard's statement was published in last week's issue. His explanation of the situation called forth many expressions of approval from shippers present who appreciated the sincerity of the desire on the part of the railroads to do everything in their power to meet the problem, but there were also many criticisms of the railroads for failure to display greater efficiency in the movement of cars in specific instances and numerous stories of cars being held idle for long periods.

The hearing illustrated in a striking manner the ramifying effect of a shortage of transportation facilities, the interdependence of industries of various kinds and the vital dependence of all upon transportation. This was particularly brought out in the testimony of the witnesses interested in road-building, who had planned an elaborate program of highway construction largely for the purpose of encouraging motor truck transportation, either in competition with or as supplementary to the railroads, which program now cannot be carried out because the railroads cannot transport the necessary materials.

Shippers on construction materials insisted that their product is just about as essential as coal, more so than coal for non-essential uses. Some highway officials pointed out how good roads would enable the motor trucks to help the railroads in handling the traffic, while others referred to the damage done to roads by motor trucks which made it imperative that cars should be furnished for repair materials. Cement and lumber shippers said their product was needed to enable the farmers to build granaries in which to store the grain instead of asking the railroads to haul it all at once; lumber shippers complained that they could not sell their produce for building purposes if cement is not also available; glass manufacturers urged the importance of sand; representatives of public utilities insisted in the paramount importance of fuel, while other witnesses urged the crying need for additional housing facilities.

In opening the hearing Chairman Clark said that many informal complaints regarding the order had been received, but that the fuel situation is very bad, as everyone knows, and important public utilities, including railroads, are without any reserves and living from day to day.

Mr. Willard said that the action taken up by the commission in issuing the priority order, in his opinion, was one which should have been taken and he suggested no modification in the order, but thought that it should be possible for the shippers and railroad officers to get together to see how exceptional cases could be taken care of under the order and that, if necessary, the commission could be asked for modifications.

In discussing the freight congestion, Mr. Willard said he understood the accumulations of cars after having been reduced to the number that was on hand at the end of federal control, had been increased to about 120,000 as a result of the recent outbreak of the strikes. He said that no one can predict what the railroads can do in the face of a situation like that because the congestion delays coal loading, wheat loading and movement of all kinds.

One of the most serious problems facing the railroads, Mr. Willard said, is the carrying out of the program for supplying the Northwest with coal via the lakes. From 25,000,000 to 28,000,000 tons should be transported, but up to July 1 only 4,000,000 tons had gone. This was partly because a smaller proportion of the coal from the districts that usually sent it across the lakes has gone in that direction this year. To carry out the full program the railroads must dump at lake ports nearly 4,000 cars a day for the balance of the season of navigation, but the railroads cannot carry out the program unless the coal is shipped in that direction. Mr. Willard said the New England situation was not so serious because the ocean is open all the year round, although he understood that the public utilities situation had been serious within the last two weeks as a result of the new strikes. Mr. Willard pointed out that the railroads during the first six months of this year had already moved 40,000,000 tons of coal more than in 1919 and only 25 less cars a day than during the first six months of 1918. If it had not been for the switchmen's strike they would have done more. There is no reluctance on the part of the railroads to do what ought to be done.

Commissioner Aitchison asked whether the trouble is due to an excess of demand for coal or because too much coal is being stored. Mr. Willard said he understood that the coal reserves had been so depleted during the strike that the stocks on hand this spring were much smaller than usual.

He pointed out that the large production of coal in 1918 had been accomplished only under the exercise of the drastic powers of the Fuel Administration and of the Railroad Administration. He would not recommend a return to all of the practices they had used, such as the zoning system, but thought that present conditions require the pooling of coal so that it will not be necessary to keep separate so many different grades of coal. Mr. Willard said there is little reason now to complain of too light loading of coal and there is no difficulty in getting coal cars loaded promptly, but the consignees can help by unloading promptly.

With strikes out of the way Mr. Willard thought the railroads ought to be able to carry out the lake program, but Commissioner Clark pointed out that if shippers do not bill their coal to the lakes the railroads cannot haul it there. Mr. Willard also thought that shippers ought to forego the reconsignment privilege in times of emergency, although the practice was all right in ordinary times. Commissioner Aitchison asked about the supply of railroad fuel on hand. Mr. Willard said he understood that there was about a four days' supply, which is about as low as it is safe to go.

Commissioner Potter asked what machinery the railroads have by which special situations like the movement of highway materials, the lake coal program, etc., can be handled. Mr. Willard said that they can be taken up with the Car Service Commission, or with his committee, and until its local organization is completed, with him personally.

The Fuel Situation

A. G. Gutheim, a member of the Car Service Commission, described how the coal strike had resulted in reducing the reserve stocks at a time when business was going at a tremendous rate and there was a roadbuilding program three times as great as had ever been attempted before. He pointed out that when the coal operators are receiving only a 50-per cent car supply, the fact should be recalled that a 100 per cent supply is more than the country needs or ever had and it would make possible the shipment of 18,000,000 tons a week or 900,000,000 to 950,000,000 tons a year. A 70-per cent car supply, he said, would be sufficient for a production of 12,000,000 tons a week, which would be sufficient. A program of 30,000,000 tons of coal for lake shipment this year, he said, is practically impossible. Last year 40 per cent of the coal had moved to the lakes by July 1; in 1918 only 26 per cent; but in 1920 only 11 per cent. The peak loading at Lake Erie docks was 3,700 cars a day in 1917. Three thousand cars a day would provide 21,000,000 tons.

Commissioner Potter asked whether the small percentage this year is due to any reduction of coal production and Mr. Gutheim said that the shippers which produce the lake coal have had a production about equal to that of last year, but have sent less of the coal to the lakes. Some has gone to New England and some for export. The shipments during the first five months of 1920 and the two preceding years have been as follows:

To New England, by rail	1918	6,900,000 tons
	1919	4,500,000 tons
	1920	5,300,000 tons
Lakes	1918	4,234,000 tons
	1919	5,000,000 tons
	1920	1,650,000 tons
Export, excluding Canada	1918	1,466,000 tons
	1919	1,706,000 tons
	1920	5,796,000 tons

Commissioner Clark asked whether there was any transportation difficulty in connection with the movement of lake cargo coal which has not existed in previous years, and Mr. Gutheim said he thought the labor troubles had not been sufficient to account for the difference.

Showing the reduction in the reserves of railroad fuel, Mr. Gutheim read reports showing that the average number of cars of company coal and coke held daily on 155 railroads reached the high point on April 4, 1919, when it was 52,405, or about 10 days' supply. In July, 1919, the number was down to 47,210, in August to 31,877, in September to 26,216, and on October 31, 1919, to 29,191. During the winter the average was from 30,000 to 32,000, as compared with an average daily consumption during the last week of federal control of 6,879 cars. During April the average was from 29,000 to 35,000, and on June 25 it was 27,616, as compared with a consumption of about 8,000 cars daily.

In reply to questions as to what is necessary to get sufficient coal up the lakes, Mr. Gutheim said one of three things is necessary: Either the lake people must buy coal or the operators must ship of their own volition, or there must be some compulsion. Under the assigned car plan the operators could have cars for shipments to the lakes, but not otherwise. But the Fuel Administration assigned so many cars for particular classes of shipments that very few cars were left for regular distribution. The impression he got from the talk of people who visit his office is that consumers can get coal if they are willing to pay the price, although many say they cannot get shipments on contracts because of car shortage, with the result that they buy spot coal from some other district at a higher price and then ask for cars to move it. He said the Boston & Maine had recently paid $14.50 a ton for bituminous coal at Mystic Docks, Boston.

Discrimination Against Sand, Gravel and Cement Complained Of

V. O. Johnson, president of the National Association of Sand & Gravel Producers, said that the entire business of members of his association, the largest users of open-top cars except the coal shippers, has been put in jeopardy by Order No. 7, which had taken away 80 per cent of their coal supply, and he protested most vigorously that they were entitled to a fair share of the equipment. He insisted that it was far more important to use cars for sand and gravel than for coal for near-beer, silk-stocking, piano and pleasure automobile factories. Unless relief is given the industry will be ruined within a few weeks.

A. N. Johnson, of the Portland Cement Association, asked that the priority order be rescinded. The construction industry, he said, is basic; there is a three-year deficiency in construction work, millions of dollars are tied up in uncompleted work and miles of roads are being ruined for want of repairs. He declared that the derangement of traffic caused by orders of the Interstate Commerce Commission and of the Commission on Car Service has not had the desired effect but that "the attempt to give the coal industry a monopoly of the car supply is wrong." This brought a quick retort from Commissioner Aitchison, who said the commission is not trying to foster the coal industry but to supply the country with fuel.

William H. Duval, county attorney of Cook county, Ill., asked the commission to give discretion to the railroads to allow them to furnish sufficient materials for the maintenance of highways, on the ground that the motor trucks would assist the railroads in supplying transportation, but he said that motor truck transportation was too expensive for road materials. Commissioner Aitchison referred to the bitter and repeated protests received by the commission from the public utilities of Chicago regarding the inadequate supply of coal and asked Mr. Duval whether, as a public official, he would rather have coal or material to maintain the highways. Mr. Duval said that it is, of course, necessary to have coal but Chicago has always been able to get it in the past and he thought it would continue to get it. Mr. Aitchison said that much of the difficulty is caused by the fact that citizens of Chicago have refused to work on the railroads.

G. W. Buchholz, representing the Associated General Contractors of America, said that if priority for fuel is neces-

sary it should be restricted to fuel essentials. When Commissioner Aitchison asked who is to decide what are essentials, he replied that the commission should apportion the cars fairly between industries.

Mr. Aitchison also asked the witness where he would draw the line as indicating a non-essential use of cement, as to whether he would merely draw it between opera houses and moving picture places and dwelling houses, or as to whether he would shut off the use of cement for too large a house.

Henry M. Camp, of the National Lime Association, said that preference in favor of coal loading will result in serious delay in the delivery of sand, gravel and crushed stone, which are used in the manufacture of lime, and that it is imperative that building and construction work shall go on, but he appreciated the seriousness of the coal situation because it is also affecting his industry. He said there will be a shortage of 50,000 homes in New York this fall and that shelter may be as important as fuel.

F. G. Ward, representing the National Federation of Retail Lumber Associations, said his members have an abundant stock of lumber, but are unable to dispose of it because of the lack of cement, sand, gravel and sometimes of nails. The farmers are anxious to build granaries in which to store grain, but need cement, sand and gravel.

Thomas H. McDonald, chief of the federal Bureau of Public Roads, said that the road-building program has already been reduced to one-fifth of that for which federal aid had been provided and his department, in connection with state highway authorities, has taken the position in April that no more contracts should be let "until we have cleaned up the mess we have started." He pointed out, however, that it is important to continue a considerable amount of maintenance work because commercial vehicles, which have been forced onto the roads by the railroad transportation difficulties, destroy the roads, and it is essential that this form of transportation be maintained because as high as 10 per cent of the food products are coming into the cities over the roads.

R. E. Riley, representing the washed and white sand producers of Northern Illinois, complained because the priority order had taken away even the unsatisfactory equipment they had formerly received and that no provision had been made for furnishing box cars in its place.

H. B. Fuller, of the American Sand Association, urged consideration of the importance of molding sand for foundries, which he said is as essential as coal.

I. D. Lain, representing the Association of Municipal and Highway Contractors of Illinois, said that bankers are refusing to loan money for roadbuilding work, the bonding companies have sustained losses and are going to refuse to bond contractors, thousands of employees have been thrown out of work and wages are so high that the interruption of material shipments causes large losses.

L. F. Owen, representing the Chicago Building Material Exchange, described the shortage of housing facilities in Chicago and the serious effect on the building trades of the coal priority order, asking that the order be amended so that open top cars may be used for building materials to the extent of 50 per cent of the shipments made in June. He also recommended an increase in the per diem rate on open cars from 90 cents to $2, a demurrage rate based on the value of the commodity, the prohibition of coal reconsignment, an embargo on exports, a distribution of cars among industries in proportion to their capacity and, if necessary later on, an order limiting the furnishing of cars to essentials such as food, fuel, clothing, shelter and highways.

Conflicting Views as to Coal Shortage

George H. Cushing, managing director of the American Wholesale Coal Association, asserting that there is no coal shortage but an "overproduction of demand" and that the priority order should be withdrawn "because it interferes with other people's business without doing anything necessary for the coal business," insisted that current coal production "exceeds the needs or any reasonable demand although far short of the current buying power of the market." He admitted that there is a bad distribution of coal, but he took the position that it was the result of the panicky condition of the market caused by the fact that government officials have scared the public into thinking a coal famine is imminent. He estimated the coal requirements for the year beginning April 1 at 535,000,000 tons and said that while the average weekly production necessary to provide that amount is not usually attained until August, this year it has been reached as early as June.

Asked whether a fuel administrator should be appointed Mr. Cushing said: "If you want to hopelessly ball up the situation that is what you should recommend. This is election year and there is not a man in the United States with enough courage to fix the price of coal where it ought to be." Asked what he would consider a high price for coal Mr. Cushing said anything over $5.50 a ton. Chairman Clark read a circular letter from a coal company offering coal already in cars at $13 a ton.

John W. Lieb, vice-president of the National Electric Light Association, and other representatives of public utilities said that their reserve stocks have almost completely disappeared and they are living from hand to mouth. They have had to buy spot coal in the open market at $12 to $15 a ton and many companies have shared their fuel supplies with others in order to keep the plants running, while the soliciting departments are busy keeping away new business, because in many cases it has been necessary to curtail output at a time when the companies ought to be accumulating reserves. Mr. Lieb said that the solution is a preferential car assignment at the mines for public utilities. He also expressed acknowledgment of the "splendid co-operation received from railroad officials in trying to remedy the situation."

Oscar H. Fogg, of the American Gas Association, said that the visible supply of coal for the utilities in New York had decreased during the past week from 180,000 to 130,000 tons. In reply to Commissioner Potter, he said that 95 per cent of the companies have contracted for the fuel and could get it if the car supply were adequate.

W. H. Groverman, representing the lake dock operators, said that only 61 mines in five states on six railroads are obligated by contract to ship coal to the lakes. He also said that the large number of wagon mines, which outnumber the standard mines three to one, are decreasing the production of the latter because they can get a car and take a whole day to load it as against only three minutes to load a car under a tipple. These smaller mines add something to the production, but they decrease the supply of cars at the standard mines and the companies having contracts for lake coal have been getting only a 35 per cent car supply and they cannot meet the requirements on that basis.

Carl D. Jackson, of the Wisconsin Railroad Commission, asked that the order be strengthened so as to insure an adequate supply of coal to the Northwest.

Eugene McAuliffe, president of the Union Colliery Company of St. Louis, and also representing several public utilities thought the government should take over the regulation of export coal to stop profiteering. No matter what the railroads and the commission do, he said, there will not be enough coal moved to the Northwest this season. He suggested that the commission revoke the assigned car privilege and when asked whether it is not the common practice for operators to order more cars than they are entitled to, he admitted that the practice was common, but that it was

the fault of the railroads for failure to sufficiently police the distribution of cars. He said that the privilege of reconsignment should be revoked and the establishment of the zone system should be reconsidered.

"The practice of buying switching service and empty freight cars in terminals has grown to such proportions as to warrant the criminal prosecution of those involved," Mr. McAuliffe said. "The money thus paid clandestinely for the service is said to equal or exceed the amount returned shippers in the form of rebates in times past. That is a generality but that testimony has come to me so overwhelmingly from shippers, from railroad officials and from my own employees as to the necessity of doing these things, that I think the commission, if they care to go into the thing, will find no difficulty in getting at the facts."

"For your information," said Chairman Clark, "I will say that the commission has found very extreme difficulty in getting the facts. We have been nosing after that thing now for months. It is not customary to advertise things of that kind that we are doing, but there comes a time sometimes to speak a word in defense of some things being shot at from every angle without any information as to facts."

"If you can get a specific case," said Mr. McAuliffe, "I will furnish you with information about it."

Chairman Clark read a letter from the Canadian War Mission pointing out that Canada is dependent on the United States to a large extent for coal, estimating its requirements at 17,000,000 tons. The letter said that a critical stage had been reached in Canada and it was feared that an adequate supply was not forthcoming.

J. D. A. Morrow, vice-president of the National Coal Association, commending the commission's order, asserted that only by its strict enforcement can the country's immediate demand for coal and the supply for next winter be met. It is conservatively estimated, Mr. Morrow told the commission that the country needs at least 545,000,000 tons of coal for its requirements for the current year, ending March 31 next. Part of this is needed to make up a shortage of some 15,000,000 tons that ordinarily would have been in the country's bins on April 1 last. Since April 1, shipments from the mines have been running 1,245,000 tons a week below requirements, until, on June 26, they had fallen 16,000,000 tons below the requirements, making a total shortage today of between 30,000,000 to 35,000,000 tons.

With the natural transportation difficulties of the winter months to face, the mines, Mr. Morrow said, ought to produce an average of 12,000,000 tons a week from now until December 1, if the country is to have the aggregate production needed to make up the deficit and to carry it through the winter. At present, he pointed out, the production is running approximately 10,400,000 tons a week.

Iron and Steel Companies Faced with Shortage

The representatives of iron and steel companies who testified on July 10 did not particularly object to the priority for coal, because they are also having difficulty in obtaining adequate fuel supplies, but they wanted a share of the open-top cars for ore and other raw materials and iron and steel products and particularly an interpretation of the order to define exactly what cars should be reserved for coal loading and to prescribe more specifically how they may be used on the return empty movement.

J. F. Townshend, traffic manager of the National Tube Company, said that the railroads are making various interpretations as to what is a coal car, ranging from flat cars to 36-inch gondolas and refusing the steel mills the use of some types of cars that carry only 30 per cent of their capacity when loaded with coal. He said that the ex-lake ore shipments so far this year have been 3,000,000 less than for the corresponding period of 1918 and he thought that open-top cars made empty at the lake ports should be loaded with ore instead of being returned direct to the mines. He produced figures showing that 20 steel companies have 1,416,727 tons of steel products, or 28,334 carloads piled at the mills, on platform and in yards awaiting shipment, while many mills have been shut down for lack of cars.

W. S. Guy, assistant traffic manager of the Carnegie Steel Company, said that its business is in the most deplorable condition in its history. It is unable to get enought raw materials to run all of its blast furnaces; some are running irregularly and in addition it is not able to ship its finished and semi-finished products which are piled so high that it will soon be necessary to stop production altogether until shipments can be made. Thousands of men have been thrown out of work and many consumers of the company's products are shutting down for lack of supplies. The company has 5,000 carloads of material piled up and it is unable to fill orders for materials needed by the railroads, for outside carbuilding plants that are doing work for the railroads, for light rails and car wheels needed by coal mines, nor for agricultural implements. Commissioner Aitchison said the manufacturers of agricultural implements have already turned out more than they can ship.

John Andrew Ronan, representing scrap iron dealers in the Chicago district, and Charles M. Haskins, secretary of the National Association of Waste Material dealers, particularly asked an interpretation of the order to make more specific which types of open cars should be given priority for coal loading, saying that a chaotic situation had been brought about by the varying interpretations.

E. D. Scheffe, representing the Standard Oil Company of New Jersey, said that the shortage of coal and the open-top freight car shortage had reduced the output of pipe for oil wells and pipe lines and for tank steamers, thus curtailing the supply of oil. He urged a modification of the order.

M. O. Eldridge, representing the American Automobile Association, testified that so large a proportion of the nation's freight business now is being hauled by motor trucks that it is practically as important to keep the highways maintained and new construction going forward as it is to keep the railroads running, and he said that many more passengers are carried by automobile than by rail. He insisted that the passenger automobile is a pleasure vehicle to the extent of only 10 per cent, the great proportion of passenger car use being industrial and commercial.

Mr. Willard resumed the stand at the close of the hearing and said he favored an extension of the priority order for another 30 days. He also thought a more exact definition of coal cars would be of assistance. He regarded the lake coal situation as perhaps the most serious one to be dealt with but believed that conferences of the interested carriers and shippers would be able to work it out. He was reasonably optimistic as to the general situation and did not feel that many mills would have to close or remain closed for long. He said the railroads would do everything possible in the way of speeding up the movement of trains, but that new equipment cannot immediately be brought into use nor can the percentage of bad order cars be suddenly reduced.

Mr. Willard said that the reasons for the present shortage of facilities are very largely the same as those which have produced such a demand for coal. The unusual development of productive capacity during the war has resulted in the offer of a great deal more commodities for movement than before the war, and during the war the railroad capacity was not enlarged. Much comment has been made, Mr. Willard said, upon the slow movement of cars through terminals, but he would be glad if any of the gentlemen could suggest a formula for correcting that situation. Under the transportation act the railroads have nothing to do with the settlement of such problems as have resulted in the

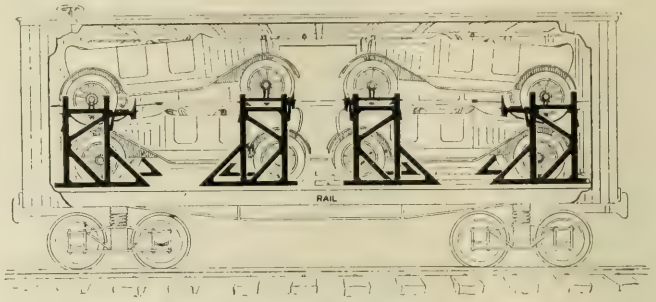
strikes. Commissioner Aitchison asked if there was anything in the act to prohibit him from dealing with the claim of certain classes of employees that they are not getting relatively what they should in wages. Mr. Willard replied that his own construction of the act would be that inasmuch as the whole question of wages has been referred to the Labor Board, he would not feel at liberty to act independently. While he was opposed to it on principle, it was a fact that during federal control there has been put into effect almost a complete standardization of wages all over the country and it would start the upsetting of the whole process again if one railroad should change the wages of some of its employees.

Mr. Willard discussed in detail some of the particular local situations that had been mentioned by shippers and he said that C. H. Markham, president of the Illinois Central, had returned to Chicago with the idea of working out with the shippers a plan for handling the necessary building materials in Chicago. He said he knew of a stone quarry near the city with sufficient capacity to handle all the material necessary, that sand banks to furnish all the sand that is needed are within 20 to 30 miles of Chicago, and there is an enormous cement plant almost within the city limits. He also said that the general superintendent of the Illinois Central at New Orleans would try to work out a plan for meeting the situation there. The sand has to be hauled 100 miles into New Orleans, but if there are 30 city blocks of streets torn up the condition should be remedied, if only from the standpoint of fire protection. He also thought the railroads should be able to furnish enough material to keep existing highways in good repair and he had no doubt it can be done by utilizing the return movement of coal cars. He referred to the arrangements made for a meeting of coal operators and his committee to try to work out a plan for supplying enough lake coal and said that it may be necessary for the commission to give some sort of an order such as assigning cars to the lake service.

In closing the hearing Chairman Clark said the commission realized the utter impossibility of taking any action or even refraining from taking any action which will please everyone. He wished to second Mr. Willard's suggestion that, in so far as it is possible for the shoppers and the carriers to function together in the handling of transportation questions without functioning through the commission, the commission believes that such a plan is conducive to the best results, and when it is impossible to adjust matters in that way, of course they can be brought to the attention of the commission and it will have to assume the responsibility of determining them if within its jurisdiction.

"Carbo" Steel Decks for Carrying Automobiles

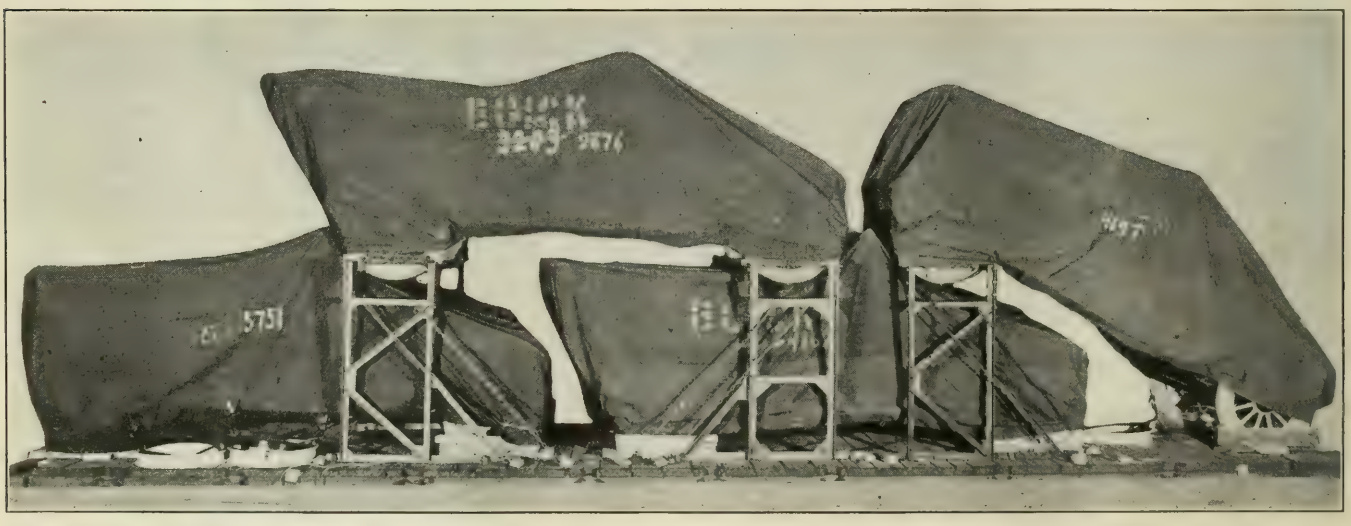
The Buick Motor Company, Flint, Michigan, makes extensive use of steel decks for economizing space in shipping automobiles, increasing the capacity of many cars 100 per cent. The load shown in the picture was one of 50—consisting of 200 automobiles—recently sent from Flint, through Canada, over the Canadian Pacific, to Seattle, Wash. These four machines are on a 36-foot platform car, which, without the decks would have carried only two. All of the automobiles arrived at destination in perfect condition.



Double-Deck Arrangement for Automobiles

This deck is made by the Carbo Steel Products Company, 2600 West 111th Street, Chicago. The Buick Company has in use 2,500 sets of the apparatus, and finds them a good investment. In the month of May the Buick factories were able to send by rail not more than 40 per cent of the automobiles which they made and, therefore, had a strong motive to load every car to its greatest capacity. Where the automobiles standing on the floor of the car weigh, together, less than five tons, there is a saving in freight charges by the use of the "upper story," as five tons is the minimum weight charged for a load on a 36-ft. car.

This decking can be used on flat, gondola or box cars. The smaller illustration shows a typical load in a box car. The deck is readily assembled off the car and is easily and quickly lifted into position. The uprights are held in position by chains nailed to the car floor. The manufacturers have prepared minute instructions both for loading and unloading. Four small differential chain blocks are used to lift the automobile. Ropes are used, where and when necessary, to avoid scratching bright parts. A circular of instructions is provided for use in unloading at places where the consignee has no special apparatus.



A Canadian Pacific Car (Mostly Concealed) Loaded for a Trip from Flint to Seattle.

Railroad Problems of China and Japan

By Geo. R. Henderson

A SHORT TRIP of observation through the principal parts of China and Japan cannot fail to impress an engineer with the great difference in the problems of railway progress which these two countries have to face, and which are extremely important in both cases. In China, there is a large and populous country in which the various sections are poorly united by internal means of communication, with scant railroad facilities and practically no wagon roads, outside of the larger towns. In Japan the country is small, but also populous, the railroads are well located and operated, and many good roads are in existence acting as feeders to the railroads and permitting motor traffic between important centres. China needs many miles of railroad and wagon road construction in order to develop her natural resources, strengthen her military position, and what is of the greatest importance, unite her various sections into a national entity and terminate the ceaseless conflicts between the north and south which at present and in the past have been the greatest menace to her national life and internal development.

Japan, on the other hand, is a compact and united people, whose religious doctrines as embodied in Shintoism and Buddhism have for centuries strengthened the loyalty and devotion of her citizens to the hereditary ruler, but the traffic has become so overburdened by passengers and freight that relief must be had at once in order to comply with the demand for increased transportation facilities.

A glance at the map shows Japan quite well covered by a network of railroads, especially on the main island, Hondo. Few roads, on the other hand, extend any distance from the coast of China to the interior and these are of various origin. For instance, the short line from Kowloon (opposite Hong Kong) to Canton and about as far beyond, was built by English capital; likewise the line from Shanghai to Nanking and from Pukow (across the Yang-tze from Nanking) to Tsinanfu. From the latter point to Tientsin, the construction was done by German engineers, as well as



A Section Between Peking and the Great Wall Built by Chinese Engineers

the Shantung line to Tsing-Tao. The Peking-Hankow road is French and the lines about Peking, particularly to Kalgan and the Great Wall were constructed by the Chinese. These lines, however, are standard gage, and the cars generally have M. C. B. type couplers and air brakes. A committee is now studying the problem of standardization on invitation of the Chinese government, which operates the lines about Peking, and F. H. Clark, formerly general superintendent of motive power of the Baltimore & Ohio, is considering the equipment part of the program. It is true that river navigation affords considerable communication between interior and coast towns, but it is slow and subject to interruptions by floods and storms. The direction of the river traffic, moreover, is mainly east and west, whereas the most promising results are looked for by connecting the north and south, thereby obliterating the lines of sectional antagonism. Little progress has actually been made on the Canton-Hankow road, although it was prospected many years ago.

The Japanese roads are mainly government properties, but are saddled with several unfortunate features. The gage of track is only 42 inches, and as there are numerous tunnels and heavy cuts, it would be well nigh impractical to change to standard gage. The couplings used are the link and hook (the old English standard) and the passenger



The Two Extremes of Transportation in China

train and engine brakes are of the vacuum type: freight cars are mostly of light capacity (4-wheel) and the majority of the cars have no brake at all, and a few have hand levers to be applied from the ground when the cars are standing. While the islands of Japan are comparatively small, the density of population requires a wider gage, but this is prohibitive—the brakes and couplers could be changed, but expense and trouble would follow; however, it is only a question of time when this *must be done.*

How to provide the proper motive power on a 3 ft. 6 in. gage track is a serious problem, and it is possible that electric traction with multiple unit locomotives will be the most economical solution. On the whole, it seems that the question is easier of settlement for China than for Japan, as the fundamental principles are on a sounder basis. The South Manchuria Railway, operated by the Japanese from Mukden, through Antung and Seoul (Korea) to Fusan is standard gage, with M. C. B. couplers, standard passenger platforms and air brakes and seems like a section of the Pennsylvania railroad transplanted in the old Hermit Kingdom. It is particularly striking when you travel one day over this excellent highway, which is modern and progressive, and the next day ride on the narrow gage trains in Japan.

It should not be inferred from this remark that traveling in Japan is uncomfortable—in fact the road bed is good and well guarded against washouts from near-by rivers, the banks of hills at such places being generously protected by cubical stone blocks, laid up in diagonal ranges, without cement, but locking themselves in place. The passenger trains generally have second and third-class cars, with through corridors and compartments or side seats, like our street cars. First class cars are only used on a few of the express trains, although there are some express schedules of third-class cars only. The local trains average about 25 miles per hour and the express 30 to 35. The limited express which runs daily between Tokyo and Shimoneseki (where passengers take the ferry to Fusan for Korea and China) makes on the average something less than 35 miles an hour and has dining, sleeping and observation cars. These are very comfortable, but the dining car service is not what would be expected on such

a train, being much below the standards of America. The first and second-class cars are clean (except in wash and toilet rooms), but in third-class cars the floors become strewn with orange peels, and between these, rolling empty bottles and the legs of the passengers, which generally extend well across the passage, visits to the diner through these cars are full of uncertainty and discomfort. The men, and often the women smoke in all the cars, but this fumigation is a positive advantage at times. The platform aprons, over the hook and link coupling, vary many inches in height, which is rather dangerous on crooked parts of the road.

In many of these respects the Chinese trains are superior, as the platforms are based upon the American standards and the cars are kept in a much cleaner condition than one would naturally expect. Dining cars are plentifully provided and the meals are edible and quite well served. The speed of trains is about the same as in Japan and the movement is kept close to the schedule.

Our interest would naturally be directed to the portions built by Chinese engineers and the two photographs show the general construction on the Peking-Kalgan line, also the mountainous nature of the country in the region of the Great Wall. The bed is well protected against floods and washouts by cubical blocks and masonry walls, and the rails are heavy (about 80 lb. to the yard) and stone ballast liberally supplied. The heavy (3 per cent) grades are protected at frequent intervals by derails and runaway stops of steep reversed grades, and at each change of grade the slope is indicated on posts.

The needs of China are known to her officials, as a conference with Mr. Chen, Minister of Communications, made clear the fact that greatly enlarged facilities were imperative. When asked by the Minister, at whose request the visit was made, what was China's most urgent requirements, we suggested that trunk lines of railroad to unite the various antagonistic sections of the country and good country roads to develop local traffic and to act as feeders would be the best for all the interest of the people. With a plentiful supply of stone and cheap labor the latter could be easily constructed, but for the former, international assistance will be necessary, and for this purpose, the consortium now being arranged by American, French, English and Japanese bankers will be invaluable.

Express Company Consolidation

A HEARING on the application of the American Railway Express Company for permission to continue its consolidation of the principal express companies after September 1, was held before Examiner Butler of the Interstate Commerce Commission at Washington on July 12. The hearing was delayed in preliminary discussion after Alfred P. Thom, Jr., representing the Association of Railway Executives, and H. G. Herbel, representing the Southwestern railroads, had asked that the hearing be not concluded until the railroads had had an opportunity at meetings to be held at New York during the week to decide as to their attitude toward the proposed consolidation. Mr. Thom merely said that the railroads had no position to take as yet, while Mr. Herbel intimated that the railroads might desire to oppose the consolidation, or even to consider the formation of other express companies, or the undertaking of express service by the railroads. Several representatives of state commissioners and of shippers thought they might not want to introduce their own testimony until they knew the railroads' position, but it was finally decided to proceed and to allow the opportunity for further testimony on July 26.

T. B. Harrison, representing the American Railway Express Company, said he understood the meetings of the executives in New York were concerned merely with the question of the proposed contract to be entered into with the express company.

George C. Taylor, president of the American Railway Express Company, outlined the history of the consolidation and the advantages which would accrue from its continuance, saying he felt confident that a single company would be able to furnish a much better express service than had previously been rendered, with a saving in expense. He admitted that the present service is unsatisfactory, saying that this condition resulted from the effects of war conditions and from the fact that the company has had an uncertain tenure of existence. It has no contracts with the railroads running beyond September 1, it is yet to be legalized by the Interstate Commerce Commission and its stockholders have received no returns since the formation of the company, although the government has guaranteed it against deficit. It cannot raise the new capital required, which he estimated at $31,000,000, for new facilities, until its status is determined.

Mr. Taylor said the economies already effected by consolidation could be definitely figured at $13,000,000 a year and he had no doubt they amounted to as much as $25,000,000, although it had not been possible to check back against the former costs in all cases. He pointed out that legalization of the consolidation would give the company no monopoly unless all the railroads choose to make contracts and even then it would be subject to the regulation of the Interstate Commerce Commission and of the state commissions, whereas to break up the company would lead to a chaotic condition resulting in increasing the present transportation confusion. He thought with an increase in rates and a new lease of life that it would be possible to raise the capital required to improve the plant and build up a dependable and reliable express service and he said the company realized that it was necessary for its own preservation to do this. He said he thought a majority of the larger shippers are in favor of the consolidation but that he had made no effort to get them to appear before the commission to say so and he pointed out that 90 per cent of the company's business is now commercial as most of the small package business is done through the parcels post.

After several other express officials had testified and after cross-examination at length by representatives of shippers and state railroad commissions that are opposing the consolidation, the hearing was adjourned until July 19, when testimony on behalf of the protestants will be introduced. The cross-examination indicated that objection to the consolidation is largely based on the fear that a permanent consolidation would make it impossible to collect old claims against the constituent express companies. It was stated that the Adams and Southern companies have already refused to pay legitimate claims although they have offered to settle all claims for 60 per cent without investigation and that they have withdrawn their agents from many states so that the companies cannot be served and sued except in New York. The Wabash & Missouri Pacific railroads have opposed the consolidation until the Wells Fargo company agrees to pay claims for alleged violation of its contracts with the railroads.

THE PRINCE OF WALES, while traveling in Australia, was in a train accident near Perth, on July 5, according to a despatch to the London Times. The Prince's car, with one other, was dragged on the ties for about 600 feet, and overturned, but he climbed out of a window unscathed and smiling. What happened to the other people on the train is a point on which the press despatch is silent.



A New Plan for Water Service Administration

Union Pacific Organization Insures Co-operation Between Supplying and Using Departments

FOR THE PAST FOUR YEARS, water service on the Union Pacific has been subject to supervision by a special organization which differs in many respects from those maintained on most railways. The plan of organization and the methods and the policies pursued have been instrumental in effecting a marked improvement in the character and quantity of water supplied to the locomotives and are therefore worthy of considerable study. There is also considerable food for thought in the considerations which led the management of the Union Pacific to undertake this new form of organization.

Few roads in this country were confronted with a more serious problem than that which faced the Union Pacific with regard to its water service in 1915. The traffic had increased at such a rapid rate that all the facilities of the system were being taxed to the utmost in spite of generous programs of additions and betterments carried on over a period of several years. The water service problem was especially difficult because the country traversed by the line, except where strictly mountain water is available, abounds in waters containing large quantities of incrusting and foaming compounds and the Union Pacific, like many other roads, had no well-defined organization charged with responsibility for the supply of an adequate quantity of good boiler waters. This was particularly true with respect to the treatment of the water, and had led to several reversals of policy as different departments and individuals succeeded in bringing their particular ideas to bear on the subject. Beginning in 1903, some 35 water-treating plants were installed at various points of the system, the Union Pacific having been among the first roads to take up the treatment of water in the roadside plants. These were operated with varying success during the subsequent years. Certain agencies had tended to interfere with their effective operation, chief among which was the enormous growth of traffic, which rendered many of them too small to meet the demands of the individual stations; so they were gradually allowed to go into disuse and in 1915 only 14 of them were in operation.

The task of rectifying this situation was approached by the management from the position that adequate supervision and effective organization are the two prime requisites for success and that the lack of these had been responsible for the shortcomings in water service on most of the roads that had experienced difficulty in this direction. At the same time it was recognized that no one department could be held solely responsible; thus the engineering and maintenance of way departments must prospect for, construct and operate the plants supplying the water, the mechanical department uses the water and is affected by its quality, while the operating department is charged with its cost.

In the face of these conflicting interests, it was decided to organize a special water service staff or bureau responsible directly to the general manager which would be charged with two distinct functions: (1) to exercise technical control over the complex problems of water supply and treatment, and (2) to reconcile the conflicting interests and views of the various departments of the road which were, of necessity, concerned with this problem. It was recognized that this was primarily a problem for the chemical engineer. This work was organized under the direction of Dr. William M. Barr, with the title of consulting chemist, reporting to the general managers of the Union Pacific, the Oregon Short Line and the Oregon-Washington Railroad & Navigation Line, and he developed a small staff designed to meet the needs of the peculiar duties imposed upon it.

This organization is not committed to any particular school of water treatment. The policy is to institute the particular measures in each individual case which a thorough study indicates would best suit the conditions. Under this policy recourse has been had to both water softeners and boiler compounds, each under the circumstances that indicated their special applicability.

The Organization

The organization created to handle the work under the direction of the consulting chemist was not built up according to any predetermined plan. Instead it was designed to suit the capabilities of the men best fitted to become a part of it. An effort was made to recruit the men as far as possible from the company's forces. There is a principal assistant in direct charge of the water softener operation who is engaged also in the investigation of new water supplies. Subordinate to this principal assistant are two traveling chemists and a pumping station or mechanical supervisor, the first two being engaged in a systematic check and supervision of the water treatment at the various plants and the last named in general investigation of the mechanical operation of the plants.

The consulting chemist has three other assistants, who report direct to him, two assistant chemists and the foreman of the company's factory for the manufacture of boiler compounds.

The consulting chemist's organization ordinarily takes the initiative in new projects for the development or enlargement of water supplies. The actual design and construction of the new plants or improvements of old ones is carried out by the maintenance of way department or, on terminal work and large improvements, by the engineering department, but the consulting chemist or his assistants keep in close touch with the work to insure that the plan originally agreed upon is carried out. If the project includes a water softener, one of the traveling chemists is called upon to adjust the treatment when the plant is placed in service and to give it close supervision until the water has proven satisfactory to the motive power department.

The water stations and treating plants are operated and maintained by the maintenance of way department and the pumpmen and repairmen report to the water service foreman, who in turn is responsible to the bridge and building supervisor, but the pumpmen who operate softeners are under instructions to follow any directions given them by the travel-

ing chemist regarding the treatment. Copies of any complaints from the traveling engineers or others regarding the behavior of the water are sent by the motive power department to the consulting chemist and the situation is carefully studied, and any corrective measures taken are watched until satisfactory results are obtained.

Extensive use is made of boiler compounds for overcoming the incrusting solids in the water in cases when the amount is too small to warrant the installation of a softener, and also for immediate or temporary relief until such time as the water may be softened or abandoned. Anti-foaming compound is issued to the engine crews the same as oil and waste, and they are permitted equal latitude in its use. As referred to above, one activity of the consulting chemist's department has been the manufacture of boiler compounds.

A Conservative Policy Is Pursued

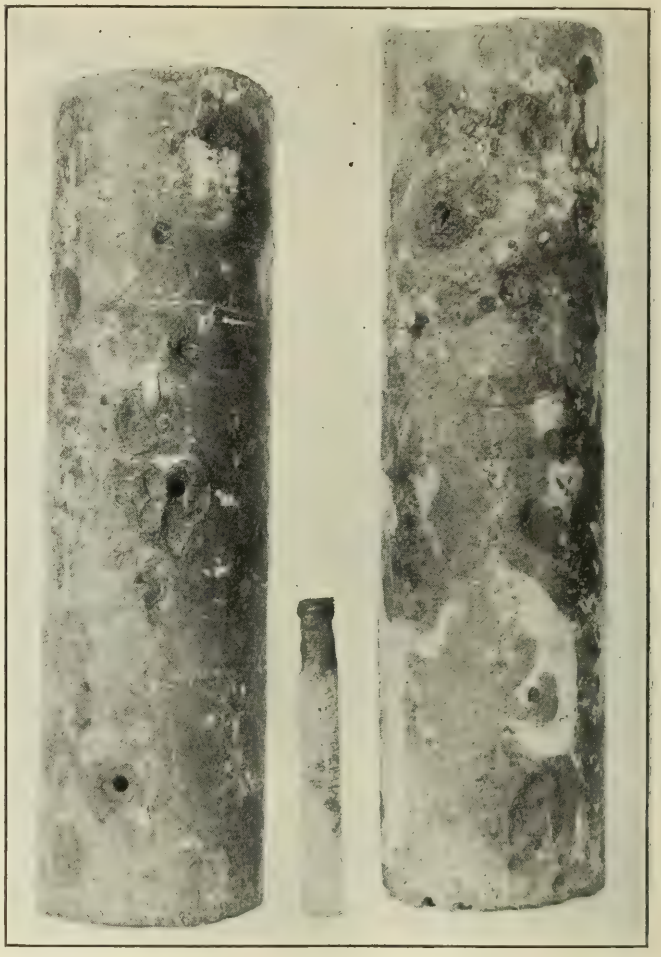
The policy of the Union Pacific under its new organization for water service may in general be said to be conservative. No project has been started until the matter could be thoroughly investigated. Wholesale improvements have not been undertaken, yet at the same time, by following a consistent plan, many extensive improvements have been made. Each engine district has been studied in turn, but instead of attempting to obtain perfection on one district at a time, efforts have been directed to the improvement of water at the principal stations, leaving a few cases to receive further consideration later. In a general way, the initial object has been to obtain about 75 per cent efficiency on the entire road before directing attention toward further perfection on any one district. Because of the greater demands of traffic, attention has been directed primarily to the Union Pacific to start, but the work is now developing on the other parts of the system.

In this connection it is of interest to review the policy pursued with respect to the water softening plants. When the new department was organized in 1916 there were records of 35 softeners on the road, of which only 14 were in operation. The other 21 were either standing idle or had been dismantled. This situation was approached with an open mind. It was not assumed that these plants had been wrongfully withdrawn from service, neither was it considered that the plants were entirely responsible for the conditions leading to their abandonment. From a general study of the situation, several reasons have been disclosed for discontinuing the use of these softeners. Many of the plants were installed at the very beginning of scientific water treatment on railroads, with the result that some of the installations were ill-advised. Attempts were made in some cases to soften water which it was impractical to use in the boilers after treatment. Most of the plants also were installed on lines of very rapidly growing traffic, so that many of them were soon required to handle far greater quantities of water than they had been designed to treat properly. As a result of the investigation, 14 of the 21 plants out of use in 1916 have been abandoned permanently, while seven of them have been restored to service. In the meantime, investigations have developed the necessity for a number of new plants, several of which have been built and others are contemplated.

First Look for a Good Water

One rule followed in the study of the individual plants is that it is much better to find a water that does not require softening than it is to install a treating plant for water that is obviously in need of treatment. As a consequence, very extended surveys have been made to discover new sources of water, and the efforts in this direction have been rewarded with no small degree of success. Each case is considered as an individual problem instead of subjecting it to a general formula. As a consequence there has been a wide variety in the measures taken to obtain improved water at the different stations. Thus, at North Platte, Neb., and Grand Island, treating installations were avoided by obtaining new supplies, but at Council Bluffs, Ia., it is planned to improve conditions by replacing the existing water softener by a new one of sufficient capacity to meet present demands and treat all the water used by the locomotives.

In the development of supplies all the requirements have been taken into consideration, so that while the quality of water to be obtained has been the paramount feature, the question of quantity and operating cost has always been considered. Surface supplies have been brought in by gravity



Superheater Flues and Staybolt Corroded by Water Containing 75 Grains of Alkali Chlorides and 20 Grains of Incrustants. This Water Was Replaced by One Containing 2 Grains of Alkali Chlorides and 5 to 7 Grains of Incrustants.

lines and by pumping where necessary. Wells of all depths up to 1900 ft. have been developed where conditions indicated that a good supply could be obtained and where this was the only source of supply.

The results from this plan of organization and policy on the Union Pacific have not been spectacular. Instead a steady, permanent improvement has been made with the personnel of all departments generally satisfied that the policy pursued is producing results and that further progress will be made as conditions warrant. The initial efforts having been directed very largely toward the elimination of unsatisfactory waters by such improved supplies as could be discovered, further improvements must, of necessity, consist more largely in some method of treating existing supplies. The field for the development of new supplies, however, is far from exhausted.

Transportation Situation Slightly Improved

Coal Operators and Railway Executives Co-operating
Difficulties in Grain Section

THE TRANSPORTATION SITUATION continues to be exceedingly serious throughout the country, although there has been some improvement in the movement of fuel and other commodities, particularly in the eastern district. The local car service committees are doing splendid work in helping to clear up the congestion and in facilitating the movement of traffic. Many manufacturing plants are in much the same situation as the steel industry, the condition in which was clearly developed at the hearings before the Interstate Commerce Commission which are reported on another page. Many industries are finding it impossible to secure sufficient raw materials to keep their plants working at capacity or to ship their finished products.

There has been a considerable increase in the movement of coal to the New York district within the past week and there now appears to be no danger of a shut-down of the public utilities which was so greatly feared last week.

On Wednesday a committee of bituminous coal operators met in New York with the advisory committee of the Association of Railway Executives. The entire situation was gone over thoroughly, a general plan of operations was considered, and sub-committees were appointed which will immediately work out such details as may be found advisable in order to secure the greatest possible relief.

It is expected that the modification of Service Order No. 7, reported elsewhere in this issue, will afford a considerable relief to the iron and steel industry. Mr. Willard's remarks at the end of the hearing before the Interstate Commerce Commission, reported in the same article, indicate the steps which will be taken to improve the situation for stone, gravel, sand and other road and building materials.

Chairman Cuyler Urges Greater Efforts

Thomas De Witt Cuyler, chairman of the Association of Railway Executives, in recognition of the existing critical transportation situation throughout the country, has sent out a circular letter to member-roads urging them to do everything in their power to (1) return home cars to home roads wherever possible, (2) repair bad-order cars and locomotives to the utmost of their physical and financial capacity and (3) increase the average car mileage. With regard to the increase in car mileage and the general speeding up of train movement, the facts are cited that if the average car mileage be increased to 30 miles a day an increase of approximately 25 per cent in the gross transportation capacity of the railroads would be effected.

Grain Movement in the West

With the 1920 wheat crop, estimated by the United States Department of Agriculture at 780,543,000 bushels, practically ready to move in volume, the tense transportation situation and car shortage in the Central West remain practically unchanged from their status of the past month. The emergency relocation orders, one issued by the Interstate Commerce Commission, and directing the movement of approximately 20,000 serviceable empty box cars of western road ownership from eastern to western railroads during a period of 30 days, and the other issued by the Commission on Car Service for the movement to western roads of approximately 28,000 box cars on a 30-day schedule, have resulted in inducing railroad men, shippers and farmers in the wesern states to take a more optimistic view of the situation. The western lines have reported that 15,500 of the 20,000 cars ordered west by the Interstate Commerce Commission have been received, and 4,500 are reported as still in transit. The westward movement of the 28,000 box cars, ordered by the Commission on Car Service, is not yet fully under way. Those cars which already have been placed in western grain states have been absorbed so rapidly that the relief they have afforded has not been very apparent.

The size of the country's grain crops this year, while not as large as in 1919, means that the western granger lines have strenuous work ahead of them. The Department of Agriculture's forecast for the year's production of wheat is 780,543,000 bushels, as compared with 940,987,000 bushels in 1919. The forecast for oats is 1,315,476,000 bushels, compared with 1,248,310,000 bushels in 1919. The forecast for barley exceeds the crop of 1919, as does the forecasts for several of the smaller crops. In addition, on March 1, 1920, the Department of Agriculture reported that 165,539,000 bushels of wheat, or 17.6 per cent of last year's crop, was still on the farms, as compared with 14 per cent in 1919; 118,626,000 bushels, or 12.6 per cent, was in country mills and elevators, as compared with 11.8 per cent in 1919; 37.4 per cent of the corn crop was still on the farm, 33.9 per cent of the oat crop and 22.9 per cent of the barley crop.

When it is recalled that in 1919 at this time 35,000 cars suitable for grain loading were being held in storage in the Central Western region, 27,000 in the Southwestern region, and 4,000 in the Northwestern region, awaiting the grain movement, it can readily be seen that the movement of this year's crop will entail strenuous action both on the part of the co-operative commissions and the carriers. Another unfortunate factor is the condition of much of the equipment supposed to be suitable for grain loading. Many cars, which because of deferred repairs, are really unfit for this traffic will serve only to aggravate the situation.

During the past six weeks, substantial reductions have been made in the visible supply of grain in public and private warehouses at the principal markets.

The Movement of Coal in the West

The movement of coal in the western states showed slight but continued improvement during the past week. The situation in the Northwest is particularly acute, the slump in the shipments of coal by water seriously diminishing the tonnage usually stored at the head of the lakes.

The Relation of Western Cars on Line to Ownership

The general situation in the western states is reflected in the proportion of the cars on line in relation to the number of cars owned. On June 15 the western roads had but 88.3 per cent of their ownership of box cars and 97.7 per cent of their total cars owned, as compared with 105.9 per cent and 107.2, respectively, on the corresponding day last year. The Central Western district had 91.4 per cent of its box cars and 97.5 per cent of all cars, as compared with 106.1 per cent and 104.8 per cent, respectively, a year ago. The Southwestern district had 101 per cent of its box cars and 106.2 per cent of all cars, as compared with 104.1 per cent and 100.3 per cent, respectively, last year. This situation will undoubtedly be corrected to some extent by the recent orders to move empty cars westward. This relocation of equipment is planned to take the place of the storage of cars which was possible last year. However, this relocation is a forced movement and will therefore require intensive co-operation among the carriers to be successful.

Frank Trumbull

FRANK TRUMBULL, who in January last resigned as chairman of the board of directors of the Chesapeake & Ohio and the Hocking Valley, died at Santa Barbara, Cal., on the evening of July 12 of heart disease. He was 62 years of age and his death followed a long period of ill-health.

Mr. Trumbull was in railway service practically continuously from the time when at 12 years of age he went to work as a water boy on one of the new railways in the Southwest. He was born at Arcadia, Mo., in 1858, of New England stock, his father being a minister. He had no opportunity to secure the usual grade school education, but worked as water boy and at similar jobs on the railway from the age of 12 to 16, and then entered the office of the controller of the Missouri, Kansas & Texas as a clerk. For the next 14 years he worked up step by step through the accounting offices of the Missouri, Kansas & Texas and the Missouri Pacific, until in 1886 he was appointed auditor of the Texas & Pacific.

He then left railway service for five years, beginning in 1888, and engaged in the wholesale coal business in Colorado. He did not lose his connection with railway work during this time, however, because he also found time to make reports on various western coal properties for banking concerns in New York and London.

Returning to railway service in 1893, he was appointed receiver of a bankrupt branch of the Union Pacific, known at that time as the Union Pacific, Denver & Gulf. In this new task first he began to make his reputation as a rebuilder and financier. Working in association with Grenville M. Dodge, and later with Edwin Hawley and the Huntingtons, he developed and extended the line connected it with the Fort Worth & Denver City and otherwise improved it. In 1899 the property had become independent and was organized as the Colorado & Southern with Mr. Trumbull as president and Mr. Dodge as chairman of the board of directors. Mr. Hawley became a member of the board of directors in 1902. Mr. Trumbull remained in charge of the Colorado & Southern until 1909 when he effected a sale of a controlling interest in the property to James J. Hill.

The improvements that had been made in the property in the years during which Mr. Trumbull was interested in it, namely, from 1893 to 1909, furnish no small amount of tribute to the skill in management which Mr. Trumbull manifested in bringing the road to a high level. In 1893 the road had about 1,000 miles of line and earned in that year $3,500 a mile gross. The mileage of the road on June 30, 1908, was 1,952. The operating revenues for the year ending on that date were $14,281,000 and the operating incomes amounted to $4,635,000. The operating revenues amounted to $7,393 per mile. The company had no floating debts and was paying regular dividends on its first and second preferred stock.



Frank Trumbull

From 1908 to the end of 1919 Mr. Trumbull was chairman of the board of the Chesapeake & Ohio and the Hocking Valley. A large interest in the former had been relinquished by the Pennsylvania Railroad and was being held for the time being by the banking firm of Kuhn, Loeb & Co. Several of Mr. Trumbull's associates induced him to join with them in purchasing this stock and after doing so he was made chairman of the board of directors of the company. He also managed at about the same time to secure for the latter a controlling interest in the Hocking Valley which although it does not connect directly with the Chesapeake & Ohio has proved a profitable property for it and has helped it in handling traffic to the central and northern part of Ohio. Similarly the Chesapeake & Ohio was able to purchase the line from Cincinnati to Chicago now known as the Chicago Line of the Chesapeake & Ohio.

Mr. Trumbull and his associates did not own a majority of the stock of the Chesapeake & Ohio and the other interests retained a voice in the management of the property. The development of the property was somewhat slow and in 1910 the road had difficulty in raising all of the new capital which could have been spent advantageously on the road. Nevertheless, despite these handicaps, Mr. Trumbull managed to carry out his broader policies and developments and finally succeeded in making the Chesapeake & Ohio the splendid property it is today.

Mr. Trumbull had a strong realization of the broader problems confronting the American railroad manager. He was largely instrumental in the formation of the Railway Executives Association, now known as the Association of Railway Executives. This was formerly known as the advisory committee of railway executives and Mr. Trumbull was its first chairman.

The details in this brief sketch of Mr. Trumbull's career and the amplification of it which will be found in the article concerning Mr. Trumbull's career which appeared in the *Railway Age* of January 9, 1919, will easily point out his ability as a railway manager, as a developer and as a financier. It should be added that Mr. Trumbull by the work done in the later years of his life, demonstrated that he also had the qualities of a diplomatist and statesman. To a high degree he showed great ability in outlining constructive plans for improving railroad regulation and in presenting the case of private operation and intelligent regulation to the public in an attractive, persuasive and convincing manner. When the Esch-Cummins Bill was under consideration he differed from the majority of his colleagues among the railway executives in believing that the railway companies should ask for some form of guarantee of net return from the government. Because of ill health and also

because of this difference of opinion with his colleagues, he withdrew from active participation in the discussion of the railroad question in which he had been for years a leader. In the passage of the Esch-Cummins Bill, however, he had the satisfaction of seeing, only a short time before he passed away, most of the principles which he had long advocated crystallized into law. No man had a greater part than he in forming the public opinion which finally caused this legislation to be adjusted.

All of Swiss Federal Railways to be Electrified

ANOTHER BIG step has been taken in electrifying the Swiss Federal Railways. The Swiss Government has floated a $25,000,000 loan in the United States, consisting of 20-year, 8-per cent sinking fund gold bonds. The proceeds of this loan are to be used in the United States and the loan is a part of a program for the gradual electrification of the government railway systems of Switzerland. This is the highest coupon rate ever carried by a foreign government loan issued in this country. The last previous issue, which was a Belgian government bond, had an interest coupon of 7½ per cent. The issue of $30,000,000 of Swiss government bonds put out almost a year ago had a coupon rate of 5½ per cent, and at the offering price yielded 6 per cent.

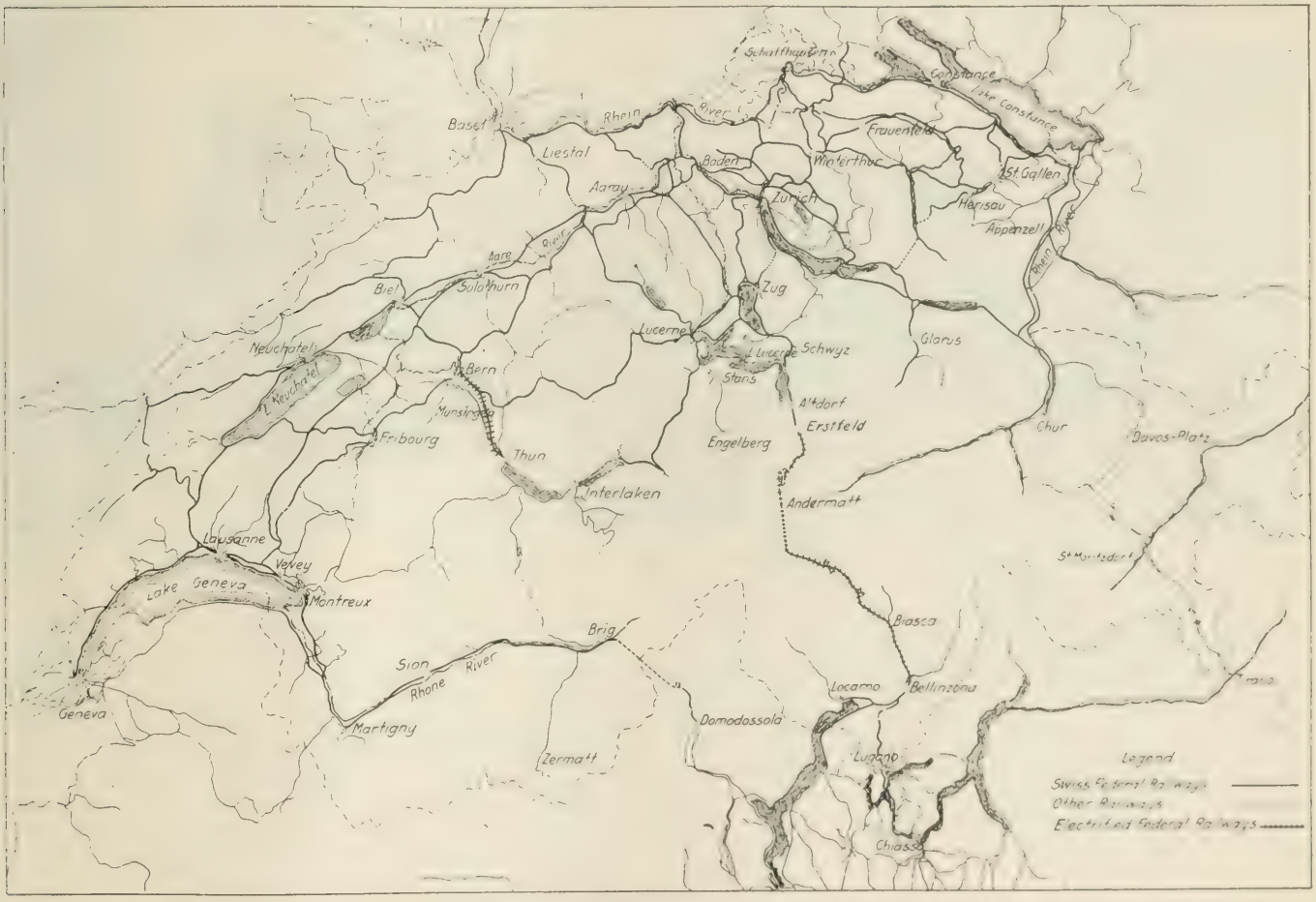
The syndicate which offered the loan is headed by Lee, Higginson & Co., 43 Exchange Place, New York. The bonds were offered on Tuesday, July 6, and subscriptions were closed at noon on the following day.

The Swiss Minister of Railways has stated that it is not wise to wait the return of normal conditions before electrifying the railways, because the coal scarcity will probably last for many years.

Small Part of Federal Lines Now Electrically Operated

There are a total of 3,300 miles of railway in Switzerland, of which 1,900 miles are owned by the Swiss Confederation. These include the principal arteries of the Swiss railway system. Of the 1,400 miles owned by private companies, 622 miles are electrically operated. At present only two of the important federal standard gage lines have been electrified. The first was the line from Bern to Thun, a distance of about 20 miles, which was opened for operation in May, 1919. This line connects with the privately-owned Bern-Lötschberg-Simplon Railway and trains are hauled by electric locomotives direct from Bern to Brig. From 5 to 7 through passenger trains and 3 freight trains are operated each way per day over this line.

The second federal line to be electrified was the line from Erstfeld to Bellinzona, a distance of 68 miles. The electrification of this line was approved in 1913 and the work is now practically completed. This section, with 28 per cent of its length consisting of tunnels and a grade of 2.5 to 2.7 per cent for 25 miles, takes care of a large amount of traffic with Italy. It is expected that the electrification of this line will soon be extended from Bellinzona to Chiasso and from Erstfeld to Lucerne.



Principal Railways of Switzerland

Power Supply

Efforts will be made to use a maximum amount of water power for the operation of the railroads. It is estimated that there is now available a total of 2,700,000 h.p. in water

power and that if present plants were replaced with new ones and provisions made for controlling the headwaters that this might be raised to a total of 8,000,000 h.p.

Power for the Bellinzona-Chiasso and Erstfeld-Lucerne lines will be obtained from the power plants at Amsteg and Ritom. The Amsteg power house will afford 26,000 h.p. and the Ritom power house 32,000 h.p. and they may be used as the power supply of these lines even if the traffic increases 60 or 70 per cent.

In 1919 the Swiss Federal Railway accounts showed that the deficit had increased from $14,355,000 in 1917 to $41,510,000 in 1918. This was due to increased wages, pensions and the cost of all materials, but above all to the enormously increased price of coal during the last six months of 1918.

Equipment

All of the locomotives on the federal lines are designed to operate on 15,000-volt, low frequency, single-phase power supplied to them from an overhead wire. Four different types were delivered to the railroads in 1919. Two of these were ordered from the Ateliere de Construction Oerlikon, of Oerlikon, Switzerland, and two from Brown Boveri & Co., Baden, Zurich. Each company supplied one passenger and one freight locomotive. The mechanical parts of all of the locomotives were supplied by the Swiss Locomotive & Machine Co., Winterhur, Switzerland.

The same method for transmitting power from the motors to the driving wheels is used on all four locomotives. The motor pinions engage gears on jack shafts, which in turn are connected to the driving wheels by side rods. The side rod arrangements designed by the two companies are distinctly different. The two Oerlikon locomotives are of the 2-6-2 and 2-4-4-2 type and weigh 91 and 113 tons, respectively. The two Brown Boveri locomotives are of the 2-4-4-2 and 2-6-6-2 type, and weigh 118.5 and 133.5 tons respectively.

Electric regeneration has been tried and found to be entirely satisfactory on these locomotives. This was the first practical application of regeneration to locomotives using single-phase series motors. The system first tried was that of the Maschinenfabrik Oerlikon.

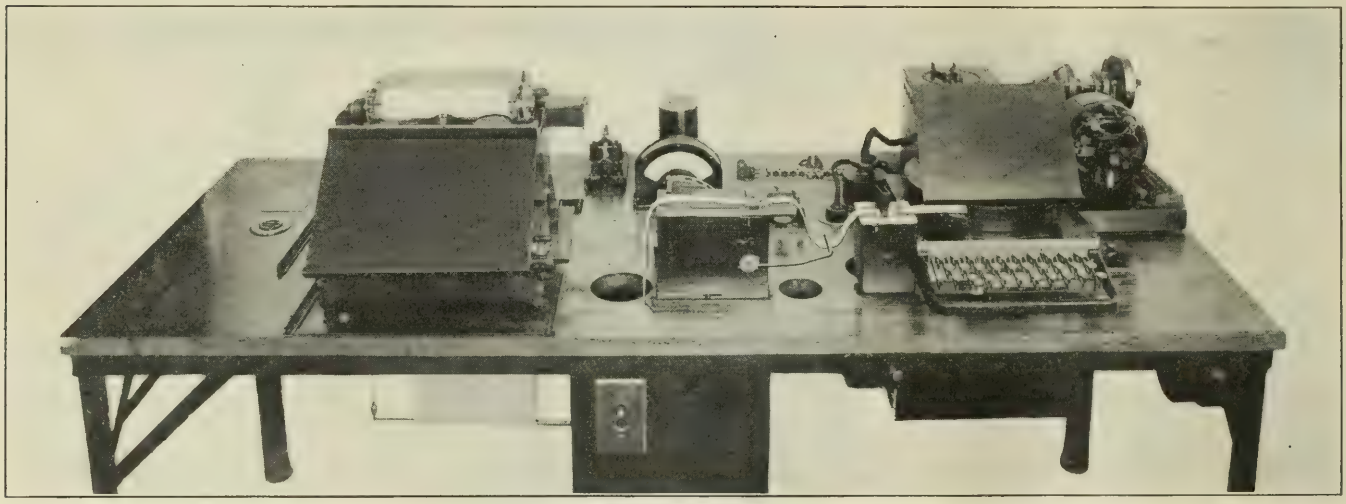
The cost of electrifying the Erstfeld-Bellinzona Railway has been estimated to be $8,000,000 and the cost of electrifying all of the federal railways has been estimated roughly at $200,000,000. The satisfaction given by the American equipment will undoubtedly determine the matter of floating more loans for this purpose in the United States.

The Kleinschmidt Printing Telegraph

The Kleinschmidt Electric Company, New York City, is now putting on the market an improved form of its automatic printing telegraph apparatus, simplified in construction, capable of increased speed and fitted with various improvements. The illustration shows a typical set for transmitting and receiving where the wire is worked duplex.

The message to be sent is prepared on a tape, as in other rapid telegraphs, the operator doing the perforating by means of keys on a standard typewriter keyboard, minus the lower-case letters. The Baudot multiplex code is used.

The automatic transmission of messages over the line is regulated, to correspond with the speed maintained by the operator, by means of an automatic switch. After the operator has perforated four or five inches of tape, the beginning of the message is inserted in the transmitter (in the middle of the table) and the switch lever (a light bent wire) then rests on the tape. Assuming that the operator works as fast as or faster than the transmission speed of the wire—60, 70 or 80 words a minute—there is an accumulation of slack in the tape and the lever remains in its lowest position, as shown in the illustration. The transmitter now functions. If the operator completes the messages on hand, or operates at a lower speed than the impulses are sent out over the line, then the tape tends to become taut; and this lifts the lever and thereby cuts out the transmitter from its circuit. Later, when a new supply of tape has been prepared, that part of it between the machines again becomes slack; and by the movement of the lever downward the transmitter is started again.



The Kleinschmidt Printing Telegraph

The transmitter sends negative and positive impulses through the distributor to the line. These are received at the receiving end by a polar relay and the distributor there controls the local receiving circuit. With duplex working the printer needs but little attention, and the transmitting operator has time to act as receiving operator, tearing off the incoming messages as they are completed.

A Morse key and sounder are provided for use in balancing the duplex, but the bell signals on the printer can also be used for signaling from station to station.

This apparatus is sold direct to users. In tests carried out for a period of four months these printers have worked continuously to the extent of turning out 56,000 words without errors. Hindrances from operating difficulties were practically negligible. The apparatus works at a lower line frequency per letter than other printing telegraphs and there is, therefore, less liability to interruptions.

General News Department

Three express messengers have been apprehended at Gainesville, Fla., pending investigation of the robbery of an express car of southbound Atlantic Coastline train No. 39, near that city, on July 9. John Holder, messenger in the car that was robbed, was found bound and gagged and a sum said to approximate $5,500 was missing.

Trainmen at Pine Bluff, Ark., at a meeting called by organizers of the St. Louis Yardmen's Association, one of the "outlaw" labor organizations, suddenly decided to remain loyal to their employers and consequently hustled the organizers into a motor car and took them out of town, destination unknown.

The Long Island during the first six days of July carried 2,018,653 passengers, exceeding by 10 per cent the record made in 1919 for the July 4 holiday business. On the steam and electric trains 1,789,900 people were taken care of, as follows: July 1, 220,100; July 2, 245,200; July 3, 344,300; July 4, 340,800; July 5, 364,100; July 6, 275,400.

The appointment of a committee of northwest officials and business men to request government orders for prompt coal deliveries was decided on at a meeting of the Minnesota Railroad and Warehouse Commission held at St. Paul, Minn., on July 7. It was pointed out that this district faces a serious fuel shortage unless immediate steps are taken to relieve the situation.

Trial of four employees of the American Railway Express Company in court at Charleston, W. Va., recently brought out the statement that during the last two months the losses of the company by theft at points on the Chesapeake & Ohio, between Richmond, Va., and Cincinnati, Ohio, amounted to $100,000. One of the men arrested was an employee of forty years' standing. The entire office force of the company in Charleston was changed.

Train No. 1, of the Minneapolis & St. Louis, running between Des Moines, Iowa, and Minneapolis, Minn., was in an accident near Arnold, Iowa, on July 3, due to a tank derailment 50 feet south of Bridge 131. Eight persons were killed and about 25 were injured. The ties and track on the bridge were torn up by the derailed tank causing the entire train to buckle, toppling some of the cars and breaking down the bridge structure. Investigation showed that the track and equipment had been in good condition.

Twenty-one passengers were killed in a double collision on the Lackawanna & Wyoming Valley (electric) road near South Pittston, Pa., on the evening of the third of July; and about 100 passengers were injured. The conductor of one of the cars was killed. The leading car is said to have been stopped by an obstruction on the track or the failure of power, due to lightning; and a second car, having collided with this, was itself run into a few minutes later by a "limited" car. Explanation of the cause, so far as published, indicates that dependence for safety was placed on a flagman who did not go back.

The American Short Line Railroad Association is proceeding with the organization of its new departments authorized at its meeting in April. J. F. Gavin, heretofore traffic manager of the Kansas City & North Western, has been appointed assistant to the vice-president in charge of the traffic and tariff department, with office at 216 Bond building, Washington, D. C., and the association is arranging for the organization of a legal department, under the direction of B. B. Cain, general counsel, and of a purchasing department. T. F. Whittelsey, secretary-treasurer of the association, is acting manager of the purchasing department.

Perishable Freight Division of A. R. A. Established

The American Railroad Association has announced the establishment, effective July 1, of a perishable freight division with E. F. McPike, manager of perishable freight service of the Illinois Central, as chairman, with headquarters at 431 South Dearborn street, Chicago.

This step is taken in accordance with a recommendation of the Inter-State Commerce Commission. The new division is created 'for the purpose of investigation and handling of perishable freight matters within its scope and to co-operate with and co-ordinate the efforts of all the departments of the railways in handling perishable freight matters."

The details of organization are now being worked out and conferences have been invited with other interests involved.

Railroad Committee, U. S. Chamber of Commerce

The Chamber of Commerce of the United States has announced the membership of its railroad committee for 1920-1921 as follows: George A. Post, New York, N. Y., chairman; F. C. Dillard, Sherman, Texas; Emory R. Johnson, University of Pennsylvania, Philadelphia, Pa.; George W. Simmons, Simmons Hardware Company, St. Louis, Mo.; A. W. Smith, special counsel, United States Railroad Administration, Washington, D. C.; Edward J. Frost, 426 Washington street, Boston, Mass.; Charles E. Lee, Commission on Car Service, Washington, D. C.; William W. Salmon, president, General Railway Signal Company, Rochester, N. Y.; Walter S. Dickey, Kansas City, Mo.; Harry A. Wheeler, Union Trust Company, Chicago, Illinois. Mr. Post has been chairman of the committee during the past year.

N. R. A. A. Exhibit

The National Railway Appliances Association has sent a notice to the members announcing that the 1921 exhibit will be held at the Coliseum and Annex, Chicago, on March 14-17, 1921, at the same time that the American Railway Engineering Association will hold its annual convention and the Signal division of the American Railroad Association will hold its spring stated meeting in that city. While the attendance at the exhibit last March greatly exceeded that of previous years, reaching a total of 22,612, plans are being made to accommodate a still larger number of visitors next year. The officers are also arranging for an increase in the amount of floor space occupied by the next exhibit and are working on a number of other plans to increase the value of the exhibit as an educational medium for those engaged in the construction and maintenance of railway tracks, structures and signals. In view of the inability of numerous firms to secure space at the last minute in recent years, the president of the association urges that all members and other interested railway supply manufacturers make reservations promptly with C. W. Kelly, secretary-treasurer, 122 South Michigan avenue, Chicago.

Increased Freight Rates Expected in Canada

"The $33,000,000 deficit of the Canadian National Railways during the past fiscal year may be considered the biggest single agency liable to bring about an increase in freight rates," according to S. B. Brown, assistant manager of the Transportation Department of the Canadian Manufacturers' Association, with headquarters at Toronto. "But another and not so generally known is that the Canadian Pacific, the king among railroads as far as efficiency is concerned, boasted a net surplus of about $840,000 in the past year's operations. This is, in the opinion of transportation men, far too small. The Canadian Pacific's proportion of operation expenses to revenue ran somewhere in the neighborhood of 85, when American railway economists insist that 70 is getting to the

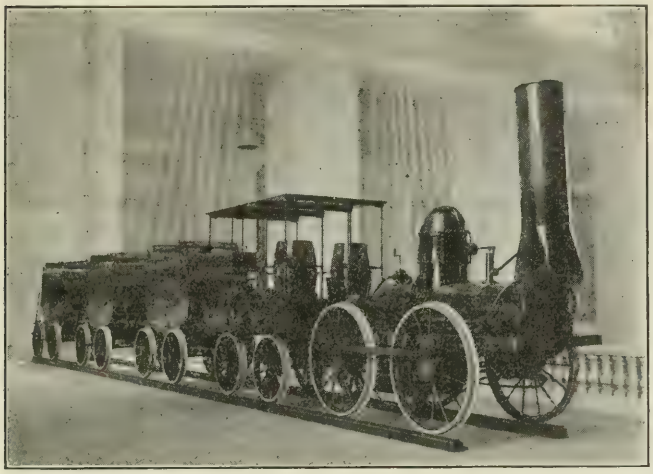
danger point. So when the superior organization of the Canadian Pacific, compared to the average American road at the present time, is considered it is clear that the Canadian Pacific will also be forced to look for an increase in rates.

"The American roads applied for an increase of from 25 to 35 per cent, which, according to their financial statement, seems justified. But I scarcely think that when the Canadian roads ask for their increase they will expect that much, although it is declared that 50 per cent more revenue would hardly place the government road on the right side of the ledger, even counting the Grand Trunk Pacific as a colonization road and not as a commercial proposition."

New York State's First Railroad Train

The DeWitt Clinton, the first locomotive to run in the state of New York, and now familiar to most people because of its exhibition at the Chicago World's Fair and other places, has been installed in the east gallery of the Grand Central Terminal, New York City, where it is in full view of the thousands of passengers passing through the grand concourse of that station daily.

The historic trip made by the DeWitt Clinton was from Albany to Schenectady in August, 1831. The engine was built by the



The DeWitt Clinton Exhibited in Grand Central Terminal

West Point Foundry Company and made its first trial trip on August 3.

The engine has been rebuilt several times and the tender and the cars, shown also in the picture, have been fixed up and painted so as to look like new. As it now stands the engine weighs 9,420 lb.; and each of the coaches weighs 3,420 lb. The length of the engine is 12 ft. 10 in.; of the tender 10 ft. 11 in.; and of each coach 14 ft.

Signal Division Meets

The Signal Division of the American Railway Association opened its twenty-fifth annual gathering at Alexandria Bay, Thousand Islands, on Wednesday morning of this week. There were over 500 members and guests present, thus making it the largest meeting for several years. President C. J. Kelloway, Atlantic Coast Line, in the opening address paid a warm tribute to the early members of the association who had built it up so that it is now regarded as the highest authority in its field. Its Manual now classifies 7,000 subjects and contains 1,200 standard designs.

President Kelloway voiced the feeling of a great majority of the members that the division ought to be self-governing, subject only to the executive committee of the American Railway Association. He urged that the younger members participate in the discussions, that the committee work be done more fully and thoroughly and that the chairmanships of standing committees be limited to five years. He also urged taking steps to improve the sectional meetings at which maintenance problems and rules should be discussed by the men who actually do the work. The American signal engineer has been a pioneer, but the time has come when the universities should develop men for this profession.

Following the president's address, a report of a special committee, consisting of W. J. Eck, superintendent, signal and electrical department, Southern Railway, and A. H. Rudd, chief signal engineer, Pennsylvania Railroad, was adopted authorizing the continuance of negotiations with the railway executives and the American Railway Association, looking to a reorganization such as was outlined at the Chicago meeting last March. The resolution empowers the committee of direction to confirm the informal negotiations during the past two months, to conclude the reorganization as outlined by the president, and to adopt these new plans tentatively until approval can be had by letter ballot next year.

Timetable Ninety Years Old

The press now co-operates cordially with the railroads in promoting the best transportation service, and statistics show that this is no new thing. The Baltimore & Ohio Magazine calls attention to an example of such co-operation in 1830, more than ninety years ago. It is in the shape of a facsimile of the first timetable issued by the Baltimore & Ohio on May 20 of that year; and it appears in the *editorial column* of the Baltimore American. Following a brief note, printed at the head of the first column, the American gives the official timetable issued by P. E. Thomas, president of the railroad. It says:

NOTICE IS HEREBY GIVEN, That the Railroad between Baltimore and Ellicott's Mills will be opened for the transportation of passengers, on MONDAY, the 24th inst.

A brigade, or train coaches, will leave the Company's Depot on Pratt Street, and return, making three trips each day—starting at the following hours precisely, viz:—

Leave Baltimore at 7 a. m. and Ellicott's at 9 a. m.
Leave Baltimore at 11 a. m. and Ellicott's at 1 p. m.
Leave Baltimore at 4 p. m. and Ellicott's at 6 p. m.

The price for the trip of twenty-six miles will be seventy-five cents for each person. Additional carriages will be furnished if the business warrants.

Railway Returns for Three Months

The Interstate Commerce Commission has issued the following compilation of railway revenues and expenses for the three months ended with March:

Item	Amount 1920	Amount 1919	Per mile of road operated 1920	Per mile of road operated 1919
27. Average No. miles operated	234,603.77	234,169.86	.....	.....
Revenues:				
28. Freight	$936,578,408	$776,429,998	$3,992	$3,316
29. Passenger	267,167,702	255,769,640	1,139	1,092
30. Mail	*77,780,922	12,813,863	331	55
31. Express	37,092,468	22,324,351	158	116
32. All other transportation	33,576,301	27,105,381	143	116
33. Incidental	32,966,718	31,002,924	140	132
34. Joint facility—Cr.	1,793,270	1,651,593	8	7
35. Joint facility—Dr.	590,838	490,165	2	2
36. Railway operating revenues	1,386,364,951	1,126,607,585	5,909	4,811
Expenses:				
37. Maint. of way and structures	190,249,745	172,307,777	811	736
38. Maint. of equipment	353,277,930	286,230,056	1,506	1,222
39. Traffic	14,944,340	10,754,245	64	46
40. Transportation	645,128,058	524,454,371	2,750	2,240
41. Miscellaneous operations	13,297,747	10,610,573	56	45
42. General	34,771,519	30,759,466	148	131
43. Transon. for investment—Cr.	904,750	1,546,050	4	6
44. Railway operating expenses	1,250,764,589	1,033,570,438	5,331	4,414
45. Net rev. from ry. operations	135.600,362	93,037,147	578	397
46. Railway tax accruals	56,330,735	45,716,106	240	195
47. Uncollectible railway rev.	295,290	180,326	1	1
48. Railway operating income	78,974,337	47,140,715	337	201
49. Equipment rents (Dr. Bal.)	6,986,247	4,503,268	30	19
50. Joint facility rent (Dr. Bal.)	4,852,700	3,712,906	21	16
51. Net of items 48, 49 and 50	67,135,390	38,924,541	286	166
52. Ratio of operating expenses to operating revenues, per cent	90.22	91.74	...	...

(D)—Debit item.
§—Credit item.
*—Includes approximately $50,000,000 back railway mail pay.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY, 1920

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	141	$183,493	$67,405	$271,885	$43,268	$45,927	$5,285	$90,962	$10,166	$198,783	73.11	$73,102	$14,251	$58,848	$58,255
Ann Arbor	301	342,835	54,160	426,584	74,173	83,210	5,911	202,637	13,310	379,333	88.92	47,251	17,500	29,746	—1,188
Arizona Eastern	377	263,513	52,722	340,052	70,617	49,234	2,651	96,683	20,238	241,702	71.07	98,350	25,676	72,665	38,030
Atchison, Topeka & Santa Fe	8,723	9,567,229	4,137,457	15,214,482	2,715,320	3,959,129	181,982	5,892,615	331,090	13,075,523	85.94	2,138,959	907,883	1,230,523	—1,391,505
Atlanta & West Point	93	107,289	95,166	228,411	29,334	45,487	3,029	82,631	9,733	176,954	77.47	51,458	8,928	42,530	—14,765
Atlanta Birmingham & Atlantic	639	339,510	79,473	457,745	119,888	134,390	19,714	253,305	27,827	555,186	121.28	—97,441	16,262	—113,741	987
Atlantic City	177	140,460	229,922	385,294	51,913	53,550	1,878	173,833	475	281,738	73.12	103,556	14,520	89,033	—88,015
Atlantic Coast Line	4,890	3,683,827	1,425,135	5,739,372	973,102	1,188,538	70,914	2,889,370	132,045	5,287,356	92.12	452,016	300,000	150,069	—153,351
Atlantic & St. Lawrence	166	132,605	87,606	232,062	72,132	45,874	1,747	115,759	8,675	294,013	126.69	—61,950	12,123	—74,073	102,211
Baltimore & Ohio	5,153	14,482,991	2,472,768	18,263,119	2,790,162	4,765,182	190,313	7,933,536	468,743	16,275,964	89.11	1,987,155	387,798	1,597,657	1,341,911
Baltimore, Chesapeake & Atlantic	87	79,606	30,735	118,781	9,441	82,494	1,151	76,818	3,367	173,271	145.87	—54,490	3,700	—58,190	42,328
Bangor & Aroostook	658	475,859	78,850	581,914	114,840	107,719	4,512	193,070	19,146	449,645	77.27	132,269	26,996	105,273	98,742
Beaumont, Sour Lake & West	118	144,639	32,665	185,450	31,035	32,924	3,118	77,947	5,887	150,878	81.35	34,572	2,850	31,722	47,272
Belt Ry. Co. of Chicago	31	.....	.....	252,540	48,133	40,470	705	131,172	5,677	226,157	89.55	26,383	35,434	—9,050	—10,660
Bessemer & Lake Erie	225	724,973	36,130	787,541	180,529	318,470	21,674	287,007	36,207	849,498	107.86	—61,957	15,800	—77,766	—630,564
Birmingham Southern	31	43,375	.....	59,390	5,129	7,944	854	34,648	3,316	51,892	87.37	7,497	1,754	5,743	1,659
Bingham & Garfield	36	165,835	1,405	169,030	31,617	35,839	1,405	33,829	4,990	107,824	63.78	61,208	7,425	53,782	104,294
Boston & Maine	2,304	4,364,333	1,739,873	6,819,856	928,685	1,420,422	47,172	3,460,776	226,947	6,115,866	89.67	703,990	237,702	431,366	520,583
Brooklyn Eastern District Terminal	9	46,945	.....	51,205	7,206	14,976	.....	55,678	4,414	82,272	160.67	—31,067	7,408	—38,476	12
Buffalo & Susquehanna R. R. Corp.	296	214,064	6,790	224,414	69,855	94,315	2,382	82,740	8,183	257,474	114.73	—33,060	3,200	—36,260	—8,589
Buffalo, Rochester & Pittsburgh	589	1,384,476	144,778	1,588,769	295,534	550,179	16,051	703,174	43,873	1,610,666	101.37	—21,897	35,000	—56,897	135,199
Canadian Pacific Lines in Maine	283	132,982	29,079	175,248	60,862	43,749	2,899	99,388	4,072	210,970	120.38	—35,722	12,200	—47,922	17,490
Central New England	361	516,818	17,011	566,293	172,572	106,593	3,119	310,513	17,169	615,116	108.62	—48,823	18,225	—67,049	—239,244
Central R. R. Co. of N. J.	686	2,468,467	750,893	3,532,857	390,543	958,459	32,789	1,934,608	95,429	3,444,280	97.49	88,577	265,166	—176,588	—98,468
Central Vermont	413	498,661	86,767	638,460	91,569	134,952	7,201	422,933	19,082	678,462	106.26	—40,001	17,400	—57,417	90,593
Charleston & West. Carolina	342	233,310	52,915	301,892	62,137	51,675	5,741	165,283	8,565	293,402	97.18	8,490	11,625	—3,135	—30,380
Chesapeake & Ohio	2,520	5,300,017	930,085	6,739,755	922,728	1,532,827	46,520	2,682,468	131,788	5,347,033	79.33	1,392,723	229,810	1,162,912	—639,934
Chicago & Alton	1,050	1,483,474	556,474	2,200,367	406,257	595,860	33,616	929,722	65,821	2,043,516	92.87	156,751	60,000	96,545	15,461
Chicago & East. Illinois	1,131	1,420,324	403,253	2,033,327	384,474	724,985	19,376	909,733	64,239	2,115,605	104.04	—82,278	100,906	—182,564	—165,918
Chicago, Det. & Can. Grand Trunk Junct.	62	68,893	10,615	92,948	18,800	16,542	1,056	47,640	3,511	87,548	94.19	5,397	4,596	801	92,247
Chicago & Erie	269	886,672	71,168	1,029,804	119,845	147,070	16,555	445,903	31,834	764,772	74.26	265,032	40,900	224,085	4,975
Chicago & North Western	8,405	8,647,761	2,767,763	12,744,632	2,682,027	2,814,546	92,944	5,582,847	330,268	11,623,960	91.20	1,120,673	725,000	395,545	—326,662
Chicago Great Western	6,069	16,045,128	7,413,936	27,066,533	6,689,510	8,166,850	257,371	12,854,793	715,951	29,179,984	107.81	—2,113,451	1,363,867	—3,479,801	—5,910,796
Chicago, Indianapolis & Louisville	654	751,286	296,525	1,160,876	162,109	382,584	25,277	526,835	30,053	1,143,689	98.51	17,187	48,676	—31,573	—121,053
Chicago Junction	12	.....	.....	218,883	66,658	84,686	134	307,305	12,229	471,012	215.18	—252,129	2,994	—255,122	—240,735
Chicago, Milwaukee & St. Paul	10,629	7,275,590	2,389,290	11,032,590	2,620,745	3,082,251	118,996	5,572,079	394,936	11,880,976	107.68	—848,386	677,263	—1,525,649	—1,783,549
Chicago, Rock Island & Gulf	463	316,164	102,707	465,008	76,603	61,522	9,204	202,973	12,391	364,121	78.30	100,888	17,833	83,054	85,095
Chicago, Rock Island & Pacific	7,648	6,921,126	2,639,815	10,203,562	2,375,803	3,032,082	130,735	4,598,920	246,092	10,454,997	102.46	—251,435	547,667	—800,275	—1,231,281
Chicago, St. Paul, Minn. & Omaha	1,749	1,519,025	611,619	2,313,018	421,698	436,486	25,382	1,042,241	71,420	2,009,851	86.89	303,168	137,100	165,693	68,441
Chicago, Terre Haute & South Eastern	374	338,663	23,413	372,071	79,706	139,014	3,377	142,893	10,763	376,998	101.32	—4,927	19,500	—24,428	—9,439
Cincinnati, Indianapolis & Western	321	235,484	54,934	318,271	57,252	116,121	9,282	146,445	19,436	349,426	109.78	—31,149	13,539	—44,687	9,138
Cincinnati Northern	245	242,774	17,246	269,198	103,965	88,264	3,502	99,032	5,886	300,649	111.67	—31,451	10,465	—41,920	—92,271
Cleveland, Cincin., Chicago & St. Louis	2,408	4,114,677	1,574,993	6,318,219	1,413,908	2,029,069	79,250	2,674,024	154,902	6,412,143	101.48	—93,924	234,510	—328,577	1,379,028
Colorado & Southern	1,099	798,580	217,264	1,097,332	334,933	484,410	9,387	444,075	41,491	1,322,501	120.52	—225,169	59,791	—284,995	—328,914
Colorado & Wyoming	43	21,869	1,018	90,799	15,211	21,611	178	42,069	4,275	83,283	91.72	7,516	5,000	2,516	—14,073
Delaware & Hudson	858	2,447,198	209,841	2,836,639	390,226	942,586	26,795	1,540,695	136,737	3,062,536	107.96	—225,891	81,500	—307,391	—550,844
Delaware, Lackawanna & Western	956	3,747,016	1,084,264	5,626,097	931,270	1,318,541	78,628	2,704,768	140,198	5,287,404	93.97	338,693	389,583	50,896	—1,305,754
Denver & Rio Grande	2,585	2,184,187	556,874	2,953,228	445,447	665,409	36,835	908,722	78,134	2,187,002	74.05	766,226	136,000	630,170	216,296
Denver & Salt Lake	255	148,939	35,691	195,250	53,995	41,570	780	106,924	6,498	209,767	107.43	—14,517	9,000	—23,517	78,661
Detroit & Mackinac	376	107,848	34,710	155,128	36,363	36,666	2,345	68,755	9,870	153,798	99.14	1,329	37,970	—36,641	—14,967
Detroit, Grand Haven & Milwaukee	195	210,262	47,065	287,720	63,877	63,345	4,457	199,543	12,281	343,500	119.38	—55,780	3,088	—58,868	187,599
Detroit, Toledo & Ironton	454	366,350	11,960	399,293	100,008	92,322	5,794	183,901	15,386	397,412	99.52	1,881	9,192	—7,311	112,588
Duluth & Iron Range	298	1,216,106	22,719	1,328,243	149,415	134,761	741	252,515	18,711	556,834	41.92	771,409	67,600	703,655	61,611
Duluth, Missabe & Northern	407	1,793,788	52,800	1,995,179	247,532	153,810	2,721	370,736	26,946	802,773	40.24	1,192,406	105,904	1,086,502	—1,330,720
Duluth, South Shore & Atlantic	614	365,658	100,085	511,722	119,982	79,919	5,121	210,800	9,707	431,518	84.32	80,204	34,000	46,177	34,444
Duluth, Winnipeg & Pacific	178	155,838	23,824	183,681	36,789	44,206	3,516	91,070	9,422	185,003	100.71	1,322	10,735	—12,059	—5,638
El Paso & South Western	1,027	750,438	208,627	1,021,970	178,428	209,748	17,629	315,690	50,071	781,964	76.51	240,069	100,415	139,320	—197,183
Elgin, Joliet & Eastern	833	1,550,783	12	1,770,150	203,801	464,664	7,850	726,481	36,946	1,439,647	81.32	330,503	49,759	280,971	1,688
Erie	1,989	5,622,353	1,137,079	7,541,320	1,308,439	2,592,253	101,722	3,981,671	247,275	8,316,596	110.20	—769,275	249,016	—1,018,909	—1,547,938
Florida East Coast	764	718,220	246,699	1,114,726	141,698	153,214	8,469	432,011	26,664	788,388	70.72	326,338	39,583	286,755	157,874
Fonda, Johnstown & Gloversville	88	45,679	75,068	127,003	12,576	15,050	381	41,331	11,845	81,212	63.94	45,792	5,075	40,717	1,357
Fort Smith & Western	253	49,652	29,150	141,419	39,764	34,602	4,301	55,148	7,218	142,328	100.64	—909	5,000	—5,922	—14,487
Fort Worth & Rio Grande	235	65,663	58,602	134,898	43,214	27,684	1,579	80,835	6,866	160,177	118.73	—25,279	3,785	—29,100	36,185
Galveston, Harrisburg & San Antonio	1,384	1,422,181	431,364	2,003,953	759,584	485,000	33,632	759,948	62,163	2,122,409	105.91	—118,455	74,388	—195,986	—507,455
Georgia	328	342,367	139,005	532,633	64,662	112,194	11,231	234,618	18,560	491,465	92.27	41,218	5,950	35,266	—2,661
Grand Trunk Western	350	731,151	221,795	1,032,704	156,546	328,295	15,174	544,135	41,474	1,092,237	105.76	—59,534	51,084	—110,637	32,687
Great Northern	8,175	7,179,605	1,429,658	9,695,801	2,747,199	1,728,822	109,151	3,654,791	213,281	8,576,443	88.39	1,119,359	836,252	288,277	478,849
Green Bay & Western	252	79,011	14,642	100,408	45,504	19,331	1,029	37,689	3,066	106,620	106.18	—6,211	6,874	13,085	—3
Gulf & Ship Island	307	194,844	56,243	262,890	58,376	49,116	3,778	168,019	13,011	280,772	88.71	29,619	11,031	18,576	35,677
Gulf, Colorado & Santa Fe	1,907	1,243,213	486,672	1,881,229	526,119	484,074	26,862	851,715	54,221	1,943,999	103.38	61,770	87,016	—148,481	—134,187
Gulf, Mobile & Northern	470	241,161	57,132	313,012	81,389	65,769	9,862	150,158	16,493	323,663	103.40	10,650	13,743	—3,364	46,343
Hocking Valley	350	829,906	102,920	1,000,681	159,311	367,259	6,404	404,399	33,212	970,573	96.98	30,109	63,097	—32,989	—310,891

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY, 1920—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.					
Houston & Texas Central	885	$599,881	$238,984	$905,428	$266,038	$183,333	$17,339	$369,493	$25,487	$861,532	95.15	$43,895	$47,433	—$6,107	—$83,193
Houston, East & West Texas	190	187,939	52,382	253,276	137,606	31,667	2,367	104,146	5,381	281,167	111.01	—27,890	9,408	—37,558	—59,762
Illinois Central	4,799	7,696,303	2,117,412	10,713,131	2,001,680	3,070,198	89,750	5,038,210	231,902	10,527,729	98.26	185,402	658,585	—473,319	—1,664,723
Illinois Terminal	24	80,847	.....	85,414	4,037	8,919	593	14,737	4,818	33,102	38.75	52,311	1,117	51,195	19,017
Indiana Harbor Belt	120	.....	.....	587,866	207,688	93,604	2,296	383,766	18,533	705,887	120.07	—118,020	10,747	—128,768	—56,727
International & Great Northern	1,159	930,165	281,762	1,308,792	262,974	333,687	21,950	828,682	48,315	1,487,059	113.61	—178,266	32,500	—211,110	.....
Kanawha & Michigan	176	401,811	53,786	470,300	98,229	206,926	2,747	165,770	13,065	486,732	103.48	—16,432	25,000	—41,434	—124,867
Kansas City, Mexico & Orient	272	91,168	17,270	114,536	52,160	38,630	2,719	65,196	18,847	167,552	146.28	—53,017	7,700	—60,717	—15,067
Kansas City, Mex. & Orient of Tex	465	93,194	20,138	120,553	75,024	40,629	2,954	84,764	7,816	211,188	175.18	—90,635	6,250	—96,885	—48,554
Kansas City Southern	779	1,244,339	234,704	1,574,483	258,268	294,423	32,662	582,467	58,254	1,225,575	77.83	348,908	71,969	276,933	131,321
Lake Erie & Western	741	743,254	61,276	848,592	169,217	254,675	14,410	361,545	25,324	824,108	97.11	24,484	35,000	—9,154	—54,133
Lake Superior & Ishpeming	34	196,529	148	221,098	14,331	16,355	194	37,835	2,837	71,553	323.62	149,545	4,953	144,592	100,991
Lake Terminal	12	.....	160	109,626	20,451	33,530	.....	72,439	61	126,481	115.37	—16,855	5,902	—22,757	3,638
Lehigh & Hudson River	96	235,355	3,647	276,137	29,542	38,800	1,616	113,679	6,252	189,890	68.76	86,247	8,600	77,647	31,131
Lehigh & New England	229	432,303	1,812	447,339	57,036	73,642	2,912	131,149	13,229	227,930	50.95	169,409	14,803	154,606	51,072
Lehigh Valley	1,435	4,174,085	604,178	5,203,205	943,455	1,584,071	73,885	3,567,764	161,404	6,355,452	122.14	—1,152,246	206,000	—1,358,353	—1,552,680
Long Island	398	512,375	1,334,422	2,033,322	315,906	418,966	14,005	1,070,413	54,716	1,888,609	92.88	144,713	101,096	43,238	—493,107
Los Angeles & Salt Lake	1,168	1,149,660	398,450	1,687,127	256,140	339,483	29,099	585,158	38,887	1,297,854	76.92	389,273	76,222	313,048	185,810
Louisiana & Ark	302	252,744	48,962	313,988	77,308	42,994	4,459	102,069	8,050	234,880	74.81	79,107	18,342	60,759	72,762
Louisiana Ry. & Nav. Co	343	237,850	44,048	304,914	76,032	55,147	6,516	157,827	13,233	308,755	101.24	—3,840	14,000	—17,840	—173
Louisiana Western	207	278,359	100,863	408,007	100,911	76,667	7,963	109,378	15,409	312,975	76.71	95,033	20,320	74,628	—17,851
Louisville & Nashville	5,040	7,028,032	2,017,958	9,621,758	1,608,078	2,438,702	156,204	4,379,631	207,719	8,882,063	92.31	739,695	302,611	436,983	—242,771
Louisville, Henderson & St. Louis	199	161,580	61,620	237,505	76,947	29,242	5,046	86,602	8,617	206,453	86.92	31,052	7,215	23,806	—35,182
Maine Central	1,216	1,174,410	388,324	1,686,684	291,667	375,147	11,612	2,513	43,047	1,607,164	95.28	79,520	95,742	—16,227	54,247
Maryland, Delaware & Virginia	82	70,672	28,894	105,429	10,151	41,568	8,540	78,059	2,106	132,424	125.60	—26,995	2,000	—28,995	14,809
Michigan Central	1,862	3,525,762	1,969,043	6,199,723	1,237,211	1,665,645	77,075	2,642,796	123,512	5,851,159	94.37	348,563	246,500	100,940	—1,051,932
Minneapolis & St. Louis	1,646	974,126	196,216	1,247,138	315,036	350,263	19,316	620,139	38,523	1,343,391	107.72	—96,253	56,546	—153,079	—186,328
Minn., St. Paul & Sault Ste. Marie	4,243	2,711,526	629,529	3,676,015	738,504	624,215	45,930	1,493,200	86,844	3,009,758	81.87	666,256	275,012	391,230	135,451
Minneapolis & International	194	60,297	27,618	95,249	55,808	14,856	450	42,106	3,475	116,696	122.51	—21,448	6,042	—27,490	—11,712
Mississippi Central	164	52,301	20,949	78,113	15,585	26,504	2,062	34,952	6,711	85,813	109.85	—7,700	5,000	—12,700	1,409
Missouri & North Arkansas	364	91,366	39,934	141,024	66,996	33,634	3,027	63,979	6,483	174,119	123.46	—33,096	5,893	—38,988	22,322
Missouri, Kansas & Texas	1,715	1,997,961	689,745	2,921,105	576,657	803,804	42,073	1,034,743	96,125	2,570,451	87.99	350,654	94,942	255,214	12,974
Missouri, Kansas & Texas of Texas	1,739	1,117,803	749,978	2,043,521	536,642	365,878	30,509	1,113,550	83,502	2,150,290	105.22	—106,769	59,603	—166,655	—196,434
Kansas, Oklahoma & Gulf	329	159,421	23,883	193,042	41,965	33,941	2,694	93,148	9,090	180,988	93.75	12,055	10,500	1,555	96,412
Missouri Pacific	7,299	6,268,101	1,663,439	8,633,771	1,983,192	1,999,381	153,913	3,666,582	243,451	8,087,961	93.67	545,810	238,070	307,121	—307,338
Mobile & Ohio	1,165	1,124,059	189,318	1,410,921	270,616	452,329	29,422	650,739	45,706	1,449,767	102.75	—38,846	59,652	—98,498	—3,362
Monongahela	108	216,713	27,877	250,686	148,802	36,875	452	92,964	6,359	285,451	113.86	—34,765	6,293	—41,058	—93,971
Monongahela Connecting	7	.....	.....	273,420	31,235	36,255	561	128,291	6,628	202,972	74.23	70,448	3,003	67,444	89,173
Montour	56	103,784	1,237	108,657	37,122	52,768	1,128	38,249	6,878	137,963	126.97	—29,307	2,431	—31,737	—13,381
Morgan's La. & Tex. R.R. & S.S. Co	400	577,815	171,956	807,663	255,030	158,333	12,137	276,063	26,636	730,934	90.49	76,728	42,938	32,860	—50,010
Nashville, Chattanooga & St. Louis	1,247	1,509,236	442,083	2,072,974	348,393	447,858	46,659	880,192	56,655	1,783,433	86.03	289,542	42,500	247,020	207,914
Nevada Northern	165	146,933	9,853	163,438	25,592	22,723	797	41,228	5,646	96,143	58.82	67,295	8,267	59,028	25,639
New Jersey & New York	47	10,254	88,284	103,629	11,937	18,173	855	61,998	2,690	95,654	93.30	7,975	1,927	6,048	—4,721
New Orleans & Great Northern	284	143,937	50,916	203,871	47,782	39,800	4,266	84,639	9,547	186,587	91.52	17,284	12,117	5,167	27,191
New Orleans, Texas & Mex	191	151,409	41,049	199,230	57,816	52,940	4,694	75,707	9,054	199,972	100.37	—741	12,167	—12,905	—39,348
New York Central	6,069	16,045,128	7,413,936	27,066,533	6,689,510	8,166,850	257,371	12,854,793	715,951	29,179,984	107.80	—2,113,452	1,363,867	—3,479,801	—5,910,796
New York, Chi. & St. Louis	574	1,679,328	98,764	1,850,564	276,693	311,266	39,483	700,425	60,719	1,394,169	75.33	456,395	25,000	431,395	71,111
New York, New Haven & Hartford	1,965	4,551,805	4,150,437	10,000,392	1,426,941	2,187,563	54,274	4,989,738	334,788	9,181,648	91.81	818,744	339,000	478,712	—322,143
New York, Ontario & Western	569	650,406	204,871	1,030,376	178,951	242,705	10,427	461,943	26,487	920,513	89.34	109,863	29,100	80,763	—98,246
New York, Susquehanna & Western	135	312,957	61,088	44,781	33,825	67,660	2,256	246,378	8,273	358,386	86.40	56,395	18,674	37,718	10,083
Newburgh & South Shore	7	.....	.....	119,869	12,580	31,783	.....	80,918	4,459	129,739	108.23	—9,870	7,759	—17,629	—10,460
Norfolk & Western	2,199	5,343,366	789,914	6,423,483	1,057,792	2,001,773	53,105	2,497,375	143,823	5,777,480	89.94	646,003	425,000	220,724	—435,138
Norfolk Southern	905	405,722	155,261	600,994	147,532	116,475	12,590	310,125	32,719	619,623	103.10	—18,629	16,666	—35,389	—38,042
Northern Pacific	...	5,674,521	1,566,089	7,981,880	3,028,649	1,533,094	80,070	3,186,116	231,641	8,218,088	102.95	—236,208	739,131	—976,347	—1,123,735
Northwestern Pacific	538	300,083	258,181	637,438	87,704	75,065	5,775	256,329	16,029	443,432	69.56	194,006	25,647	168,359	34,146
Oregon Short Line	2,353	2,648,122	596,845	3,514,123	552,186	647,457	30,630	964,005	126,345	2,388,147	67.95	1,125,976	275,703	850,273	165,742
Oregon, Washington R.R. & Navigation	2,223	1,680,946	586,914	2,500,318	567,841	467,087	39,502	1,041,775	126,917	2,273,475	90.92	226,842	248,252	—21,426	—309,830
Panhandle & Santa Fe	773	499,136	139,993	678,472	178,819	236,554	3,855	246,211	1,616,325	681,763	100.49	—3,291	20,435	—23,726	56,115
Peoria & Pekin Union	19	18,604	3,340	99,800	21,173	29,144	9	65,885	4,239	120,450	120.69	—20,650	9,500	—30,150	14,873
Pere Marquette	2,230	2,324,529	520,929	3,161,077	482,917	638,855	34,771	1,296,267	121,230	2,582,702	81.70	578,376	79,960	498,414	—85,367
Perkiomen	41	79,950	11,455	95,121	6,635	4,778	10	39,653	124	51,220	53.84	43,901	3,275	40,625	13,171
Philadelphia, Beth. & New England	10	.....	.....	138,517	24,140	18,650	496	77,107	1,506	121,900	88.00	16,617	1,030	15,587	22,897
Philadelphia & Reading	1,126	6,083,423	783,925	7,294,061	789,282	1,113,745	50,119	3,129,035	145,704	5,249,494	71.97	2,044,567	209,583	1,834,969	1,190,981
Pittsburgh & Lake Erie	224	385,718	248,447	754,893	536,696	1,036,017	14,977	558,700	57,035	2,205,258	292.12	—1,450,364	151,571	—1,602,027	—1,428,394
Pittsburgh & Shawmut	103	129,061	5,596	135,487	24,864	29,356	1,298	48,711	5,370	109,599	80.89	25,888	149	25,739	38,896
Pittsburgh & W. Va	63	156,850	9,557	184,153	64,664	38,377	1,963	63,089	13,146	194,333	105.52	—10,179	14,939	—25,108	55,534
Pittsburgh, Shawmut & Nor	209	94,115	5,572	103,502	34,140	61,491	1,017	49,861	5,593	152,110	146.96	—48,607	1,885	—50,492	89
Fort Reading	21	112,901	.....	134,589	17,275	3,711	18	53,124	—4,149	69,979	51.99	64,610	12,007	52,603	—59,049
Richmond, Fred. & Potomac	118	492,415	298,730	925,816	87,999	156,998	6,480	385,370	29,284	672,988	73.77	252,828	31,050	221,664	—285,897
Rutland	415	261,934	112,464	459,644	140,696	176,262	4,051	216,189	13,598	552,659	120.24	—93,015	18,169	—111,188	—114,991
St. Joseph & Grand Island	258	195,733	33,969	249,922	101,023	33,750	1,938	129,721	12,335	282,581	113.06	—32,659	11,881	—44,539	—35,583

Traffic News

The Wabash inaugurated a new daily train on July 11, leaving Chicago at 10 a. m. and arriving at Detroit at 5:35 p. m. It has also restored its Pullman service to New York.

Charles A. Lahey, who recently resigned as general freight agent of the Chicago, Milwaukee & St. Paul, to become a member of the Western Trunk Lines Rate Committee, has resigned the latter position to become traffic manager of the Quaker Oats Company, effective July 15.

The New York Public Service Commission, First District, has suspended until November 29 new tariffs filed by the Long Island on July 2, calling for increases in passenger fares on its lines out of New York, amounting in many cases to 10 per cent over existing rates. Hearings have been set to begin August 2.

Representatives of the Atchison, Topeka & Santa Fe appeared before the California Railroad Commission on July 1 to protest against the further invasion of the freight hauling business between Los Angeles, Cal., and San Francisco by motor trucks. The United Motor Freight & Express Co. is seeking to establish a San Francisco-Los Angeles long haul freight truck line. The hearing has not been completed.

An embargo on all shipments of lumber billed to Cincinnati, O., and to points in the Cincinnati switching district was placed in effect on July 1, by the local Commission on Car Service Committee. The embargo, it is explained, will not blockade the shipment of lumber into or through Cincinnati, as permits will be issued authorizing the movement of the commodity to points that are not under blockade beyond Cincinnati.

The Traffic Club of Cleveland, Ohio, has elected the following officers: President, C. T. Stripp, traffic manager of the National Malleable Castings Company; first vice-president, M. R. Maxwell, general freight agent of the New York Central; second vice-president, H. N. Sibbal, traffic manager of the National Lamp Works of the General Electric Company; secretary, F. A. Gideon, special agent for the American Steel & Wire Company; and treasurer, M. J. Naughton, commercial agent of the Delaware, Lackawanna & Western.

In the three days' period from July 3 to 5, inclusive, the Pennsylvania Railroad carried to Atlantic City, Wildwood, Cape May and intermediate points 87,208 passengers, and hauled back from the same points 76,585 passengers. This makes a combined total of 163,793 persons, much exceeding the traffic in any corresponding period in the history of the South Jersey lines. In transporting these passengers 1,515 cars were operated to the seashore points, and 1,513 were operated back, making a combined round-trip movement of 3,028 cars.

The American Wholesale Lumber Association, Chicago, has appointed the following members on its traffic committee: A. L. Stone, chairman, Nicola-Stone & Myers, Cleveland, O.; C. E. Walden, Sabine-Tram Lumber Company, Beaumont, Tex.; M. G. Truman, Marsh & Truman, Chicago; Thomas E. Coale, Thomas E. Coale Lumber Company, Philadelphia, Pa., and J. G. McCormick, McCormick Lumber Company, Birmingham, Ala. The traffic committee has been organized to protect the industry, and in particular the wholesalers, but will also, in every way possible, assist in co-operating with the railroads and the government in meeting the present transportation emergency.

The Southern Pacific Lines have arranged for the issuance of export permits from the Southern Pacific office at Memphis, Tenn., direct to points in Japan and China for the export of cotton from the local territory. These permits will cover shipments moving through San Francisco, Cal., Portland, Ore., Seattle, Wash., and other Pacific coast ports to the Orient. Heretofore it has been necessary to obtain such permits through the terminal lines at the port of exit, involving considerable delay to shippers. The permits will be issued to shippers immediately after space is contracted for.

Coal Production

A decrease of 3 per cent in bituminous coal production during the week ended July 3 is attributed to diminished output on Friday and Saturday, on the eve of the Fourth of July holiday, according to the weekly bulletin of the United States Geological Survey. The total production of soft coal, including lignite and coal coked at the mine, is estimated at 10,255,000 net tons, a decrease when compared with the preceding week, of 305,000 tons. The output was, however, larger than that of the week of June 19, before the service order granting complete priority for coal mines in the use of open-top cars went into effect.

Production during the first 158 working days of the last four years has been as follows:

1917	278,000,000	1919	218,099,000
1918	288,000,000	1920	262,272,000

The year 1920 is thus 15¾ million tons behind 1917, and 26¾ million tons behind 1918, but is over 44 million tons ahead of 1919.

The mine reports for the week ended June 26 show an improvement in car supply apparently attributable to the order effective June 21, directing priority in the use of open-top equipment for coal mines. Transportation disability remained the dominant factor limiting production; losses due to all other causes were at a minimum. Service Order No. 6, directing that coal mines be given priority in the use of open-top equipment for a period of 30 days beginning June 21, was in effect throughout the week of the 26th. The reports, therefore, measure the improvement in car supply effected. Partly or wholly as the result of the order the average working time over the country as a whole increased from 53.9 to 55.5 per cent of full time, and the average loss attributed to car shortage declined from 39.4 to 37.9 per cent. The improvement is said to be the more significant when it is remembered that it was accomplished in spite of further outbreaks of the switchmen's strike on carriers serving the Somerset, Cumberland-Piedmont and Fairmont fields and Section C of central Pennsylvania which, for a time at least, practically stopped eastbound shipments from those districts. Although the improvement was widespread it was by no means universal and in many districts the car supply grew even less satisfactory than before.

No material increase was shown in lake shipments during the third week of operation of the pool re-established by Service Order No. 5. Total lake shipments since the beginning of the season now amount to 4,130,000 tons, as compared with 8,561,000 tons in 1918, and 10,053,000 tons in 1919. With more than one-third of the season of navigation gone, the lake movement is thus nearly four and a half million tons behind 1918, and nearly six million tons behind 1919.

How the country has run down in its stock of soft coal is strikingly shown in a report issued by the Geological Survey, showing that while in ordinary times there is a supply of some 35,000,000 tons of coal in the hands of consumers in the early Spring months, the country's surplus throughout last Spring was almost entirely exhausted. On May 31, the Survey's figures show, there were stocks of bituminous coal at industrial plants, other than steel, of 3,389,066 tons throughout the country, representing an average of 3 3/7 weeks' supply. Public utility plants had on hand 1,372,880 tons, or a little over 3 weeks' supply. Coal gas plants had stocks of 222,805 tons, or enough to last 3 1/7 weeks. In some centers the shortage was much more acute than in others.

The Geological Survey's tabulation for manufacturing and public utility plants in individual states shows that on May 31 New York State had run down to a supply that would last 2 6/7 weeks, New Jersey 3 2/7 weeks, Pennsylvania 3 1/7 weeks, Delaware 3 2/7 weeks, West Virginia 3 3/7 weeks, New Hampshire 2 6/7 weeks, Ohio 2 weeks, Illinois 2 weeks, Virginia 1 2/7 weeks, Kentucky 2 weeks, Tennessee 2 1/7 weeks, Arkansas 2 weeks, Texas 1 4/7 weeks, Colorado 2 weeks. In Massachusetts there was a supply of 5 1/7 weeks, Connecticut 4 1/7 weeks, Rhode Island 6 1/7 weeks, North Carolina 4 6/7 weeks, South Carolina 7 4/7 weeks.

Commission and Court News

Interstate Commerce Commission

The commission has suspended from July 5 to November 2 proposed cancellation of distance rates on grain and grain products between Missouri points on the one hand and Iowa points on the other hand as published by the Chicago, Burlington & Quincy.

The Interstate Commerce Commission has suspended from July 1 to October 29, tariffs of the Belt Railway of Chicago, the Chicago & Western Indiana and the Indiana Harbor Belt, naming increased switching charges at points within the Chicago switching district.

The Interstate Commerce Commission has suspended from July 15 to November 12 proposed increased rates on potatoes, carloads, applicable from certain points in Iowa, Minnesota, Michigan and Wisconsin to certain points in Arkansas, Illinois, Iowa, Missouri, Wisconsin and Kentucky, as published in a tariff issued by E. B. Boyd, agent.

The Interstate Commerce Commission has further suspended from August 2 until September 1 the operation of the Hudson & Manhattan Railroad Company tariff increasing the local fares between points on its line in the City of New York, Borough of Manhattan, and Jersey City and Hoboken, New Jersey, the operation of which was suspended from April 4 to August 2 by an order previously entered.

The Interstate Commerce Commission has declined to modify its order giving shipments of coal to tidewater for coastwise shipment to points in the United States priority over the movement of coal for import. A modification of the order was requested by Secretary of Commerce Alexander, who said that the virtual embargo on coal exports would have a disastrous effect upon American foreign trade and upon the American shipping industry.

The Commission has rendered a decision on the complaint of the Wholesale Coal Trade Association of New York against the director general of railroads, holding that demurrage charges assessed on tidewater coal held at Baltimore, Philadelphia and certain points in the vicinity of New York, from November 11, 1918, to March 2, 1919, were not unreasonable. The demurrage charges assessed between March 3, 1919, and March 31 were unreasonable to the extent that they exceeded the charges based upon five days' free time and a demurrage charge of $2 per car per day, but that the charges and free time rule in effect since March 31, 1919, have been and are reasonable. The decision holds that the difference in treatment accorded the complainants and the lake port shippers does not constitute an undue discrimination and that the record does not justify a departure from the general rule with respect to denying relief from demurrage charges which accrued during strikes.

Application for Southern Pacific Water Service Denied

The Interstate Commerce Commission has denied the application of the Southern Pacific Company, under the provisions of Section 5 of the act to regulate commerce as amended by the Panama Canal Act, for a modification of the order heretofore entered by the commission to permit operation of its Atlantic steamship lines in either regular or irregular service between New York and Port Arthur, Sabine Pass, Texas City, Freeport, Houston, Beaumont and Orange, Texas, and between Portland, Me., Boston, Fall River and New Bedford, Mass., Providence, R. I., Philadelphia, Pa., and Baltimore, Md., on the one hand, and New Orleans, La., and Galveston, Tex., and other Gulf ports on the other hand. The commission holds that it is possible for the Southern Pacific Company to compete with the proposed boat lines and that such service is not in the interest of the public and of advantage to the convenience and commerce of the people and will exclude or prevent competition on the routes by water.

Foreign Railway News

Railway Rates in Belgium Increased

LONDON.

On July 1 the passenger fares on Belgian railways will be increased by 10 per cent and freight rates by 50 per cent.

Central Argentine Railway Extensions

LONDON.

The Central Argentine Railway has decided to devote a sum of 40,000,000 gold pesos (approximately $36,800,000) to the extension of its system.

Electrification of Santander-Bilbao Railway

At the general meeting of the shareholders of the Santander-Bilbao Railway, held in Madrid, recently, according to the Railway Gazette, London, it was decided to carry out the electrification of the line, which has a length of about 74 miles.

Reconstruction of French Railways

Repair and renewal of lines, bridges and tunnels on the Northern Railway of France has now been almost entirely completed, says a note in the Railway Gazette, London, and normal express services will be practicable on the Paris-Lille-Tourcoing, Paris-Saint Quentin-Erquelines and Paris-Laon-Hirson lines. Out of over 600 bridges, 475 are now permanently restored and 80 others are on the point of completion. The three tunnels of Vauxaillon, La Férée and Guise, which were blown up, are repaired. Of 113 destroyed road bridges, 50 are restored. At the great Hellemmes workshops, where only walls remained, a temporary restoration was effected which permitted of the repair of 147 engines during last year. All restrictions in regard to goods traffic on the Nord line have been withdrawn.

Improvements on the Manila Railroad

The board of directors of the Manila Railroad Company, which operates 647 miles of track in the Philippine Islands, nearly all on the island of Luzon, has authorized the expenditure of $2,500,000 for new equipment and betterments.

The directors approved requisitions for 30 new locomotives, 100 thirty-ton freight cars and 25 additional passenger coaches. Bids for furnishing this equipment will be opened soon in New York. E. J. Westerhouse, general manager of the railroad, is now on his way to the United States, bringing with him the necessary documents to effect the dissolution of the New Jersey corporation, which has operated the railroad. When this dissolution has been concluded under an act of the Philippine Legislature, the road will become a Philippine corporation.

Proposed New Railways from Argentina to the Pacific

LONDON.

The Times Trade Supplement states that in the past the construction of a railway between Salta on the Argentine State railway system and Antofagasta, Chile, on the Pacific has been discussed and considered. Although the project was looked on favorably by the Argentine Government, the Chilean Congress refused to grant the concession chiefly owing to traditional dislike on the part of Chile of any violation of that bulwark built for them by nature—the Andes. However, this feeling is disappearing and on all sides favorable consideration is being given to the proposed construction.

The proposed route of the railway comprises a distance of about 650 miles from Antofagasta to Salta and crosses the Chilo-Argentine frontier approximately at half-way at a place called Huatiquina. The total estimated capital required is $40,000,000, of which $17,500,000 would be devoted to the Chilean section of the line. The project is that the Argentine and Chilean govern-

ments should respectively guarantee the interest on the capital expended on the construction of the part of the line traversing each country.

Electric Locomotives for the Swiss Federal Railways

The first of the 14 electric locomotives ordered by the Swiss Government in the latter part of 1918 for the Federal Railways (Guebe Valley and Berne-Schwarzenbourg lines) has just been delivered by the builders, the S. A. Brown, Boveri & Cie, Baden.

The new locomotive has successfully passed the tests it was subjected to before acceptance. The locomotive develops 1,000 horsepower at a speed of 40 kilometers (24.85 miles) per hour. The maximum speed attainable is 60 kilometers (37.28 miles) per hour. Single-phase, 15,000-volt power is supplied to the locomotives by an overhead system.

Of the 14 electric locomotives ordered, seven were to be made by the Swiss Machine & Locomotive Works at Winterthur, Switzerland, and seven by the S. A. Brown, Boveri & Cie, Baden, Switzerland.

Exports of Cars in May

The exports of freight cars in May totaled 1,884, valued at $3,789,237. The passenger car exports totaled 14, valued at $110,798, and the item parts of cars is given as $1,828,373. The detailed figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

EXPORTS OF CARS FOR RAILWAYS IN MAY

	Passenger		Freight and other		For other railways		Parts of cars.
Countries	Number	Dollars	Number	Dollars	Number	Dollars	Dollars
Finland	..	.....	....	.....	.....	.....	96,150
France	..	.... ..	833	2,005,111	.....	.....	168,592
Italy	..	.....	....	.....	.....	.....	90,310
Poland and Danzig	..	.....	350	665,000	.....	.....	.....
Spain	..	.....	.....	.....	.....	.....	869,118
Switzerland	..	.....	.....	.....	.....	.....	130
England	..	.....	.....	.....	.....	.....	12,745
Canada	2	4,000	31	48,655	154	15,253	114,496
Guatemala	..	.....	.....	.....	.....	.....	38
Honduras	..	.....	10	45,000	.....	.....	217
Nicaragua	..	.....	.....	.....	.....	.....	500
Panama	..	.....	.....	.....	.....	.....	782
Mexico	..	.....	14	19,546	25	6,100	4,526
Newfoundland and Labrador	..	.....	1	1,640	.....	.....	.....
Jamaica	..	.....	.....	.....	.. ..	.....	500
Trinidad and Tobago	..	.....	.....	.....	18	11,727	.....
Cuba	3	48,000	367	533,899	105	110,521	118,181
Dominican Republic	..	.....	22	20,920	3	780	844
Argentina	..	.....	.....	.....	.....	.....	25,500
Brazil	..	.....	70	113,675	.....	.....	31,748
Chile	..	.....	10	17,437	.....	.....	2,559
Colombia	9	58,798	....	.....	.....	.....	22,972
Ecuador	..	.....	.....	.....	.....	.....	846
Peru	..	.....	8	4,344	.....	.....	63,928
Uruguay	..	.....	.....	.....	.....	.....	305
China	..	.....	58	86,914	165	41,374	48,657
Chosen	..	.....	.....	.....	.....	.....	19,676
British India	..	.....	10	21,160	.....	.....	.....
Japan	..	.....	.....	.....	.....	.....	25,689
New Zealand	..	.....	.....	.....	.....	.....	33,435
Philippine Islands	..	.....	.....	.....	.....	.....	70,220
British West Africa	..	.....	.....	.....	.....	.....	63
British South Africa	..	.....	100	205,936	6	47,346	5,646
French Africa	..	.....	.....	.....	50	15,000	.....
Total	14	110,798	1,884	3,789,237	526	248,101	1,828,373

Lamentable Condition of German Rolling Stock

LONDON.

The "Berliner Tageblatt" has received the following information from the Federal railroad Ministry regarding the present situation of the German railroad traffic and the present condition of the railroad repair shops.

During the past months the railroad traffic has shown a considerable improvement as compared with the preceding year. There are various reasons for this improvement. Conditions on the Prussian lines have become more consolidated, mainly on account of the severance of the Saar territory from the Federal railroad system. The former Prussian-Hessian State Railroad has now in its possession 23,000 locomotives, or 1,400 more than before the war. But of these 23,000 locomotives, only 13,000 are in working condition. Before the war 17,500 were in working condition.

In order to meet fully the demands of the traffic, about 1,000 to 1,500 more locomotives in working condition are necessary. About 1,400 locomotives had to be sidetracked because the repair shops could not keep them in condition.

During the last few weeks, 80 new locomotives were finished and delivered, 40 of which had been built by private concerns. Notwithstanding this addition the number of locomotives fit for service has not been increased by 80, but only by 30 to 40, as about this same number of locomotives had to be withdrawn elsewhere in the meantime. This shows that the repair shops are still unable to meet the demands made upon them to keep the rolling stock in good condition.

More building materials are now available, but there is still a scarcity that puts a curb on the building of new locomotives and on the repairing of the old ones. The delivery of coal has also improved somewhat.

Exports of Railway Track Material in May

Exports of rails in May totaled 58,497 tons, valued at $3,434,893; of spikes, 3,072,767 pounds, valued at $137,087, and of switches, frogs, splice bars, etc., valued at $582,278. The detailed figures by countries, compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

EXPORTS OF RAILWAY TRACK MATERIAL IN MAY

	Spikes, 529		Steel rails, 530		Switches, frogs, splice bars, etc. 531
Countries	Pounds	Dollars	Tons	Dollars	Dollars
Belgium	.....	.....	.....	.....	25
Denmark	.....	.....	4,740	249,143	26,767
France	.....	.....	679	27,069	1,010
Italy	.....	.....	.....	.....	1,970
Netherlands	.....	.....	.....	.....	4,978
Portugal	.....	.....	8	403	17
Roumania	.....	.....	.....	.....	7,767
Spain	.....	.....	506	32,855	5,149
England	.....	.....	175	11,469	9,727
Canada	2,980	135	2,909	157,744	23,226
Costa Rica	.....	.....	.....	.....	2,083
Guatemala	20,000	1,230	.....	.....	600
Honduras	70,395	3,918	978	57,647	19,659
Nicaragua	50,000	2,207	34	1,725	478
Panama	.....	.....	.....	.....	112
Salvador	.....	.....	.....	.....	284
Mexico	67,201	3,949	335	19,156	36,072
Barbados	.....	.....	.....	.....	591
Jamaica	21,220	1,104	.....	.....	363
Trinidad and Tobago	.....	.....	879	50,339	3,940
Other British West Indies	.....	.....	.....	.....	960
Cuba	1,067,586	44,207	8,860	466,677	108,147
Dutch West Indies	200	21	.....	.....	.....
French West Indies	2,000	105	.....	.....	1,250
Haiti	200	38	.....	.....	.....
Dominican Republic	254,262	11,153	1,448	91,484	5,666
Argentina	14,400	792	324	21,303	643
Brazil	305,811	16,032	499	31,240	35,867
Chile	75,611	3,484	130	7,821	8,245
Colombia	600	48	1,004	51,231	1,247
Ecuador	17,000	870	176	9,764	164
Dutch Guiana	.....	.....	.....	.....	2,498
Paraguay	.....	.....	184	10,614	.....
Peru	70,950	4,470	2,164	158,902	18,497
Venezuela	6,000	231	55	3,054	510
China	4,600	199	214	13,970	6,748
British India	3,700	102	60	3,866	124
Straits Settlements	.....	.....	6	504	2,304
Dutch East Indies	.....	.....	3,226	168,730	6,740
Japan	877,486	34,206	20,879	1,324,487	151,972
Siam	.....	.....	1	1,750	.....
Philippine Islands	140,565	8,586	3,314	191,484	15,581
British South Africa	.....	.....	4,483	258,055	69,166
Portuguese Africa	.....	.....	199	12,396	1,101
Total	3,072,767	137,087	58,497	3,434,893	582,278

Increase of English Railwaymen's Rates

LONDON.

The Ministry of Transport has stated recently that the cabinet has had under consideration the report of the National Wages Board upon the claims relating to wages of railwaymen, referred from the Central Wages Board, and that in accepting the conclusions come to by the board the cabinet has been deeply impressed by certain remarks in the report.

In the report it is clearly stated that the present claims cannot be put forward on the ground of the increase which has taken place in the cost of living, but that the evidence given on behalf of the unions made it apparent that such claims have as their basis a desire to improve the pre-war status of railway workers, and that the present wages at present prices give a larger purchasing power than pre-war wages at pre-war prices.

The board concluded from the evidence submitted that large

increases in the charges to the users of railways are necessary, in order to meet the increased cost of labor, materials and stores, even apart from any concession in respect of the claims then before the board. It was also of the opinion that it would be an unwarrantable reflection upon the present management of the railways of England to suggest that such further economies are immediately practicable as would cover to any appreciable extent the additional costs with which the companies are faced and it was stated in the report, "That the board must also bear in mind that somewhere a point is reached at which an increase in rates will produce no additional revenue. That point can be determined only by experience, and there is accordingly some risk attaching to any substantial increase in rates that it will lead to such displacement or arrestment of traffic as will result in loss instead of gain."

The National Wages Board concedes that the settlement should not be disturbed for such period as will facilitate a return to that stability of industry and commerce which is so necessary to the well-being of the community, but the cabinet is of the opinion that this must be accepted with the qualification that should forthcoming increases of railway rates and charges consequent in large measure upon the increased cost of labor, not produce additional revenue, it would be impossible that the present level of wages could be maintained. In such circumstances the improved standard of remuneration of railwaymen, which the government desires if possible to maintain, can only be maintained by hearty co-operation of the workers with the management, enabling such substantial economies in working to be effected as will adjust any adverse balance.

The cabinet has also decided to extend to Ireland in principle the findings of the board, and to increase the wages on Irish railways by similar percentages to those given in Great Britain.

Exports of Locomotives in May

The exports of locomotives in May numbered 152, valued at $5,906,046. This is five less in point of numbers than were exported in April. From the standpoint of value the May figure represents the greatest export of locomotives for any month this year to date. The shipments to Belgium made up the largest single item.

The detailed figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

Exports of Steam Locomotives in May

Countries	Number	
Belgium	62	$3,589,700
France	28	840,000
Canada	3	51,292
Mexico	6	60,550
Cuba	5	113,640
Brazil	9	179,810
Chile	2	36,330
Colombia	5	136,479
Ecuador	3	98,025
Peru	3	30,450
China	7	232,764
Chosen	4	118,900
Japan	7	54,420
Philippine Islands	2	5,186
British South Africa	6	358,500
Total	152	$5,906,046

Exports of Car Wheels and Axles in May

The exports of car wheels and axles in May totaled $756,027, as compared with $593,394 in April. The detailed figures by countries as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

Exports of Car Wheels and Axles in May

Countries		Countries	
France	$208,872	Chile	$3,672
Italy	39,180	Colombia	4,170
Portugal	10	Ecuador	605
England	16,992	Paraguay	5,175
Canada	34,737	Peru	1,161
Guatemala	126	Uruguay	504
Honduras	890	Venezuela	2,190
Nicaragua	505	China	2,100
Panama	4,223	Kwantung	91,329
Mexico	19,522	Dutch East Indies	7,760
Jamaica	264	Japan	98,449
Trinidad and Tobago	2,372	Australia	170
Other British West Indies	28	New Zealand	7,981
Cuba	75,903	Philippine Islands	1,201
French West Indies	300	British South Africa	1,333
Haiti	127	French Africa	45,000
Dominican Republic	1,325	Portuguese Africa	56
Argentina	6,648		
Brazil	71,147	Total	$756,027

Equipment and Supplies

Locomotives

Northwestern Pacific.—See item under freight cars below.

The New York, Chicago & St. Louis is inquiring for 3, 8-wheel switching locomotives and 5 Mikado type locomotives.

George H. Carey, 1 Broadway, New York, is inquiring for one 0-4-0 second-hand switching locomotive, with tender, for export to Canada.

Colombian Government.—The Baldwin Locomotive Works has completed a transaction with the government of Colombia whereby the company has established a credit of $2,000,000 in favor of the South American republic. The contract, arranged by the Under-Secretary of Railroads, has been approved by the Minister of Finance. It is understood that the credit is for ten years, and allows Colombia to draw upon it at any time. So far no orders for engines have been placed under the credit established. At a cost of $50,000 each the credit would cover purchase of 40 engines.

Rumanian Government.—The Baldwin Locomotive Works has received an order for spare parts for locomotives from Rumania. Terms of payment, it is understood, are cash against documents, the Rumanian government having established a credit in this country. This order is in addition to the order taken by President Samuel M. Vauclain while in Rumania covering engines and spare parts and to be paid by shipments of oil. The parts in the new order are understood to be for Pershing locomotives, which were turned over to the Rumanian government at the end of the war.

Freight Cars

The New York, Chicago & St. Louis is inquiring for 100 coal cars.

The Standard Oil Company is inquiring for from 500 to 1,000 tank cars.

The Chicago, Indianapolis & Louisville is inquiring for 5 caboose cars.

The Virginia & Carolina Southern is inquiring for 25, 40-ton flat cars

The Chicago, Indianapolis & Louisville is inquiring for 10 caboose underframes.

The Joint Purchasing Commission of Indiana is inquiring for 25 to 50 gondola cars.

The Grasselli Chemical Company, Cleveland, Ohio, is inquiring for from 75 to 100, 50-ton tank cars.

The Priscilla Coal Company has ordered 45, 55-ton hopper cars from the Pressed Steel Car Company.

The New Jersey Zinc Company, New York, is inquiring for 45, 55-ton hopper cars and 5, 40-ton box cars.

The St. Louis-San Francisco has ordered repairs on 1,500 box cars from the American Car & Foundry Company.

The Gulf Coast Lines are inquiring for 500, 40-ton box; 300, 50-ton gondolas, 150, 50-ton flat cars, and 50, 50-ton tank cars.

The Pickands-Mather Company, Cleveland, Ohio, has ordered 412, 70-ton hopper cars from the Cambria Steel Company.

Robert Hudson, Ltd., London, England, is inquiring for 45 gondola cars and 45 box cars of 77,000 lb. capacity, for use on the Benguela Railway.

The Thomas F. Carey Company, 120 Liberty street, New York, is inquiring for second-hand equipment, as follows: 200, 30-ton

box cars; 200, 40-ton flat cars; 200, 40-ton gondolas, and 150, 50-ton steel hopper cars.

The Chicago & North Western is inquiring for 500, 40-ton stock cars, and later will be in the market for a large number of additional freight cars.

George H. Carey, 1 Broadway, New York, is inquiring for second-hand equipment, as follows: 16 flat cars of 25-ton capacity and 15 box cars of 30-ton capacity, to be 38 ft. long or over, for export to Mexico.

Northwestern Pacific.—The Railroad Commission of California authorized this company, June 17, to purchase equipment consisting of one tug, one car float, 60 logging flat cars, 50 stock cars, 50 steel gondolas, 10 cabooses, 10 steel baggage cars, 6 steel coaches, 12 vestibule wooden coaches, 12 wooden coaches for suburban service and 3 locomotives.

The American Trading Company, 25 Broad street, New York, is inquiring for the following equipment: 50 steel cane cars of 60,000 lb. capacity, with side unloader, wooden floors and three wooden compartments, to be 36 ft. or 37 ft. long and equipped with standard couplers and air brakes; 40 steel, 20-ton cane cars, with side discharge and two compartments, to have wooden floors and be 30 ft. long and equipped with air brakes; 40 steel flat cars of 60,000 lb. capacity, with wooden floors, to be equipped with stake pockets, air and hand brakes; 3 refrigerator cars, all for export.

Passenger Cars

Northwestern Pacific.—See item under freight cars above.

The Delaware, Lackawanna & Western is in the market for 10 milk cars.

The Alabama & Vicksburg has ordered 6 passenger coaches from the American Car & Foundry Company.

The Pennsylvania Equipment Company, 1420 Chestnut street, Philadelphia, Pa., is in the market for a second-hand combination mail and passenger coach, about 70 ft. long, mail compartment 30 ft. inside measurement.

Iron and Steel

The Atchison, Topeka & Santa Fe is offering 2,000 tons of scrap iron.

Sophus Berendsen, 15 Broad street, New York, is inquiring for 3,000 tons of 60-lb. T-rail and accessories, for export.

The Chicago & North Western has issued a list of scrap for sale aggregating 4,000 tons and including 500 tons of No. 1 steel rails.

The Oregon Washington has placed a contract for a drawbridge across the St. Joe River, near Chatcolet, Idaho, with the American Bridge Company. The contract calls for 300 tons of structural steel.

George H. Carey, 1 Broadway, New York, is inquiring for 400 tons of 20-lb. relaying rail, for export to China; also, for 100 tons of 60-lb. relaying rail, for export to Cuba, and for 1,200 tons of 50-lb. relaying rail.

Signaling

The Canadian National Railways have ordered from the Union Switch & Signal Company a 16 lever Saxby & Farmer interlocking machine with 13 working levers and 3 spare spaces and other attendant mechanical materials for Neepawa, Ont.

The Canadian Pacific has placed an order with the Union Switch & Signal Company for a 48-lever Saxby & Farmer interlocking machine with 42 working levers and 6 spare spaces, together with the necessary materials for rebuilding and enlarging the mechanical interlocking plant at Hamilton Junction, Ont.

Supply Trade News

George R. Boyce was elected third vice-president of **A. M. Castle & Co.**, Chicago, at a recent meeting of the board of directors.

Jerome A. Moss has resigned from the firm of Joseph E. Nelson & Sons, contractors, Chicago, and will engage in general railway contracting, with offices at Chicago.

T. W. McManus, master mechanic for the Kellogg Switchboard & Supply Company, Chicago, has been elected vice-president and general manager of the **Security Tool Works,** Chicago.

J. I. Capps has been appointed purchasing agent of the **American Manganese Steel Company,** Chicago, with headquarters at Chicago Heights, Ill., succeeding **S. T. Peebles,** who is now in charge of sales. The appointment is effective July 1.

J. D. Roett, sales engineer for the Union Switch & Signal Company, Swissvale, Pa., with headquarters at Chicago, has resigned to enter the service of the **Standard Tank Car Company,** Sharon, Pa., in the same capacity and with the same headquarters.

George Wagstaff, sales manager for the Onondaga Steel Company, at Syracuse, N. Y., has been appointed district manager of sales in charge of the Chicago territory for the **Central Steel Company**, Massillon, Ohio, with offices in the Peoples Gas Building, Chicago.

The American Car & Foundry Company has recently purchased two additional pieces of real estate for its contemplated $2,000,000 plant extending from Blue Island avenue, along Paulina street to the Chicago River, at Chicago. The land, now occupied by the company, was formerly under lease.

Alfred Herbert, Ltd., machine tool makers and importers, Coventry, England, announce that **E. D. Mitchell**, for many years a member of its Coventry staff, and lately assistant manager of the New York branch, has been appointed manager at New York, to succeed **W. J. Fuller,** who has resigned from that position.

The **Falls Hollow Staybolt Company,** Cuyahoga Falls, Ohio, announces that the **Minnesota Supply Company,** 802 Pioneer building, St. Paul, Minn., has been appointed its northwest sales representative, and the business is in charge of **W. H. Hooper,** who has been engaged in the railway work and the railway supply field for the past 25 years.

The American Iron & Steel Corp., with executive offices at Cleveland, has been chartered recently in the state of Delaware and is sponsored by interests identified with the steel industry in the Cleveland, Pittsburgh and Michigan district. The new concern will build a steel plant on a site with about two miles of Lake Michigan frontage just west of Michigan City, Ind., at a cost between $5,000,000 and $10,000,000.

William D. Ennis has resigned as professor of marine and mechanical engineering in the Post Graduate Department of the United States Naval Academy, to become vice-president of the **Technical Advisory Corporation,** New York. Mr. Ennis has been associated with the latter corporation since its organization, and will be hereafter located at its general offices, 132 Nassau street, New York.

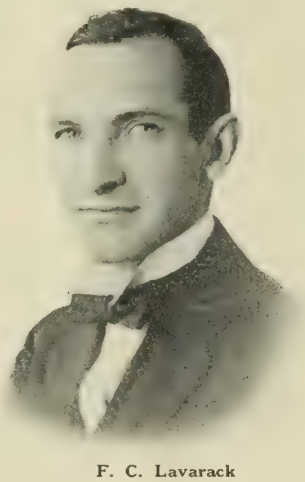
M. O. Leighton, chairman of the National Public Works Department Association, **Major C. T. Chenery,** secretary of that association, and **A. C. Oliphant,** of the Washington office of Engineering Council, have formed a co-partnership in the name of **M. O. Leighton Company,** with office at 700 Tenth street, Washington, D. C., for the purpose of engaging in general engineering practice and industrial representa-

tion before the federal departments. These men will retain their connection with their respective associations, pending the displacement of Engineering Council by the Federated American Engineering Societies.

The Roller-Smith Company, New York, announces recent changes in its sales organization as follows: **G. L. Crosby,** sales manager, has been appointed general sales manager at New York; **M. Frankel,** assistant sales manager, is now western sales manager at Chicago; **W. J. Shire,** sales engineer, is now eastern sales manager, New York; **C. G. Kahant,** a sales engineer, is now export manager and district sales manager, New York; **F. R. Ryan, J. E. Wood** and **H. D. Baker** remain district sales managers, respectively, of the Chicago, Cleveland and Detroit territories, and in addition to the above **C. M. Hunt** is a sales engineer in the New York office and **M. B. Mathley** is a sales engineer in the Chicago office.

Charles P. King, formerly manager of the New York office of the Lima Locomotive Works, Inc., and who, for several years previously, traveled in the West Indies and Central and South American countries for the same corporation, on July 15 assumed charge of the car business of the **Ralston Steel Car Company,** Columbus, Ohio, as eastern sales and export representative at the offices of the **Ralston Car Sales Corporation,** the selling agent for the Ralston Steel Car Company, 2 Rector street, New York. Mr. King received his preliminary training in the car building business in the shops and offices of the old Jackson & Sharp Car Company, Wilmington, Del., under the direction of his father, A. M. King, who was, for many years, until his death in 1897, general superintendent of that company. Mr. King returns to the railroad field after a brief venture in the export trade paper publishing business.

F. C. Lavarack, who is president of the newly organized **Railroad Accessories Corporation,** New York, as was announced in the *Railway Age* of July 9, was born in 1883, in England, and came to the United States in 1897. He entered the service of the Standard Signal Company in 1900, and later served as chief draftsman with the same company. He then was with the New York Central in the signal department, and subsequently went to the Federal Signal Company as chief draftsman, later becoming assistant resident engineer with that company at Chicago. In 1907 he was appointed an assistant to the signal engineer on the electric zone of the New York Central, and then became director of instruction of the School of Railway Signaling at Utica. He subsequently was signal engineer with the Federal Signal Company, New York, and in 1912 formed the Signal Accessories Company, of which he was vice-president. He later organized the Duplex Channel-Pin Company and the Signal Construction Company, of both of which he is president. He is the author of "Locking," an elementary work on mechanical interlocking, published in 1907.



F. C. Lavarack

The Protexol Corporation, 34 Barclay street, New York, announces that it has bought all the assets and property, including franchises, patents, trade-marks and copy-rights of the Carbolineum Wood Preserving Company, and will continue the business under the name Protexol Corporation, successors to Carbolineum Wood Preserving Co. **Ernest F. Hartman,** president of the Protexol Corporation, has been president of the Carbolineum Wood Preserving Co. since its incorporation, and is authority on the subject of wood preservation and wood preserving materials. **John N. Schlude,** treasurer of the new corporation, has been secretary and treasurer of the Carbolineum Wood Preserving Company since its incorporation; **Ross M. Whitbeck,** secretary of the new corporation, had been connected with the Carbolineum Company as sales manager for many years. **Fred Jaeger,** manager of the export department, had been in charge of the export department of the Carbolineum Company since 1915. **Edwin F. Paddock,** chemist and engineer, is in charge of the laboratory and manufacturing, and had been with the Carbolineum Company in a like capacity for nine years. The Carbolineum Wood Preserving Company, prior to the war had the exclusive U. S. rights to the trade names Carbolineum and Avenarius Carbolineum, but some time ago discontinued the use of these foreign trade names and adopted for its product the name Protexol wood preservative, a trade name coined by itself and protected by U. S. trademark registration. The Protexol Corporation, in succeeding to the business of the Carbolineum Wood Preserving Co., has erected an extensive coal tar products plant at Kenilworth, N. J. The Carbolineum Company had confined itself to the manufacture and sale of but one product, Protexol wood preservative; the Protexol Corporation is manufacturing a complete line of coal tar products, including four grades of wood preservatives, namely Protexol, Anolineum, Neosote and Creosote, also shingle oils, carbolic and cresylic acid and acid oils, black preservative varnishes, roofing paints, detergents, disinfectants, sheep dips and weed killers. The general office of the corporation is at 34 Barclay street, New York.

Obituary

Edward A. Schreiber, general manager of the **Vapor Car Heating Company,** Railway Exchange building, Chicago, died on July 4 from heart trouble, following a previous attack on May 20, just after his return from a European trip in the interest of the car heating company. Mr. Schreiber was formerly connected with the steam fitting department at the Pullman car works, and in 1901, entered the service of the Chicago Car Heating Company, predecessor of the present Vapor Car Heating Company, since which time, and up to his death, at the age of 58, he was active in the affairs of that company.

Trade Publications

The Duff Manufacturing Company, Pittsburgh, Pa., has just issued a 12-page illustrated bulletin known as No. 303 describing the line of Duff trip jacks manufactured by this company. This publication includes a complete description of the various styles and sizes of jacks used for constructing, surfacing, ballasting and repairing of railroad track.

Lateral Motion Driving Box.—Means for increasing the capacity of narrow gage locomotives by the use of the Franklin lateral motion driving box and the Economy engine truck are described in bulletin 77, a four-page pamphlet issued by the Franklin Railway Supply Company, New York. These devices permit the use of an extra pair of driving wheels, with a corresponding increase in the tractive power of the locomotive. A line drawing shows the arrangement of the box and flexible side rods.

Greetings from the Texas Company.—A small booklet entitled "Howdy" was issued by the Texas Company, New York, to delegates attending the American Railroad Association Convention, Sections 3 and 6, at Atlantic City. The booklet acquainted convention delegates with some pertinent facts regarding the Texas Company and a description of railroad lubrication was given by George L. Noble, vice-president and general manager, the railroad sales department. Conditions in the New York and Chicago fields were described by the respective department managers. Attention was called to the provision in some localities for spray oiling the rails in order to prevent corrosion and rust, using a specially designed car for this purpose. The last few pages of the booklet give a brief but interesting account of the activities of the Texas Company outlining the fields covered by the different departments.

Railway Financial News

CHICAGO & NORTH WESTERN.—This company has filed a $500,000,000 mortgage at Council Bluffs, Neb., in favor of the Farmers' Loan & Trust Company of New York. It is for the purpose of refunding all the company's outstanding indebtedness with the exception of $165,000,000 secured by previous mortgages.

DETROIT, TOLEDO & IRONTON.—Fosburgh, Pratt & Osborn, management firm of New York, on July 13 announced the details of the sale of this railroad to Henry Ford. The statement reads, in part:

"The control of the road was taken over by Mr. Ford on Friday last by the purchase for cash of approximately 97 per cent of the adjustment mortgage bonds and the preferred and common stock. The price paid was $600 for each $1,000 bonds, and $5 and $1 for each share of the preferred and common stock, respectively.

"This road underwent a drastic reorganization in 1914, when it was taken over by the first mortgage bondholders and the holders of receivers' certificates. About a million dollars of new money was then provided to improve the condition of the property. Frederick Osborn, of this firm, was retained by the larger security holders to represent them in the management of the property. Early this year it became evident that improvement of this road was a vital necessity to Detroit, and it was through the efforts of Mr. Osborn to raise capital for the road from the larger industries of Detroit that the sale to Henry Ford was brought about.

"For the immediate future a program of large purchases of heavy rails, ballasting, construction of cutoffs and elimination of grades has been adopted and will be put into effect at once, and the capital thus provided by this automobile industry for the development of this Detroit road will enormously relieve the serious rail congestion which has existed in Detroit for some years past."

A statement by the Ford interests, announcing the purchase, says: "Mr. Ford, for some time past, has been devoting much of his time to a fundamental study of the engineering and mechanical problems involved in railroading, and, with the large means at his disposal and his own genius along lines of large production, interesting developments may well be looked for."

GRAND TRUNK.—Former President of the United States William H. Taft has been appointed to represent the Grand Trunk system on the board of arbitration that is to determine the amount to be paid by the Canadian government for the stock of the corporation. The other members of the board are Sir Walter Cassels, chief judge of the Exchequer Court, who will be chairman, and Sir Thomas White, representing the Canadian government. The sittings of the board of arbitration will be held at Montreal beginning in September.

Under legislation passed last year at Ottawa the Canadian government agreed to assume the bonded indebtedness of the Grand Trunk system and its outstanding debenture stock and to pay the shareholders, most of whom live in Great Britain, an arbitrated price for their common and preferred stock.

TOLEDO TERMINAL RAILROAD.—The board of referees appointed by the Interstate Commerce Commission has decided that this company is entitled to compensation at the rate of $252,999.43 a year for the use of its property by the government during the period of federal control. The company had not made a contract with the Railroad Administration and it claimed it was entitled to compensation at the rate of $495,000.

WESTERN MARYLAND.—This company has applied to the Interstate Commerce Commission for an order authorizing the issuance of $6,000,000 of five-year 7½ per cent convertible notes for the purpose of refunding and retiring $1,000,000 of notes of the Coal and Iron Railway maturing August 1 and $5,000,000 of three-year notes of the Western Maryland maturing November 1.

Railway Officers

Executive

James G. Corbett, who has been appointed assistant to the president of the Central of Georgia, with headquarters at Savannah, Ga., as noted in the *Railway Age* of July 2 (page 45), was born at Wilmington, N. C., on March 14, 1879. He was educated at the Cape Fear Academy and began railroad work in 1894 as a stenographer and clerk in the office of the freight claim agent of the Atlantic Coast Line at Wilmington, N. C. From April, 1897, to September of the same year, he held a similar position on the Central of Georgia, at Savannah, Ga. He then became secretary to the traffic manager of the Central of Georgia and the Ocean Steamship Company at Savannah, which position he held until October, 1901, when he was made secretary to the assistant general freight agent of the Central of Georgia. From June, 1902, to September, 1907, he served as secretary to the vice-president and traffic manager and vice-president of the same road at Savannah. In September, 1907, to the time of his recent promotion, he has served as chief clerk to W. A. Winburn, who has been respectively vice-president, president, federal manager and president of the Central of Georgia.

Financial, Legal and Accounting

Carl L. Peckham and **Arthur Latham** have been appointed assistant auditors on the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, effective July 1.

Operating

Arthur J. Carr, chief despatcher on the Northern Pacific, with headquarters at Glendive, Mont., has been transferred to the Montana division, succeeding **H. T. Riggs,** assigned to other duties, effective July 6.

Victor B. Fisher, who has been appointed general superintendent of the Philadelphia & Reading, with headquarters at Reading, Pa., as noted in last week's issue of the *Railway Age*, was born at Allenwood, Pa., on July 8, 1867. After receiving a high school education, he began railway work in the spring of 1882, as a messenger on the Philadelphia & Reading, and in the fall of the same year he became a telegraph operator on that road. In 1885 Mr. Fisher was appointed train despatcher, holding this position until May, 1890, when he went to the New York Central as yardmaster. The following December he returned to the service of the Philadelphia & Reading as train despatcher and in September, 1897, was appointed assistant trainmaster, with office at Tamaqua, Pa. In February, 1913, he was promoted to trainmaster, serving in this capacity until February, 1918, when he was appointed superintendent of the Shamokin division, which position he held at the time of his recent appointment.



V. B. Fisher

E. Richards, superintendent of safety of the St. Louis Southwestern, with headquarters at Mt. Pleasant, Tex., has been appointed superintendent of telegraph, with headquarters at Tyler, Tex., effective July 1.

Traffic

C. H. Guion has been appointed assistant general freight agent of the Gulf Coast Lines, with headquarters at Houston, Tex., effective July 1.

The freight traffic department of the Pennsylvania announces that **H. W. Whittaker,** Philadelphia, Pa., has been appointed chief of tariff bureau, for the Eastern Region and that part of the Central Region east of Pittsburgh, Oil City and Erie; and **R. H. Smith,** Pittsburgh, Pa., for the Central Region west of Pittsburgh, Oil City and Erie, and for the Northwestern and Southwestern Regions.

Mechanical

C. B. Young, mechanical engineer of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been promoted to general mechanical engineer, with the same headquarters, effective June 16. **E. C. Anderson,** acting mechanical engineer, with headquarters at Chicago, succeeds Mr. Young.

A. T. Pfeiffer has been appointed assistant superintendent of fuel and locomotive performance on the New York Central, with headquarters at New York City. **Robert McGraw** has been appointed fuel instructor, with headquarters at Syracuse, N. Y. **J. C. Brennan** has been appointed supervisor of fuel and locomotive performance of the First district, with headquarters at Utica, N. Y. **C. W. Wheeler** has been appointed supervisor of fuel and locomotive performance of the Second district, with headquarters at Syracuse, N. Y., succeeding **L. F. Burns.**

Engineering, Maintenance of Way and Signaling

C. L. Spaulding has been appointed district engineer of the Eastern district of the New York Central, effective July 1. This district has been extended to include the electric zone, exclusive of the Grand Central Terminal.

B. S. Voorhees, district engineer of the New York Central, has been promoted to the position of general office engineer of the New York Central Lines, on the staff of George A. Harwood, assistant to the president, effective July 1.

Francis J. Meyer, roadmaster of the New York, Ontario & Western, with headquarters at Walton, N. Y., has been promoted to assistant engineer, with headquarters at Middletown, N. Y., succeeding **R. W. Canfield,** who has resigned to enter other business.

John Lansdale, whose appointment as valuation engineer of the Southern Pacific Lines in Texas and Louisiana, with headquarters at Houston, Tex., was announced in the *Railway Age* of June 18 (page 1958), was born on June 24, 1882, at Triadelphia, Md. Mr. Lansdale entered railway service in the engineering department of the Tonopah & Goldfield in May, 1906. From 1906 to 1910 he served in the maintenance and construction departments of this road. In February, 1910, he was appointed assistant engineer of the Southern Pacific, with headquarters at San Francisco, Cal. In July, 1912, he was appointed assistant engineer of the Los Angeles & Salt Lake and in March 1913, was appointed assistant engineer and valuation engineer of the Pacific Electric railway and other electric railway properties of the Southern Pacific in California. From September, 1917, to July, 1919, he was with the American Expeditionary Forces in France, serving as a captain and later as a major of engineers. In December, 1919, he returned to the engineering department of the Southern Pacific at Houston, Tex., remaining there until his recent appointment.

Railroad Administration

Victor K. Hendricks, formerly assistant chief engineer of the St. Louis-San Francisco, has been appointed regional engineer of the Southwestern region, with headquarters at St. Louis, Mo., effective July 1, succeeding Horace Stringfellow, transferred to Washington as regional engineer of the Southern and Pocahontas regions.

Obituary

Pearl Wight, formerly receiver of the Texas & Pacific, died in New Orleans, La., on July 5.

G. K. Andrews, commissioner of agriculture for the Missouri Pacific, with headquarters at St. Louis, Mo., died in that city on July 10.

John F. Hogan, transportation expert of the Wisconsin Railroad Commission and a member of that body since its organization in 1905, died suddenly at his home at Madison, Wis., on July 7.

James C. Peasley, formerly vice-president and treasurer of the Chicago, Burlington & Quincy, with headquarters at Chicago, died in Chicago on July 13, at the age of 80 years. Mr. Peasley was born on March 30, 1840, in Henderson County, Ill. He entered railway service as an agent with the Burlington at Ottumwa, Ia., in 1862. One year later he was promoted to assistant treasurer, a position he held for the next three years, when he became cashier of the National State Bank at Burlington, Ia. In 1869 he was appointed president of the Burlington & Missouri, a position he held until 1881, at which time he was appointed vice-president and treasurer of the Chicago, Burlington & Quincy, which position he held until he retired in February, 1902.

Albert D. Bethard, formerly vice-president and general manager of the Missouri, Kansas & Texas, with headquarters at Dallas, Tex., died at his home, in Dallas, on July 12. Mr. Bethard was born October 24, 1855, at Bushnell, Ill. He entered railway service with the Rockford, Rock Island & St. Louis (now a part of the Chicago, Burlington & Quincy) as a telegraph operator in 1871 and was later promoted to train despatcher at Rock Island, Ill. From 1876 to 1881 he served with the St. Louis, Iron Mountain & Southern as operator, despatcher and trainmaster. Upon the latter date he was appointed trainmaster on the Richmond & Allegheny and not long after was promoted to superintendent of telegraph. In December, 1888, he was appointed trainmaster of the Missouri, Kansas & Texas, with headquarters at Denison, Tex., and was later promoted to division superintendent. He was promoted to superintendent of car service in May, 1901. In June of the same year he became superintendent of car service of the entire system, and in July, 1904, was appointed superintendent of transportation. One year later he was promoted to assistant general manager, a position he held until June, 1910, when he was promoted to vice-president and general manager, which position he held until 1913.

Wallace G. Collins, formerly general manager of the Chicago, Milwaukee & St. Paul, died in Seattle, Wash., on July 12. Mr. Collins was born on November 21, 1851, at Oconomowoc, Wis. He entered railway service with the Chicago, Milwaukee & St. Paul, in 1867. Three years later he became telegraph operator on the Northern Pacific and was later promoted to train despatcher. From 1872 to 1873, he was with an engineering corps on the Canada Southern. On the latter date he returned to the Chicago, Milwaukee & St. Paul as assistant despatcher and four years later he was promoted to chief train despatcher and superintendent of the La Crosse and Wisconsin Valley division, which position he held until 1889, when he was appointed assistant to the general superintendent. He was promoted to general superintendent in 1891 and seven years later became general manager. In February, 1900, he was appointed vice-president and general manager of the Marinette, Tomahawk & Western, which position he occupied until 1904. On April 1, 1905, he left the St. Paul to become president of the Chicago Warehouse and Terminal Company and vice-president of the Illinois Tunnel Company. Recently he had been engaged in the lumber business of the Northwest.

The Chesapeake & Ohio Veteran Employees' Association has postponed until September its fourth annual meeting, which was scheduled to be held at White Sulphur Springs on July 17.

Electric power has been substituted for steam to operate the two immense fans employed to rid the Chesapeake & Ohio Railroad tunnel at Big Mound, W. Va., of gas and smoke.

EDITORIAL
Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

The Railroad Labor Board's Award.

THE RAILROAD LABOR BOARD has made an award, granting to railway employees what is probably the largest advance in wages ever made at one time to any class of working men in the world. It is given to about 2,000,000 employees and will, it is estimated, amount to $600,000,000 annually. The award, together with some statistics showing what it means to the various groups of employees, is published elsewhere in this issue. The average advance to the employees as a whole is about 22 per cent. It amounts to approximately 25 per cent for the clerks, 25 per cent for the maintenance of way employees, 19½ per cent for the shop employees, 23½ per cent for the agents and telegraph operators and 23 per cent for engineers, firemen, conductors and trainmen.

The principal argument advanced for an advance in the wages of railway employees was that it was needed to offset the increase in the cost of living. Other factors which the Railroad Labor Board was required to consider were the wages paid for similar work in other industries, the hazards of the employment, etc. The Board, in its report, sets forth that the increase in the cost of living since 1914 is now generally conceded by authorities to be approximately 100 per cent. The average earnings per railway employee in 1914 was approximately $810. It is impossible to say what will be the average annual earnings of all employees now under the new rates of pay. Roughly speaking, however, there are 2,000,000 employees, and the advance in wages which has just been granted will make the total pay roll approximately $3,500,000,000. It would appear, therefore, that the average annual earnings per employee on the new basis would be around $1,750, or about 115 per cent more than in 1914. On the average, therefore, the advance in wages which have now been granted substantially exceed the increase in the cost of living.

But an average is an average. The advances of some classes of employees have been relatively much larger than those of other classes. The Railroad Wage Commission, created by the director general of railroads in the spring of 1918, adopted the principle of making larger percentages of increase in the wages of the lower paid employees than in those of the higher paid. The same principle was applied to a considerable extent in the making of the other advances in wages granted under government control. The result was the destruction of the relationships between the wages of different classes of employees which had previously existed. The Railroad Wage Board, in its award, also in many cases has acted on the principle of making larger advances to the lower paid employees than to the higher paid employees.

The establishment of the absolute eight-hour day generally and its non-establishment in train road service, where it is inapplicable, also have operated to further change the relations between the wages of different classes of employees. In consequence, while some employees as a result of the various advances which have been made, including those made by the award of the Labor Board, will enjoy total advances in wages far exceeding the increase in the cost of living, others will not even by this award be given advances which will fully offset the increase in the cost of living. The advances in the wages of maintenance of way and of most shop employees, for example, far exceed the increase in the cost of living, while the increases in the earnings of most classes of train and yard employees will hardly equal it.

Probably no changes in railway wages ever made ever caused so much dissension and trouble as the changes by which the wages of car repair men were made greater than those of switchmen. To them the recent strikes in yards all over the country are largely attributable. The Railroad Labor Board in its award grants the so-called "car knockers" an increase of 13 cents an hour, or only about 19 per cent, while it gives the switchmen an increase of 18 cents an hour, or about 30 per cent. Even this adjustment, however, will not be regarded with satisfaction by anybody except the car repair men. The car repair men are hardly more than common laborers and formerly received much less than switchmen. On the new basis they and the switchmen both receive 81 cents an hour. If the advance granted to the switchmen is fair, then the advance granted to the car repair men, although smaller, results in the latter still being paid excessive wages. Their average wage in 1915 was 26½ cents an hour. The new basis of 81 cents makes the increase in their wages since 1915 over 200 per cent. The advances granted them under government control were outrageously large and the Railroad Labor Board by granting them another large increase has merely added another outrage, and continued a condition which already has been prolific of trouble.

The award should cause great satisfaction to many employees because to them its result will be to make the advances in their wages since 1914 and 1915 exceed the increase in the cost of living by from 35 to 100 per cent. It will cause dissatisfaction to others, and especially to the employees in train service and the higher paid men, because it will make their total advances since five or six years ago relatively much less than those of other classes of employees and no more than equal, if actually equal, to the cost of living. Employees who are disappointed will be wise, however, if they will recognize the fact that under existing laws regarding regulation of rates and wages it can hardly do them any good to strike or talk about striking. The Transportation Act provides that "just and reasonable" wages shall be fixed by the Railroad Labor Board. The railroad companies could hardly defend in rate cases before the Interstate Commerce Commission, wages higher than those held "just and reasonable" by the Railroad Labor Board. Therefore, resort to the Railroad Labor Board is the only logical recourse for employees who are dissatisfied.

As to the public, it probably will think and be justified in thinking that on the whole the advances in wages which have been made during the last six years impose upon it as heavy a burden as it ought to be asked to bear. The total number of railway employees in 1914, the year on which the increases in the cost of living usually are computed, was 1,710,296, and the total wages paid to them was $1,381,-117,292. As already stated, the number of employees at present is about 2,000,000, and as a result of the recent award their annual wages will run at the rate of approximately $3,500,000,000. The increase in the railroad pay

roll since 1914 has been about $2,100,000,000 or approximately 160 per cent. The average increase in wages has exceeded the average increase in the cost of living. Undoubtedly a large majority of the people of the country have not had during this time as large increases in their income as in their cost of living. The public is likely to conclude that the total advances in the wages of railroad employees have been sufficient, and that any bad conditions that have been created by mistakes which have been made in fixing the relations between the wages of different classes of employees should be corrected merely by changing these relations.

The Idle Hour

On one very important railroad operating 2,000 locomotives, it is known that these locomotives are out of service 14 hours out of every 24; that they will average 10 hours in active service per day. This is a good average, but the railroad is not satisfied. It needs more locomotives and the management knows that if just one idle hour of the day for each locomotive could be transformed into an hour of active service it would be equivalent to making about 200 additional locomotives immediately available. Knowledge of these facts, however, will not banish the idle hour. Improved terminal facilities, better terminal organization and an accurate periodical statement of the average time locomotives are held at each and every terminal for each and every cause are the main factors upon which any substantial improvement must be based. The periodical statement giving an accurate analysis of the time spent at each terminal by each class of locomotives on this railroad is a remarkable document. That it can be compiled every month at a nominal cost is a noteworthy achievement and will afford a highly valuable example to those executives who are objecting to the compilation of this data in place of utilizing it to discover how many idle locomotive-hours are being lost at each terminal on their railroad. The *Railway Age* hopes to publish in an early issue a description of the means by which this report can be made a practical operating factor on any railroad.

False Economy in Half-way Measures

The majority of large locomotives built a decade ago were unsatisfactory because the capacity of the boiler was not great enough to meet the demands of the cylinders. Recent improvements have brought about a great increase in boiler output without corresponding increases in size or weight, and therefore many of these locomotives are being redesigned. In many cases where the old boiler was inadequate to supply the cylinders, these same cylinders are not large enough to utilize efficiently all the steam that can be generated by the boiler when fitted with capacity increasing devices. An engine with a redesigned boiler and with the same cylinders will of course be a free steamer and will show a high economy in fuel; nevertheless, if the fuel saving is the only gain, the increased boiler capacity is not being used to the best advantage. When the boiler is redesigned the entire engine should be checked over and larger cylinders should be applied if this change is necessary to utilize fully the boiler capacity and adhesive weight. This is the truly economical practice, for higher boiler capacity brings a larger return when applied in increasing the train load than when used as a means of reducing fuel consumption. Because money is hard to get there is a tendency to spread an appropriation over as many engines as possible. This is no doubt the reason why cylinders often are not changed when the boiler capacity is increased. The larger train load made possible by enlarging the cylinders and the lengthened service life of the locomotives should not be overlooked. Probably a change would be desirable even if the greater direct saving would be effected by using the smaller cylinders, for the more the capacity is increased by the redesign, the longer will be the service life of the engine and the lower the annual depreciation cost.

Picking Up Cars at Outlying Points

One of the problems confronting the operating officer in securing the maximum mileage from cars is that of preventing their delay at intermediate stations or blind sidings. This is particularly likely to occur at points where there is no agent, but it is also common at the smaller open stations. While delay to an individual car may not be serious in itself, when this is multiplied many times on a system it becomes large in the aggregate and exerts an appreciable influence on the gross car movement. On many roads it is the practice for these cars to be picked up as rapidly as the despatcher may be able to arrange for passing trains to handle them and issue specific instructions therefor, but it is common experience that for one reason or another delays result from such a practice. To remedy this condition one road has recently inaugurated a practice of starting trains out light from terminals whose principal duty is to pick up all such cars and start them moving. This expedient has been found to contribute materially to the elimination of delays and to a corresponding increase in the mileage per car per day. Because of this fact it is particularly worthy of consideration at the present time.

Catch Up the Heavy Car Repairs

The latest available information indicates that there are at least 175,000 bad order freight cars held out of service on the railroads of the United States, or approximately 7.5 per cent of the total available equipment. This is over 80,000 more bad order cars than the minimum of 4 per cent which is usually considered attainable under the best conditions. Furthermore, whereas of the average daily output of repaired cars only about 10 per cent have been given heavy repairs, it is probable that not less than 90,000, or over half of the 175,000 cars now in bad order, are seriously in need of heavy repairs. This is the result of conditions which have seemed to justify the sacrifice of sound permanent policy in the matter of maintenance to meet the exigencies of the extraordinary traffic in war materials. The present situation is acute, particularly as to the requirements for open top and box cars, the demands for which have become so insistent as to assume emergency proportions. So far as repairs are concerned, however, it differs from the war emergency in one important respect. For the duration of the war its successful prosecution became the all-absorbing purpose of the nation and where the immediate needs of this purpose could be furthered by the sacrifice of sound permanent policies, it was necessary that the future be left to take care of itself. Now, however, the country needs the permanent re-establishment of normal industrial and commercial relationships, and this requires a steady increase in the number of serviceable cars. Sufficient new equipment fully to relieve the shortage will probably not be in service for several years. The maintenance of existing equipment is at a low level and there is no reserve to permit a further postponement of needed repairs. Hence, while every effort must be put forth to reduce quickly the present excessive number of bad order cars, the average condition of the equipment must at the same time be permanently improved. This can only be done if cars needing heavy repairs are given heavy repairs. To meet the emergency these repairs must be made wherever

the cars are found, without waiting for the opportunity to return them to the home lines. The car departments owe the roads 80,000 cars, not only fit to run, but fit for the kind of service they are designed to furnish.

"With" Instead of "For" the Farmer

Railroads in all parts of the country have secured remarkable results in increasing the traffic originating upon their lines by helping to encourage agriculture and industry. The July 12 issue of "American Railroads," published by the authority of the Association of Railway Executives, tells of a number of ways in which different roads are co-operating not only in helping to increase production in the farming districts, but also in marketing the products and in getting these products promptly to the market—a most difficult task under present conditions. The New York Central Lines have formulated a policy which indicates a high degree of co-operation with the farmers. It may possibly best be expressed by quoting as follows from F. S. Welsh, manager of agriculture and stock yards for that system: "The adoption of a policy of 'service' and a willingness to do things 'with,' instead of 'for,' the farmer, has brought to us a better understanding and a closer relationship with the problems of agricultural communities along our lines, and to these communities a realization that the railroad in the field of agriculture is not impersonal, but is a real constructive force seeking to play its proper part as a public service institution in the advancement of community progress." It is just this sort of effort that will go a long way to heal past misunderstandings and secure a degree of interest and co-operation on the part of the farming communities that will greatly help to put the railroads on the right sort of a basis with the public.

Why Not Speed Up in Your Department?

A good many kinds of railroad work could be made to move more smoothly if celerity were made a primary object. Every car record officer who is not already doing first-class work in this respect, may be expected to emulate the Delaware & Hudson, but why should not train despatchers, local freight agents and many others also take a lesson here? A certain local freight office in a large city answers telephone inquiries from expectant consignees (concerning incoming freight, l. c. l as well as car loads) as quickly as does the car clerk above spoken of. How many of your freight agents do as well? The ticket clerk who keeps a passenger waiting ten minutes while he fills out an unusual form ought to be called upon to explain why he does not do it in three minutes. The train despatcher is in a class different from that of the local agent because he does not come into contact with the public except when trains are late (and then only indirectly), and when the company is, prima facie, at fault. But if he —the collective train despatcher—can shorten the average time taken to publish to passengers the facts about bad train delays, he will be voted a medal. Why not announce prizes to be given to the despatchers who shall do the quickest work in correcting train troubles? It would be necessary, of course, to go into very small details, for big cases do not happen often enough to keep up a lively interest. Suppose a train is delayed 20 minutes; why should not the despatcher, or somebody, give careful thought to see whether some passenger cannot be saved a part (or all) of that amount of time, and thus be made into a warm friend of the company? Twenty minutes is a short time, and one passenger is only one friend; but much of our most boasted efficiency has been built up on just such small beginnings.

Floodlights and Their Uses

Floodlighting has received much popular attention during the past three years, but there have been comparatively few applications in the railroad field which have been based on anything like scientific principles. The tungsten lamp with its high intrinsic brilliancy made floodlighting units possible and it was tried out in many different fields. War conditions demanded that a great number of emergency lighting systems be installed and these demands were met quickly and at a minimum cost with floodlamps. The result was that the use of floodlighting became generally popular. This led to many ill-advised applications, since floodlamps do not give uniform illumination and if not properly placed cause an objectionable glare and cast shadows where they are not wanted. There are cases, however, where they may be used to very good advantage. They are used for hump and classification yards, for clearing wrecks, lighting long platforms, for excavation and construction work, for lighting turntables, and a form of floodlighting has been in use for a long time in roundhouses. In yards they are particularly desirable for the reason that they eliminate the poles which must be used for other forms of lighting. Almost all of the objections to floodlighting have been caused by improper installations or injudicious applications. They must be so placed that any possible glare from them can not be used as an excuse for accidents or carelessness. When properly used they constitute an inexpensive light which is portable, or quickly installed permanently.

For How Many Seconds Will You Risk Your Train?

In case of doubt or uncertainty the safe course must be taken (Rule No. 107); and settle *your doubts quickly.* These italicized words are not printed in the Standard Code, but every conductor and every engineman would do well to engrave them on the tablets of his memory. F. J. Mitchell, a freight conductor on the Canadian Pacific, while descending a steep grade on a recent trip, noticed a car in his train which *he thought* leaned too much to the north side; and he stopped the train at once. He found an arch bar broken and, no doubt, averted a costly derailment; and he receives commendatory notice in the monthly "Educational Bulletin" of General Superintendent J. J. Scully. Conductor Mitchell acted, evidently, to settle his doubt as soon as he recognized it; as soon as he doubted that the car was moving safely. We cannot all be heroes, but it is the duty of everyone to be always wide-awake. Perhaps the most effective rule for fitting oneself to meet such emergencies as this is to study the whole science and art of railroading *all the time.* Study keeps the mind lubricated. No one can tell what kind of emergency is going to confront him. Independence in thought and mental alertness at all times are essentials of the best efficiency and loyalty, not to mention heroism. Everybody interested in safe train-running remembers a tragic collision in February, 1917, when each of three men in a locomotive cab ought to have had a doubt (about the color of a signal light), and if they had had it—if one of them had—and had settled it according to the rule, would have averted or mitigated disaster. This Canadian Pacific bulletin also educates by bad examples as well as by good ones. In one month 21 agents and nine operators received black marks for pretending (by entries on daily sheets) to have recorded the variation of their clocks when no time had been sent; and 16 of the cases were second offenses. A conductor received 15 demerits for not reporting a negligent train-baggageman. Adjusting car couplers by pushing with the foot was visited, not simply by a friendly word from a safety committee, but by five demerits; and the yard foreman, who neglected to warn the careless man, also got five.

Detroit, Toledo & Ironton

"Taking it all in all, if Mr. Ford, himself, wants to learn something about railroads, or if he wants his son to learn the business, he could not possibly have done better than to buy the Detroit, Toledo & Ironton Railroad." This remark, quoted from the conclusion of the able article by F. J. Lisman on another page of this issue, succinctly sums up an idea that is probably being held at the present moment by the majority of the railroad men of the country. The *Railway Age* is fortunate in being able to present to its readers an article on Mr. Ford's purchase of the Detroit, Toledo & Ironton by an observer who is in a position to speak so authoritatively as Mr. Lisman. He points out that the D., T. & I. was built by promoters rather than by railroad men and that as a result it has been confronted with obstacles to efficient operation that the railroad men who have operated it have found impossible to overcome. Mr. Ford has paid $5,000,000 for the property, subject to $1,800,000 first mortgage bonds and car trust certificates. It is estimated that the present physical value of the railroad is from $16,000,000 to $20,000,000, which on the face of it looks as though Mr. Ford has secured a bargain. But, as Mr. Lisman points out, the road has a line built in many places to make distance rather than to save it; it needs heavier rail, better ballasting, etc., and what is perhaps most important, it has a crooked "hilly" line through Adrian, Mich., and at its southern end a 10-mile stretch of uncompensated 1.7 per cent grade with 12-degree curves. Mr. Lisman estimates that to overcome these obstacles it may be necessary to relocate some of the line, possibly abandon parts of it, and that as a whole it may be necessary to spend $8,000,000 additional to the purchase price, not including expenditures that may be necessary for shops, equipment, sidings, etc. He is optimistic enough to believe that if the thing is worked out right the railroad will probably pay a reasonable rate of interest on its entire cost.

Quick Freight Car Tracing

The car record office of the Delaware & Hudson at Albany, N. Y., answers tracers in half a minute—an operation so quick that shippers who make their inquiries by telephone sometimes accuse the tracing clerk of "faking." The explanation of this seeming magic is the smallness of the road, and a couple of loud speaking telephones, which Superintendent J. E. Roberts has installed at a slight expense. The road being small—though its lines aggregate a length of over 900 miles and it moves freight cars 175 million miles yearly—all car records, from all junctions, can be brought together in Albany on the next morning after the completion of the 24-hour day for which they are made; so the information given to inquirers is never more than one day old. The company has a general office building (just completed a few years ago) which is perfectly adapted to its purpose. The car-record clerks, about 25 of them, work in an airy room with daylight on three sides; and the man, sitting at one side of the room, who receives an inquiry by telephone for, say, B. & A. car 123,456, at once repeats the number on the room telephone. Each one of the 25 women hears it. Only the one who has the "B" book takes pains to fix the number in her mind; but she is the one whose book contains the record of the movement of that car for the current month, and she turns at once to page 456. If she does not find the number inquired for she at once informs the tracing clerk that there is no record. If she does find it she tells him (for example) "delivered to the Erie at Binghamton on the 25th," and he repeats that answer to the original inquirer, who is still waiting at the other end of the telephone line—perhaps 100 miles away. A dozen consecutive inquiries have been answered in this way in 25 seconds each. The girl usually shortens the time a few seconds more by giving her reply in the abbreviated phraseology used on her book.

Bridge Renewals and Repairs

The bridge engineer of one of the more prosperous western roads declared recently that he would use every means in his power to avoid the renewal of any bridge on the lines under his jurisdiction as long as the present price level remained in effect. Fortunately for him, the property with which he is connected has been maintained in much better condition than the average railroad the country over. Consequently, it is much easier for him to carry out his expressed policy than it would be on some other line that has been compelled to follow a hand-to-mouth program with regard to bridge renewals for many years. This tendency is unquestionably general and is all the more serious because it is being pursued after a number of years during which the bridge renewals have been less than normal. For some time the prevailing rule that renewals should be made whenever the annual cost of maintaining the old structure exceeds the annual cost of the new one has not applied. Because of the shortage of material in the closing months of the war, great pressure was brought on the railroads to resort to all manner of makeshifts to avoid the building of new structures. Then followed the closing year of the government control period with its retrenchment in all expenditures. In the meantime the cost of replacements has continued to advance so that the tendency to resort to further repairs of old structures is more marked than ever before. This is obviously an unhealthy condition. Too large a proportion of the structures are being retained in service under a form of special dispensation with the result that a larger part of the bridge maintenance activities are in the nature of emergency measures, while the burden of responsibility on the maintenance officer is increased enormously. Another effect of this condition which must not be overlooked is the obstacle which it puts in the way of the use of heavier motive power on the railroads.

Maintain Your Shop Tools

Much has been said about the need for new railway shop machinery and equipment to replace that which is worn out and obsolete. The need is urgent, but can any steps be taken to increase shop output pending the installation of new machinery? One important way to make the most of present repair shop facilities is to maintain them in the best possible operating condition by careful periodical inspection and prompt repairs to any machines showing signs of weakness. Another important point is the assignment to each machine or tool of work to which the machine is best adapted. This implies that shop executives keep in close touch with their cost systems and see to it that the most efficient methods of performing the work are adhered to. For example, if the records show that cast iron crosshead shoes can be machined twice as quickly on a miller as on any other type of machine, why use a planer that may be needed on other work? The total results of weeding out uneconomical practices in all the repair shops of the country would be as effective in improving the movement of traffic as the purchase of many cars and locomotives. Results are needed now. Even if unlimited capital was available, no considerable amount of new machinery could be ordered, shipped and installed in less than six months and unless more cars and locomotives are made available at once, many industries will be obliged to suspend production either through the lack of raw material or coal, or the inability to ship their products. Present repair shop facilities must be utilized to the utmost.

An Unprecedented Action to Promote Railroad Efficiency

THE CHIEF EXECUTIVES of the railways, at a meeting in New York on July 16, took action which is not only of the greatest significance and importance under present conditions, but is unprecedented in the history of American railroads. On the recommendation of their advisory committee, which recently was created, they set up certain standards of efficiency of operation, which, by resolutions unanimously adopted, they pledged themselves to make every effort to attain. The purpose and object of this effort will be to relieve the present dire transportation situation in the shortest possible time. The significant feature of every one of the standards set up is that it is higher than any corresponding standard hitherto attained in the actual operation of the railroads of the United States, and is probably higher than ever was attained in the operation of the railroads of any country.

The first standard is "an average daily minimum movement of freight cars of not less than 30 miles per day." The average movement per car per day under government operation in 1918 was 24.6 miles and in 1919 23.1 miles. The greatest average movement ever attained in any year was in 1916 when it was 26.9 miles. If the railways should accomplish what they have set out to do, it would mean practically five miles per car per day more than was made under unified government control in 1918 and would be equivalent to adding 400,000 to 500,000 cars to the available equipment.

The second standard set up is "an average loading of 30 tons per car." The highest average ever attained was in 1919 when it was 29.1 cars. An increase of one ton in the average load per loaded car would be equivalent to adding from 50,000 to 75,000 to the available supply of cars.

The third standard established is "the reduction of bad order cars to a maximum of four per cent of the total owned." The last report upon the subject showed 7.4 per cent or about 178,000 of all the freight cars of the United States in bad order. A reduction of this to four per cent would increase the useful available supply of cars by about 80,000.

The fourth and fifth standards set up are "an early and substantial reduction in the number of locomotives unfit for service" and "more effective efforts to bring about the return of cars to the owner roads." To enable the managements of the railroads, and also the Interstate Commerce Commission and the public, to know how successful each railway is in improving its operating results, it was resolved that "all railway companies shall forward to the advisory committee or such agency as the latter may designate, reports that will enable a check to be made currently of performance under this resolution, and the advisory committee shall arrange for comparative compilation of such reports and make distribution to the individual companies." In order to achieve the results they have resolved that they should and will secure, the railway managements will have to improve greatly the efficiency of operation of the individual properties and co-operate loyally with each other. They will have to have the support of their employees, and the recent wage award ought largely to remedy the labor conditions which for some months have so seriously interfered with efficient operation. The managements will also have to have the energetic support of the Interstate Commerce Commission and of shippers, for the Commission and the shippers can largely determine how heavily cars shall be loaded and also how rapid the circulation of cars shall be, since cars are in the hands of shippers about one-third of the time.

The action of the railroads in creating an Advisory Committee and local committees to bring about better co-operation between themselves, and in setting up as attainable and to be attained operating standards higher than ever were before attained under either private or government management, is significant of a revival among railway executives of the spirit of enthusiasm and initiative which in the past caused the great increases in the efficiency and economy of operation of our railroads. The welfare not merely of the railroads, but of the nation, demands that they shall receive the encouragement and support of labor, of shippers and of the regulating authorities. Unless the railways are enabled to handle more freight many industries all over the country will be forced to close down. This will mean ruin for many business concerns and unemployment for many hundreds of thousands of working men. That disaster must be averted.

Abolish Reconsignments and Shippers Order Privileges

THE DEMANDS FOR transportation service continue to increase as the roads are entering the grain-moving season. These demands can be met only by securing greater service from the equipment now in use. This result can only be accomplished by reducing the delays to which cars are now subjected and thereby increasing the average miles made per car per day. In no field is the demand for transportation more insistent than in the coal trade, yet curiously enough it is here that practices are found in an aggravated form which are serving greatly to retard the movement of cars, namely, the extensive use of consignment and "shippers order" privileges. Created in the days of over-zealous competition, these concessions have come to be abused so generally that they are resulting in a large number of freight cars being converted from carriers of freight into rolling warehouses which are shunted from place to place at the will of the shipper to take advantage of fluctuating markets or supply. As an illustration of the magnitude of this practice, 65 per cent of all of the coal brought into Chicago by one of the largest coal-carrying roads is reconsigned, while only 35 per cent moves direct to the point of unloading, and the proportion reconsigned on all roads entering the city is only slightly less.

Although orders are received for the reconsignment of about 90 per cent of the cars before these cars arrive at the city classification yards, the fact that they are subject to reconsignment prevents their being classified at outlying terminals direct for delivery as is done with as much other traffic as possible. Rather, their movement is slowed down and their classification is made necessary in the already overburdened city yards. Also the other 10 per cent of the cars assigned are placed on "hold tracks" where they remain from two to five days awaiting instructions after which they must be moved one by one at added expense.

In an effort to expedite the movement of coal through Chicago, the terminal committee at that point has issued an embargo against all coal not billed to a definite destination and an order prohibiting the reconsignment of cars for which reconsignment orders are not received a sufficient time in advance of the arrival of the cars to permit the necessary switching instructions to be issued without delay to the cars. The Illinois Public Service Commission has indicated its approval of this action by telegraphing the Interstate Commerce Commission recommending that the National Commission suspend reconsignment and blind billing privileges at all points. The issuance of such an order will free the roads from the parasitic burden of performing transfer and warehouse service for which they were never created and will enable them to place their equipment wholly in transportation service. It is only in this way that the greatest service may be rendered to the largest possible proportion of the shipping public.

New York, New Haven & Hartford

OF THE MANY PROBLEMS which have burdened the New Haven—operating, financial and economic—the problem of personnel has been of importance second only to that of the relationship which exists between New England railroads and the position of New England industries in the economic life of the United States. It is not necessary to go back over the history of the Mellen régime when the responsible management was so far away from the details of operation that it would have been a miracle if employees and officers had not become somewhat demoralized. What is, however, of great interest and importance is the attitude of the present management toward this aspect of the New Haven's problems.

It is customary for a railroad president to close his annual report with more or less perfunctory thanks to employees and officers for their work during the year. In the 1919 annual report of the New York, New Haven & Hartford, however, E. J. Pearson, president of the road in 1917, federal manager during government control, and now again president of the corporation, speaks to his people in a far from perfunctory way. He says: "All employees are directly interested in the successful outcome of the many matters involved. They are especially interested in the improvement of the property and will respond fully to opportunities to improve its service. Their ability, experience and loyalty have been demonstrated through many difficult situations, for which they deserve high credit. As through their endeavors they establish themselves in the friendship and confidence of the many the New Haven serves, so will they also enhance in public opinion, the reputation and standing of the road. The benefits to the railroads provided by the Transportation Act are made dependent upon proper and economical operation. It must be the aim of all to bridge the present interim with their best efforts and to operate so that the requirements of New England and also those of the Transportation Act for service and economy will be fulfilled."

In its financial problems the New Haven has been greatly helped by the government. The Railroad Administration loaned it $43,964,000 to pay off debts maturing in April, 1918, and the total indebtedness of the company to the government is now $66,000,000; in addition the company is seeking a further loan of $13,500,000. Assuming that this loan is successfully negotiated, the New Haven's financial crisis will have been tided over for some years. In the meantime, the operating problem and the freight rate problem, due to the intimate relation between railroad rates into and out of New England and the entire industrial situation within New England, will have to be worked out. On the purely operating problem a substantial beginning of a solution has been made. In 1919, under government operation the New Haven earned a total of $106,545,000 which is at the rate of $54,200 per mile of road. This was an increase of $4,251,000 over the earnings in 1918, due entirely to an increase in earnings of $5,394,000 from passengers. Operating expense in 1919 amounted to $92,473,000—an increase over 1918 of $4,727,000. The net income accruing to the government was $10,223,000 comparing with a rental paid by the government of $17,251,000.

One of the difficulties connected with the operation of the New Haven is the preponderance of passenger business. The passenger train mileage in 1919 was approximately 14,200,000, and the freight train mileage was approximately 6,000,000. The earnings from passengers and express, exclusive of mails and incidental earnings, amounted to $50,000,000, comparing with $49,000,000 earned from freight revenues. The total number of passengers carried one mile in 1919 was 2,024,000,000, or a passenger density of 1,030,000 passenger miles per mile of road. Even with the increased passenger fares the average receipts per passenger per mile on the New Haven amounted to 2.212 cents, rates to soldiers, clergymen, etc., accounting for the difference between this figure and the 3 cent a mile rate. There are going to be very serious difficulties in the way of raising freight rates in New England as will be explained later, but it would seem that passenger rates might be increased without affecting the industrial relations of these states with the rest of the country and thus afford a necessary relief to the New Haven.

It is sometimes said, and probably correctly, that if New England had as high freight rates as the rest of the country New England industries would be forced out of business. New England manufacturers can compete successfully with manufacturers in other parts of the country only through a rate structure which favors New England. While, therefore, the Interstate Commerce Commission may find it possible to adjust the proportion of rates which the New England roads receive on a through haul so as to give the New England roads something more than they are now getting, the freight rate problem will have to be handled with great skill and knowledge if the goose that lays the golden egg is to be continued in healthful laying condition.

Prior to the time that Mr. Pearson came to the New Haven it had been generally considered that the preponderance of passenger traffic, the nature of the grades of the road and configuration of the lines precluded the possibility of the use of heavy locomotives and the successful working out of any plan for greatly increasing the average train load. Mr. Pearson, however, undertook to buy heavier locomotives and to work out a scheme for increasing the train load and reducing freight train miles. Apparently he is doing this successfully. In 1916, when he went to the road, ton miles amounted to approximately 26,000,000,000. In 1919 ton miles amounted to 34,000,000,000. In 1916 freight train miles totaled 7,200,000 and in 1919 had been reduced to 6,000,000. This result was accomplished largely through the use of heavier locomotives and improved operating methods with the facilities, other than locomotives, that had previously been provided.

The New Haven is now at work building two very improved freight yards—one at Cedar Hill, Conn., and the other at Providence, R. I. Regarding these, Mr. Pearson says: "The terminal at Cedar Hill, when completed, will enable the receipt of trains however made up and of cars whatever their loading, from all directions, their proper classfication and re-loading, and then the forwarding in straight trains properly made up and cars properly loaded for destination to every important gateway and commercial center on the system. The Providence terminal will perform corresponding service with a similar benefit to the Lines East. Large advantages will accrue from decrease in cost of train and terminal service and in car hire.

The following tables show the principal figures for the operating of the property during 1919 and 1918. This is not a corporate income account:

	1919	1918
Average mileage operated	1,966	1,992
Freight revenue	$49,236,963	$50,721,288
Passenger revenue	44,774,218	39,379,917
Total operating revenues	106.545,120	102.294,112
Maintenance of way and structures	14,280.055	13,525,534
Maintenance of equipment	21,377,447	20,913,413
Traffic expenses	541,089	475,232
Transportation expenses	51,147,509	48,020,080
General expenses	3,283,635	3,087,451
Total operating expenses	92,473,381	87,746,523
Taxes	3,770,657	3,216,376
Operating income	10,273,265	11,315,322
Federal net income	10,222,751*	8,926,839

*The increase here shown is due to a credit to the income account of the government of $3,293,369 in 1919 for items prior to January 1, 1918, whereas in 1918 a credit was given the government for like items of only a little over $1,000,000.

CORPORATE INCOME ACCOUNT.

	1919	1918
Rental	$17,250,849	$17,095,885
Gross income	23,735,594	22,735,594
Net income	2,397,460	2,043,526
Items prior to January 1, 1918	3,274,520	1,138,984

The Award of the Railroad Labor Board

Railway Employees Granted Flat Monetary Increases Totaling $600,000,000 Annually

THE UNITED STATES RAILROAD LABOR BOARD, in its decision in the controversy over wage and working conditions of railway employees, rendered July 20, awarded the various classes of employees flat increases in wages averaging approximately 21 per cent above the rates now being paid, and adding about $600,000,000 to the annual payroll. The award does not dispose of the many questions regarding working conditions which the brotherhoods interwove with their requests for increased compensation. Such subjects as the payment of overtime for Sunday and holiday work, the continuation or elimination of the National Shop Agreement, the application of the award to the various "outlaw" organizations, and kindred subjects are left for future determination. The separation of these two phases of the controversy by the Board was made on the assumption that adequate investigation and consideration of these questions would demand much time and that because of the existing tense labor situation it was desirable to make as early a decision of the wage question as practicable and deal with the other problems at a later date.

In making its award some differentials between the wages of different classes of employees which have been a source of dissatisfaction were partially adjusted. For instance, the differential which has existed for some time between the wages paid car repairmen and switchmen, giving the former a decidedly higher rate of pay than the latter, has been changed so that under the new award switchmen and their helpers are to be paid the same or better rates than car repairmen. The car repairmen are granted an increase of 13 cents an hour, bringing their hourly wage from 68 cents to 81 cents, or an advance of 19 per cent. The switchmen's rate is advanced from $5.33 to $6.96 and helpers from $5.00 to $6.48, or increases of approximately 30 per cent.

The actual additions to the total payroll of the larger classes of employees (allowing nothing for overtime) are estimated as follows:

		Approximate percentage increase
Yardmasters and train despatchers	$4,767,357	
Clerks	103,920,176	25
Maintenance of way employees	160,297,568	25
Mechanics and shop laborers	139,237,215	19½
Agents and telegraphers	21,281,669	23
Enginemen	65,025,612	
Trainmen	91,561,335	23
Marine employees	250,000	
Total	$586,340,336	

These figures are, of course, group figures and do not reflect the fact that the award of the Board has treated the applications of the lower paid employees much more favorably than those of the higher paid employees.

After stating that a number of carriers, including many of the short lines, are not parties to this award and outlining the origin and nature of the controversy, which has been previously covered in the columns of the *Railway Age*, the introduction to the Board's decision reads:

In arriving at its decision, the Board has taken into consideration, as the Transportation Act prescribes:

"(1) The scale of wages paid for similar kinds of work in other industries;

"(2) The relation between wages and the cost of living;

"(3) The hazards of the employment;

"(4) The training and skill required;

"(5) The degree of responsibility;

"(6) The character and regularity of the employment, and

"(7) Inequalities of increase in wages or of treatment, the result of previous wage orders or adjustments."

Besides the circumstances set out above the Act provides the Board shall consider in determining wages "other relevant circumstances." This, it understands, comprehends, among other things, the effect the action of this Board may have on other wages and industries, on production generally, the relation of railroad wages to the aggregate of transportation costs and requirements for betterments, together with the burden imposed on the entire people of railroad transportation charges.

The Board has been unable to find any formula which applied to the facts would work out a just and reasonable wage for the many thousands of positions involved in this dispute. The determination of such wages is necessarily a matter of estimate and judgment in view of all the conditions; a matter on which individuals will differ widely as their information or lack of it, their interest, situation and bias may influence them.

Those persons who consider the rates determined on herein too high should reflect on the abnormal conditions resulting from the high cost of living and the high rates now being paid in other industry. The employees who may believe these rates too low should consider the increased burden these rates will place on their fellow countrymen, many of whom are less favorably situated than themselves.

The Board has considered the seven circumstances suggested by the Act. "The hazards of the employment," "the training and skill required" and "the degree of responsibility" were well presented by the representatives of the employees and of the carriers. These factors are recognized by all and have had due weight. With reference to "the character and regularity of the employment," the Board finds that with few exceptions railroad employment is more regular, and the character of the work is more desirable than like occupations outside. As a rule railroad employees are such for life and usually remain for years with the same company. This permanence of employment has certain advantages which have been considered by the Board. As to "inequalities of increases in wages or of treatment the result of previous wages orders or adjustments" the urgency of prompt action has made elaborate investigation into this factor impracticable. It has, however, been considered. With regard to "the scale of wages paid for similar kinds of work in other industries," and "the relation between wages and the cost of living," the Board has been under some difficulty. It is clear that the cost of living in the United States has increased approximately one hundred per cent since 1914. In many instances the increases to employees herein fixed, together with prior increases granted since 1914, exceed this figure. The cost of living and wages paid for similar kinds of work in other industries, however, differ as between different parts of the country. Yet standardization of pay for railroad employees has proceeded so far and possesses such advantages that it was deemed inexpedient and impracticable to establish new variations based on these already variable conditions.

For the reasons stated it was necessary to adopt the method of determining what, if any, increases over existing wages (established under the authority of the United States Railroad Administration) would constitute a reasonable and just

wage for the hundreds of classifications of railroad employees. By so doing such differences in present rates as are the result of local differences are preserved together with (in general) the differentials between different classes of employees which have come about in the railroad service and which may be considered *prima facie* to be based on good reason. It is believed that this method accomplishes that approximation to justice which is practicable in human affairs.

The Board has endeavored to fix such wages as will provide a decent living and secure for the children of the wage earners opportunity for education, and yet to remember that no class of Americans should receive preferred treatment and that the great mass of the people must ultimately pay a great part of the increased cost of operation entailed by the increase in wages determined herein.

It has been found by this Board generally that the scale of wages paid railroad employees is substantially below that paid for similar work in outside industry, that the increase in living cost since the effective date of General Order 27 and its supplements has thrown wages below the pre-war standard of living of these employees and that justice as well as the maintenance of an essential industry in an efficient condition require a substantial increase to practically all classes.

The American people desire and must have transportation adequate to their needs. They also wish to do justice to men employed in the public service whether on public utilities or otherwise. Wage scales which are insufficient to attract or support men of the character necessary for railroad work constitute waste and extravagance and not economy. Transportation cannot be efficient unless the personnel throws itself into its work with the devotion which public service ought to inspire and no such devotion can exist in the minds of men who feel themselves treated with injustice. It is hoped that the present decision which adds substantial amounts to present wages will be felt to be just and equitable under all the circumstances and railroad employees will accordingly render the best service of which they are capable. If they will do this, it is believed the American people will receive benefits far outweighing the cost of the increases decided upon herein.

It is believed that if the keen intelligence of railroad employees and managers alike is fired by an eagerness to serve the people and a spirit of co-operation to that end is brought about, such economies of material and labor, such improvements in method and workmanship, such solutions of transportation problems will result as will offset a great part of the increase of wages provided for herein and that the people will thus be relieved of a part of the burden of these increases. They deserve and have a right to expect this spirit.

During the hearings, the "International Association of Railroad Supervisors of Mechanics," and "The American Train Dispatchers' Association" have been made parties to this dispute. In granting hearings to them, this Board has not assumed or decided any question of jurisdiction between the several organizations or associations either parties to or outside of this dispute.

There are in the dispute as presented questions involving rules and working conditions, some of which are interwoven with and materially affect earnings and wages. Adequate investigation and consideration of these questions would demand time. Existing conditions required that the Board should make as early decision of the wage question as practicable. For that reason, it has been necessary,—and both parties to the controversy have indicated it to be their judgment and wish, that the Board should separate the questions involving rules and working conditions from the wage questions. Accordingly, the Board has not undertaken herein to consider or change the rules and agreements now existing or in force by the authority of the United States Railroad Administration or otherwise and this decision will be so understood and applied.

The Board assumes as the basis of this decision the continuance in full force and effect of the rules, working conditions and agreements in force under the authority of the United States Railroad Administration. Pending the presentation, consideration and determination of the questions pertaining to the continuation or modification of such rules, conditions and agreements no changes therein shall be made except by agreement between the carrier and employees concerned. As to all the questions with reference to the continuation or modification of such rules, working conditions and agreements, further hearings will be had at the earliest practicable date and decision thereon will be rendered as soon as adequate consideration can be given.

It is further declared that this Board, finding it necessary to adopt a basis for the rates and advances decided on, has adopted the rates established by or under the authority of the United States Railroad Administration. The intent of this decision is that the named increase except as otherwise stated shall be added to the rate of compensation established by and under the authority of the United States Railroad Administration.

The decision of the Board is the result of the action of the Board, composed of nine members acting as a body, under the usual parliamentary methods of procedure and its own rules. Each and every separate question was considered and voted upon—each and every rate for each class was voted upon and adopted by a majority vote of the Board, and in every instance one or more of the public group, as the law requires, voted in the affirmative on any classification or rate adopted.

In a problem so complex and involving the inter-relationship of the wages of so many different classes of employees, it is obvious that there could not be unanimous agreement among all the members of the Board on all increases fixed by this decision; but inasmuch as the several increases hereinafter set forth represent, in each instance, the best judgment of the majority of the Board it is believed that no useful purpose would be served by setting forth the views held by the members who for one or another reason dissented from particular increases. This statement is made in order that it may not be inferred that the decision, in all its details, states the precise increase which any one of the members hereof might have stated if he had the sole power and responsibility for fixing such increase.

This Board estimates that the increase in wages herein provided for will impose on the railroads an addition to the payroll of March 1, 1920, aggregating approximately six hundred millions of dollars per annum.

The Board appreciates that some time will necessarily be required for computing back pay from May 1. This is work of a kind which must be done by regular employees, familiar with the classifications, rates and rules.

The Board believes that the railroads will proceed with diligence in the matter. It urges upon them that there be no unnecessary delay; and it urges equally upon the employees that they exercise patience and refrain from unreasonable pressure or criticism.

The Board decides upon the present dispute and submission that the rates of increase set out below, added and applied to the rates established for the positions specified by or under the authority of the United States Railroad Administration, constitute, for the said positions on carriers named herein, a just and reasonable wage.

The Board also decides that the rates set out below constitute for the positions specified on carriers named herein a just and reasonable wage.

Article I gives in detail the names of the various railroads affected. The other articles follow:

ARTICLE II.—CLERICAL AND STATION FORCES.

Add to the rates established by or under the authority of the United States Railroad Administration for each of the hereinafter named classes, the following amounts per hour:

Sec. 1. Storekeepers, assistant storekeepers, chief clerks, foremen, subforemen and other clerical supervisory forces.....13 cents.

Sec. 2. Clerks with an experience of one (1) or more years in railroad clerical work, or clerical work of a similar nature in other industries, or where their cumulative experience in such clerical work is not less than one (1) year .....13 cents.

Sec. 3. Clerks whose experience as above defined is less than one (1) year, and until an experience of one (1) year in such work entitles them to the increase provided for in Section 2.....6½ cents.

Sec. 4. Train and engine crew callers, assistant station masters, train announcers, gatemen and baggage and parcel room employees (other than clerks) .....13 cents.

Sec. 5. Janitors, elevators and telephone swithboard operators, office station and warehouse watchmen, and employees engaged in assorting way bills and tickets, operating appliances or machines for perforating, addressing envelopes, numbering claims and other papers, gathering and distributing mail, adjusting dictaphone cylinders and other similar work..10 cents.

Sec. 6. Office boys, messengers, chore boys and other employees under eighteen years of age, filling similar positions, and station attendants.5 cents.

Sec. 7. Station, platform, warehouse, transfer, dock, pier, store-room, stockroom and team-track freight handlers or truckers, and others similarly employed .....12 cents.

Sec. 8. The following differentials shall be created or maintained, as the case may be, between truckers and the classes named below:

(a) Sealers, scalers and fruit and perishable inspectors, one (1) cent per hour above truckers' rates as established under Section 7.

(b) Stowers or stevedores, callers or loaders, locators and coopers, two (2) cents per hour above truckers' rates as established under Section 7.

The above shall not operate to decrease any existing higher differentials.

Sec. 9. All common laborers in and around stations, storehouses and warehouses, not otherwise provided for.....8½ cents.

ARTICLE III.—MAINTENANCE OF WAY AND STRUCTURES AND UNSKILLED FORCES SPECIFIED

Add to the rates established by or under the authority of the United States Railroad Administration, for each of the hereinafter named classes, the following amounts per hour:

Sec. 1. Building, bridge, painter, construction, mason and concrete, water supply, and plumber foremen, except such water supply, and plumber foremen as were paid under the provisions of Supplement No. 4 to General Order No. 27.....15 cents.

Sec. 2. Assistant building, bridge, painter, construction, mason and concrete, water supply, and plumber foremen, and for coal wharf, coal chute, and fence gang foremen, pile driver, ditching and hoisting engineers and bridge inspectors, except such assistant water and plumber foremen as were paid under the provisions of Supplement No. 4 to General Order No. 27 .....15 cents.

Sec. 3. Section, track and maintenance foremen, and assistant section, track and maintenance foremen.....15 cents.

Sec. 4. Mechanics in the maintenance of way and bridge and building departments, except those that come under the provisions of the national agreement with the Federated Shop Trades.....15 cents.

Sec. 5. Mechanics' helpers in the maintenance of way and bridge and building departments, except those that come under the provisions of the national agreement with the Federated Shop Trades.....8½ cents.

Sec. 6. Track laborers, and all common laborers in the maintenance of way department and in and around shops and roundhouses, not otherwise provided for herein.....8½ cents.

Sec. 7. Drawbridge tenders and assistants, pile-driver, ditching and hoisting firemen, pumper engineers and pumpers, crossing watchmen or flagmen, and lamp lighters and tenders.....8½ cents.

Sec. 8. Laborers employed in and around shops and roundhouses, such as engine watchmen and wipers, fire builders, ash-pit men, flue borers, coal passers (except those coming under the provisions of Article VIII, Section 3, this decision), coal chute men, etc.....10 cents.

ARTICLE IV.—SHOP EMPLOYEES

Add to the rates established by or under the authority of the United States Railroad Administration, for each of the hereinafter named classes, the following amounts per hour:

Sec. 1. Supervisory forces .....13 cents.

Sec. 2. Machinists, boilermakers, blacksmiths, sheet metal workers, electrical workers, carmen, moulders, cupola tenders and coremakers, including those with less than four years' experience, all crafts.....13 cents.

Sec. 3. Regular and helper apprentices and helpers, all classes..13 cents.

Sec. 4. Car cleaners .....5 cents.

ARTICLE V.—TELEGRAPHERS, TELEPHONERS AND AGENTS

Add to the rates established by or under the authority of the United States Railroad Administration, for each of the hereinafter named classes, the following amounts per hour:

Sec. 1. Telegraphers, telephone operators (except switchboard operators), agents (except agents at small non-telegraph stations as referred to in Supplement No. 13 to General Order No. 27, Article IV, Section c), agent telegraphers, agent telephoners, towermen, lever men, tower and train directors, block operators and staffmen.....10 cents.

Sec. 2. Agents at small non-telegraph stations as referred to in Supplement No. 13 to General Order No. 27, Article IV, Section (c)..5 cents.

ARTICLE VI.—ENGINE SERVICE EMPLOYEES

Add to the rates established by or under the authority of the United States Railroad Administration, for each of the hereinafter named classes, the following amounts per mile, per hour, or per day, as the case may be, except in Section 4, as noted:

Sec. 1.—Passenger Service

Class	Per mile, cents	Per day
Engineers and motormen	.8	$0.80
Firemen (coal or oil)	.8	.80
Helpers (electric)	.8	.80

Sec. 2.—Freight Service

Class.	Per mile, cents	Per day
Engineers (steam, electric or other power)	1.04	$1.04
Firemen (coal or oil)	1.04	1.04
Helpers (electric)	1.04	1.04

Sec. 3.—Yard Service

Class	Per hour, cents
Engineers	18
Firemen (coal or oil)	18
Helpers (electric)	18

Sec. 4.—Hostler Service

Note.—Superseding rates established by or under the authority of the United States Railroad Administration, and in lieu thereof, for each of the hereinafter named classes, the following increased rates are established:

Class	Per day
Outside hostlers	$6.24
Inside hostlers	5.60
Helpers	5.04

ARTICLE VII.—TRAIN SERVICE EMPLOYEES

Add to the rates established by or under the authority of the United States Railroad Administration, for each of the hereinafter named classes, the following amounts per mile, per day, or per month, as the case may be, except in Section 4, as noted:

Sec. 1.—Passenger Service

Class	Per mile, cents	Per day	Per Month
Conductors	.67	$1.00	$30.00
Assistant conductors or ticket collectors	.67	1.00	30.00
Baggage men handling both express and dynamo	.67	1.00	30.00
Baggagemen operating dynamo	.67	1.00	30.00
Baggagemen handling express	.67	1.00	30.00
Baggagemen	.67	1.00	30.00
Flagmen and brakemen	.67	1.00	30.00

Sec. 2.—Suburban Service (Exclusive)

Class	Per mile, cents	Per day	Per Month
Conductors	.67	$1.00	$30.00
Ticket collectors	.67	1.00	30.00
Guards performing duties of brakemen or flagmen	.67	1.00	30.00

Sec. 3.—Freight Service

Class	Per mile cents	Per day
Conductors (through)	1.04	$1.04
Flagmen and brakemen (through)	1.04	1.04
Conductors (local or way freight)	1.04	1.04
Flagmen and brakemen (local or way freight)	1.04	1.04

Sec. 4.—Yard Service

Note.—Superseding rates established by or under the authority of the United States Railroad Administration, and in lieu thereof, for each of the hereinafter named classes, the following increased rates are established:

Class	Per day
Foremen	$6.96
Helpers	6.48
Switchtenders	5.04

ARTICLE VIII.—STATIONARY ENGINE (STEAM) AND BOILER ROOM EMPLOYEES

Add to the rates established by or under the authority of the United States Railroad Administration, for each of the hereinafter named classes, the following amounts per hour:

Sec. 1. Stationary engineers (steam).....13 cents.

Sec. 2. Stationary firemen and engine room oilers.....13 cents.

Sec. 3. Boiler room water tenders and coal passers..... 10 cents.

ARTICLE IX.—SIGNAL DEPARTMENT EMPLOYEES

Add to the rates established by or under the authority of the United States Railroad Administration, for each of the hereinafter named classes, the following amounts per hour:

Sec. 1. Signal foremen, assistant signal foremen and signal inspectors .....13 cents.

Sec. 2. Leading maintainers, gang foremen and leading signalmen .....13 cents

Sec. 3. Signalmen, assistant signalmen, signal maintainers and assistant signal maintainers .....13 cents

Sec. 4. Helpers .....10 cents.

ARTICLE X.—MASTERS, MATES AND PILOTS

Superseding rates established by or under the authority of the United States Railroad Administration, and in lieu thereof, for each of the hereinafter named classes, the following increased rates are established; provided, that these increases shall be applied only to railroad operated car floats, lighters and ferries and railroad operated tug boats propelling railroad operated car floats, lighters and ferries.

	Per month
Sec. 1.—New York Harbor	
Ferryboats	
Masters, pilots or captains	$220.00
Mates or first officers	150.00
Tugboats and Steam Lighters	
Masters, pilots or captains	220.00
Pilots (South Amboy, Perth Amboy and Port Reading coal towing lines)	200.00
Mates	150.00
Sec. 2. Philadelphia, Camden and Wilmington District	
Ferryboats—	
Masters or pilots (regular) (a)	$190.30
Extra pilots (promoted) (a)	150.22
Tugboats—	
Masters or captains (a)	150.96
Mates (a)	111.00
(a) Based on 8 hours per day.	
Sec. 3.—New Orleans, Anchorage, Baton Rouge, Vicksburg, Delta Point, Avondale, Algiers, Harahan and Gouldsboro District	
Southern Pacific "Carrier"—	
One master-pilot	230.00
Two master-pilots	220.00
Southern Pacific "Mastodon"—	
One master	230.00
Two masters	220.00
Southern Pacific "El Vivo" and El Listo"—	
Pilots	155.00
Southern Pacific "Restless"—	
Masters	180.00
Louisiana-Mississippi "Albatross" and "Pelican"—	
Captains	230.00
Pilots	220.00
Gulf Coast Lines "B. F. Yoakum"—	
One master	230.00
Two masters	220.00
Texas and Pacific "L. S. Thorne" and "Gouldsboro"—	
Master	230.00
Pilots	220.00
Mates	140.00
Sec. 4.—Newport News, Hampton Roads and Norfolk District	
New York, Philadelphia & Norfolk Railroad Bay Freight Service, Tugs "Cape Charles," "Parksley," "Delmar," "Pocomoke," "Salisbury," "Crisfield," "Portsmouth" and "Norfolk"—	
Captains	$250.00

The following table shows in detail the advances in wagesthat the award gives to all the various classes of employees:

I. C. C. classification No.	Class	Hours worked month of October, 1919	Hours worked year 1919	Annual increase which would result by adding 1 cent per hour	Increase per hour	Annual increase which would result by multiplying column No. 5 by column 6
(1)	(2)	(3)	(4)	(5)	(6)	(7)
5 and 6	Clerks	49,546,334	538,568,650	$5,385,686.50	.13	$70,013,924
7	Messengers and attendants	2,340,344	25,439,539	254,395.39	.05	1,271,977
8	Assistant engineers and draftsmen	2,215,504	24,082,528	240,825.28	.13	3,130,728
9	M. W. and S. foremen (exc. 10 and 28)	1,904,788	20,704,828	207,048.28	.15	3,105,724
10	Section foremen	9,914,376	102,334,267	1,023,342.67	.15	15,350,140
11	General foremen—M. E. Department	411,648	4,474,613	44,746.13	.13	581,700
12	Gang and other foremen—M. E. D.	5,707,200	62,037,264	620,372.64	.13	8,064,844
13	Machinists	13,799,156	149,996,825	1,499,168.25	.13	19,489,187
14	Boilermakers	4,356,686	47,357,176	473,571.76	.13	6,156,433
15	Blacksmiths	2,254,394	24,505,262	245,052.62	.13	3,185,684
16	Masons and Bricklayers	256,662	2,789,916	27,899.16	.15	418,487
17	Structural Iron Workers	131,079	1,424,828	14,248.28	.15	213,724
18 (a)	Carpenters	6,462,016	70,242,113	702,421.13	.15	10,536,317
18 (b)	Car builders	5,112,649	55,574,494	555,744.94	.13	7,224,684
19	Painters and upholsterers	2,836,072	30,828,002	308,280.02	.13	4,007,640
20	Electricians	3,004,040	32,653,914	326,539.14	.13	4,245,009
21	Air Brakemen	1,933,975	21,122,308	211,223.08	.13	2,745,900
22	Car inspectors	6,185,888	67,240,602	672,406.02	.13	8,741,278
23	Car repairers	20,954,172	227,791,849	2,277,718.49	.13	29,610,340
24 (a)	Other skilled laborers	11,988,081	130,310,346	1,303,103.46	.13	16,940,345
24 (b)	Car builders	1,332,000	14,476,937	144,769.37	.13	1,882,002
25	Mechanics' helpers and apprentices	26,092,289	283,623,181	2,836,231.81	.13	36,871,014
26	Sectionmen	61,844,626	672,251,084	6,722,510.84	.08½	57,141,342
27	Other unskilled laborers	26,924,929	292,674,678	2,926,746.78	.08½	24,877,348
28	Foremen, construction gangs and work trains	456,651	4,963,796	49,637.96	.15	744,570
29	Other men, construction gangs and work trains	6,622,146	71,982,727	719,827.27	.08½	6,118,532
30	Traveling agents and solicitors	293,784	3,193,432	31,934.32	.13	415,146
31	Employees in outside agencies	177,264	1,926,860	19,268.60	.13	250,492
32	Other traffic employees	92,208	1,002,301	10,023.01	.13	130,300
33	Train despatchers and directors	1,352,591	16,002,664	147,026.64	.13	1,911,346
34	Telegraphers, telephoners and block operators	5,086,105	55,285,961	552,859.61	.10	5,528,596
35	Telegraphers, telephoners operating interlocker	1,886,604	20,507,385	205,073.85	.10	2,050,738
36	Levermen (non-telegraphers)	912,950	9,923,766	99,237.66	.10	992,376
37	Telegraphers-clerks	2,784,270	30,265,015	302,650.15	.10	3,026,501
38	Agent-telegraphers	4,694,015	51,023,943	510,239.43	.10	5,102,394
39	Station agents (non-telegraphers)	3,255,416	35,386,372	353,863.72	.10	3,538,637
40	Station masters and assistants	144,952	1,575,628	15,756.28	.13	204,832
41	Station service employees, exc. 5, 6, 37, 38, 39, 40 and 66	28,453,787	309,292,665	3,092,926.65	.13	40,208,046
42	Yardmasters	951,952	10,347,718	103,477.18	.15	1,552,158
43	Yardmasters' assistants (not yard clerks)	797,520	8,669,042	86,690.42	.15	1,300,356
44	Yard engineers and motormen	5,267,481	57,257,518	572,575.18	.18	10,306,353
45	Yard firemen and helpers	5,235,581	56,910,765	569,107.65	.18	10,243,938
46	Yard conductors (or foremen)	5,159,218	56,080,700	560,807.00	.20⅜	11,426,443
47	Yard brakemen (or helpers)	12,590,054	136,853,887	1,368,538.87	.18½	25,317,969
48	Yard switch tenders	1,534,368	16,678,580	166,785.80	.13	2,168,215
49	Other yard employees	1,169,549	12,712,998	127,129.98	.13	1,652,690
50	Hostlers	2,719,200	29,557,704	295,577.04	.18	5,320,387
51	Enginehousemen	18,032,222	196,010,253	1,960,102.53	.10	19,601,025
52	Road freight engineers and motormen	8,836,590	91,016,959	910,169.59	.13	11,832,205
53	Road freight firemen and helpers	8,913,702	91,811,131	918,111.31	.13	11,935,447
54	Road freight conductors	7,594,941	78,227,892	782,278.92	.13	10,169,626
55	Road freight brakemen and flagmen	18,174,719	187,199,606	1,871,996.06	.13	24,335,949
56	Road passenger engineers and motormen	2,691,839	32,302,060	323,020.60	.16	5,168,330
57	Road passenger firemen and helpers	2,577,134	30,925,608	309,256.08	.16	4,948,097
58	Road passenger conductors	2,406,572	28,878,864	288,788.64	.13⅓	3,849,553
59	Road passenger baggagemen	1,281,293	15,375,480	153,754.80	.13⅓	2,049,551
60	Road passenger brakemen and flagmen	3,377,661	40,531,932	405,319.32	.13⅓	5,402,906
61	Other road train employees	836,315	10,035,780	100,357.80	.13	1,304,651
62	Crossing flagmen and gatemen	5,627,200	61,167,664	611,676.64	.08½	5,199,251
63	Drawbridge operators	404,032	4,391,828	43,918.28	.08½	373,305
64	Floating equipment employees	2,226,094	24,197,641	241,976.41	.08½	2,056,800
65	Express service employees	.....	.....	.....	....	.....
66	Policemen and watchmen	2,828,480	30,745,578	307,455.78	....	.....
67	Other transportation employees	1,165,880	12,673,116	126,731.16	.13	1,647,505
68	All other employees	4,631,560	50,345,057	503,450.57	.13	6,544,857
	Total	450,252,785	4,894,247,772	$48,942,477.72	...	$591,735,844

Note—Actual figures were available for October, 1919, but not for the entire year 1919. Freight and mixed train miles for October were 9.7 per cent of such mileage for the year. Passenger mileage for October was 8.8 per cent of the mileage for the year. Average freight and passenger mileage for October was 9.2 per cent of the year. Therefore, in arriving at the annual hours for 1919, the following basis was used:

Engine and train service—Freight, October hours times 10.30.

Engine and train service—Passenger, October hours times 12.

All other service, average figure, viz., October times 10.87 was used.

Classification No. 18 has been divided into (a) carpenters in Maintenance of Way Department, which according to records of Board of Railroad Wages and Working Conditions are 53 per cent of the total, and (b) carpenters in the Maintenance of Equipment Department, or car builders, who comprise about 47 per cent of the total.

Classification No. 24 has been divided into (a) "Other skilled laborers," and (b) carmen (covering car builders, truck builders, tank builders, tender repairmen, etc.) which latter classes it is estimated comprise about 10 per cent of the total.

New York, Philadelphia and Norfolk Railroad Barges, 2, 4, 5 8, 9, 10, 14, 16, 17, 18—	
Captains	210.00
New York, Philadelphia & Norfolk Railroad Tug "Philadelphia"—	
Captains	191.75
Chesapeake & Ohio Railroad Tugs "Greer," "Alice," "Hinton," "Wanderer" and "Helen"—	
Mates	160.00
Norfolk Southern Railroad Tug—	
Master (day)	160.00
Captain (night)	150.00
Chesapeake & Ohio Railroad, Steamer "Virginia"—	
Master and pilot	215.00
First mate	160.00
Second mate	160.00
Southern Railroad Ferry Steamer and Tug—	
Captain (day)	190.00
Captain (night)	180.00
Mate	160.00
Mate	145.00
Atlantic Coast Line Railroad Tugs "Norfolk" and "Pinners Point"—	
Captain (day)	190.00
Captain (night)	180.00
Atlantic Coast Lines Railroad Passenger Barge—	
Masters	122.32
SEC. 5.—PORT OF BALTIMORE	
Baltimore & Ohio Railroad Tug "Liverpool"—	
Masters	201.00
Mates	147.00

ARTICLE XI.—OTHER SUPERVISORY FORCES

Add to the rates established by or under the authority of the United States Railroad Administration, for each of the hereinafter named classes, the following amounts per hour:

Sec. 1. Train despatchers .....13 cents.
Ses. 2. Yard masters and assistant yard masters.....15 cents.

ARTICLE XII.—MISCELLANEOUS EMPLOYEES

Add to the rates established by or under the authority of the United States Railroad Administration, for employees in the hereinbefore named departments who are properly before the Board and not otherwise provided for, an amount (as per Section 3, Article XIII) equal to that established for the respective classes to which the miscellaneous classes herein referred to are analogous. The intent of this article is to extend this decision to a miscellaneous class of supervisors and employees, practically impossible of specific classification, and at the same time to insure to them the same consideration and rate increase as provided for analogous service.

ARTICLE XIII.—GENERAL APPLICATION

Sec. 1. The increases in wages and the rates hereby established shall be effective as of May 1, 1920, and are to be paid according to the time served to all who were then in the carriers' service and remained therein, or who have since come into such service and remained therein.

Sec. 2. The provisions of this decision will not apply in cases where amounts less than thirty dollars ($30.00) per month are paid to individuals for special service which takes only a portion of their time from outside employment or business.

Sec. 3. Increases specified in this decision are to be added to the hourly rates as established by or under the authority of the United States Railroad Administration for employees now being paid by the hour. For employees paid by the day, add eight times the hourly increase specified to the daily rate. For employees paid by the month, add two hundred and four (204) times the hourly rate specified to the monthly rate.

Sec. 4. Each carrier will in payment to employees on and after August 1, 1920, include therein the increases in wages and the rates hereby established.

Sec. 5. The amounts due in back pay from May 1, 1920, to July 31, 1920, inclusive, in accordance with the provisions of this decision, will be computed and payment made to the employees separately from the regular monthly or semi-monthly payments, so that employees will know the exact amount of their back payments:

Recognizing the clerical work necessary to make these computations for back pay and the probable delay before the entire period can be covered, each month, beginning with May, 1920, shall be computed as soon as practicable, and as soon as completed, payment shall be made.

Sec. 6. The increases in wages and the rates hereby established shall be incorporated in and become a part of existing agreements or schedules.

Sec. 7. Except as specifically modified herein, the rules regulating payments of overtime or working conditions in all branches of service, and the established and accepted method of computing time and compensation thereunder, shall remain in effect until or unless changed in the manner provided by the Transportation Act, 1920.

Sec. 8. It is not intended in this decision to include or fix rates for any officials of the carriers affected except that class designated in the Transportation Act of 1920, as "Subordinate Officials," and who are included in the act as within the jurisdiction of this Board. The Act provides that the term "Subordinate Officials" includes officials of carriers of such class or rank, as the Interstate Commerce Commission shall designate by regulation duly formulated and issued. Hence, whenever in this decision words are used, such as "foremen," "supervisor," etc., which may apply to officials as are now or may hereafter be defined and classified by the Interstate Commerce Commission as such subordinate officials.

ARTICLE XIV.—INTERPRETATION OF THIS DECISION

Sec. 1. Should a dispute arise between the management and the employees of any of the carriers as to the meaning or intent of this decision, which cannot be decided in conference between the parties directly interested, such dispute shall be referred to the United States Railroad Labor Board in the manner provided by the Transportation Act, 1920.

Sec. 2. All such disputes shall be presented in a concrete joint signed statement setting forth: (1) the article of this decision involved. (2) the facts in the case. (3) the position of the employees, and (4) the position of the management thereon. Where supporting documentary evidence is used it shall be attached in the form of exhibits.

Sec. 3. Such presentations shall be transmitted to the Secretary of the United States Railroad Labor Board, who shall place same before the Board for final disposition.

By order of Chairman.

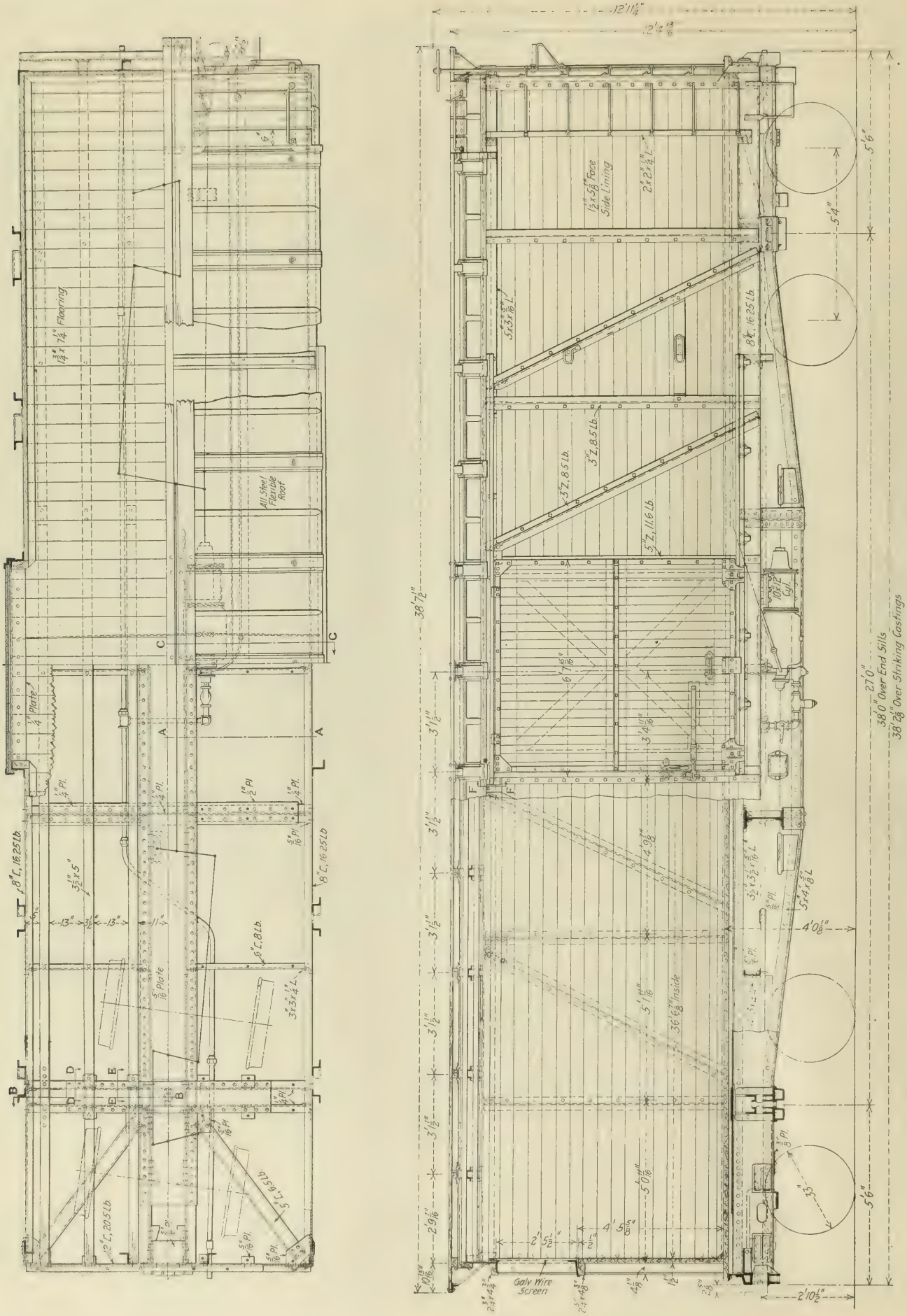
After sessions lasting all day Tuesday and Tuesday night, Wednesday and Wednesday night unanimous approval or disapproval of the Labor Board's award had not been reached. However, all but one of the organizations affected by the award had taken action. Seven unions, namely, the Brotherhood of Railway Trainmen, the Brotherhood of Locomotive Engineers, the United Brotherhood of Maintenance of Way Employees and Railroad Shop Laborers, the Switchmen's Union of North America, the Brotherhood of Locomotive Firemen and Enginemen and the Masters, Mates and Pilots of America had voted to accept the award outright.

The following organizations voted to refer the award to their respective memberships with recommendations of acceptance: The International Association of Machinists, the Sheet Metal Workers International Alliance, the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, the Brotherhood of Railway Car Men of America, the International Brotherhood of Electrical Workers, the International Brotherhood of Boiler Makers, Iron Ship Builders and Helpers of America and the International Brotherhood of Blacksmiths, Drop Forgers and Helpers.

The Brotherhood of Railway Signalmen and the Employees Department of the American Federation of Labor voted to refer the award to the employees without recommendations. The Order of Railway Telegraphers rejected the decision and the Order of Railway Conductors failed to reach a decision.

Following the decision on the part of the brotherhoods affected, the Grand Council of Union Chiefs composed of a representative of each of the brotherhoods met to reach a concerted agreement on the award. However, because of the varying views they were unable to come to an agreement, being deadlocked on Thursday morning. Late Wednesday several of the organizations which are dissatisfied with the award appealed to the board to reopen the controversy but this appeal was immediately refused. All of the members of the board feel that the award is the result of their best efforts at this time and under the existing conditions. The only evidences so far reported of outlaw strikes of protest against the award have appeared in Chicago, where shopmen employed by the Grand Trunk refused to return to work Wednesday afternoon after a mass meeting. This move led to the extension of the strike talk to other shops in the Chicago district but it is believed that the ruling of the award which forbids the participation of the vacationist in its retroactive features has resulted in stabilizing the workers. Union leaders claim that the outlaw organizations have planted men in shops and in groups of workers throughout the country with instructions to take advantage of whatever dissatisfaction is expressed to induce the spread of the vacation idea. In general, reports coming to the brotherhood chiefs in Chicago indicate that the award is meeting with the approval of railway workers and it is believed that eventually it will be referred to the employees with recommendations for its acceptance and plans prepared to request further increases.

RAILROAD PRONUNCIATION.—The conductor and a brakeman on a Montana railroad differ as to the proper pronunciation of the name Eurelia. Passengers are often startled upon arrival at this station to hear the conductor yell: "You're a liar!" Then from the brakeman at the other end comes the cry: "You really are! You really are!"—*Boston Transcript.*

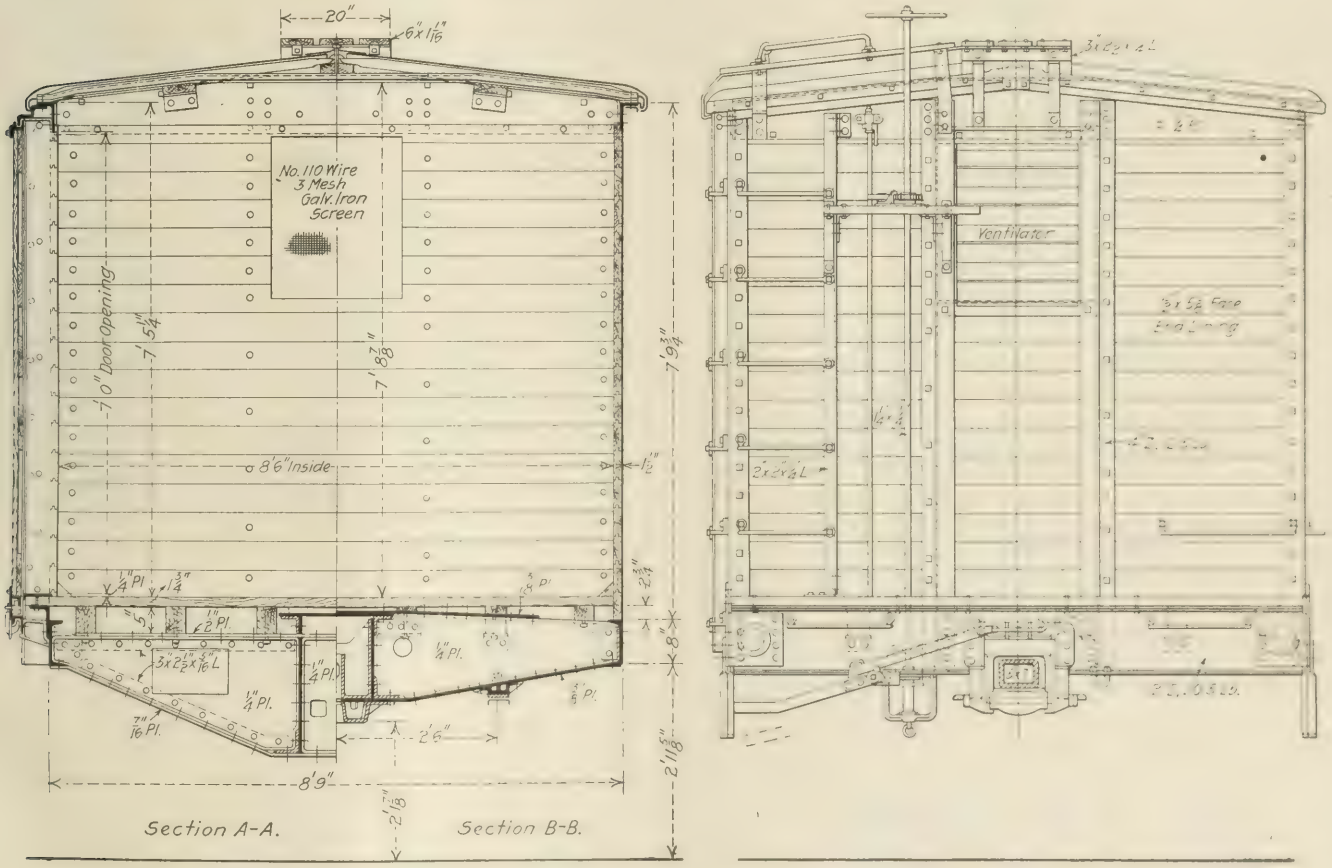


Plan and Side Elevation of Box Car for Cuba Railroad

Forty-Ton Box Cars for the Cuba Railroad

Single Sheathed Steel Frame Equipment Notable for Exceptionally Strong Construction

CAR EQUIPMENT for foreign railways is usually of interest by reason of the divergence from American standards of design. However, the Cuban Railroad has recently put into service some box cars which in strength and general design compare favorably with similar types in this country. These cars were designed and built by the American Car & Foundry Company. The first lot was recently completed and an additional order is now under construction. The cars are of the single sheathed type with steel underframes and steel superstructure. The nominal capacity is 36,400 kilos, or 80,247 lb., and the length over the end sills is 38 ft. 0 in. The light weight is approximately 40,000 lb. The car body is 36 ft. 6⅞ in. long inside, the inside height and width being 7 ft. 5¼ in., and 8 ft. 6 in., respectively.



End Elevation and Sections of 40-Ton Box Car for Cuba Railroad

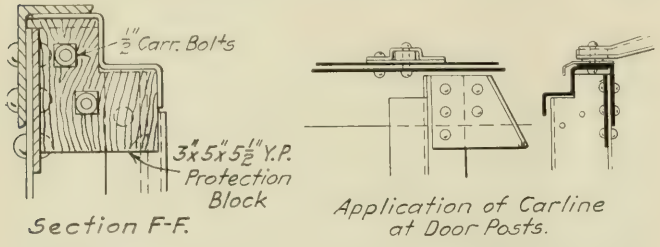
Underframe

The underframe is built up of rolled shapes and plates, comparatively few pressed steel parts being used. The center sill is of the fishbelly type, consisting of two steel side numbers continuous between the end sills. They are made of 5/16-in. plates with top chords of 3½-in. by 3½ in. by 5/16-in. angles and bottom chords of 5-in. by 4-in. by ⅝-in. angles with the long flanges placed horizontally. The sills are 24¾ in. deep for a length of 10 ft. 4 in. at the center and taper to 15 in. deep just inside of the body bolsters. The web plates are reinforced vertically with 4-in. by 3-in. by ¼-in. angles. A steel top cover plate 5/16 in. thick and 21 in. wide is riveted over the greater portion of the center sill, extending to a point approximately over the center of the draft gear. The body bolsters consist of two ¼-in. pressed steel diaphragms with 3-in. flanges all around, spaced six inches apart. Each bolster is reinforced at the top by a 12-in. by ⅜-in. cover plate, extending a short distance beyond the side bearings, and at the bottom by a 13-in. by ⅜-in. plate, extending the full width of the car. The bolsters have cast steel center plates and center fillers and malleable iron side bearings. The top of the bolsters slopes downward from the center sill and the top of the side sill is 1⅜-in. lower than the top of the center sill. The side sill is of 8-in., 16¼-lb. channel section and extends continuously from end sill to end sill.

There are two crossbearers, spaced 9 ft. 3½ in. apart. Each consist of a ¼-in. pressed open hearth steel diaphragm, flanged three inches wide on all sides. A filler of similar construction is placed between the center sills. The crossbearer is reinforced at the top and bottom with a 3-in. by 2½-in. by 5/16-in. rolled steel angle. The top cover plate is 3 in. by ½ in. and extends through the center sill web plates. The bottom cover plate is 8 in. by 7/16 in. and extends continuously from side sill to side sill, passing under the center sill.

At the center of the car and midway between the body bolsters and crossbearers there are floor beams consisting of

6-in., 8-lb. channels, secured to the side and center sills by means of the vertical stiffening angles, and also by pressed angle connections, as shown in the sectional drawing. The end sills are 12-in., 20½-lb. channels and extend straight along the full section for the entire width of the car. A 5-in., 6½-lb. channel extends from the corner of the body bolster and center sill to the corner of the car, where it is attached to the side sill and end sill by means of flanged gusset plates.

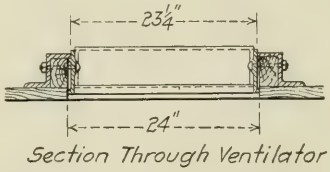


Side Plate Section at Floor and Arrangement of Roof Members

The draft gear is of the Cardwell friction type with Sharon couplers operated by the American Car & Foundry Company's direct-connected top operating uncoupling device.

Superstructure

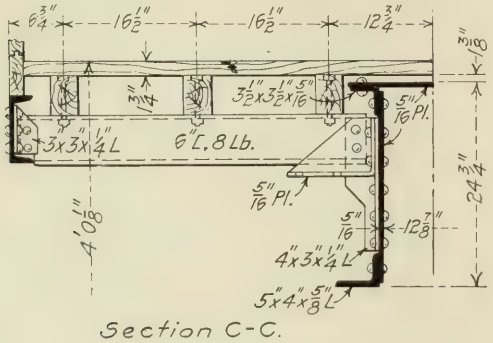
Both the vertical and horizontal intermediate members of the side truss are 3-in., 8½-lb. Z-bars, securely riveted to the side sill and to the side plate, which is a 5-in. by 3-in.



Section of End at Ventilator

by 5/16-in. angle with the short flange extending outward. The door posts are 5-in., 11.6-lb. Z-bars. A pressed steel section attached to the flange of the side plate serves as reinforcement over the door opening and also as weather protection for the door. The side sill is reinforced under the door opening by a 5¾-in. by 3¾-in. by 5/16-in. bent angle.

The corner posts are 5-in. by 4-in. by ⅜-in. rolled steel

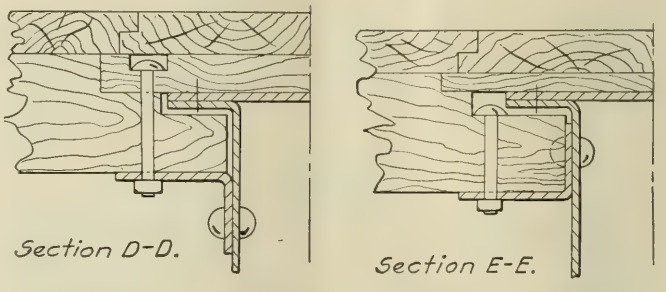


Section at Crossbearer

angles and are secured to the side sill by means of bent angle clips. At the upper end they are riveted to the side plate and the end plate, which is of ¼-in. steel plate, shaped to suit the roof. There are two Z-bars and posts of 4-in. 12½-lb. section. Between the end posts, directly below the running board brackets, is placed a Wine shutter type ventilator. The Hutchins flexible all-steel roof is applied to these cars. The steel car lines are riveted directly to the side plate. The detail of the application at the door posts is shown in the sectional view.

The side lining is 1½-in. by 5⅛-in. tongued and grooved yellow pine bolted to the steel frame. Floor stringers of 5-in. by 3½-in. yellow pine are applied over the floor beams and crossbearers, extending continuously between the end sills, the sections at the bolsters being arranged as shown in the drawing. There are three stringers on each side of the car and to them is secured the flooring, which is 1¾-in. by 7¼-in. yellow pine, ship lapped. Two and one-quarter inch beveled grain strips are applied around the sides and ends.

The side doors, which have a clear opening of six feet,



Arrangement of Stringers and Flooring at Bolster

are constructed of 13/16-in. yellow pine, tongued and grooved, with a 13/16-in. pine frame. The outside frame and crossbar are steel angles. The doors are fitted with Camel Company door fixtures, including bottom rollers, door starter and burglar-proof lock. Handholds, ladders and sill steps are all in compliance with the requirements of the federal safety appliance laws and the standards of the American Railroad Association. The air brakes are Westinghouse schedule KC-10-12, meeting A. R. A. requirements and including J-M exander rings. The hand brakes have the National Malleable Casting Company's mechanism with square brake mast. Galvanized wrought iron pipe is used in the air brake piping.

Trucks

The trucks are of the rigid diamond arch bar type with 5-ft. 4-in. wheel base, having cast iron wheels and A. R. A. standard journal boxes. The bolsters are of cast steel with the center plate cast integral and are fitted with Stucki roller side bearings. The spring plank is pressed steel of channel section. Ajax No. 2 brake beams are used. They are fitted with third point suspension and have safety supports of the American Car & Foundry Company's design.

These cars were shipped on their own wheels, being sent to Key West over the Florida East Coast and transferred to Cuba on the car ferry operated by that road.

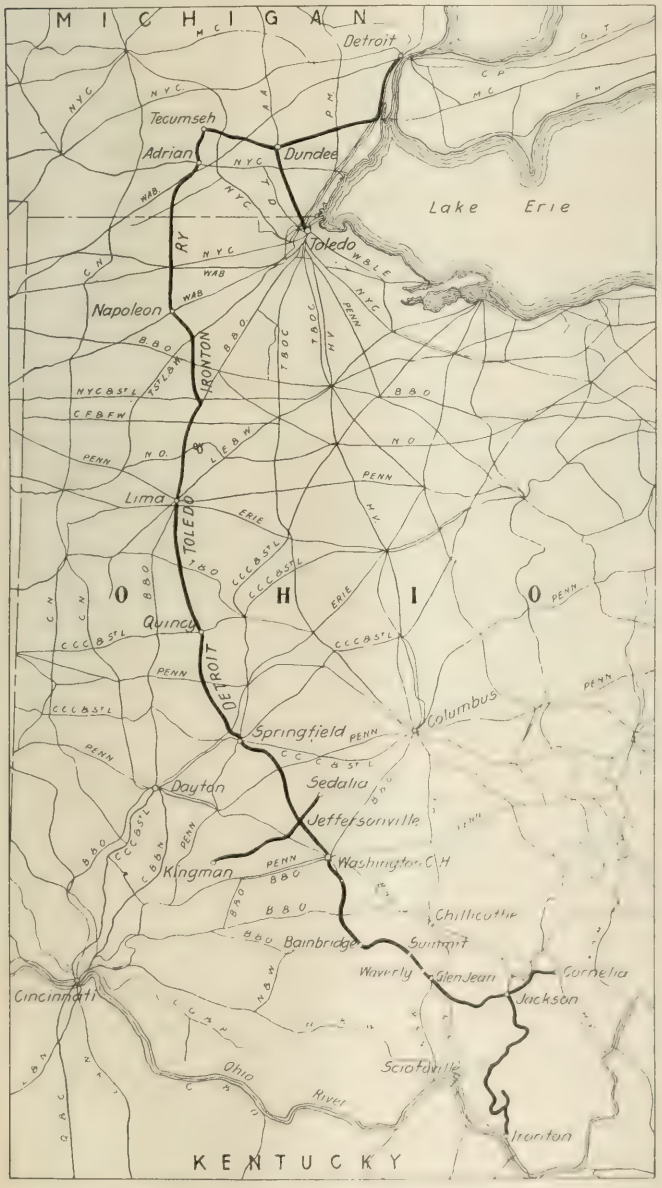
POST-WAR FINANCING.—Those railroads who financed long-term bonds after the Civil War, running from 40 to 50 years, received an unfortunate deal. They had to pay high interest rates and their maturity falls in a period of high rates. An example is the Chicago & North Western. It had to pay 7 per cent for new money from the Civil War until after the 1873 panic, although its shares paid dividends. Then it financed at 6 per cent until the early 80's and subsequently got money at 5 per cent and 4 per cent. At the beginning of this century it was able to finance itself at 3½ per cent. The tighter money market of the last decade has necessitated a renewed increase in rate on its own securities, rising from 4 per cent in 1912 to 7 per cent at the present, in other words, back to the Civil War rate.—*The Wall Street Journal Straws.*

The Sad Romance of the Detroit, Toledo & Ironton

A Brief History of the Road and an Analysis of the Steps the Fords Will Have to Take to Rehabilitate It

By F. J. Lisman
F. J. Lisman & Co., New York

IN THESE BUSY DAYS even the acquisition of a 500-mile railroad by as conspicuous a personality as Henry Ford does not attract as much attention as it would have 10 or 20 years ago; but the event is certainly both an interesting and important one in the railroad field, both on account of the interesting and checkered career of this railroad and the novelty of the property's present status.



The Detroit, Toledo & Ironton and Its Connections

Back in the early 70's, when some genius discovered the fact that narrow gage railroads could be built cheaper than standard gage roads, it became the fashion to build railroads as crooked as possible. At about that time the Springfield, Jackson & Pomeroy was conceived to run from Springfield (then one of the most important industrial centers of Ohio) southeasterly into the coal fields. There was considerable timber in those days in the southern part of Ohio; and as the constructors of the road were subsidy hunters, they hearkened to the voice of a lumberman who had some good hard wood timber on top of a ridge in the southern part of Ross County and who offered to supply a large number of ties to the road providing the line was built over his particular hill.

This was done; and while the ties for possibly 15 miles were originally supplied gratis, the road has more than paid for these ties in the way of additional fuel and wages during each and every year of its existence. The Springfield, Jackson & Pomeroy never got beyond the Jackson coal fields and promptly went into receivership before it was fully completed.

The Ohio Southern

It was subsequently made standard gage and then became part of the Corbin system; that is, it was operated in connection with what is now the Peoria & Eastern and which was then known as the Indianapolis, Bloomington & Western, extending from Columbus, Ohio, to Peoria, Ill. This system also went into receivership and the road from Springfield to Jackson then became the Ohio Southern Railroad, which, in the later 80's, authorized an issue of $15,000 per mile of first mortgage 6 per cent bonds. The road extending from Springfield to Wellston was fairly prosperous, but the fact that it had this open mortgage, authorized at $15,000 per mile, attracted Henry S. Ives, generally known as "Napoleon Ives, a railroad buccaneer," who, in the early 90's, acquired control of this property and proceeded to extend the road wherever he could build cheaply and as long as he could sell bonds and make a profit out of issuing them at $15,000 per mile.

Around Jeffersonville, in Fayette County, the country is absolutely level and he proceeded to build branches from this town northeasterly towards Columbus and southwesterly towards Cincinnati, building as far as the country was level. He gave the euphonious title of "Columbus & Cincinnati Division" to these two branches, aggregating 42 miles. He also extended the road from Springfield to Lima, expecting to exchange a substantial coal traffic at that point with the Erie and Nickel Plate Railroads. However, the panic of 1893 brought about the downfall of this scheme and a long and picturesque receivership followed. The receivership was in the Ohio state court and the receivers were local politicians. The management of the property was a stench in the nostrils of the public. For instance, an investigation developed the fact that while the coal shippers as a rule could not get adequate equipment to move their coal, a friend of one of the receivers, who claimed that his mine was producing coal of an inferior quality and therefore had to have a specially low freight rate, in order to enable him to operate at all, got all the cars he needed, while those who were paying higher rates had to do largely without them.

Finally the first mortgage bondholders' committee foreclosed on the property and instead of organizing a new com-

pany, as is customary, they proceeded to operate the road as a committee.

The Detroit & Lima Northern

In the meanwhile—that is, about 1896—some Ohio politicians, friends of the receivers of the Ohio Southern, headed by Chas. M. Haskell, who many years afterward became governor of Oklahoma, started to build a railroad from Lima northerly into Michigan, called the "Lima Northern," the title of which was subsequently changed, with the expanding ambitions of the promoters, to the "Detroit & Lima Northern." They also wanted to build a branch to Columbus and showed the pictures of handsome through trains which were to be operated between Columbus and Detroit.

They sold their first mortgage bonds at any old price to whoever would buy them, but within a few months the contractors claimed that they had not been paid anything on account of construction. The road went into the hands of receivers and, under the Ohio laws, the contractors maintained a first lien on all the property ahead of all the first mortgage bonds. The theory of the Detroit & Lima Northern promoters was that, by reaching Detroit from the south without passing through the Toledo gateway, they could handle business to that city to the best advantage and could get the benefit of the 70 cents per ton higher freight rate on coal, etc., which was the differential prevailing at that time to Detroit as against Toledo.

However, the road really did not get to Detroit at all, but to the outskirts of that city (partially over leased lines), it did not reach a single industry in Detroit and, as the Michigan Central exacted a switching charge of $7.00 per car, the road, of course, did no Detroit business and could not have made any money out of it if it had gotten it and, furthermore, its road was not in physical condition to handle any volume of business.

The Detroit Southern

In 1901, the Ohio Southern and the Detroit & Lima Northern were taken out of receivers' hands under a reorganization plan which greatly reduced the interest charges and which converted the old Detroit & Lima Northern bonds into stock, etc. The management of this new company, called "Detroit Southern Railroad," under the presidency of Samuel Hunt, a well-known railroad man at that time, made a serious attempt to create a good property. Terminals were acquired on the Detroit River, arrangements were made to enter the city of Detroit, the old Ironton Railroad at Ironton was acquired and a short link was built at the south end giving the road connection with the Chesapeake & Ohio and making a through line from Detroit to the Ohio river and the West Virginia coal fields. However, this management could not overcome the handicaps of the property, as it could not raise sufficient additional capital to do all the needful, and another receivership in 1905 was the sequence.

Detroit, Toledo & Ironton

Control of the property was then acquired by H. B. Hollins & Co., and the late Eugene Zimmerman of Cincinnati, Hamilton & Dayton notoriety was made president of the company. The financial reorganization of the company was not a sound one, as the fixed charges had been increased rather than decreased and practically no new money had been provided for necessary improvements; in fact, immediately afterwards the company increased its fixed charges still further in order to acquire control of the Ann Arbor Railroad by the creation of a three-year note issue. When these notes came due, they could not be paid and another five-year receivership was the result.

Finally, in 1914, another foreclosure took place and the old first mortgage bondholders were asked to pay an assessment of $350 per bond, for which they received income bonds at 60 per cent of their par value and they received in exchange for their old first mortgage bonds about $500 in preferred stock and $500 in common stock. Any holder of the $8,500,000 first mortgage bonds not paying this assessment was wiped out and the holders of the $4,250,000 of the consolidated bonds were entirely wiped out.

During the last five years, the property has had earnest attention. The management has strengthened its hold on the Detroit situation but the times were very adverse to any substantial development of any railroad. In the meanwhile, the income bonds, for which the old first mortgage bondholders had paid 60 per cent in the hope of thereby making their original investment good, had sold down as low as 7, or about one-ninth of their cost.

The Climax

Now along comes Henry Ford, who buys the property for just about the amount which the first mortgage bondholders paid in assessment in 1914; that is, he has paid exactly 60 for the income bonds, on which the bondholders have had no interest for six years, and he paid $5.00 for the preferred stock and $1.00 per share for the common stock, which works out an average of about $30.00, or 3 per cent for the original first mortgage bonds.

What is Mr. Ford going to do with this property? Geographically, it is ideally located as a through line from Detroit to the south. It crosses every trunk line running from Chicago and St. Louis to the east; it connects at its south end with the Chesapeake & Ohio, practically at the mouth of the Big Sandy river, and through the Big Sandy division of the Chesapeake & Ohio with the Carolina, Clinchfield & Ohio, thus making a straight route from Detroit to the southeast.

The southern end of the line runs through coal territory and connects with the West Virginia and eastern Kentucky coal fields. The line crosses the Baltimore & Ohio at Napoleon, Ohio, and also connects at Lima with the Erie, Nickel Plate and the Pennsylvania Railroad's main line. Mr. Ford, no doubt, expects to get better facilities for transporting to his plant the products of the Pittsburgh district than at present via the congested gateway at Toledo.

He undoubtedly controls enough business to keep the road busy hauling coal and other supplies northbound and hauling the products of his factory as southbound tonnage. However, pretty as it looks there are several flies in the ointment.

$8,000,000 Must Be Spent

Before this railroad can handle this tonnage, large sums must be spent. The present line, through the city of Adrian, Mich., located about 63 miles southwest of Detroit, must be either re-built or more likely abandoned. The line around that city is crooked and hilly and cannot handle any substantial tonnage. It was built by the above-mentioned promoters as cheaply as possible and in its construction, whenever an expensive barn was in the way, a heavy curve was used in preference.

There is an old right of way of an abandoned railroad which was purchased by the Lake Shore, extending from Dundee, Mich., southwesterly through Lenawee County, and can probably be purchased cheaply, which, together with what is known as the Fayette Branch of the Lake Shore, could be advantageously substituted for the present roundabout Adrian line. Some of the bridges will have to be strengthened, but, above all, the hill in southern Ohio, referred to in the beginning of this article, will have to be eliminated. This is a ten-mile uncompensated 90 ft. grade, with 12 degree curves.

In order to avoid it, it will be necessary to build another railroad, probably 30 miles long, either a considerable dis-

tance to the north or to the south of the present line. Possibly arrangements might be made to use the double track Norfolk & Western line from Waverly in the Scioto Valley to Chillicothe and thence that part of the Cincinnati, Hamliton & Dayton (now part of the Baltimore & Ohio) which is not a particularly busy track between Chillicothe and Washington Court House. This would mean a trackage over other lines of approximately 50 miles.

The necessary shop facilities for the railroad would have to be substantially created anew and a large amount of ballasting and heavier rails is necessary. At present prices, it probably will be necessary to spend on the road, including the elimination of the Bainbridge Hill and the Adrian situation, not less than $8,000,000. To this must be added the cost of shops, equipment, additional sidings, water tanks, etc. When all this is done, and with good management, Mr. Ford and the citizens of Detroit will have a railroad which will offer great facilities for their business and should, with good management, produce a fair rate of interest on its entire cost.

Fords Paid $5,000,000

The present physical value of the property is probably somewhere between $16,000,000 and $20,000,000. Mr. Ford has paid $5,000,000 for this, subject to $1,800,000 of first mortgage and car trust bonds.

Mr. Ford is reported to have always been a keen critic of railway management. It will be very interesting to know whom he is going to select to work out this proposition and how he will take the innumerable problems and annoyances which, during the next few years, will come up in connection with what the railroadmen will, no doubt, call Mr. Ford's "new tin lizzy."

Mr. Ford, it is stated, is going to equip the road with new Ford passenger motor cars. The Detroit, Toledo & Ironton has been particularly weak on passenger business because it runs across at right angles to the direction of passenger traffic, which, of course, goes to the big cities; that is, in the southern part of Ohio to Cincinnati and Columbus and in northern Ohio to Toledo. From Detroit southwesterly, the road competes with the Wabash, which gives much more frequent train service. The only city to which it would naturally have a large passenger business is Springfield and there it competes with a parallel trolley line.

Other Problems

The road has other problems of its own; such as, bad water (on a large part of the line) which requires treatment for locomotive use. It always lacked proper police protection in the city of Springfield, where it used to be the habit of a considerable proportion of the population to jump on the coal cars and help themselves to as much coal as they thought they needed. The Jackson coal field also has some particular troubles of its own. In fact from the railroad point of view, it is the most unsatisfactory coal field in the country. The Jackson coal field produces a very high grade of coal, suitable for domestic purposes only, which brings a particularly high price. This coal has a market during the fall and winter months, in northern Ohio, Indiana and Michigan and very little of it moves at other times of the year.

This field is composed of a number of small mines and three railroads compete for the business. Consequently the cost of marshaling a train out of this district is expensive and, if a trainload is assembled, it is hauled north over the hills until the road reaches the level country near Lima, and then the cars are delivered in scattered lots to all the connecting lines. This coal commences to move heavily in September just as the demand for cars usually grows and the cars become scattered all over the country and do not return to the originating railroad maybe until spring, when the season's business is over.

In the meanwhile the coal operators shout for cars and about every other year they appeal to the Ohio Public Service Commission and ask that the Detroit, Toledo & Ironton show cause why its charter should not be repealed because it is not furnishing the shippers with an adequate and reasonable amount of equipment.

Taking it all in all, if Mr. Ford, himself, wants to learn something about railroads, or if he wants his son to learn the business, he could not possibly have done better than to buy the Detroit, Toledo & Iron Railroad.

Part of the official announcement in connection with the property by Mr. Ford reads:

"For the immediate future a program of large purchases of heavy rails, ballasting, construction of cut-offs and elimination of grades has been adopted and will be put into effect at once, and the capital thus provided by the automobile industry for the development of this Detroit road will enormously relieve the serious rail congestion which has existed in Detroit for some years past.

"It is also stated that all the employees of the Detroit, Toledo & Ironton will share in the Ford bonus distributions."

Early Rate Decision Expected

WASHINGTON, D. C.

AN EARLY DECISION by the Interstate Commerce Commission advancing both freight and passenger rates is looked for now that the Railroad Labor Board has announced its award of increased wages for the employees. Under the law the board is required to certify its award to the commission, which must take it into consideration in fixing the rate level and it has been the general belief that the commissioners had generally made up their minds as to the amount needed by the railroads without the wage increase and that they would be able to add $600,000,000 to whatever figures they had previously determined upon in time to announce a rate decision by about August 1 or in time to give 30 days' notice and allow the roads to prepare tariffs effective on September 1.

The wage award would increase the total railroad payroll from $2,700,000,000, the amount of the wages in 1919, to $3,300,000,000. An addition of $600,000,000 a year would require an increase of about 16 or 17 per cent in freight rates, based on last year's freight revenue of $3,653,000,000, on top of the $1,018,000,000, or 28 per cent increase already asked by the railroads, if it were all to be paid by the freight traffic. However, the roads had announced that they proposed to take care of part of the wage increase by advancing passenger fares and assuming that half of the $600,000,000 could be raised in that way an additional increase of only about 8 per cent would have to be made in freight rates, over the 28 per cent already asked.

Adding the $600,000,000 to the amount already estimated by the roads as needed to produce a 6 per cent return would make a total of over $1,600,000,000, or about 30 per cent of last year's total operating revenues.

While the application of the roads averaged 27.85 per cent for the United States, it figured out 30.43 for the eastern district, 30.95 for the southern and 23.95 for the western. Adding 8 per cent to these would make the new percentages about 38, 39 and 32, or 36 per cent for the roads as a whole, although the $600,000,000 wage advance probably would not produce equal percentages in the three districts. Committees of passenger traffic officers have been working out the proposed increase in passenger fares and representatives of the general rate committee of the Association of Railway Executives, C. T. Airey, vice-president of the Central of Georgia; Gerrit Fort, vice-president of the Boston & Maine, and Edward Chambers, vice-president of the Atchi-

son, Topeka & Santa Fe, met at Washington on Tuesday to give further consideration of the matter after the wage decision was announced, for a report to the general rate committee.

Committees of traffic officers, accountants and lawyers met at the office of the Bureau of Railway Economics in Washington on Wednesday to prepare the details of the plan which was to be submitted to the Interstate Commerce Commission on the following day, the general purpose being to raise approximately half of the wage increase from the rates for passenger train service. It was estimated that approximately $200,000,000 could be raised by an advance of ½ cent per mile in passenger fares and consideration was also given to percentage increases on commutation fares and milk rates as well as to the possibility of ½ cent a mile surcharge for Pullman fares. In addition, the roads expect to receive increased revenue from their proportion of the proposed increases in express rates.

Incidentally, as the wage award is retroactive to May 1, approximately one-third of the annual increase, or $200,000,000 will be paid out of the United States Treasury for the months of May, June, July and August, under its guaranty to the roads for the period from March 1 to August 31, although some of the roads did not accept the guaranty and are not thus protected.

Copper in Steel Tie Plates Reduces Corrosion

The New York Central Lines have conducted a series of tests under the direction of J. V. Neubert, engineer maintenance of way, Eastern Lines, to determine the relative loss of metal in tie plates of various compositions, including those containing a small percentage of copper. The length of time over which the tests were conducted varied from two years to a maximum of six years, and some of the tests are still in progress. In all cases the maximum corrosion developed on the bottom or under side of the plates, a result contrary to the generally accepted theory of most engineers and maintenance of way men that the maximum corrosion takes place on the top or exposed portion.

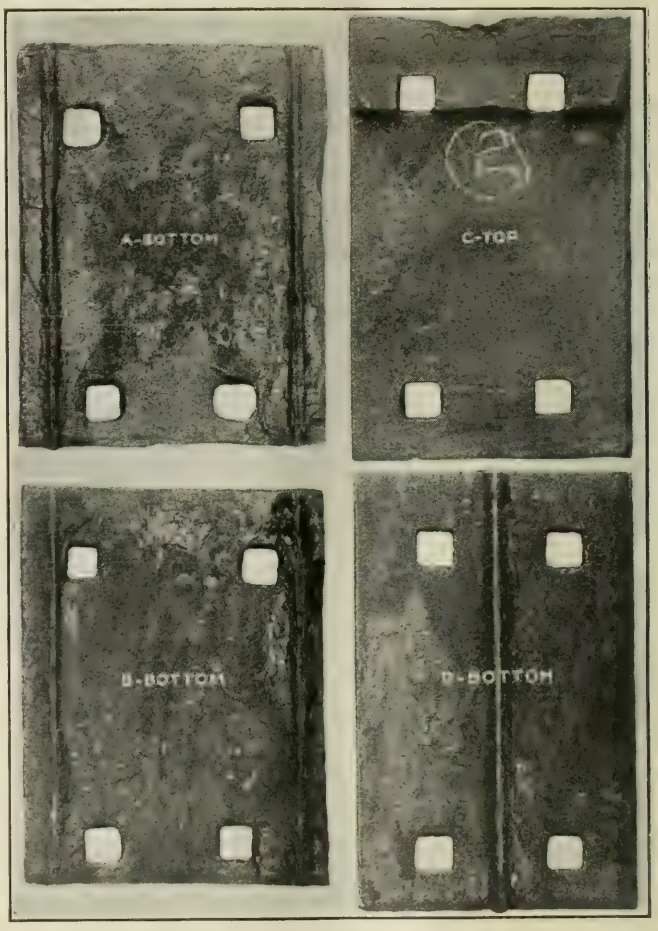
The percentage of copper in the plates containing that metal ranged between 0.25 per cent as a minimum and 0.5 per cent as a maximum, the plates so treated being rolled otherwise according to the standards of the New York Central. The copper-treated plates so obtained were subjected to the same tests as the other plates. An exposed test on a number of steel tie plates rolled from mild Bessemer steel containing 0.25 per cent copper and a number rolled according to the same specifications without the copper content showed an average loss of 8.88 per cent for untreated plates and only 1.46 per cent for the treated plates.

A second exposed test was made which covered a larger number of tie plates rolled from metals of various compositions. The plates used in this instance were cleaned and then exposed on the roof of a building at Hoboken, N. J., where the action of the salt air of New York bay could be studied. Investigation showed that the loss on the copper plates varied from 0.46 to 0.72 per cent, with an average of 0.56 per cent.

In comparing the data so obtained the nearest approach to the results reported from the copper-treated plates was a percentage loss of 0.59 per cent for high carbon open-hearth steel, too hard to punch. The pure iron plate came next, with 1.17 per cent, and then the high-carbon Bessemer plate, with 1.77 per cent, the latter also being too hard to punch. The remainder, which were standard steel tie plates, varied from 4.70 per cent to 6.60 per cent, showing approximately eight to ten times the loss in the common or regularly accepted tie plates as for the special copper-treated ones.

The results of comparative tests of corrosion on copper-treated and untreated plates taken from actual service are more clearly shown in the illustrations. These plates are typical of the ones subjected to the service tests covering periods of time up to six years. Photographs A and B show a standard 7-in. by 9-in. by ½-in. shoulder tie plate of the New York Central, with ½-in. bottom flanges. This plate was rolled in 1913 from mild Bessemer steel according to the specifications of that road and contained from 0.10 to 0.15 per cent carbon, from 0.50 to 0.60 per cent manganese, and a combined sulphur and phosphorus content of less than 0.10 per cent. It was installed in track during June, 1913, and removed in December, 1919. The bottom flanges of the plate shown in the illustration and of other samples taken at the same time are practically eaten off.

In direct contrast to this are the results derived from a copper treated plate. Photographs C and D show one of



A and B, Rolled Steel and C and D, Copper Steel Tie Plates After 7 Years of Service

the samples taken from a total rolling of 865 tons, or 22,365 tie plates, delivered to the New York Central in 1913. This followed the mild Bessemer steel specifications of that road, the manganese content being about 0.10 per cent higher, with the addition of 0.50 per cent of copper. The particular plate shown was installed in August, 1913, and removed in October, 1919. Both the top and bottom of this treated plate, as well as the bottom flange, show little or no corrosion.

This addition of copper naturally results in a tie plate with a slightly higher first cost, but the increase over regular prices will not be over $2 to $3 a ton, depending upon the size of the order and other relative conditions. As a result of these experiments the New York Central has placed an order for 650,000 tie plates, or 4,000 tons, to be rolled according to the railway's standard specifications, with the addition of 0.25 per cent of copper.

Signal Engineers' 25th Annual Convention

Largest Meeting in the Signal Association's Quarter Century— Extensive Revision of Specifications for Construction

THE ANNUAL MEETING of the Signal Division of the American Railroad Association—the signal engineers and their assistants, formerly the Railway Signal Association—was held at Alexandria Bay, Thousand Islands, N. Y., on July 14, 15 and 16, President C. J. Kelloway (A. C. L.) in the chair. The action of the meeting in connection with pending proposals relative to the terms of affiliation of the signal engineers' organization with the American Railroad Association, and an abstract of the annual address of President Kelloway, were given in the *Railway Age* of July 16, page 118. Secretary H. S. Balliet (N. Y. C.) read the report of the Committee of Direction, telling briefly of what has been done by the Committee during the past 10 months. A sectional committee has been established at Butte, Mont., and there are now 32 such committees. Over 300 members have been admitted during the year and the membership of the division now is 1,508. Mr. Balliet's report included a list of the members of the association who have been in military or naval service with information as to those who have resumed their active membership.

The first discussion was on the report of Committee No. 11, R. B. Elsworth (N. Y. C.) chairman. This committee presented a revised specification for caustic soda primary battery and for leadtype portable storage battery, the design of the revision being to raise the standard requirements; also a revised specification for a concrete storage battery box; also a drawing of round and rectangular primary battery jars and covers. Following a brief discussion all these were accepted for submission to letter ballot, for inclusion in the Manual.

Committee No. 10, W. J. Eck (Southern), chairman, presented a report on colors for signals, which was accepted as information. This report deals with marker lamps and flags used on trains and with various other signals, the purpose being to prescribe standard colors for all uses which shall be consistent with the use of green for proceed and yellow for caution, as in fixed signals. Changes in the wording of numerous rules of the standard code are proposed, particularly where the rules, as they now stand, leave it optional with each railroad what color to use. As to rule 20, however, that which calls for the use of green flags and lights on the front of locomotives, the committee has nothing to say.

This committee was instructed to report on automatic train control, and in response presented a statement, in parallel columns, of the definitions, requisites, etc., of an automatic train control system as proposed by the Block Signal and Train Control Board of the Interstate Commerce Commission, in 1910; the Railway Signal Association in the same year; the American Railway Association in 1914 and the Automatic Train Control Committee of the United States Railroad Administration in 1919. This matter was accepted as information.

The committee reported also on the proper means to be used to cause automatic signals to indicate stop in emergencies, formulating instructions as follows: to protect track workers or when track is dangerous, disconnect the signal circuits; this should be done by the men of the signal department. For a permanent arrangement, open the track relay through a knife switch; open circuit wires through circuit controllers; shunt the track circuit by circuit controller or by knife switch. Indicators may be used to advise track workers of the approach of trains. In emergency a shunt wire with clips may be attached to bond wires, provided prompt action is taken thereafter to arrange for proper disconnection as prescribed. The meeting voted to submit these rules to letter ballot.

On the subject of time releases, the committee presented the following rule: "For average conditions the proper time interval for the release of the electrical and mechanical devices applied to signal and switch apparatus, should be the time required for a train running thirty miles an hour to travel from a point 1,000 ft. before reaching a distant signal to a point 10 ft. beyond the home signal." The committee presented this only as a guide, adding the admonition that local conditions must govern the actual length of the time interval. This rule was accepted for submission to letter ballot.

Committee No. 6, F. P. Patenall (B. & O.), chairman, submitted for adoption four new standard designs, seven revised drawings and 15 drawings of new subjects, which drawings had been approved at intermediate meetings. The four new drawings were: 1373, gage plates, insulated butt joint; 1414, roundels; 1428, bonding of an electric railroad crossing with a steam railroad where one rail of the electric line is insulated from the crossing; and 1429, same as 1428, with the exception that the electric rails are not insulated.

The other drawings were: 101, switch point drilling; 1010, crank and jaw pins; 1015, one inch signal pipe and coupling; 1082, semaphore bearings; 1084, pipe carrier, assembly; 1085, pipe carrier, details; 1194, semaphore bearing, details and assembly; 1220, cross-arm bolts; 1399, low target stand; 1409, cotters, 1430, semaphore lamp, two lenses; 1440, switch lamp, spherical type; 1441, switch lamp with base socket (for spherical type); 1442, lens hoods and couplings for switch and semaphore lamps; 1443, oil fount for spherical type lamp; 1449, base for four inch pipe; 1470, train marker lamp; 1480, engine signal lamp; 1496, highway crossing gate and slow track sign lamp hangers; 1497, highway crossing gate lamp fount; 1498, highway crossing gate lamp handle and alinement clamp, and 1499, highway crossing gate lamp. But little discussion occurred and it was voted that the 26 standard drawings be submitted to letter ballot for inclusion in the Manual.

Committee No. 12, R. C. Johnson (B. R. T.), chairman, submitted a report on the form of contract for block signal and interlocking work which was up for approval. In the absence of Mr. Johnson, H. F. Haag (K. C. S.), in presenting the report, said that since its preparation a serious question had arisen about procuring insurance under certain paragraphs of the contract; and at his request the entire report was accepted as a progress report.

Committee No. 5, G. K. Thomas (A., T. & S. F.), chairman, presented a revised report on printed instructions and examination papers for signal maintainers. There was considerable criticism of parts of this report and the first section "general" was referred back to the Committee for further consideration. The rest was ordered to letter ballot.

Committee No. 8, C. H. Morrison (N. Y., N. H. & H.), chairman, presented comprehensive specifications for an alternating current automatic block signal system including one for an air-cooled reactor, one for a resister, one for a switchboard and one for an indicator or repeater; and a code of instructions for the installation and operation of switchboards. This Committee's work supersedes various

specifications now in the Manual. The whole was adopted for submission to letter ballot for inclusion in the Manual.

Committee No. 16, I. S. Raymer (P. & L. E.), chairman, presented specifications for lubricating oil which were approved for submission to letter ballot.

Committee No. 4, C. F. Stoltz (C. C. C. & St. L.), chairman, reporting on D. C. Automatic Block Signaling, presented a specification for a universal switch circuit controller and one for first range voltage high signal mechanism; and, after brief discussion, both were ordered sent to letter ballot.

Thursday's Session

Committee No. 9, W. H. Elliott (N. Y. C.), chairman, presented a number of reports on wires and tables. A specification for wire joints, illustrated by seven drawings, was accepted, after brief discussion, to be sent to letter ballot for inclusion in the Manual. This specification had been approved at the March meeting. The same action was taken on a specification for copper bond wire. A member suggested that copper bond wire, when packed for shipment, should be completely covered with burlap to lessen the temptation to thieves; but no action was taken on this suggestion.

This Committee having been instructed to revise the specification for rubber covered insulated wire and cables, with a view to raising the standard requirements, presented a carefully prepared report; but the first member to discuss the motion to adopt this report was the leader of a minority of the committee who desired further discussion or postponement. Mr. Elliott responded by saying that the minority had had ten years in which to present its views in concrete form. The committee had allowed all reasonable opportunities for discussion, and all members had been notified of all meetings; but these minority members had not faithfully attended. Votes in committee meetings had been unanimous. A mere proposal to postpone is not a reasonable method of dealing with a carefully prepared report. The main argument of the minority was for the inclusion of impracticable tests. After a long discussion the report was adopted for submission to letter ballot.

Similar action was taken on the specifications, reported by the Committee, for aerial braided cable for 660 volts; for rubber insulated armored submarine cable for 660 volts; for armored submarine cable for 2,200 volts; for lead covered cable for 660 volts; for lead covered cable for 2,200 volts, and for underground braided cable for 660 volts.

Committee No. 7, on Direct Current Relays, E. G. Stradling (C. I. & L.), chairman, presented a specification for tractive armature direct current relays. This brought out a long discussion on the limits of the drop-a-way and the pick-up, objection being raised to having an instrument so delicate that track circuits could not be worked more than 3,500 feet in length. There was also a discussion on whether the top plate of the relay should be metal. Following these and other criticisms there was some sentiment in favor of recommitting the specification because of the generally admitted desirability of further discussion on some features; but on a strong argument, by the committee, that a new specification was needed, the old one being eight years old, even though perfection be still far in the future, the meeting voted to sustain the committee. Following the adoption of two amendments the specification was adopted for letter ballot. One amendment was to the rule for adjustment (page 279) so as to make the maximum working current for four-ohm relays with two fingers (carrying first-range voltage) 0.100 Amp., and for those with three or four fingers 0.120 Amp.. In reply to a criticism the committee held that it would not be impracticable to deliver the amount of current here specified if the rail bonding were good. The other amendment was to the paragraph (page 281) providing for tests; a clause was added to the effect that the purchaser shall say what and how many tests he desires to have made at the point of production.

Following the disposal of this report, Mr. Fugina (L. & N.), a member of the committee, asked for the sentiment of the meeting regarding the standardization of direct current relays. There is a considerable sentiment unfavorable to the standardization of signal apparatus, but the committee felt that the direct current relay should be standardized so far as reasonably practicable. A number of prominent members supported this view; but representatives of manufacturers opposed it, declaring that future development would be retarded. They, however, were willing to co-operate with the committee in every way possible except to divulge trade secrets. These are their stock in trade. It was finally voted that in view of the discussion the committee of direction shall take such action as it shall deem necessary regarding the instructions to Committee No. 7.

For Committee, No. 2, E. J. Relph (N. P.), presented a specification for mechanical interlocking machine style "A" locking. At the request of the Committee this was accepted as a progress report.

Friday

Committee No. 3, F. B. Wiegand (N. Y. C.), chairman, presented specifications for various details of power interlocking, all of which had been discussed at previous meetings. Acting on a suggestion made at the December meeting, the committee proposed an electric lock applicable both to power and mechanical interlocking machines. Following a brief discussion the specifications were adopted for submission to letter ballot.

The committee on electrical testing, P. M. Gault (I. C.), chairman, presented revised instructions for testing for ground resistance and a revised table for standard ranges and scales for testing electrical instruments. These were accepted for submission to letter ballot.

The Committee on Pole Lines, John Leisenring (Illinois Traction), chairman, proposed the inclusion in the Manual of the specification of the American Railroad Association, for wire line crossing railroads, and this was approved. The meeting approved the action of the Committee in supporting the Telegraph & Telephone Division of the A. R. A. in its opposition to certain specifications, covering wire line crossings, being prepared by the Bureau of Standards.

Committee No. 15, on Valuation, J. M. Carley (B. & A.), chairman, presented a report containing information relating to depreciation, based on the principles which were applied in the case of the Texas Midland; and offered recommendations of percentages to be added to cover loss and waste.

Officers Elected

The officers of the Division chosen for the ensuing year are as follows: Chairman, F. W. Pfleging (U. P.); first vice chairman, F. B. Wiegand, (N. Y. C.); second vice chairman, C. A. Christofferson (N. P.); secretary, H. S. Balliet, (Grand Central Terminal, New York City). The following were elected to the Committee of Directors: W. E. Boland (Sou. Pac.); C. R. Hodgdon (Can. Natl. Rys.); C. J. Kelloway (A. C. L.), and J. B. Latimer (C. B. & Q.).

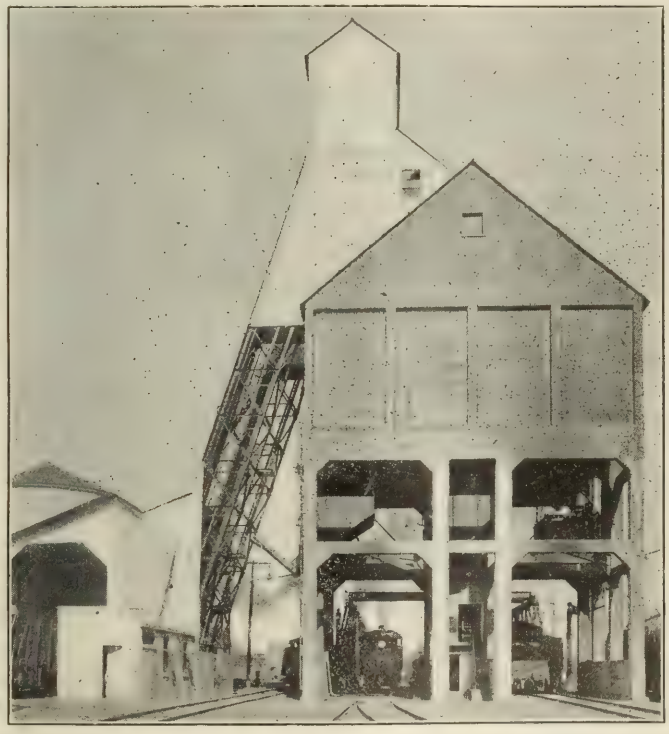
Signal Appliance Association

The officers of the Signal Appliance Association, chosen for the ensuing year at a meeting held at Alexandria Bay, N. Y., are: Chairman, J. Warren Young (Kerite); vice chairman, Henry Lee (Simmons-Boardman Pub. Co.); secretary-treasurer, F. W. Edmunds (Schroeder Headlight & Generator Co.), New York City. Those elected to the Executive Committee are: W. P. Allen (Union Switch & Signal Co.); R. E. Trout (Thos. A. Edison Inc.); L. Thomas (General Railway Signal Co.), and Geo. H. Porter (Western Electric).

A New Coaling Station for the Kentucky & Indiana

The Ogle Construction Company has recently completed the installation of a reinforced concrete coaling station of the balanced bucket type for the Youngtown yard of the Kentucky & Indiana Terminal at Louisville, Ky. The new station, which has a capacity of 1,000 tons, serves four tracks, and replaces a 500-ton plant which had deteriorated badly. The completion of the new structure has resulted in speeding up engine service at this point, approximately 2,270 engines being despatched during the month of February, 1920, as compared with 1,649 during the corresponding month of 1919, while during March, 1920, this was increased to 2,570 engines.

Coal is delivered to the new station in hopper bottom cars over a hopper track, from which point it is elevated by either or both of two 2½-ton bucket hoists to the top of the storage bin. At this point it is discharged automatically into an inlet chute, where it is deflected by means of deflector gates



End View of Station Showing General Arrangement of Equipment, Etc.

controlled from the ground to any one of the four 250-ton pockets as desired. Each pocket delivers the coal by gravity to a 15-ton steel weighing hopper, the flow of the coal being controlled from the ground. This arrangement provides for the accurate accounting of the amount of coal delivered to the locomotives on any one of the four tracks.

A 100-ton wet sand storage bin has been included in the main assembly, the wet sand being elevated and handled by the same equipment used for the coal. The wet sand is discharged by gravity to a steam sand drier, then flowing over a screen to a dry sand drum. From the drum it is elevated by compressed air to two storage tanks of 5 cu. yd. capacity.

The station proper is entirely of reinforced concrete, while the shed over the hopper track, the roofing and siding of the elevator and the roofing of the power house and coaling station are of corrugated asbestos board. The hoisting machinery consists of two 2½-ton automatic loaders, and two 2½-ton counterweighted buckets each driven by a 20-hp. electric motor. When operated together these hoists can maintain an hourly hoisting capacity of 150 tons.

The station was erected under the direction of the engineering department of the Kentucky & Indiana Terminal, W. S. Campbell, manager and chief engineer.

Illinois Roads Fight Reduction in Passenger Rates

With the Interstate Commerce Commission actively engaged on figuring, not whether it will permit increased freight rates but rather how much this increase should be, the railroads in 10 states are facing a fight to prevent a reduction in passenger fares from 3 cents per mile, authorized by the United States Railroad Administration on June 10, 1918, to the 2-cent per mile rate which Illinois, Ohio, Michigan, Oklahoma, Iowa, Kansas, Indiana, Wisconsin, Minnesota and Nebraska have fixed as the lawful passenger rate per mile. This case has developed further in Illinois than in any other state and as a result railway men throughout the country are closely watching the Illinois hearings which are now being held, as the resulting decision will undoubtedly influence the action taken in other states.

Illinois passed a law in 1907 fixing the passenger rates within its boundaries at 2 cents per mile. Six years later legislation was passed conferring power upon the state public utilities commission to regulate rates, but in this legislation it was specifically declared that it did not repeal the 2-cent fare law. When the government took over the railroads in 1918 the question of increasing passenger fares to 3 cents per mile arose, and on June 10 of that year favorable action was taken on all the railroads in the country. Now that the railroads have been returned to private control, all existing rates under the Transportation Act remain in effect until September 1. The fight which is now developing is to determine whether the state 2-cent a mile laws will automatically become effective on that date or whether the 3-cent a mile fare will be continued.

In many of the states the state utilities commissions have taken the schedules which the railroads have filed "under advisement." However, in Illinois, the State Public Utilities Commission suspended the tariffs which the roads filed. In so doing it declined to permit the 3-cent fare to continue effective after September 1 with a law for 2 cents per mile in the state statutes unless shown the reason.

The roads in Illinois are represented before the commission by Bruce Scott, general solicitor of the Chicago, Burlington & Quincy, whose task is to show why the 3-cent rate should remain effective. Mr. Scott, in representing the carriers, quoted the Transportation Act, which says that the rates in effect "shall continue in force and effect until after changed by state or federal authorities, respectively, or pursuant to authority of law." He contended, furthermore, that the federal government, in taking over the roads, created "a legal status" which continues on rates until September 1 and until thereafter changed. The basis of the railroads' contention is that there must be an affirmative act to change the rates rather than an automatic reversion to the 2-cent fare.

Among the other states which are interested in this case are Arkansas, West Virginia, New Jersey, Pennsylvania, Maryland, Delaware, North Dakota, Virginia, South Dakota and Alabama, all of which immediately before the war had intrastate passenger rates of 2½ cents per mile. In addition, there are a number of states which had mixed rates which are similarly interested in this case, among which are New York, Rhode Island, Massachusetts, New Hampshire and Vermont, all of which had rates running from 2 to 4 cents.

To Speed Up Freight Movement

At a meeting of the Association of Railway Executives, held in New York on July 16, resolutions were adopted covering a program to speed up car movement and increase car efficiency. The program calls for an average minimum car movement of 30 miles daily; an average car loading of 30 tons; a reduction of bad order cars to 4 per cent; a similar reduction of the number of locomotives unfit for service; and the adoption of more effective efforts to bring about the return of cars to owning roads.

The meeting also discussed the express situation and decided to recommend that the express business continue to be carried out as at present by the American Railway Express Company. The relations between the railroads and the Pullman Company were touched upon but owing to lack of time decision was deferred.

The resolution outlining the program to be followed was adopted unanimously and is as follows:

Whereas, It is apparent that under existing conditions transportation facilities of the railroads in the United States, with particular reference to the cars and locomotives, are inadequate to handle the unusually large volume of business offered for movement in the country as a whole at the present time; and

Whereas, It will be impossible to overcome immediately this deficiency by increasing the number of cars and locomotives, and it is clear that conditions require the most intensive use of the existing facilities; and

Whereas, It is recognized that upon release of the carriers from Federal control, not only were the cars and locomotives in the country as a whole inadequate and in an impaired condition, but the distribution of cars as to ownership was such as to prevent the greatest efficiency in their use, and that since the termination of Federal control constant interruptions due to disturbed labor conditions, which it is hoped will cease with the announcement of the wage award, have seriously interfered with the movement of the traffic and relocation of cars.

Therefore, Be It Resolved, By this Association, that all members thereof and all other common carriers, be urged to devote forthwith their utmost energy to the more intensive use of the existing equipment, and that, as a program to be followed in this connection, they should undertake, with the co-operation of the public, to secure for the country as a whole

(1) An average daily minimum movement of freight cars of not less than 30 miles per day;
(2) An average loading of 30 tons per car.
(3) Reduction of bad order cars to a maximum of 4 per cent of total owned;
(4) An early and substantial reduction in the number of locomotives now unfit for service; and
(5) Should make more effective efforts to bring about the return of cars to the owner roads.

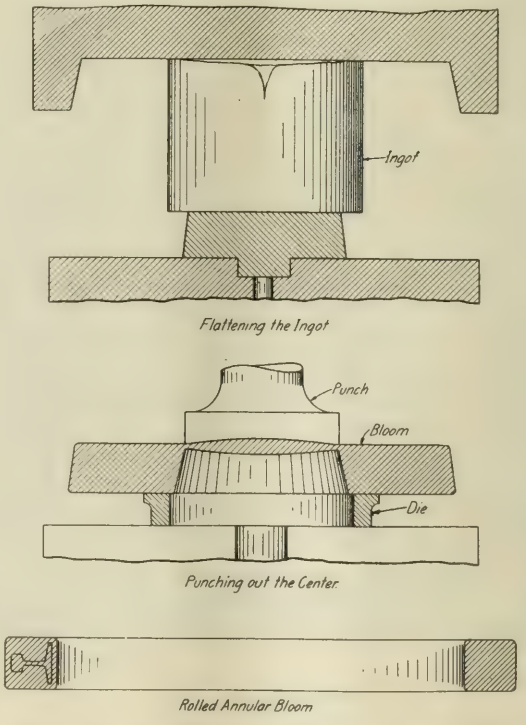
Resolved, That all railroad companies shall forward to the Advisory Committee or such agency as the latter may designate, reports that will enable a check to be kept currently of performance under this resolution, and the Advisory Committee shall arrange for comparative compilation of such reports and make distribution to the individual companies.

Resolved, That the Advisory Committee be instructed to acquaint the Interstate Commerce Commission with this action.

The decision concerning the American Railway Express Company followed a study of the situation made by a standing committee of which W. B. Storey, president of the Atchison, Topeka & Sante Fe, is chairman. Concerning the decision to recommend the continuance of the present method of operation by the American Railway Express Company, a statement issued after the meeting said: "It is the general belief of the members of the association that this will be in the public interest. As a practical question, there was really no other alternative because of conditions brought about by the war. Inasmuch as certain questions of revenues of the railroads are involved in this contract, the general counsel of the association, Alfred P. Thom, was directed to submit to the Interstate Commerce Commission the form of contract for its approval. Upon such approval the association will recommend to the member roads a standard form of contract to be made between the individual companies and the express company."

Annular Blooms for Rail Manufacture

Some interesting experimental work has been done on an entirely new method of reducing ingots to rails whereby it is believed that the trouble from piping and segregation may be largely avoided. In a procedure now followed, any defective metal in the center of the ingot below the portion cropped off is drawn out into the rail, spreading it over a large part of the length. The plan now suggested, which was described by C. A. Witter in a paper before the recent annual meeting of the American Iron & Steel Institute in New York, purposes to apply the method



Three Stages in the Formation of the Annular Bloom

used in the manufacture of steel tires for the past 10 years. In this process the ingot is pressed flat and the central portion punched out to form a ring-shaped bloom as shown in the two drawings. In this process a considerable portion of the material in the center of the ingot is removed by a cutting punch, thus eliminating unsound segregated steel.

After the bloom has been pressed to the ring-shape, it is placed in rolls similar to those used in the manufacture of tires and rolled until the section has been reduced and the ring considerably enlarged. The ring is then cut through with a swinging hot saw, after which special rolls are used to straighten the ring out into a straight bloom. The remainder of the process follows that of ordinary rail manufacture. Tests of six rails produced by this process give results as to the homogeneity of the material in the various portions of the rail section that would seem to justify more extended experimentation with this process.

Claims Against the Railroad Administration

WASHINGTON, D. C.

TWENTY-TWO RAILROADS and transportation companies have now filed their complete claims with the Railroad Administration for a final settlement of the accounts due them or owed by them to the government arising from the period of federal control. One settlement has been made, with the Spokane, Portland & Seattle, and several more with smaller companies are understood to be about ready to be made, but many of the larger systems have stated that they will not be able to compile all of the statistics on which their claims are based for several months. Some considerable sums due the railroads for rental, as to which there is practically no dispute, are thus tied up because the Railroad Administration is declining to pay the entire amounts until the final settlement in order that it may hold enough to protect its own claims. Most of the companies that have filed their complete statements are the smaller companies, although they include the Seaboard Air Line, Western Pacific, and Virginian, the Pullman Company and the Clyde & Mallory Steamship lines. Many other companies have filed claims for certain items.

All claims include items for money due on a regular statement of account, including that due for rental, and in the case of roads that have not signed contracts they usually include a claim for special compensation in addition to the standard return. They also include amounts due on open account in favor either of the company or of the government, and cash taken over or sums collected for one side or the other, with interest.

Most roads owe the government for additions and betterments made during federal control.

On the other hand, the government owes money to most roads, with no dispute except possibly as to the amount, for depreciation reserve on equipment. Frequently there is a claim against the government for equipment destroyed but not replaced and most companies have claims for structures destroyed by fire or extraordinary losses, which the government has to pay because it carried its own insurance. There are also claims on behalf of most roads for losses in connection with additions and betterments made for war purposes, such as tracks to cantonments, or facilities for joint use as a part of the unification program which the individual roads now say they have no use for. Approximately 9,000 of such claims have already been filed. Where the government finds that it is clearly liable the tracks are promptly torn up and the materials sold for salvage, frequently to the company that made the claim, for its use elsewhere.

The largest items in the claims of the railroads are for undermaintenance of way and structures and equipment and for materials and supplies, and there are counter-claims by the government on the same accounts.

About 30 roads have now filed claims for undermaintenance. A few have stated that they have no claims of this character and in some instances companies have admitted they owe the government comparatively small sums on this account.

One of the interesting claims is that of the Western Pacific for $361,755 damage done by creeping rails caused by using its track between Wells, Nev., and Winnemucca in one direction only, the Southern Pacific's line having been used for traffic in the other direction.

Probably the source of the greatest contention between the roads and the government is found in the question of upkeep. In general the railroads have based their contention, in preliminary discussion with the Railroad Administration officials, on the so-called engineering method of calculating the degree of maintenance during federal control as compared with the test period. This depends on the number, quantity and quality of physical units of materials used, as distinguished from the so-called accounting method, relied on by the Railroad Administration, which is based on the money expended and the man-hours of labor employed in maintenance, equated for differences in prices and wages between the test period and the period of federal control. The standard contracts between the companies and the government provided that the property should be returned in substantially as good condition as when taken over with a proviso that the expenditure of the same amount of money as in the test period, after making proper allowance for differences in prices, wages, volume of traffic, etc., should be taken as a compliance with that covenant.

While the government is basing its position as to maintenance on the amount of money expended, and certain equation formulas it has worked out, the railroads contend that this method contains no provision for the inefficiency of labor as a result of which the expenditure of given sums produced less physical results. The Railroad Administration frankly admits that this is so, but takes the position that the contracts do not assume to protect the companies against the inefficiency of labor and that morally the government should not be expected to do so in view of the fact that it represents a world-wide condition resulting from the war. The government officers say they will not recede from this position unless and until they are forced to do so by a Supreme Court decision. As it is extremely difficult to prove the condition of a railroad as of either date, December 26, 1917, or February 29, 1920, it would seem that the government has an advantage in the method which it is depending upon, and the lesser railroads are said to be coming more and more to concede the correctness of the accounting method. Some of the larger systems, however, are compiling elaborate records to show a deficiency in physical units of maintenance.

The government is also depending largely on the amounts expended for maintenance of equipment to offset some undermaintenance of way and structures. On this account it has large sums to its credit for expenditures to comply with the requirements of the safety appliance laws. It also made large expenditures for electric locomotive headlights, although these represent additions and betterments rather than maintenance.

The adjustment of materials and supplies is a complicated process, requiring an inventory and a check of thousands of items on each road so that the adjustment may be made on the basis of the prices as of February 29. In some cases a road had more materials and supplies on hand when returned than when taken over, or than it desires to carry, although in general the government will have to pay large sums when it has to pay for the replacement of materials used up because of their greater value at the present time.

The claims when received by the Railroad Administration are separated and the various parts assigned to the appropriate department or division of the Railroad Administration where they are checked up before conferences with the representatives of the roads are undertaken. As the settlements are so complicated and involve so many disputed items which would require a vast amount of labor to investigate scientifically the director general is favoring the plan of lump sum settlements on a compromise basis. This was the method followed in the Spokane, Portland & Seattle case, in which the road received $1,600,000, after only three days had been spent in negotiation after the claims of the two sides had been set up. While it was at first reported that this settlement included an item for undermaintenance, it is now stated that there were claims on both sides of the maintenance account, the differences between which were largely extinguished in the lump sum settlement, and the Railroad Administration considers it is at least as much en-

titled to say that it collected a sum for overmaintenance as the road is to say it collected for undermaintenance.

It is believed that the compromise basis will be adopted in a large number if not a majority of cases in the interest of expedition, because there is a shortage of competent accountants and many companies will doubtless prefer to make a settlement that will bring prompt returns to protracting the negotiations. The Railroad Administration has not itself filed many claims against the companies, although its organization has done a great deal of preparatory work in that direction, but has rather concentrated on its counter-claims against the companies that have filed their statements, using its own as offsets against those filed by the companies.

The Pullman Company's claim is for $24,422,264, of which about half represents compensation for the use of its car line property during federal control and the balance represents depreciation of equipment, materials and supplies, and cash taken over.

Securing Uncontaminated Water in Coal Territory

By R. Reimann

Assistant Engineer, Baltimore & Ohio, Baltimore, Md.

With the increasing development of coal mines, it has become a difficult problem for the railroads traversing coal fields, to secure uncontaminated water. The problem is not only to obtain a water supply that is satisfactory today, but to secure immunity from future contamination by mine drainage.

The Baltimore & Ohio traverses many coal fields and consequently has its full share of this difficult problem. On the Cleveland, Lorain and Wheeling branch, where it traverses the Pittsburgh coal field in an east-west direction, just west of the Ohio river, from a point opposite Wheeling, W. Va., the contamination from mine drainage had become a source of much concern in 1904. The water was taken from Wheeling creek (in Ohio), and had become much polluted, particularly from mines located on Crabapple creek, a tributary to Wheeling creek. A test well was driven to ascertain if water might be had from deep wells, but the result proved to be disappointing. It was therefore decided to locate a dam and reservoir on Wheeling creek above the mouth of Crabapple creek, which at that time was the principal carrier of contamination. It was only a few years before mines were opened above the dam, and trouble developed again, and gradually became worse, as more mines were opened.

New investigations and surveys of the watersheds of several of the tributaries to Wheeling creek were then made. Reports were made by various experts, but were invariably inconclusive; it can be said literally that there was much groping in the dark, evidently because of lack of a comprehensive knowledge of the extent of the coal veins, particularly of course, where they had not yet been developed.

It was then, that the idea of preparing a map of the entire region, showing by contour lines the elevations of the principal coal seam, the Pittsburgh vein, and the line of outcrop was conceived by the writer. There is nothing new about this method of mapping; it has been used for several years by the United States Geologic Survey in making its geologic folios, but the practical application to the question of an uncontaminated water supply is new, as far as the writer is aware.

The topographical sheets (to a scale of 1 in. to 1 mile), published by the United States Geological Survey, form the basis of the map. On these are put, after they have been reduced to the sea level datum as many elevations of the coal as can be obtained from the several coal mining companies. As the contours on top of the coal seam are very much more regular and uniform than the surface contours, relatively few elevations are necessary to determine the contours such as appear necessary and are not obtainable from the coal companies, are obtained along the outcrop by wye-level and hand-level. While the elevations might be obtained by aneroid, if done with great care, this method is not recommended, as such errors as are likely to occur with an aneroid will cause serious misrepresentations. As a rule, the coal beds are so nearly horizontal that errors of 5 or 10 feet in elevation will be quite troublesome. Based on these elevations, the contours are then sketched on the map, and the line of outcrop readily obtained by means of the coal contours and the surface contours. By means of such a map, the liability of pollution for any stream can be determined readily, and the elevation of the coal in relation to the surface obtained.

Unless there should happen to be some watershed entirely outside of the coal field, and consequently immune from contamination, the question will be to select the watershed which appears the most favorable because the coal is relatively the deepest below the surface. The investigation should not stop here; a detail survey of the site should establish beyond a question the entire practicability of the project, including its possible adverse effect upon present and contemplated mine operations, before the decision should be considered final. If such is not the case, it would be advisable to make a detail survey of the watershed that, on the map, appears to be the second choice, and so on.

While the method outlined above will entail considerable expense, it is believed to be indispensible where a water supply has to be obtained in a coal territory. Superficially considered, it might appear that a mere direct investigation in the field would be all that is required, but experience shows that such is not the case. As above stated, the reservoir built in 1905 soon became contaminated. Since that time numerous investigations have been made; if any of the recommendations made had been followed, it would only have been a question of time when the trouble from contamination would have recurred. By preparing such a map as above described, no possible source of future contamination from coal mines can be overlooked.

Reports of Accident Investigations

The Interstate Commerce Commission has issued its "Summary of Accident Reports, No. 2." It is for the months of October, November and December, 1919. This report, like the earlier one, noted in the *Railway Age* of June 18, page 1926, contains only the reports made by the Bureau of Safety, on collisions and derailments which have been investigated. The statistical reports of railroad accidents, compiled by another bureau, appear in another form.

The present bulletin contains reports on seventeen cases, including two on electric roads. The names of the roads, the location, and the dates are as follows:

Northern Pacific, Helena, Mont.	October	1
Buffalo & Lake Erie Traction Co., Dunkirk, N. Y.	October	4
Erie Railroad, Belmont, N. Y.	October	10
Louisville & Nashville, Okema, Ky.	October	22
Louisville & Nashville, East Louisville, Ky.	October	28
Southern Pacific, Vincent, Calif.	October	29
Tennessee Central, Ober City, Tenn.	October	30
Delaware & Hudson Co., Scholarie Junction, N. Y.	November	15
Chicago Great Western, Harlan, Iowa	November	16
Pennsylvania Railroad, Lancaster, Pa.	November	17
Chicago & Erie, Newton, Ind.	December	9
Norfolk & Western, Walton, Va.	December	18
Canadian Pacific, Onawa, Me.	December	20
Chicago, Rock Island & Pacific, Elmont, Kans.	December	20
Detroit United Lines, Frisco, Mich.	December	21
Wabash Railroad, Huntsville, Mo.	December	22
New York Central, Cleveland, Ohio	December	24

The bulletin contains a six-page table showing condensed statements of the causes of all collisions and derailments investigated by the Commission in the year 1919.

The Work of the Russian Railway Service Corps

Two Hundred American Railway Men Render Invaluable Service on Trans-Siberian Lines

By Paul Wright

IN THOSE MONTHS when the entire world's attention was concentrated upon the momentous events that marked the crisis and culmination of the war against Germany a little group of American railway men was conducting a work of historic value in northern Asia. It is not generally known here that for a considerable time the American Railway engineers, technically the Russian Railway Service corps, were in command over more than 5,000 miles of the Trans-Siberian system. The bigness of this task is difficult to grasp. The roads at one time under American supervision stretched from Vladivostok on the Pacific, across the



American Railway Officers at Chang-Chun, Manchuria

plains and mountains of Manchuria and Siberia, past the one-time capital of Omsk, over the Ural mountains that divide Asia from Europe, and down into old Russia as far as the outpost cities of Ufa and Perm.

Furthermore, in the 28 or 29 months of their sojourn in this far distant land these Americans came into close touch with the Russians; and upon the railway men rather than upon the American soldiers or the American Red Cross workers will depend the opinion and estimate of the United States that countless Russians will retain for many a decade in the future. This personal contact of Russians and Americans is of importance. The officers of the corps were stationed along the line in Siberia and Manchuria—the territory of the Chinese Eastern in Manchuria is practically Russian—just as operating officers in the states are located.

There were 151 engineers of the Russian Railway Service corps scattered along the Trans-Siberian, not only in the particular danger zone from which Col. Morrow's troops evacuated, but in other danger zones as well, inland as far as 2,700 miles from Vladivostok. As late as March 22 of this year some of them were still there.

In the middle of last January the engineers received orders to move out the Czecho-Slovak army, and they were assured that when this was accomplished they were to be returned to America. At that moment the 151 engineers were positioned along the interminable Czecho-Slovak column of some 200 trains, between Vladivostok and Krasnoyarsk. Seven of these Americans were so far back in the line that the Bolsheviki cut them off and took them prisoner. The conditions under which that winter's work was performed were beyond description. The cold was intense, between 30 and 60 deg. F. below zero. Engines were dilapidated, the coal supply most precarious, workmen were panicky and actually starving and the currency was valueless.



The Harbin Group of American Engineers Outside Their Mess Hall

Then there was the large Kolchak army in rout. Bolshevik raids that burned bridges and stations, typhus fever and unspeakable misery in every village and town along the railway. The strain that the Americans endured was excessive. Their trainmasters, despatchers, road foremen, superintendents were called upon to perform every conceivable operation in connection with train movement, from coal mine operation to the calking of flues. Despite these adversities they maintained an average movement of two Czech trains eastward daily plus fuel, hospital trains for the Kolchak army and military trains to protect the lines. All the beginning of February it looked as if the railway would absolutely cease functioning, but it did not.

The Americans were making substantial progress despite the extreme disorder when the Kolchak government went to pieces. They were functioning in Siberia before any other ally was active there except the Czechs, whom they found there. The Americans helped in the early movements of the Czechs and helped to get them out. Of the 216 original members of the corps all but 42 had gone back home at various times and it was replacement that kept their strength up to the 151 officers on the rolls at my last de-

tailed information from Siberia, in March, when they were all preparing to leave.

The despatching of the Russian Railway Service corps from America to Siberia followed the report of the Stevens commission. It was sent there primarily as a part of the war against Germany, in order to re-organize the great Trans-Siberian railway to the end that arms and ammunition could be transported through Siberia into Russia. That was the idea of the Stevens commission report of September, 1917, more than a year before the end of the war. Later it became plain that the engineers were to serve the cause specially by assisting the Czech-Slovak army, which was fighting its way eastward from central Russia toward the Pacific.

The Chronology of the Expedition

The Russian Railway service corps numbered 216 men when it reached Asia in December, 1917. Its rolls bore the names of men capable of doing anything that needs to be done in railroading, from firing an engine or putting a tire on a driving wheel to train despatching and managing a great road. The men were organized like part of the army, they had commissions from the United States government with the rank and pay that go with these commissions. Col. George H. Emerson, of the Great Northern, was in supreme command. Most of the engineers were from Minnesota, Wyoming, Montana and adjacent territory, where the climate was reasonably similar to that of Siberia, which fact would render them capable of dealing with the problems that should confront them in the terrible winters to be encountered.

The engineers reached Vladivostok, the metropolis of Siberia and the terminus of the Trans-Siberian, on December 14, 1917. The Bolsheviks held Vladivostok then and refused to let the Americans land. Their United States transport lingered in Vladivostok harbor for three days and risked being frozen in by so doing. On December 17 the transport turned about and carried the corps back to Nagasaki, Japan. Here the Americans lived for months, learning something of Japan and studying the Russian language. In March, 1918, one half of the party under Col. Emerson came to Harbin, the great railway center of Manchuria, at the strategic point on the Chinese Eastern, which is a component part of the Trans-Siberian system. These men immediately began to do whatever work was possible on the railway, from Manchuria station on the northwest at the border between Manchuria and Siberia, down to Chang-Chun, where the Chinese Eastern touches the Japanese system, the South Manchurian, and likewise down the Chinese Eastern on the main line to Pogranitznaya, where Manchuria and Siberia meet again. They rode trains, traveled in locomotives, superintended repairs in roundhouses and shops and generally made themselves useful.

It was not until August 10, 1918, that the remaining half of the corps left Japan and came to Vladivostok. The political complexion of Siberia and changed since the preceding winter and the Bolsheviki were no longer in control, having been defeated by the Czechs as a result of Gen. Gaida's notable campaign across the country. Thus the entire corps was put in a way to co-operate with the Omsk government, which was believed to be bringing order to the country. The Vladivostok group engaged itself along the Ussuri branch of the Trans-Siberian as far north as Khabarovsk, 500 miles from Vladivostok, where the Amur and Ussuri rivers join. Circumstances, however, did not allow them to participate so actively in the railway management in Siberia as the other group was doing in Manchuria. The Vladivostok group was under Col. F. H. Lantry, of the Great Northern. Its work was largely advisory in the early months after their arrival, with no official authority.

These were days of waiting for the engineers and they were difficult to endure. The corps had come to Siberia in order to participate in the big war, and they felt that now they were doing nothing. They were not fighting and they were not even rendering to the unfortunate Russians the assistance that they were so well fitted to give. Whatever it was that restrained the engineers was obscure and occult. It had its abiding place in international politics and international jealousies. Certain nations were afraid that the United States would get too firm a grip on the affections of Russia, and very likely some sinister influences hated to see any real succor given to that nation, preferring that Russia be left prostrate.

However, this period of waiting ended at last. Late in January, 1919, the allies got together in some sort of agreement and arranged that the re-organization should be initiated according to the plans of the Stevens commission. In the middle of March the news was spread among the Americans everywhere in Siberia that they were to take hold. Presently the apportioning of the thousands of miles of lines was begun. The men were stationed where they could do the most good, according to their individual capacities. Long sections were given to the military forces of various nations to protect. There were Czech railway guards, Polish, Japanese, Chinese, Canadian, Russian, American and others. The A. E. F. in Siberia were allotted, first, a stretch of a few score miles north of Vladivostock and, second, a longer bit in the vicinity of Verkhne Udinsk, in central Siberia, east of Lake Baikal.

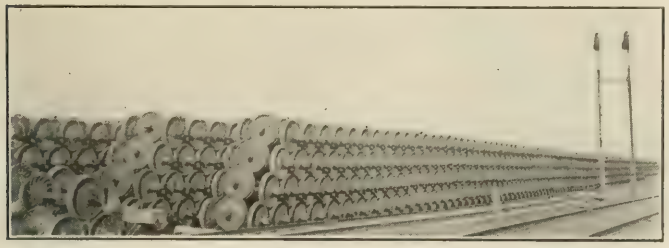
Railway experts of other nationality than American were given a share in the railway work, but by far the greater portion of it was done by our own men. And all, whether British, Canadian or Japanese, reported to the high American officers. John F. Stevens maintained his headquarters in Harbin. Col. George H. Emerson, in immediate command of the enterprise, was also there much of the time. Col. F. H. Lantry was then at Irkutsk and Col. B. O. Johnson (of the Northern Pacific) at Omsk was in charge of all the far western work, including such of the lines as extended over the Urals into European Russia. When Col. Emerson returned to the states Col. Johnson was made the high commanding officer.

These re-organizers co-operated with the white government at Omsk. They went at their duties seriously and impartially, as many an American discovered to his grief, when he was compelled to give up his private car in order that it might be devoted to the good of the country. All hands set themselves to the task of taking account of the rolling stock, estimating the extent of the sickness of the "sick" engines, introducing efficiency methods into the general operation, and the like.

New engines were set up and fresh wheels put under old cars until the Trans-Siberian system looked more American than ever. As a matter of fact a large proportion of the locomotives in use in Siberia were built in the United States and a great part of the freight transported is carried in steel gondolas made in America. The tiny Russian freight cars are infantile in comparison. Out of Vladivostok no less than 54,000 car wheels were stacked up awaiting the time when they should be used in rehabilitating the lines. These wheels had been made in America. Not far away were enough American steel rails to lay down 350 miles of track. A good deal of this material has doubtless been used by this time.

This good work would have brought relief to the Russians if it could have gone on but it was not to be. Events entirely outside the control of the American engineers spoiled the plans. The Bolsheviki, who apparently had been near defeat at Easter, 1919, received fresh energy from somewhere. Bad conditions appeared in Kolchak's armies and the Reds came driving eastward from Russia till they overran Siberia. The Omsk forces were disheartened. When

the tide of battle approached Omsk the Kolchak government had to flee and all the Americans in that part of the world left hurriedly. This meant, among other things, the removal of the vast Red Cross stores at Omsk and the transfer of hundreds of refugee children from western Siberia to Vladivostok. This was the beginning of the end. The Omsk government, for reasons which need not be discussed here, was not equal to the pressure from within and without and

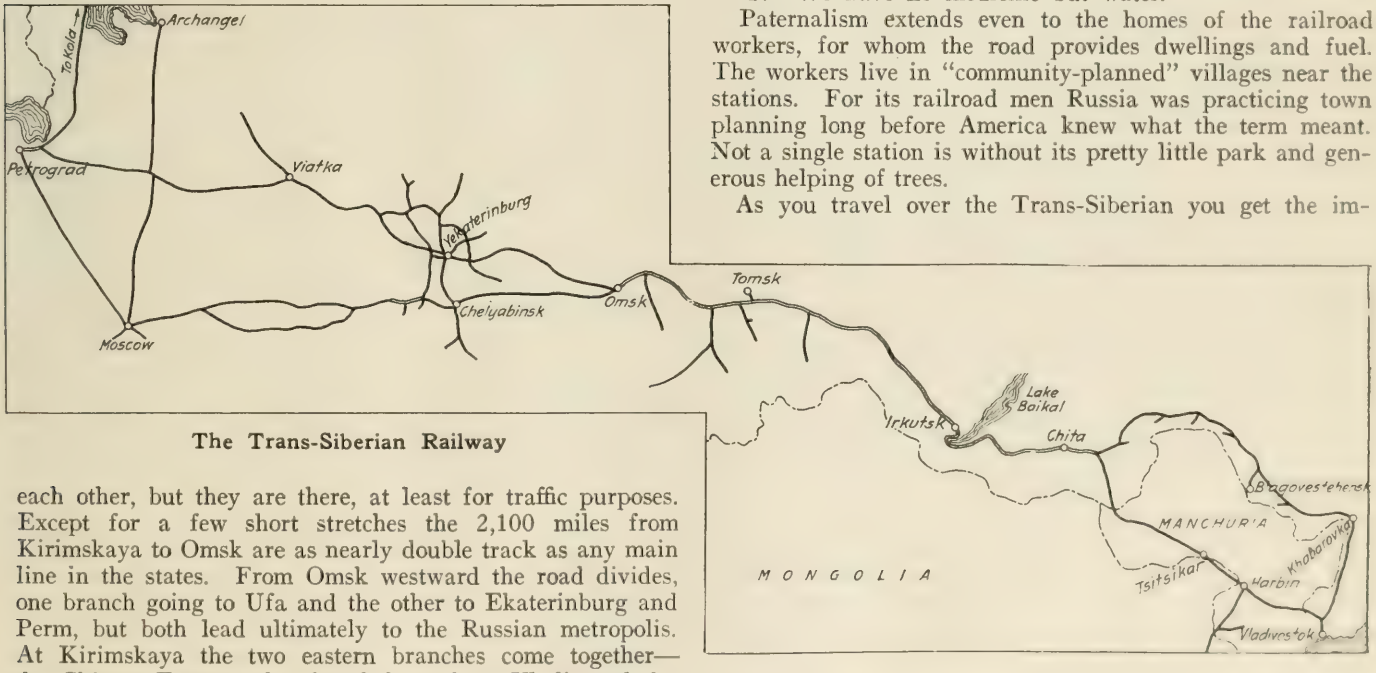


Some of the 54,000 American Car Wheels Stored at Ugolnoya, near Vladivostok

it went to pieces. The task of reorganizing the Trans-Siberian lines therewith became automatically impossible.

Siberian Railway Methods

The Trans-Siberian needs to be seen to be appreciated. It stretches over the most tremendous country in the world and is constructed in fitting style. From Vladivostok to Petrograd is 5,466 miles. Nearly all of this is double track in effect. The parallel lines are not always close to



The Trans-Siberian Railway

each other, but they are there, at least for traffic purposes. Except for a few short stretches the 2,100 miles from Kirimskaya to Omsk are as nearly double track as any main line in the states. From Omsk westward the road divides, one branch going to Ufa and the other to Ekaterinburg and Perm, but both lead ultimately to the Russian metropolis. At Kirimskaya the two eastern branches come together—the Chinese Eastern, that has led up from Vladivostok by way of Manchuria, and the Amur branch that has been following that river from Khabarovsk, where it joined the Ussuri, to Vladivostok.

All the way along are evidences that the Trans-Siberian is admirably done. The station buildings are a most obvious evidence of thoroughness. Even in the midst of the forest or snow-covered plains these are no rude and temporary shelters, dropped down miscellaneously beside the track. We saw hundreds of station houses in Siberia and not one of them but pleased the eye with its symmetry, convenience and cheerful color. Even the water tanks are far from being ugly in outline. Generally they possess beauty and dignity, as well as strength and endurance. When the Bolsheviki were engaged in crippling the road they did no more to the water towers than to puncture the tanks on top. The stately towers buildings remained intact, as the Bolsheviki lacked the explosives to destroy them.

Similarly the damage done by the civil war to the steel bridges was in most cases only temporary. It takes a good deal of dynamite to bring down a steel bridge of solid Russian construction, and a pretty thorough knowledge of engineering and explosives as well. When Col. Emerson saw some of the dynamited structures in the summer of 1918 he remarked that nothing appeared to hold them up but the formulas but within a few weeks trains were running over most of them, although many a steel span was replaced by timber.

At most of the lesser stations the buildings are of logs, but even these are designed with artistic skill. There is nothing slipshod or careless anywhere. In the larger towns the stations are of brick or stone. Each of them has a first class dining room that is well lighted by great lamps and windows and made attractive by the monstrous potted plants that the Russians love and understand. Tea and coffee and cakes can be had at all hours for moderate prices and when the trains pull in the passengers can buy appetizing and generous meals at comparatively little cost.

At all of the terminals and at many of the intermediate points hospitals are established for the railway employees, this in addition to the dispensaries. Our train found these hospitals and dispensaries almost destitute of surgical instruments and sometives entirely destitute of medicines—no iodine, no ether, no chloroform, no gauze, no bandage. The woman surgeon at the head of one railway hospital—Hilok—said: "We have no medicine but water."

Paternalism extends even to the homes of the railroad workers, for whom the road provides dwellings and fuel. The workers live in "community-planned" villages near the stations. For its railroad men Russia was practicing town planning long before America knew what the term meant. Not a single station is without its pretty little park and generous helping of trees.

As you travel over the Trans-Siberian you get the impression of a gigantic human-power momentum. There is a vast army of trainmen, track men, repair workers and others. In the early winter months of 1919 we saw the tracks kept clear of snow by hordes of patient shovelers, men, women and children. Indeed, a good deal of the crossing guarding and even heavy shoveling in Russia is done by the women. They are sturdy enough to do anything.

The running schedules in this part of the world are slow. For instance, the regular mail train across Manchuria made 33 miles an hour as its best speed. The average speed for the fast trains was also 33 miles an hour. Between Vladivostok and the western extremity of Manchuria, a distance of 1,065 miles, the running time is 40 hours for the best

train. The train stands still 10 hrs. and 30 min. in addition. The Trans-Siberian express, the train de luxe and the glory of the line, also had astonishing long stands.

The long waits at the stations, however, give the travelers a chance to get out and walk, to purchase food, to fill their tea kettles with hot water, and generally to break the monotony of the long journeys. The delays also give the hot boxes a chance to cool. Since the revolution much of the passenger traffic is carried in box cars.

The track is good. The rails weight 72 lb. to the yard. The gage is broad—5 ft. ½ in. The locomotives pull about 60 per cent of their capacity. The engineer starts and stops his train gently. The practice of pulling out couplings is frowned upon. The idea in Russia is to keep the locomotives and cars in good condition.

Overcrowding was always the rule on passenger trains except on the express. Switch engines are limited to three versts an hour in the yards. They merely creep along, and have no bells, because they do not need any. As the switchmen signal by horns and the engineers reply by using the locomotive whistle, a Russian railway yard is a poor place to sleep in.

In November, 1918, there were 150,000 refugees living in box cars in Russia and Siberia and this number must have been increased immensely as the months went by. The Czecho-Slovak army lived in cars, and it was one of the grievances of the Russians that the Czechs were holding so large a share of the rolling stock.

Russia has no train despatching system and this accounts for much of the slowness. The local station master along the line is in absolute control. If there is a train at his station he will not let it advance until he has been told over the wire that the track is clear. Russian trains are run on the staff system as in Germany. The steel staff, maybe two feet long, is the engineer's authority to proceed, and it is released in each station through an electrical device by the station master at the stop ahead. The American engineers were engaged in teaching the Russians the rudiments of American train despatching when the situation became too difficult. The Americans say that the rank and file of the Russian engineers, shopmen and station forces are of high standard and that all they needed was proper instruction in modern methods.

There has been a vast amount of graft in Russian railroading, especially of late. If a merchant wanted a car it facilitated matters to give a thousand rubles to the proper person. The native officers, or at least a large part of them, were not unnaturally opposed to American methods. It meant that very many of them would lose their jobs and would also lose their graft.

With the great mass of the Russian people, with the rank and file of the workers, the Russian Railway Service corps got along very well. Most of our railroad officers are men who have worked up from humble beginnings, and even the technically trained men among the Americans were able to get out and tackle any kind of job with their bare hands. Not so the Russian superintendents, the "nachalniks." The nachalnik is a technically trained man, and between him and the mere workers there is a great gulf fixed that the worker can never hope to pass. The Russian worker under this system can never hope to become a boss. He is out of sympathy with the entire white collar company, and they with him. Time after time our American engineers astonished the men in the workshops by showing them how a job should be done by doing it themselves. Thereby the Americans lost face with the Russian nachalniks, and doubtless made the nachalnik's position more difficult. This part of the caste system and the inability of the worker to rise to better positions accounts for much of the sabotage over there and for the spread of bolshevism.

Commission on Car Service Activities

Washington, D. C.

While the organizations built up by the railroads for the handling of transportation problems which require co-operative action have no direct means of enforcing the control which has been delegated to them, a means for bringing about compliance with the orders of the Commission on Car Service is indicated in a circular which it issued to the railroads on July 19. While no penalty is attached to its orders for the relocation of cars, the circular calls attention to the fact that they are mandatory and suggests that they may be made just as enforceable as the orders issued by the Interstate Commerce Commission, which have legal effect and carry a penalty for violations, by the simple expedient of asking the Interstate Commerce Commission to issue its own service orders against any individual road or roads that fail to carry out the orders of their own organization.

After its organization on March 1 the Commission on Car Service began issuing relocation orders, for the purpose of restoring something like a normal percentage of home cars on home roads. In many cases according to general gossip, the degree of compliance with the orders depended to a considerable extent on whether it was or was not convenient for some roads to carry them out. After the Interstate Commerce Commission had been requested by a number of railroad executives to exercise its emergency powers and had issued its Service Orders Nos. 2 and 3, transferring empty box cars from eastern to western roads and coal cars from western to eastern lines, Commissioner Aitchison found it necessary to telegraph Daniel Willard, as chairman of the executives' Special Committee on Car Service Matters, that in many instances the deliveries ordered had not been made. Mr. Willard at once took the matter up with the executives of the various roads and assured the commission of the full support of the committee in an effort to see that further action on the part of the commission would not be necessary.

The commission, of course, had a method of its own of enforcing its orders if it should deem it necessary, but since the expiration of its first relocation orders they have been renewed with some modifications by the Commission on Car Service, and the railroads, in organizing the Advisory Committee of which Mr. Willard is chairman, have undertaken to create an organization which will make it unnecessary for the Interstate Commerce Commission to issue formal orders where the railroads can handle the situation by themselves. Circular C. C. S.-59 issued by the Commission on Car Service, which indicates the location of the teeth not found in its own orders, is as follows:

"The orders of the Commission on Car Service for the relocation of cars are mandatory and must be complied with, regardless of the effect upon distribution of empty cars for loading on the railroad with which the order is placed. In the event that compliance with any order so placed involves operating difficulty or undue hardship, the facts should be immediately presented to the Commission on Car Service for consideration. Discussion of the merits of an order must not interfere with performance in the meantime.

"The Interstate Commerce Commission, which receives reports daily of the performance of each railroad on the orders of this commission, has ruled that:

1. The rate of delivery required by such orders should be maintained within weekly periods so that at the end of each seven days the full delivery required for that period shall have been made.
2. In the event of failure to maintain current deliveries through unavoidable operating difficulties, the accumulated deficiency must be made up at the rate of not less than 25 per cent of such deficiency each week until the order is up to date.

"The Interstate Commerce Commission requires from us a precise explanation in all cases where deliveries are not made in accordance with the schedule provided in the orders, and has informed us that in all instances where the order is not being given proper consideration by the individual railroad, it will be necessary to issue service orders against the delinquent road."

As the Interstate Commerce Commission's orders are made public this plan will also serve to give publicity to the railroads which are failing to co-operate with other roads and will avoid the danger of creating a public impression that the roads generally are doing so, which is likely to be the case when statements are made that "some roads" are failing to obey orders, or that "in many cases" orders have not been complied with.

More Box Cars Ordered West

The movement of 25,500 additional serviceable empty box cars from eastern and southeastern roads to western lines to assist in handling the new grain crops has been ordered by the Commission on Car Service for the 30-day period beginning July 25. The orders, with some modifications, represent practically a renewal of the orders in effect for the 30-day period ending July 24, which in turn represented a renewal of the directions contained in Service Order No. 3, issued by the Interstate Commerce Commission. The Interstate Commerce Commission's order directed the movement of 19,800 box cars of the western road ownership from eastern lines in specific daily instalments from May 25 to June 24. When it expired the Commission on Car Service issued similar orders for the next 30-day period covering a total movement of 27,900 cars. The new order will move a large number of cars from southeastern to southwestern lines, and also some of the cars from eastern and New England territory will find their way into the Southwest. These orders for the interterritorial movement of box cars are in addition to numerous relocation orders for the movement of cars from one road to another in the same territory to meet important requirements.

Preference for Fertilizer

The Commission on Car Service has issued a circular directing all roads until further notice to furnish preferential orders for the loading of fertilizers to the extent of a minimum of 75 per cent of the actual daily requirements. The circular says this movement is a seasonal one and the movement has already begun, the season having been advanced at its solicitation through the National Fertilizer Association, with a view to helping out on the car supply.

Summary of Car Situation

The Commission on Car Service has issued the following summary of general conditions as of July 15:

Box Cars—There is an especially heavy demand for box cars. Complaint from shippers indicates the shortage is widespread. The distribution of box cars to equalize the shortage is being given close attention. There is a heavy movement of box cars to western roads in preparation for the heavy grain movement now commencing. This will involve further curtailment of box car loading in the East to meet the present emergency. The demands for ventilated box in the southeastern section is especially heavy and the situation justifies constant attention. Outstanding instructions, calling for empty movement of ventilated box cars to vegetable-loading territory, must be rigidly enforced.

Automobile Cars—Prompt movement should be given automobile cars to auto-loading territory. Ownership must be respected in loading such cars, except that cars may be moved loaded or empty to Lower Michigan or Upper Indiana or, Ohio, auto-loading points for loading with autos or trucks in accordance with the Car Service Rules.

Stock Cars—Shortage of stock cars continues in stock-loading territory. The demand for stock cars in the South and Southwest for watermelon and other perishable loading is also extremely heavy, making it imperative that these cars be not delayed. Stock cars should be handled with despatch and in accordance with existing instructions.

Refrigerator Cars—Good movement of empty refrigerators to California continues, which is giving shippers a good supply of cars. Loading continues heavy and necessitates concentration on westbound movement of empty cars. Requirements elsewhere, including cars for packing house and dairy products, continue active and loading is being reasonably well taken care of.

Flat Cars—An extreme shortage of flat cars for loading logs and piling still exists in the southern territory. In the central territory the demand for flat cars for agricultural implement loading continues to exceed the supply.

Open Top Cars—There was a substantial increase in placements for coal loading during the first half of July, attributable to Monday, July 5, being generally observed as a holiday, and the effects of Service Order No. 7. There continues an acute shortage of mill gondolas in the mill districts, and storage space is rapidly becoming exhausted. Efforts should be concentrated on moving this type of car promptly to the owners. Service Order No. 9, issued by the Interstate Commerce Commission on July 13, defines coal cars as any having sides 36 in. or greater in height. This order should further improve the supply of coal cars for coal loading, and relieves the existing shortage at many of the public utilities plants.

Cars Not Equipped with Safety Appliances

In a supplement to Circular CCS-34 the Commission on Car Service says there have been questions raised as to the propriety of ordering cars not equipped with safety appliances moved, loaded or empty to the owner, in order that they may be equipped in full compliance with the law not later than November 1 next.

"The Commission on Car Service does not attempt to assume any special prerogative in this respect. The information given in Circular CCS-34 that extension of time will probably be denied and that penalties accruing because of such movements at the present time may be postponed until November 1, 1920, is entirely correct. The actual necessity exists for getting these cars equipped not later than November 1 or penalties will undoubtedly be applied at that time and will probably be retroactive to March 1, 1920. It is, therefore, of the utmost importance that all possible protection be thrown around these cars that they may be equipped according to the law. It would seem that the quickest and most effective way is to catch the cars where they are and have them equipped without attempting to return them to the home road for this purpose. If, however, it is found essential or desirable for any special reason the movement may be made in accordance with Circular CCS-34 without suffering the penalty until November 1, 1920.

"Lists of cars reported not equipped and not on home roads will be issued shortly, following which it is urged that inasmuch as owners' records with respect to these cars are probably not accurate in some instances that an inventory be made of every car reported on respective railroads to make sure that it is or is not equipped and then report to the owner and to this commission or take such action as is necessary to comply with the law accordingly."

Freight Cars Accumulate

The total accumulations of freight cars, which had been reduced to 105,000 but had increased to 121,000 by June 25 as a result of the recurrence of the switchmen's strike in

several eastern cities, showed another increase in the report for the week ending July 2, to 129,278.

The deferred car requisitions for the week ending July 1, also showed an increase, averaging 130,670 for the United States and Canada, and 123,035 for the United States alone. Of the total 38,095 were coal cars.

The revenue car loading for the week ending July 10 showed a falling off, amounting to 757,666 cars as compared with 809,845 for the corresponding week of 1919, and 975,621 for 1918. Freight received from connections amounted to 615,068, as compared with 554,129 and 698,765.

The movement of the new grain crop in western states is now beginning and the granger roads are working to capacity to keep down accumulations. With an active export demand it is expected that there will be a heavy movement of grain to the Gulf ports. Lumber, general merchandise and building materials are moving in considerable volume.

New Priority Order Issued for Lake Coal

New England Objects to Export of Coal—Chicago After Abuse of Reconsignment Privileges

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION, Division 5, on July 20 issued an additional order giving priority to coal transshipment across the lakes to the Northwest and Canada in accordance with a plan agreed upon at the meetings held in New York last week between the committee of coal operators appointed by the National Coal Association and committees of railroad officers. Representatives of the railroads and of the coal operators, accompanied by the fuel administrator of Minnesota, submitted the plan to Commissioners Clark, Aitchison and Potter of the Interstate Commerce Commission at a conference on Monday, together with a draft of a proposed order, which, with some modifications, was issued by the commission on the following day.

The commission had previously issued a priority order for lake coal but experience has indicated that it has not entirely served the purpose because the necessary amount of coal was not being billed to the lakes. Service Order No. 10 names the specific coal carrying railroads serving the mining districts which have contracts for lake coal and directs preference and priority both in the supply of cars and in the transportation of coal consigned to the lake pool and also authorizes the placing of embargoes on the supply of cars for or the movement of coal to other destinations. H. M. Griggs, the manager of the lake pool, is authorized to establish percentages of the total number of cars to which the shippers are entitled, which it is understood will represent the proportion in which the various mines hold contracts for lake coal, and after shipments to the extent of these percentages have been made any other available cars may be shipped in other directions. It has been estimated that to supply the needs of the Northwest will require a daily loading of 4,000 cars.

The order contains the usual paragraph reciting that an emergency exists because of a shortage of equipment and congestion of traffic aggravated by unfavorable labor conditions, and the inability of the roads east of the Mississippi river properly and completely to serve the public in the transportation of coal; that the people in Michigan, upper peninsula, Wisconsin, Minnesota, North Dakota and South Dakota, Montana and Canada are in a large measure dependent upon bituminous coal which must be transported from mines in Pennsylvania, Ohio, West Virginia and Kentucky by rail and lake during the season of lake navigation ending about November 1 each year and that the rate at which coal has been and is now being transported to that territory by rail and lake is not sufficient to meet its requirements or to assure the peace, health and welfare of the people. The order then continues:

"*It is ordered,* That until the further order of this commission, the Baltimore & Ohio Railroad Company from coal mines west of Grafton, W. Va., and Meyersdale, Pa.; the Pennsylvania Railroad Company and the Pennsylvania Railroad Company—Western Lines from coal mines on main and branch lines west of Latrobe, Pa.; the New York Central Railroad Company from coal mines in the state of Ohio; Louisville & Nashville Railroad Company from coal mines on and east of the lines from Cincinnati, Ohio, to Jellico, Tenn.; the Wheeling & Lake Erie Railway Company; the Hocking Valley Railway Company; the Toledo & Ohio Central Railway Company; the Pittsburgh & West Virginia Railway Company; West Side Belt Railroad Company; Bessemer & Lake Erie Railroad Company; the Pittsburgh & Lake Erie Railroad Company; Pittsburgh, Chartiers & Youghiogheny Railway Company; Montour Railroad Company; the Monongahela Railway Company; the Kanawha & Michigan Railway Company; the Chesapeake & Ohio Railway Company; Norfolk & Western Railway Company; Coal & Coke Railway Company; Union Railroad Company (Pennsylvania); the Sandy Valley & Elkhorn Railway Company; Pittsburgh, McKeesport & Youghiogheny Railway Company; Kanawha & West Virginia Railroad Company, and Long Fork Railway, each of which is a common carrier by railroad subject to the Interstate Commerce Act be, and they are hereby, authorized and directed to give preference and priority in the supply of cars for and in the transportation of bituminous coal consigned to the Ore & Coal Exchange (the address of which is Perry Payne building, Cleveland, Ohio), at any Lake Erie port for transshipment by water as a part of a pool or pools of lake cargo or bunkerage coal at any such port; and to place an embargo on the supply of cars for or the movement of all other bituminous coal in carloads to any other consignee or destination; *provided,* that this order shall not apply to coal loaded in cars furnished, placed or assigned under any order or direction hereinbefore or hereafter entered by the commission; *and provided further,* that after a producer and shipper of bituminous coal, served by any of said common carriers in the said territories, has on any day shipped to the said Ore & Coal Exchange at any of the said ports a percentage (to be determined and announced for each coal producing district by H. M. Griggs, manager of said Ore & Coal Exchange, who is hereby designated as an agent of the commission therefor) of the total number of cars to which the shipper is entitled on the said day, then this embargo shall not apply to the said shipper for the remainder of the said day to ship the remainder of the cars to which he is entitled to any consignees and destinations he may desire, including the said Ore & Coal Exchange, and the said Lake ports.

"*It is further ordered,* That bituminous coal in carloads consigned to the said Ore & Coal Exchange up to the percentages hereinbefore referred to shall not be subject to re-

consignment except upon a permit and direction therefor issued by the said H. M. Griggs, who is hereby designated as an agent of the commission therefor, which permit and direction shall be issued by him only upon a showing that the coal so to be reconsigned will go to a Lake pool or pools:

"*It is further ordered,* That the percentages hereinbefore referred to shall be subject to change from time to time by the said H. M. Griggs upon one day's notice to the carrier or carriers concerned.

"*It is further ordered,* That this order shall be effective on and after July 26, 1920, until the further order of the commission."

Members of the Canadian Railway Commission held a conference with members of the Interstate Commerce Commission on July 17 to discuss the need of coal from the United States in Canada.

The Interstate Commerce Commission on July 15 issued a notice to the railroads, saying the commission's attention has been called to the fact that railroads frequently confiscate coal consigned to government departments. It is obvious, the notice says, that railroads should refrain from confiscating coal consigned to the War Department or other government departments. The commission had previously issued a warning against confiscation of coal consigned to public utilities.

New England's Complaint

The report of an investigation made in behalf of the six governors of the six New England States says that those states need 25,000,000 tons of bituminous coal yearly and that at the present rate of movement there will be a shortage this year of 6,400,000 tons; and New England factories will be forced next winter to run on half time. The Interstate Commerce Commission's order purported to help New England in (1) the supply of cars, (2) priority in car movement and (3) in dumping at the piers; but according to the governors' report the expected advantage has not been realized. Foreign vessels still monopolize an unreasonable share of the dumping facilities at Hampton Roads. James J. Storrow, fuel administrator of Massachusetts, testifying before the Senate Committee in New York City this week, said that in the interest of New England there ought to be a rigid embargo on the export of coal. The English government has restricted coal exports one-third, this being necessary to protect British industry. Mr. Storrow said that American coal is being advertised for immediate delivery in Italy, and that the railroads of Egypt, on which traffic had had to be curtailed for lack of fuel, are being run on American coal.

In Washington, critics of New England interests say that the vessel room which has been assigned to New England since the Interstate Commerce Commission's order has not been utilized and that the real difficulty is the refusal of New England buyers to pay the high prices now asked. The governors' report, on the contrary says that $22 a ton is being paid at Boston for large lots. Many New England consumers who have fully covered their year's requirements at normal prices, say $4 or $4.50, are now unable to get coal shipped on their contracts, but they are able to get plenty of coal by paying $11 or $12 at the mines. This means, says Mr. Storrow, that thousands of cars of coal are being held in terminals and on the sidings for reconsignment by speculators; in fact, this condition is so serious, he says, that a prominent railroad officer recently brought it to the attention of the Interstate Commerce Commission.

Reconsignment Privileges Abused

The transportation situation in the Middle West has been featured by the inquiry into coal traffic conducted by the Illinois Public Utilities Commission. Alarmist reports regarding the scantiness of next winter's coal supply in Chicago, in circulation for some time, eventually culminated in the institution of an investigation by the state commission.

At the outset the fact was developed that coal has been coming into Chicago in large quantities for some time, but because of the abuse of reconsignment privileges, this coal has either been held for better prices or shipped to other points where it could be sold at larger profit.

As the investigation progressed it was found that Chicago's threatened fuel famine next winter is the result of widespread speculation on the part of wholesale coal dealers. The result was that the commission appealed to the Interstate Commerce Commission for an embargo on reconsigning and "blind" billing of coal cars. This appeal the Interstate Commerce Commission refused on the grounds that such action, taken universally, is unnecessary and would cause much needless harm. The appeal, however, did have the one result of focusing attention on practices which are in vogue in the coal industry generally. This fact, coupled with the orders which have been issued by the Interstate Commerce Commission and the Commission on Car Service, has produced a more normal handling of the coal supply in the Central West and the Northwest and both shippers and railroad men are of the opinion that a crisis has been averted. In particular, since the hearings began there has been a noticeable improvement in Chicago's coal supply.

J. F. Porterfield, general superintendent of the Illinois Central, was instrumental in pointing out the abuse of the reconsignment privilege to the state commission and prevailing on that body to appeal to the Interstate Commerce for relief. The Illinois Central figures, he showed, proved that 91,530 loaded coal cars came into the yards between July 1 and July 12—106 per cent more than came during the same period in 1919, and 7 per cent more than in the same period of 1918.

Mr. Porterfield could not give figures on how much of the coal had been reconsigned, but cited as an example that 1,227 cars, marked for reconsignment have been received in the yards since July 1. Of these 551 have been reconsigned. The others are still in the yards, presumably waiting to be sold at a price which will make it worth while to take them further than the Chicago market.

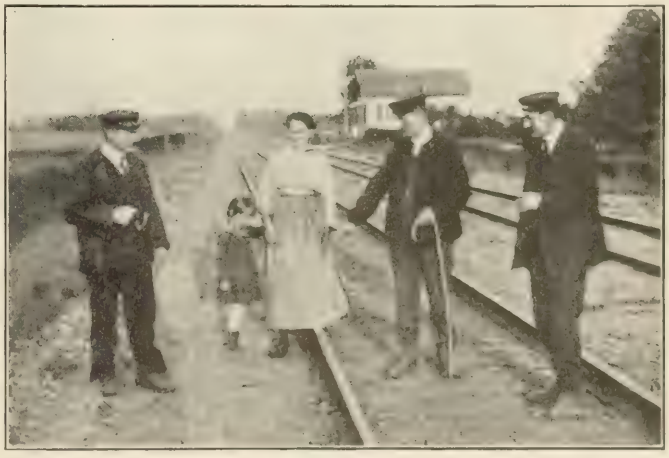


Photo from International Film Service

Radeau, the Railroad Worker Who Found President Deschanel of France, After the Latter's Fall from His Private Car Is Pointing to the Place Where the President Fell from the Train.

General News Department

The Michigan Central, the New York Central and the Wabash, will begin track elevation at Livernois avenue, Dix avenue and Waterman avenue, in Detroit, Mich., this summer. In conjunction with the work the city is to extend Military avenue across the right of way of these railways and will construct a subway at its own expense.

The United States Circuit Court of Appeals at Asheville, N. C., on July 19, suspended the injunction recently granted by the Federal District Court in West Virginia restraining the Baltimore and Ohio from according preferential treatment to certain coal mines. The court discussed the motion for two days and appears to have ordered the suspension pending further consideration of the matter.

Five thousand to six thousand dollars is the salary named in the latest announcement of the United States Civil Service Commission, which is of an examination, up to August 31, for assistant director of statistics for the Interstate Commerce Commission. Applicants must be from twenty-five to fifty years old and must have had at least three years' responsible experience. Experience in directing the work of a considerable force of clerks, during this period, will be essential; mere routine statistical work will not be acceptable. There will be no minimum requirements as to education, but persons having the equivalent of a four years' high-school course (14 college entrance units) will receive a rating of 70 per cent on education. Persons whose education has been along the lines of economics or engineering may offer such special training in lieu of not to exceed two years of railroad experience required. Such persons, however, must have specialized in some phase of economics or engineering which would fit them especially to interpret railroad statistics, and must offer at least thirty semester hours of graduate work for each year claimed in lieu of railroad experience.

Examination for Car Inspector

The United States Civil Service Commission announces an open competitive examination for senior inspector of car equipment. The Interstate Commerce Commission wants men in valuation work at entrance salaries from $2,100 to $3,600 a year. Applicants should have had five years' practical experience in car construction or in repair shops, and also some in cost estimating of car construction and repairs, and must have been in active service within two years next preceding the date of their application. They must be 25 and not over 60 years of age. Persons wishing to take this examination should apply, by or before August 24, for form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C., or to a secretary of the United States Civil Service Board, one of whom can be found in each of the principal cities.

Another Deficit in May

A partial summary of railway returns for May and for five months of this year, issued by the Interstate Commerce Commission, indicates that roads operating 196,000 miles have earned practically no net operating income this year, except the $50,000,000 of back mail pay taken into the accounts in January. The summary does not include reports of 37 roads, among which are such large systems as the Pennsylvania, the Illinois Central and the Chicago, Burlington & Quincy; but it shows for the five months a net operating income of only $47,923,347, as compared with $82,947,746, in the corresponding months of 1919, and practically all of this must be the back mail pay. For May, the roads included in the summary show an increase of $36,000,000 in revenues, but an increase of $66,000,000 in expenses, and a deficit of $7,266,964 as compared with a net operating income of $31,730,918 in May, 1919. The eastern roads for May show a deficit of $9,830,489, the Southern roads a net operating income of $3,309,204 and the Western roads a deficit of $745,679.

Civil Engineers' Convention

Herbert S. Crocker, acting secretary, New York City, announces the fiftieth annual convention of the American Society of Civil Engineers, which is to be held at Portland, Oregon, on Tuesday, Wednesday and Thursday, August 10, 11 and 12. The chairman of the local committee is George C. Mason, Gasco Building, Portland. The meetings are to be held at the Multnomah Hotel. The annual address of President Arthur P. Davis will be delivered on Tuesday morning.

C. P. R. War Veterans

The Canadian Pacific has in its service a total of 18,330 returned soldiers. When any employee sailed for voluntary service overseas, he carried with him credit for six months' pay and the promise of a position awaiting his return. That promise was more than kept, for the scale of pay was raised during the war to correspond with the increased cost of living. Moreover, for all new openings preference has been given to returned men in general. The actual figures up to June 30, 1920, are as follows: Total reported as joining the army, 11,062; dead, 1,100; wounded, 2,088; re-employed in the service, 7,008; other soldiers given employment, 11,322; and total soldiers given employment, 18,330. Of the Canadian Pacific men who have been re-employed 370 won special distinction, and two of them, John P. Robinson and R. N. Stuart, received the Victoria Cross.—*Montreal Herald.*

Retrenchment on the Pennsylvania

The Pennsylvania Railroad Company announced on Monday last that "in order to bring about efficiency in the operating forces and to curtail expenses as far as practicable it has been found necessary to effect a reduction of approximately 10 per cent" in the number of employees in the Eastern region (lines east of Altoona). The statement issued said that "care would be exercised in making the contemplated changes so as not to interfere in any way with the ability to handle traffic or to make prompt repairs to cars and locomotives." It was said that the majority of the changes would be among men in repair shops, car cleaners and clerks in the shops and general offices. Ten per cent would mean between 11,000 and 12,000 employees in the Eastern region.

A statement was issued at Philadelphia to the effect that many of the men dismissed would be needed at other points in the system, particularly in the central region, in and about Pittsburgh, and that every endeavor would be made to find places for as many as possible.

Questions by reporters brought out a few additional details. An officer is quoted as saying: "We're going right on running the railroad. But we are not going to carry a lot of deadwood on the payrolls. We are going to operate efficiently and get rid of the surplus accumulated through a variety of causes." Another said that women would suffer more than men. Office heads, without intending to detract from the qualities of women workers as a whole, say that a good many who came in during the war were better salary drawers than workers. They complain of "girls who paraded through the Broad Street Station with their arms about each other when they should have been at their desks." Reference was made also to well known former utterances concerning inefficiency in shops, due to the abolition of piecework rates and to losses due to the adoption of the eight-hour-day.

"It is unfortunate," said one officer, "that the order should

come at the time when there is talk of a strike, but decision to take this step was made some time ago and is in no way connected with the matters under arbitration."

Which Should Have Right of Way?

The Southern Pacific Lines in Texas, in a placard suitably illustrated, and posted in its stations and other places, calls on automobile drivers to consider, as between themselves and the locomotive runner, which of the two has the advantage, in case of a mishap, or miscalculation at a crossing. Under the heading "Stop a Minute," the placard says:

In the years 1917 and 1918 there were 4,325 collisions between trains and automobiles on highway grade crossings in the United States. Practically all could have been avoided. In these accidents 2,214 persons were killed and 6,109 were injured. A total of 8,323 persons.

An automobile traveling 30 miles an hour can stop within 50 feet and start again in 15 seconds. A train traveling 45 miles an hour will run a tenth of a mile in 8 seconds. The driver who figures on *making the crossing first* should consider this fact. How could the engineer anticipate or guard against collision under such conditions?

If the drivers of the automobiles in the 4,325 collisions had each expended a minute's time in stopping to be sure the crossing was safe, 2,214 persons would probably have been saved from death, and over 6,000 men, women and children saved from injury, mental and physical suffering, and expense.

Where is the line of least resistance? *Will you stop a minute?*

Will you help us all by playing safe?

Express Consolidation

At the resumption of the hearing on the application of the American Railway Express Company to continue its existence after September 1, before Examiner Butler of the Interstate Commerce Commission on July 19, Alfred P. Thom, Jr., on behalf of the Association of Railway Executives, announced that at the recent meeting of the member lines of that Association, in New York, 97 roads had voted in favor of making contracts with the American Railway Express Company; 14 had voted against, while six had reserved the right to vote later. Therefore, he said, the association entered no objection to the proposal to continue the consolidation. It takes the position, he said, that the public has a just right to expect that there will be, on September 1, an organized means of doing the express business of the country and that the organization of the American Railway Express Company, an existing and going concern, is the only one available.

H. G. Herbel, who at the previous hearing had indicated some doubt as to whether the Southwestern lines would oppose the consolidation, was not present when the hearing was resumed.

J. H. Beek, executive secretary of the National Industrial Traffic League, said that the league's committee had voted not to oppose the continuance of the consolidation and that position, he said, was endorsed at the recent meeting of the League at Philadelphia. The witness said that the position of the League is that an efficient express organization is demanded by commerce and while the service is very unsatisfactory at the present time, the League is not disposed to criticise it in view of all the conditions. The League does not favor a monopoly of the express business; but a condition, not a theory, confronts the country, he said. There is nothing to prevent any other organization engaging in the express business, Mr. Beek said, if it chooses to do so and can make contracts with the railroads. "We favor what seems to us the most probable means of speedy restoration of express service, and if after a reasonable opportunity has been afforded the express company to make the necessary additions to its facilities and improvements to its service the company shall fail to do so, at that time we shall reserve the right to be complainants."

Mr. Beek also presented a statement on behalf of the Boston Chamber of Commerce, made by the transportation committee and approved by the Board of Directors, that the consolidation is necessary to assure adequate express service. The Adams Company, the statement said, is not in position to resume business. Wells, Fargo & Company have stated that they would not resume business separately. The United States company went out of business prior to the consolidation and the Southern is in no better condition than the Adams. The statement expressed a hope that the service will be improved as soon as shippers can refrain from using the express company's facilities for freight shipments.

Mr. Beek also said that he was authorized to say that the New England Traffic League takes the same position as the Boston Chamber of Commerce. Some members of the League, however, do not agree with the position taken by the organization and no attempt is being made to bind them to its position. The Philadelphia Chamber of Commerce had adopted a resolution opposing a continuance of the consolidation. Mr. Beek severely criticised the claim policy of the Adams and the Southern companies. In reply to a question by John E. Benton, representing state commissions, he said the League would be very glad to have the Interstate Commerce Commission take any action within its power to protect claimants, but when Mr. Benton suggested that Mr. Beek was not willing to go so far as to oppose the consolidation until the claim question could be straightened out, Mr. Beek said: "We don't think the consolidation ought to be embarrassed by the conduct of one of the constituent companies over which the American Railway Express Company itself has no control." He added that the question was not one merely of loss and damage claims but involved money actually paid by shippers on C.O.D. shipments.

Mason Manghum, counsel for the Virginia Corporation Commission, put on as a witness for his side of the controversy B. F. Goodman, of the Richmond Chamber of Commerce, to explain the treatment of Virginia shippers who had claims against the old companies. By turning their property and their personnel over to the consolidated company, the witness said, the old express companies have made it impossible to bring suit against them in Virginia or to find property on which to levy. Claimants, he said, have been obliged to deal with the New York office; and the claims remain unsettled, after two years.

The Detroit-Windsor Bridge

The proposed bridge over the Detroit river at Detroit, Mich., was discussed by the backers of that project in that city on July 15, at which time the details of the proposed structure and tentative plans for financing were made public. The plans contemplate a suspension bridge of 1,770 ft. clear span, carrying two 28-ft. roadways, two 7-ft. sidewalks, two street car tracks and four railway tracks. The main span will be 100 to 110 ft. clear of the water. Railroad approaches, on 1½ per cent grades will be about a mile long. The estimated cost of the bridge is $28,000,000. The cost of a highway bridge at the same location would be about $11,500,000, making the cost to add the four railway tracks about $16,500,000. The projectors have assurances that $10,000,000 can be provided locally and negotiations are under way for raising the remainder.

It is proposed to invite all the railroads to join the project on an equal basis, on the basis of calculations showing the cost per car to be not above the present cost of ferrying, and it is promised that in the near future it can be made much less. The number of railroad cars now crossing the river is estimated at 1,700,000 annually, and the projectors of the bridge calculate that "the railways available" could safely guarantee the bridge 1,000,000 cars a year by 1925. The cost of tunnels with capacity equal to that of the contemplated bridge is estimated at upwards of $60,000,000.

The engineers have decided in favor of the suspension bridge design on the basis of economy, safety of erection, aesthetics and the time in which the structure can be completed. The engineering investigation has been conducted by Charles Evan Fowler, consulting engineer, New York City, while Gustav Lindenthal, New York City, has been retained as consulting engineer.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY, 1920

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Galveston Wharf	13	.....	.....	$118,177	$29,593	$3,355	$386	$31,711	$2,380	$83,605	70.74	$34,573	$15,800	$18,773	$38,810
St. Louis, Brownsville & Mexico	548	$511,329	$170,026	720,354	116,080	93,867	12,518	287,651	24,435	534,221	74.16	186,133	12,300	173,231	36,985
St. Louis-San Francisco	4,757	4,572,769	1,952,120	6,945,327	1,035,130	1,638,944	59,060	2,868,679	195,937	5,791,530	83.38	1,153,797	227,985	925,524	—122,224
St. Louis-San Francisco & Texas	134	113,115	16,594	139,445	32,972	29,292	1,568	81,102	6,513	151,448	108.61	—12,003	1,880	—13,890	7,903
St. Louis Southwestern	968	1,367,011	180,378	1,687,384	242,233	282,437	47,617	447,361	53,303	1,078,355	63.90	609,029	54,694	554,311	250,982
St. Louis S. W. of Texas	807	481,379	118,875	683,731	220,589	251,283	18,589	381,695	36,114	908,705	132.90	—224,974	23,000	—247,976	—153,888
San Antonio & Aransas Pass	736	212,660	95,131	338,470	83,525	80,237	6,521	242,399	18,070	430,142	127.08	—91,672	15,000	—106,672	16,318
San Antonio, Uvalde & Gulf	317	117,494	30,560	155,479	1,248	22,353	2,034	68,937	7,677	102,248	65.76	53,231	2,200	51,023	32,631
Seaboard Air Line	3,563	2,760,694	785,067	3,903,664	856,311	1,082,200	86,344	2,035,867	144,673	4,237,549	108.55	—333,885	150,000	—485,387	—407,368
South Buffalo	11	54,823	.....	123,194	8,301	11,463	440	75,140	1,500	96,844	78.61	26,350	3,580	22,770	32,276
South Buffalo	11	65,001	.....	124,487	7,772	16,616	1,053	87,379	2,031	114,851	92.25	9,636	3,580	6,056	19,127
Southern Ry. Co.	6,971	8,050,023	2,915,914	12,050,629	1,439,385	2,132,258	150,639	4,909,872	301,745	9,066,407	75.23	2,984,222	412,524	2,569,104	1,932,672
Alabama Great Southern	313	581,883	197,107	844,677	75,109	167,464	16,942	316,374	19,219	602,517	71.33	242,160	34,414	207,747	75,756
Cinc., New Orleans & Texas Pacific	338	1,072,221	310,563	1,487,728	150,136	332,593	22,477	513,835	29,704	1,057,539	71.08	430,189	60,490	369,698	282,931
Ga. Southern & Fla.	402	244,585	103,115	378,187	53,348	68,134	6,285	197,696	11,987	337,940	89.35	40,247	19,250	20,997	56,272
New Orleans & Northeastern	207	391,621	108,354	566,476	67,417	92,897	9,577	218,447	14,125	407,326	71.90	159,150	51,119	108,037	82,389
Northern Alabama	110	163,385	14,427	120,399	3,803	8,684	1,426	55,963	4,028	107,905	89.62	12,494	4,580	7,914	6,552
Southern Ry. in Miss.	278	70,929	45,151	128,225	50,224	24,743	2,902	84,346	4,546	166,761	130.05	—38,535	9,800	—48,335	—59,153
Southern Pacific	7,105	10,042,202	4,267,874	15,784,822	2,304,307	3,089,971	176,685	5,997,711	379,834	12,305,210	77.95	3,475,612	828,073	2,650,228	824,517
Southern Pacific S. S. Lines	...	220,738	16,061	249,697	21,850	228,633	8,443	277,387	26,966	563,279	225.59	—313,582	9,997	—323,580	—282,035
Spokane International	160	92,260	17,132	112,726	21,449	12,311	2,723	41,831	4,900	83,114	73.73	29,612	5,170	24,168	—1,690
Spokane, Portland & Seattle	538	535,507	149,576	724,520	327,848	86,653	7,337	217,346	23,247	671,615	92.69	52,904	90,600	—37,696	—99,764
Staten Island Rapid Transit	23	82,760	105,020	209,248	29,818	32,494	1,146	112,183	9,235	184,877	88.35	24,372	15,000	9,201	—4,771
Tennessee Central	292	175,738	52,206	241,954	42,114	45,498	4,454	107,736	11,232	211,026	87.21	30,928	5,687	24,615	65,044
Texarkana & Ft. Smith	93	134,266	21,942	165,837	19,235	10,645	1,928	58,362	6,380	96,505	58.19	69,332	8,269	61,063	48,578
Texas & New Orleans	469	501,569	164,892	735,933	222,005	226,667	8,267	226,748	20,530	736,370	100.06	—437	23,535	—24,904	—56,146
Texas & Pacific	1,946	1,946,886	924,906	3,106,195	618,504	642,026	42,528	1,359,741	103,304	2,808,239	90.41	297,956	120,800	175,473	—505,809
Toledo, St. Louis & Western	454	877,832	30,780	944,546	208,399	167,923	9,971	302,937	21,669	710,584	75.23	233,962	31,000	202,962	—153,887
Toledo & Ohio Central	503	742,691	64,382	854,062	193,558	292,210	6,768	441,083	24,602	961,393	112.56	—107,330	37,568	—144,898	—190,670
Trinity & Brazos Valley	368	108,342	20,709	136,300	48,502	44,717	3,919	64,034	7,071	168,244	123.44	—31,994	7,209	—39,167	14,431
Ulster & Delaware	128	70,534	18,275	115,290	16,526	21,174	2,685	71,689	6,848	119,528	103.67	—4,237	5,000	—9,237	7,518
Union Pacific	3,614	6,801,079	1,732,442	9,480,312	2,060,521	1,603,867	81,705	2,618,789	284,676	6,892,198	72.70	2,588,115	509,264	2,078,841	—364,531
Union R.R. (of Pennsylvania)	40	.....	.....	748,201	83,579	186,939	302	445,208	7,638	723,665	96.72	24,537	7,728	16,808	—79,010
Utah	98	109,632	1,232	111,207	18,841	29,641	156	23,814	2,847	75,299	67.71	35,907	4,066	31,841	5,426
Vicksburg, Shreveport & Pacific	171	211,009	91,886	329,890	50,625	54,565	6,048	119,330	11,058	245,848	74.52	84,042	13,717	70,279	66,541
Virginian	523	837,317	72,054	1,004,700	169,502	206,358	8,806	411,641	31,173	826,464	82.26	178,236	63,782	114,454	—221,154
Wabash	2,472	2,672,614	861,370	3,861,755	807,807	1,209,003	94,303	2,138,662	142,821	4,424,432	114.57	—562,677	130,738	—693,582	—1,204,740
Western Maryland	797	1,262,848	95,493	1,450,168	272,756	428,220	24,530	565,276	50,119	1,354,926	93.43	95,242	50,000	45,242	—23,267
Western Pacific	1,011	883,260	208,701	1,149,530	177,364	161,194	26,936	402,544	48,530	840,910	73.15	308,621	59,864	248,753	74,653
Western Ry. of Ala.	133	118,155	85,350	222,424	28,796	48,926	4,686	74,881	9,239	170,621	76.70	51,803	7,175	44,628	—24,194
Wheeling & Lake Erie	511	1,108,508	67,292	1,302,742	237,675	281,834	10,261	546,189	30,686	1,110,415	85.23	192,327	64,100	126,930	—143,045
Wichita Falls & Northwestern	328	162,642	46,098	221,059	58,319	50,049	1,822	110,831	7,665	228,686	103.45	—7,627	10,598	—18,225	—24,496
Yazoo & Mississippi Valley	1,381	1,798,142	468,937	2,388,805	558,876	579,723	24,508	942,215	55,594	2,166,486	90.69	222,320	81,417	140,836	—346,648
FOR FIVE MONTHS OF CALENDAR YEAR, 1920															
Alabama & Vicks	141	851,845	330,120	1,314,963	197,445	246,711	25,753	479,535	49,232	1,013,890	77.10	301,073	67,449	233,545	200,337
Ann Arbor	301	1,467,718	250,895	1,871,640	254,413	419,830	28,260	973,899	59,560	1,736,090	92.76	135,550	85,900	49,620	—30,899
Arizona Eastern	377	1,240,987	267,274	1,645,051	327,731	246,932	17,599	553,931	85,490	1,243,386	75.58	401,666	114,776	286,720	55,744
Atchison, Topeka & Santa Fe	8,723	53,783,607	20,056,651	83,170,104	11,816,332	19,295,842	864,422	28,308,103	1,434,583	61,685,717	74.17	21,484,387	4,117,277	17,362,275	6,926,330
Atlanta & West Point	93	643,248	423,113	1,241,847	152,429	207,283	27,942	458,644	42,265	907,890	73.11	333,957	41,683	292,274	12,341
Atlanta, Birmingham & Atlantic	639	1,714,063	355,708	2,317,617	504,999	661,291	87,595	1,192,411	87,045	2,533,670	109.32	—216,052	81,039	—297,975	369,725
Atlantic City R. R.	177	573,415	776,439	1,439,709	242,634	203,404	6,803	878,789	5,831	1,337,915	92.92	101,794	69,663	32,113	—176,670
Atlantic Coast Line	4,891	20,159,240	8,187,740	31,417,030	4,035,060	5,990,402	348,098	13,681,036	628,965	24,916,840	79.30	6,500,190	1,370,000	5,122,807	1,030,654
Atlantic & St. Lawrence	166	923,124	153,595	1,248,153	320,770	286,939	13,470	764,436	61,829	1,548,759	124.08	—306,606	61,503	—362,164	137,731
Baltimore & Ohio	5,153	63,877,057	10,799,016	82,201,816	11,455,141	24,949,859	971,067	38,663,888	2,192,164	78,799,950	95.86	3,401,865	2,246,812	1,141,079	6,399,424
Baltimore, Chesapeake & Atlantic	87	339,430	120,922	504,897	43,426	263,015	5,094	337,080	18,334	666,949	132.09	—162,051	18,500	—180,551	154,055
Bangor & Aroostook	658	2,111,497	404,096	2,715,241	580,469	574,940	18,420	1,045,366	80,245	2,335,052	85.99	380,190	130,187	250,002	120,182
Beaumont, Sour Lake & Western	118	646,240	149,120	835,909	167,689	117,115	11,780	300,747	25,916	623,022	74.53	212,887	13,187	199,620	181,792
Belt Ry. of Chicago	31	.....	.....	1,539,270	177,306	328,338	2,784	980,269	37,348	1,526,045	99.14	13,226	107,006	—93,780	17,219
Bessemer & Lake Erie	225	3,206,502	179,937	3,543,222	488,523	1,559,711	65,739	1,448,821	141,102	3,735,305	105.42	—192,083	75,200	—267,308	—823,224
Birmingham Southern	31	167,296	.....	236,174	22,388	35,680	4,834	147,285	16,944	227,130	96.17	9,044	8,771	255	—62,801
Bingham & Garfield	36	731,665	8,345	751,570	155,672	185,585	8,046	173,205	18,289	547,407	72.84	204,163	37,125	167,031	246,112
Boston & Maine	2,285	18,646,674	8,465,192	30,801,768	4,941,891	7,341,517	208,799	18,643,295	1,033,953	32,308,194	104.89	—1,506,425	1,164,638	—2,709,285	—2,122,948
Brooklyn Eastern District Terminal	9	328,942	.....	367,492	103,118	183,734	543	277,668	20,693	585,757	159.39	—218,265	51,240	—249,505	—36,906
Buffalo & Susquehanna	296	1,071,743	34,857	1,131,736	218,612	488,538	11,376	431,642	46,550	1,196,718	105.74	—64,982	16,300	—81,282	62,388
Buffalo, Rochester & Pittsburgh	589	6,146,137	669,059	7,100,912	1,053,930	2,650,142	71,930	3,365,532	180,572	7,333,991	103.28	—233,079	155,000	—388,731	236,867
Canadian Pacific Ry. (lines in Maine)	233	1,008,318	302,406	1,374,040	238,917	345,769	14,775	932,455	18,073	1,549,988	112.81	—175,948	61,000	—226,948	—92,214
Central New England	301	1,943,665	116,739	2,201,717	750,828	681,682	14,182	1,492,364	79,567	3,024,196	137.35	—822,480	91,163	—913,701	—896,626
Central R. R. of New Jersey	686	11,937,943	3,171,003	16,604,563	2,123,640	5,450,763	124,476	9,411,902	455,281	17,671,006	106.42	—1,066,443	1,239,660	—2,306,234	—2,521,486
Central Vermont	413	1,834,424	426,372	2,566,716	387,793	738,019	48,328	1,839,814	94,894	3,120,560	121.57	—553,844	87,000	—640,899	—183,682
Charleston & Western Carolina	342	1,102,027	254,919	1,438,452	285,116	315,216	22,592	749,508	18,470	1,390,903	96.69	47,550	58,125	—10,575	—158,494
Chesapeake & Ohio	2,518	25,208,191	3,966,761	31,796,587	4,236,721	8,277,906	236,385	12,858,801	660,660	26,415,196	83.07	5,381,390	1,069,050	4,311,221	—239,379

Traffic News

The Board of Railway Commissioners of Canada announces that the application of the railways for authority to make a general advance in freight rates will be heard in Ottawa on August 10.

The Isthmian Steamship lines are inaugurating a service between Atlantic and Pacific coast ports, loading and discharging at New York, San Francisco, Cal., Portland, Ore., Seattle, Wash., and Vancouver, B. C. Monthly sailings will be maintained for the remainder of this year and later there will be semi-monthly sailings.

The St. Louis gateway is now in good condition and freight from all points east through St. Louis to the southwestern territory is moving freely. This announcement is made by the St. Louis-East St. Louis Traffic Committee to clear up the misunderstanding of those who have circulated reports that there are serious delays at that point.

F. P de Hoyos, agent in New York City for the Mexican Government Railroad Administration, operating the National Railways of Mexico, announces that he is no longer the representative of the Mexican Railway Company, Ltd., which, on June 18, was returned to its owners. The Mexican Railway is represented in New York City by Carr Brothers, 65 Broadway.

Watch Your Competitor

"Aero Limited," an aerial passenger-carrying corporation, of which C. Nicholas Reinhardt, Waldorf-Astoria Hotel, New York, is the "general passenger agent," reports that in the month of June 407 passengers were carried, despite the fact that official statistics show there were sixteen days of rain. Each passenger was carried an average of 52 miles, a total mileage of 21,164, and without accident. The statement says that July's business promises to eclipse that of June.

Chemicals Used in Water Purification

In reply to a request of the Secretary of the Treasury for the issuance of a priority order to promote the shipment of numerous chemicals used in water purification, the director of the Bureau of Service of the Interstate Commerce Commission has written a letter stating that the commission deems it inadvisable to give general priority to these essentials in public health work; but is willing to act upon requests giving full particulars in cases of individual shipments and to use its best efforts to expedite the movement of such shipments. The letter says that innumerable demands have been made upon the commission, for priorities in the furnishing of cars for the transportation of commodities and if this request were granted it would necessitate similar action with respect to many others and the result would only be additional confusion.

Farmers Lose by Shortage of Freight Service

"The railroad tangle is costing the farmers of this country hundreds of thousands of dollars daily," says J. R. Howard, president of the American Farm Bureau Federation, in a statement issued at Washington.

"With 25 per cent of last year's crop still remaining in the local elevators in some sections, and a totally inadequate movement of the new crop, local buyers find it necessary to protect themselves by wider margins. Constantly facing losses through demurrage, breach of contract, excessive storage charges and high interest rates, the local buyer feels called upon to offer the wheat producer prices much lower than those quoted at the terminal markets. These increases in margins all along the line probably cost the farmer at the local elevator a total of 10 cents or more a bushel. Neither is there any benefit to the consumer through this loss sustained by the farmer. It is all pure loss—a sacrifice to inefficiency. The railroad laborer who has wilfully cut down his volume of work and repeatedly struck for increased wages may wake up to find that the increases he has caused in the costs of food, clothing and shelter more than offset the increases he has demanded in wages. There is no more damnable point at which labor can attack our economic structure, and, I might add, no surer way of cutting its own throat than by cutting down the efficiency and the carrying capacity of our arteries of transportation."

Canadian Railroads Ask Rate Increase

The Canadian Railway Association, representing all lines in the dominion, has applied to the Railway Commission for a 30 per cent increase in freight rates. The association announced that the application was based entirely on present costs of railway operation, including labor and materials. These increased costs, according to the application, exceed by enormous sums increased revenue obtained from the rate advance granted in August, 1918.

At that time wage increases were given employees based on increases in the United States under the so-called McAdoo award. Although these increases were accompanied by rate changes, the effect of the new rates was to add only $43,000,000 to the gross revenues of the railways, as against $80,000,000 additional wage costs, thus creating a discrepancy of $37,000,000 for the first year.

Coal Production

The production of soft coal during the week ending July 10 is estimated at 9,803,000 tons, according to the weekly bulletin of the Geological Survey. The decrease of 490,000 tons below the output of the preceding week, attributed to the Fourth of July holiday, was not as great as had been anticipated. The average rate of production on the five working days of the week was the greatest attained since the middle of January and on Sunday and the holiday the railroads were able in part to catch up in their work of placing cars. That production is on the increase is shown by preliminary reports on loadings on the first three days of the following week, July 12, 13 and 14, which have been at a rate of 5 or 6 per cent greater than that before the holiday. The total production for the calendar year to July 10 is estimated at 272,170,000 net tons, an average of 10,225,000 a week, and about 44,000,000 tons greater than for the corresponding period of 1919. For the week ended July 3 there was a reduction in the time reported lost on account of car shortage. The total transportation loss was 35.3 per cent of full time as compared with 37.9 per cent during the preceding week. Signs of a positive improvement in car supply were to be found in the reports for Central and Southern Illinois, Northern Ohio, Section B of Central Pennsylvania, the West Virginia Panhandle and the smokeless fields of Southern West Virginia, also in the Hazard and Northwest Kentucky districts, but transportation is said to be still the dominant factor limiting production.

Lake shipments for the season now stand at 4,684,000 tons as against 9,470,000 tons in 1918, and 10,930,000 in 1919. Incomplete returns on stocks of fuel held by the railroads indicate that on June 1 they were unusually low and that between February 29, the close of federal control, and June 1 there was a sharp decline in stocks. These statements are based on reports to the American Railroad Association made by 120 of the principal carriers. Stocks of bituminous coal held in cars by these roads declined 7 per cent from February 29 to June 1. Stocks in pools declined 34 per cent. For all stocks the percentage of decrease is given as 21.

About 47,756,000 bushels, or 5.1 per cent of last year's wheat crop, was still on the farms on July 1, according to a bulletin issued by the Bureau of Crop Estimates of the Department of Agriculture. This compares with 19,261,000 bushels on July 1, 1919, and 31,923,000, the average of stocks on July 1 for five years 1914-1918. The July forecast for the new wheat crop is 809,000,000 bushels, as compared with 941,000,000 for 1919.

Commission and Court News

Interstate Commerce Commission

The Commission has suspended from July 18 to November 15, the operation of an item in a Chicago, Peoria & St. Louis tariff, naming increased switching charges on soft coal, c.l., from Citizens Mines "A" and "B" at Springfield, Ill., to junctions with connecting lines at Springfield.

The Commission has further suspended from August 3 until September 2 the operation of proposed tariffs cancelling joint through rates on bituminous coal from points on the Sewell Valley in West Virginia to tidewater points and certain other destinations, the operation of which was suspended from April 3 to August 3, by an order previously entered.

The Commission has further suspended from August 4 until September 3 the operation of items in a Chesapeake & Ohio tariff cancelling a switching rate on coal, c.l., from the Federal Coal Company's tipple at Elkhorn City, Ky., to connection with the Carolina, Clinchfield & Ohio, destined to various southeastern points, the operation of which was suspended from April 6 to August 4, by an order previously entered.

The Commission has suspended from July 20 to November 17, the operation of Rule No. 23 of a tariff filed by F. W. Gomph, agent, which provides that freight charges on traffic from points in the United States to points in Canada must be paid in United States currency. The entire question of the payment of freight on shipments to and from Canada was the subject of a conference on July 19 between members of the Interstate Commerce Commission and of the Canadian Railway Commission.

Refrigerator Cars Two Cents a Mile

The Interstate Commerce Commission has approved the application of J. E. Fairbanks, agent, for permission to file tariffs increasing the mileage to be allowed by railroads to owners of privately owned refrigerator cars to two cents a mile, effective not earlier than August 31.

State Commissions

The Monroe & Texas was granted authority June 29 to abandon and remove that portion of its line south of Lenwil, La., by the Railroad Commission of the State of Louisiana.

The Corporation Commission of Virginia has decided that it has no authority to regulate the rates of the Pullman Company, a sleeping car company being not a common carrier, but a traveling hotel.

A safety conference was held recently at Madison, Wis., by representatives of steam and electric railroads operating in the state. The meeting was called by the railroad commission to promote the enforcement of safety measures at crossings of steam railroads by electric lines. Prior to the holding of a second conference, a survey of the conditions at the many crossings in the state will be made.

The New York State Public Service Commission, second district, has ordered the New York Central to move freight between the Erie Basin Barge Canal public terminal at Buffalo and industries adjacent to its tracks or at other points with which it can interchange traffic.

The order was issued in response to a complaint by the Superintendent of Public Works. It stipulates that the railroad shall provide engines and cars for all traffic in and out of the Barge Canal terminal, as well as spot, place and remove cars. The railroad is to file a tariff within thirty days covering charges for all service over its lines and connecting roads.

Physical connection of the railroad tracks and the State Barge Canal terminal has been provided by the State. The order holds that the connection is practicable, and has been made with due regard to safety, and that the amount of business is sufficient to justify the order.

Court News

A railroad employee, hired to guard property from theft, who was sent ahead of an interstate train to secrete himself and guard it, and who was shot by persons stealing coal from other cars standing in the yard, was not then engaged in interstate commerce within the act.—Chicago v. Alton v. Industrial Commission (Ill.) 125 N. E., 378.

The Iowa Supreme Court holds that a trackman, injured while unloading rails to be used in repairing a track used by a railroad company for the movement of interstate as well as intrastate trains, was employed in interstate commerce, whether the rails had come from another state or not.—Lammers v. C. G. W. (Iowa) 175 N. W. 311.

The North Carolina Supreme Court holds that a carpenter, killed while repairing a coal chute used for coaling intrastate and interstate trains, was not engaged in interstate commerce, so that action for his death might be maintained under the federal act; to bring an employee under the act, the service should be a part of interstate commerce or in aid of interstate transportation so as to be practically a part of it.—Capps v. A. C. L. (N. Car.) 101 S. E. 216.

The Illinois Supreme Court holds that proof that injury to a railroad yard watchman occurred at the place where he would be while performing his special duty to watch for thieves on an interstate train is not inconsistent with his then being in the performance of his general duties of watchman, bringing him within the Workman's Compensation Act, instead of the federal Employers' Liability Act. Where part of employee's duties are connected with interstate commerce, the employer, seeking to avoid liability under the Workmen's Compensation Act on the ground that liability, if any, is under the federal Employers' Liability Act, has the burden of showing that the employee was engaged in interstate commerce at the time of the injury.—Atchison, T. & S. F. v. Industrial Commission (Ill.) 125 N. E. 380.

Hours of Service Act—Day and Night Station

The federal district court for the Southern District of Texas holds that where a telegraphic train despatching service is maintained by a railroad company at a station continuously during the 24 hours, the fact that during the nighttime the messages are handled by operators of another company does not prevent the station from being one "continuously operated night and day;" and operators may not be on duty more than 9 hours in a 24-hour period.—United States v. Baker, 261 Fed., 703.

Inadequate Compensation for Use of Railroad Under Federal Control Act

The federal district court for the Northern District of Illinois holds that the amount of annual compensation offered by the Director General of Railroads for the use of the Chicago & Eastern Illinois, then in the hands of a receiver, while under federal control, namely, $3,280,000.88, was inadequate, and the receiver was instructed to decline the offer and to proceed under Federal Control Act § 3, to have the amount of just compensation determined.—Railway Steel Spring Co. v. C. & E. I., 261 Fed., 690.

Railroad Grant Lands Tendered for Lien Lands Must Be Not Less Than 40-Acre Tracts

A land grant to the Southern Pacific (14 Stat. 292) provides that where lands are lost to the company for any reasons therein specified, other lands may be selected in lieu thereof. The Court of Appeals of the District of Columbia holds that the grant is not violated by rulings of the Secretary of the Interior that the company must not tender fractions of 40-acre tracts, where it is not shown that the company will be prevented by such rulings from utilizing the base lands.—Southern Pacific v. Lane, 263 Fed. 637.

Foreign Railway News

New Railway Construction in China

LONDON.

The construction of a branch line of the Canton-Hankow railway, China, from Changsha to Changtek, a distance of over 100 miles, is now being undertaken.

Passenger Trains Between Italy and Germany to Resume Service

LONDON.

The Italian Ministry of Transport has been in negotiation with the German Railway Administration as to the resumption of passenger traffic between Germany and Italy, and it has been decided to run through trains again as soon as possible between the two countries. At first four trains will run, two between Holland and Rome and two between Berlin and Rome via Leipzig, Hof, Ratisbon, Brenner, Mona, Florence, Rome and on to Naples.

Rhodesian Railway Rates Increased

LONDON.

At the general meeting of the Rhodesia Railways, Rochfort Maguire, the president, said that the demands of the transport trade of Rhodesia, in spite of the temporary fall in tonnage during 1919, were increasing and no restriction of services towards meeting the rise in operating expenses was practicable. In the circumstances the obvious and only remedy was to increase rates. On April 1, last, an increase of 10 per cent was made in passenger fares and 25 per cent in freight rates. It is too early yet to ascertain the ultimate effect of these additional charges upon the company's revenue.

Disposal of the Swiss Government Loan

It is understood that the proceeds of the $25,000,000 Swiss government loan, announcement of which was made in the July 9 issue of the *Railway Age*, which will be spent in the United States, will be used for the purchase of such material as steel tubing, copper, insulators and possibly rails, rather than for completely finished machinery. It is not probable, however, that much of the total amount will be used for copper, as the Swiss government has been able, since the signing of the armistice, to purchase enough copper in Europe to supply their needs until 1922.

New Railway in Argentina

LONDON.

The Board of Trade Journal says that the government of the Province of Corrientes, Argentine Republic, has granted a concession to an American syndicate to construct a railway line in that province and to exploit it for 50 years, although the Government reserves the right of expropriating the permanent way, rolling stock and other assets of the concern at any time upon payment of the real value plus a premium of 20 per cent. It is stated that the stations will be located at places to be selected by the government of that province and that in order to prevent land speculation, the ground adjoining the stations will be subdivided and offered for sale at prices which will be decided upon beforehand. The title of the new concern is to be that of "Ferrocarril Colonista Corrientino."

Receipts and Expenditures on English Railways

LONDON.

The Ministry of Transport issued on July 3, a statement regarding the financial results of the working of the railways during the months of April and May. The total revenue earned for the month of April was £18,773,869, and for May £19,650,271. The total expenditure during April was £18,531,236, and May £19,014,340, giving a balance of revenue over expenditure for the month of April of £242,633 and May £635,931. The standard year proportion of net receipts under the given guarantee was for April £3,614,000, and May, £3,780,000, to which is added for interest on capital works brought into use, April £88,000 and May £88,000. Thus the net Government liability for the month ended April is £3,541,594 and for May £3,351,579, or approximately $17,000,000 and $16,000,000, respectively. The traffic revenue earned was distributed roughly as follows:

	April	May
Passenger train traffic.....	£8,441,684	£9,373,687
Goods train traffic.....	11,163,749	11,113,667

East Africa and Uganda Railways

The question was raised in the British Parliament on June 14 as to the railways which it is proposed to build in British East Africa or Uganda in the immediate future, and whether the construction of such railways would be placed to open tender, writes Consul General Robert P. Skinner to Commerce Reports. The official statement of the government in reply to the inquiries was:

"The new railways contemplated in eastern Africa are a line from Nakuru, on the Uganda Railway, through Eldama and Eldoret to Sov, on the northwest of the Uasin Oishu Plateau, and an extension of the Nairobi-Thika branch for a distance which is still under the consideration of the governor. It is not at present intended to place construction to open tender; the absence of detailed information as to the route of the Uasin Gishu Railway makes it necessary to arrange for a joint survey by the government and any contractor, and for this purpose it is impossible to negotiate with more than one firm at a time. Arrangements are in progress with Griffiths (Ltd.), of Nairobi, for a contract which will relate to the survey only, but it is to be presumed that if a contract price can be agreed upon as a result of the survey the construction contract will be given to the same firm."

Bolshevist Russia's Economic Disaster

LONDON.

The London Times is able to publish some interesting information regarding the state of Bolshevist Russia, which is contained in a memoir from a member of the Council of People's Economy (Sovnarhos), a Bolshevist body, on the present situation of Soviet Russia.

The document, which is dated last March, confesses that the economic position of Soviet Russia is becoming worse. In the big factories the output is only 10 per cent of that in pre-revolution days and many of the factories have closed down. All efforts are devoted to maintaining the diminishing transport service and supplying the army. In spite of this only 15 per cent of the locomotives are being repaired and the output of new locomotives is at the rate of 40 to 50 a year against 800 to 1,000 under the old regime. Railways are falling to pieces and experts predict that by August of this year railway communication will practically have come to a standstill. In order to repair locomotives it is necessary to take from one engine the parts which are required to repair another. By this method it is possible to repair, on an average, one locomotive by collecting the spare parts from seven others.

There is a great lack of fuel (the wood used being of the 1919-1920 season and therefore still full of sap) and lubricating oils; white metal for railway bearings which are gradually being replaced by oak bearings lubricated by graphite and there is also a shortage of steel for railway wheel tires. Only one Martin oven at the Koulebak Works provides the whole of Soviet Russia with steel for railway wheel tires. The non-existence of steel for springs makes it impossible to replace the weakened springs, and in consequence the buffers and coupling hooks of the different cars are so far out of alignment that the cars cannot be coupled together. The pneumatic brakes are completely out of order, as well as all the lighting and heating apparatus.

Although the means of transport is so seriously impaired the government proposes to electrify the railways. Members of the government think that under the most favorable conditions this can be started by 1928, provided that the iron producing and metallurgic industries will be partially revised in 1927 and that the maximum amount of help from Germany is obtained. The views of the engineers are more pessimistic, as not only the rolling stock, but also the permanent way, water-supply, workshops, apparatus for signaling and the like are in a state of dilapidation. In their opinion it is necessary to invest 3,000,000,000 of gold roubles ($1,500,000,000) to make the Russian railways more or less fit to meet the requirements of the country.

Equipment and Supplies

Locomotives

The Havana Central is in the market for 10 Consolidation locomotives.

The Algoma Eastern has ordered 2 locomotives from the Montreal Locomotive Works.

The Central Cunagua (Cuba) will have one locomotive built at the Baldwin Locomotive Works.

The Central Rosalia (Cuba) will have one locomotive built at the Baldwin Locomotive Works.

The Central Galope (Cuba) will have two locomotives built at the Baldwin Locomotive Works.

The Central Reforma (Cuba) has ordered 1 locomotive from the American Locomotive Company.

The Central Oriente (Cuba) will have one locomotive built at the Baldwin Locomotive Works.

The Central Jaronu (Cuba) will have six locomotives built at the Baldwin Locomotive Works.

The Central Australia (Cuba) will have one locomotive built at the Baldwin Locomotive Works.

The Central Algodones (Cuba) has ordered 1 locomotive from the American Locomotive Company.

The Central San Christobal (Cuba) will have three locomotives built at the Baldwin Locomotive Works.

The South Manchurian Railway has bought parts, accessories and material for 3 Pacific type locomotives and 6 Decapod type locomotives to be built in its own shops at Shakako, near Darien, Manchuria.

The Southern Pacific is building 14 switching locomotives and six 10-wheel locomotives in its shops in California, and 10 Mikado type locomotives are to be built in the shops of the Morgan's Louisiana & Texas Railroad at Algiers, La.

The Vanadium Corporation of America, New York, has ordered from the Davenport Locomotive Works two saddleback tank locomotives of 10-ton weight, to use either oil fuel or coal and to be equipped with air brakes, for use on its new line in Peru.

The Erie Railroad will be in the market for about 75 locomotives when plans now under way have been completed to finance the purchase of this equipment. The Association of Railway Executives has recommended to the Interstate Commerce Commission that it approve a loan of $1,242,500 to the Erie for this purpose, as noted in the *Railway Age* of July 2.

Freight Cars

The Havana Central is in the market for 100, 40-ton flat cars.

The Chicago & North Western is inquiring for 50 caboose cars.

The Pennsylvania Railroad is inquiring for from 500 to 750, 70-ton hopper cars.

The Joint Purchasing Commission of Indiana is inquiring for 150 hopper cars.

The American Steel & Wire Company is inquiring for 50, 50-ton steel gondola cars.

The E. M. Jones Company, Toledo, Ohio, is inquiring for from 500 to 700 freight cars.

The Dominion Shipbuilding Corporation, Toronto, Can., is inquiring for 50, 40-ton freight cars.

The Chicago & North Western has ordered 500 stock cars from the Bettendorf Company, Bettendorf, Ia.

The Newport News Shipping & Drydock Company, Newport News, Va., is inquiring for 20 flat-bottom gondola cars.

The Lehigh Valley is having 500 steel coal cars repaired at the shops of the Middletown Car Company, Middletown, Pa.

The Tennessee Copper & Chemical Corporation, 61 Broadway, New York, is inquiring for from 150 to 175, 7,000-gal. tank cars.

The West India Sugar Finance Corporation, 129 Front street, New York, is inquiring for one 5,000-gal. narrow gage tank car for export.

The Northern Petroleum Company, Pittsburgh, Pa., has ordered 20, 8,050-gal. capacity tank cars from the Pennsylvania Tank Car Company.

The Wonham, Bates & Goode Trading Corporation, 17 Whitehall street, New York, is inquiring for one 3,000-gal. narrow gage tank car for export.

The Illinois Central, reported in the *Railway Age* of June 16 as inquiring for 300 stock cars, has ordered this equipment from the American Car & Foundry Company.

The Elgin, Joliet & Eastern, reported in the *Railway Age* of July 9 as being in the market for from 500 to 1,000, 70-ton gondola and 1,500 hopper cars, has withdrawn its inquiry for this equipment.

The Vanadium Corporation of America, New York, has ordered from the Western Wheeled Scraper Company 12 dump cars of 8 cu. yd. capacity, to be equipped with airbrakes, for use on its new line in Peru.

Passenger Cars

The New York, Ontario & Western is inquiring for 15 express cars.

The Illinois Central has ordered 35 passenger cars from the Pullman Company, Chicago.

The Havana Central has ordered 10 combination baggage and mail cars from the Osgood Bradley Car Company.

Iron and Steel

The Wabash is offering 800 tons of scrap iron for sale.

The Southern is offering 2,200 tons of scrap iron for sale.

The Northern Pacific is offering 600 tons of scrap iron for sale.

The Great Northern has ordered 266 tons of I-beam spans from the Wisconsin Bridge & Iron Company.

The Chicago & North Western has contracted for 124 tons of steel towers for water tanks to be erected at Chicago by the Chicago Bridge & Iron Works.

The Vanadium Corporation of America, New York, has ordered from the United States Steel Corporation 1,000 tons of 40-lb. rail for use on its new line in Peru.

Machinery and Tools

The Atchison, Topeka & Santa Fe has issued a list of machine tools desired in which are noted lathes, borers and other shop equipment.

County Commissioners in Texas have no authority to compel railroads to join counties in the elimination of grade crossings and to share the cost thereof, according to an opinion of the attorney general's department at Austin, on June 28.

Supply Trade News

James L. Gough, president of the **Federal Machinery Sales Company,** Chicago, has retired from active business.

The Union Railway Equipment Company, Chicago, is having plans drawn for a one-story forge shop, 75 x 120 ft., to be erected at Hammond, Ind.

Hugo T. Burgtson, who has been in the employ of the **Sheafe Engineering Company, Inc.,** Chicago, since July 1, 1919, has been promoted to the position of manager of that company. Mr. Burgtson was born at Water Valley, Miss., in May, 1885. He entered railway service as an employee in the supply department of the Illinois Central and filled various positions in the storehouses and offices of the road. He later attended Armour Institute of Technology, Chicago, taking up a mechanical course and later worked with several manufacturing concerns, until his connection with the Sheafe Engineering Co., Inc., on July 1, 1919, as noted above.



H. T. Burgeson

Weston Dodson & Co., Inc., Bethlehem, Pa., announce the appointment of **F. R. Wadleigh** as export sales manager, 4006 Woolworth building, New York.

Frederick William Bason, solicitor for the Railway Educational Bureau, Omaha, Nebr., has been made vice-president of the **Sheafe Engineering Company., Inc.,** Chicago. Mr. Bason was born at Galesburg, Ill., on January 4, 1874. He served as an apprentice machinist on the Chicago, Burlington & Quincy, at Aurora, Ill., and the New York, Chicago & St. Louis, at Chicago, for a period of five years. He then entered the service of the Illinois Central as a machinist and during a period of 14 years was successively airbrake foreman, chief material inspector and supervisor of apprentice instruction. For the following four years he was connected with the Omaha Public Schools as director of vocational work in the Fort School for Boys and was later appointed head of the manual arts department of the South Omaha High School, which position he held for a period of two years prior to his appointment with the Railway Educational Bureau.



F. W. Bason

Roland Whitehurst, of the New York sales office of the **Electric Storage Battery Company**, Philadelphia, Pa., has been appointed manager of its Washington, D. C., sales office.

B. A. Plimpton, sales manager of the **Locke Insulator Manufacturing Company**, Victor, N. Y., has tendered his resignation which has been accepted effective August 15. **D. H. Osborne** is acting sales manager, Victor, New York.

The Oxweld Acetylene Company, Newark, N. J., has been given a distinguished service award by the War Department of the United States for distinguished service in the war.

W. L. Randall and T. D. Randall of D. W. Randall & Co., Chicago, have recently organized the **Randall Foundry** and will build a plant at Michigan City, Ind., for the manufacture of grey iron castings for railway equipment.

J. Leonard Replogle, president of the **Vanadium Corporation of America,** and chairman of the **Replogle Steel Corporation,** New York, has been elected a director of the **Berg & Hutton Steel Corporation** in Teschen, Czecho-Slovakia, of which the Schneider Company, Creusot, France, holds the controlling interests.

T. D. Slingman has joined the sales organization of the **Keller Pneumatic Tool Company,** Grand Haven, Mich., as special representative, with headquarters at its Pittsburgh office. Mr. Slingman has for many years been identified with the selling organization of the Chicago Pneumatic Tool Company, for the past nine years as district manager at Detroit. He left the service of that company on June 1 and shortly thereafter joined the Keller force.

Sidney G. Johnson, who resigned, effective August 1, as vice-president and director of the General Railway Signal Company, to become president of the **Signal Service & Supply Corporation,** New York, as was announced in the *Railway Age* of July 9, page 81, was born in 1874 in Eccles, Lancashire, England. He entered Harrowgate boarding school when he was about 9 years old and at the age of 12 came to America and went to Swissvale, where his father, Henry Johnson, was works manager of the Union Switch & Signal Company. About a year later he went to Rahway, N. J., where the Johnson Railroad Signal Company had been established, and during vacations he worked in the shops and drawing office. He attended a preparatory school and for two years after leaving school he worked in the construction gang of the Johnson Railroad Signal Company. He later served with the construction forces of the Union Switch & Signal Company for a year. In 1896, when the Standard Railway Signal Company was organized, with his father as president, he was made signal engineer and had charge of the locking and dog sheets, making estimates, etc. When the company went to Troy he went with it; but, after the Trojan Car Coupler Company's interests took hold, his father left the Standard and he followed him after a few months and went to the Union Switch & Signal Company in 1899 in the New York office. Shortly afterward he was appointed engineer of construction for the eastern district and later was for two years at Swissvale as signal engineer in charge of the estimating department. He then went to New York and had charge of installing the signal system on the Interborough and of other large installations put in at that time. When the Interborough work was finished he was made eastern manager in charge of sales and construction. About 1910 he was appointed general sales manager, and in March, 1914, became vice-president in charge of sales and engineering. The following July he left the service of the Union Switch & Signal Company to go to the



S. G. Johnson

General Railway Signal Company as assistant to the president, and since August, 1914, has been a vice-president and director of the latter company.

Appointments have been made at the plant of the **Lackawanna Steel Company,** Buffalo, N. Y., as follows: **George W. Whitehead** has been appointed general superintendent, succeeding **Thomas H. Mathias,** who was recently elected vice-president and general manager; **H. J. Kelly** has been appointed assistant general superintendent, succeeding Mr. Whitehead; and **Randolph Payson** has been appointed assistant superintendent, succeeding Mr. Kelly.

The **Burden Iron Company**, Troy, N. Y., has entered into a contract for a term of years with the **Burden Iron Company Railroad and Steamship Division,** to dispose of its products as applied to railroad and steamship companies. Edward L. Smith is the general partner of this newly organized partnership, and W. J. Caton has been appointed secretary, with office at 3711 Grand Central Terminal, New York. Mr. Caton has resigned from his position with Brown & Co., Inc., Pittsburgh, Pa.

Italian Decorations Awarded to Americans for War Work

At a luncheon in the Railroad Club, New York, on July 15, presentations were made by Acting Italian High Commissioner Quattrone, of decorations conferred by the King of Italy in recognition of services during the war to **Elbert H. Gary,** chairman of the United States Steel Corporation; **James A. Farrell,** president of the same corporation; **William H. Woodin**, president of the American Car & Foundry Company; **Andrew Fletcher**, president of the American Locomotive Company; **Charles S. Gawthrop,** vice-president of the American Car & Foundry Company; **Eugene P. Thomas,** president of the United States Steel Products Company, and **Charles M. Muchnic,** vice-president of the American Locomotive Sales Corporation. The Italian Government has made **Delos W. Cooke** associate director of the Cunard and allied lines, a Cavalier of the Order of St. Maurice and St. Lazarus, in recognition of his services to Italy in connection with the Red Cross and as a member of the Traffic Executive Committee of the Allies and of the Exports Control Committee.

Trade Publications

Portable Floor Cranes.—The Canton Foundry & Machine Company, Canton, Ohio, has issued a 34-page catalog illustrating and describing the portable floor cranes and hoists manufactured by that company for use in freight houses, warehouses, shops, etc., for lifting loads up to 6,000 lbs.

Jacks.—The Duff Manufacturing Company, Pittsburgh, Pa., has prepared a small 16-page folder (No. 803) illustrating and describing briefly Duff and Barrett jacks of the types most widely sold. This booklet is a miniature catalog giving complete information regarding dimensions, capacities and list prices of these jacks.

Feedwater Heating.—Figures showing the amounts that may be saved on coal bills by preheating feedwater with the heater developed by the Locomotive Feed Water Heater Company, New York, are contained in bulletin No. 6, issued by that company. The savings are also presented graphically on a chart which is arranged to show the monthly saving per locomotive for any combination of fuel consumption and gross ton miles per month and for varying coal costs.

Single Stage Air Compressors.—The Pennsylvania Pump & Compressor Co., Easton, Pa., has recently issued a 12-page illustrated bulletin known as No. 100 and devoted to the Class 3-A, power-driven, single-stage, straight line air compressors, manufactured by this company. The bulletin gives complete data on the capacities of the various types in addition to describing the latest improvements made in this line, consisting of such features as a new type of ring plate valve, solid forged crankshaft, connecting rod with solid box eyes, etc.

Financial and Construction

Railway Financial News

Atchison, Topeka & Santa Fe.—This company has applied to the Interstate Commerce Commission for an order authorizing the issuance and delivery of its common stock from time to time in amounts not exceeding $9,243,000 in exchange for its 4 per cent convertible bonds.

Anthony & Northern.—A board of referees appointed by the Interstate Commerce Commission to pass upon the claim of this company for compensation for the use of its property by the government has rendered a decision that the railroad was under federal control from December 28, 1917, to and including June 29, 1918, and not thereafter, and that the just compensation for the use of the company's property for that period was $4,756.26, in addition to which the company is entitled to $5,460 38 as reimbursement for the deficit in railway operating income which the company assumed and paid on behalf of the government. The company claimed that it was under federal control until March 1, 1920, and that it was entitled to compensation of $23,281 annually and $44,550 for the maintenance and upkeep of its property during federal control, less the amounts actually expended for maintenance and upkeep during federal control. The government contended that if the railroad was taken under federal control it was relinquished on June 30, 1918, although the applicant contended that the notice of relinquishment did not reach it until July 5, 1918. The government also contended that if the property was held to be taken under federal control the just compensation payable annually should not exceed the standard return of $9,512 and probably should not exceed $4,833, the amount of the company's annual railway operating income for 1917.

Boston & Maine.—Judge Braley, in the Massachusetts Supreme Court, on July 8 dismissed the petition by E. F. Brown and C. M. Greene, minority stockholders, asking the court to review the order of the Public Utilities Commission authorizing the Boston & Maine to refund its floating debt by issuing bonds to the amount of $17,606,000 bearing interest at 6 per cent. Counsel for Brown and Greene appealed from the decision to the Superior Court and the case will be argued in September.

Central Vermont.—An application to the Interstate Commerce Commission for the issuance by the commission of an order authorizing the applicant to issue $15,000,000 refunding mortgage gold bonds, dated May 1, 1920, principal payable May 1, 1930, together with interest at 50 per cent, has been assigned for hearing before Examiner Burnside, at Washington, July 23.

Hawkinsville & Florida Southern.—Robert B. Pegram, vice-president and resident executive officer at Atlanta, Ga., of the Southern Railway, was on July 17 appointed receiver of the Hawkinsville & Florida Southern, which operates between Hawkinsville, Ga., and Camilla, 95 miles. The receivership was asked for by the Georgia Southern & Florida, which claimed that the Hawkinsville line was indebted to it to the sum of more than $40,000.

Illinois Southern.—This road will be offered for sale at Salem, Ill., on September 20. It operates between Salem, Ill., and Branch Junction, 140 miles. The road was placed in the hands of receivers on September 17, 1918, and operations were suspended on December 12, 1919.

New York, New Haven & Hartford.—See editorial elsewhere in this issue.

Norfolk & Western.—This company has been authorized by the Interstate Commerce Commission to continue, in accordance with the terms of three indentures dated March 1, 1912, March 25, 1913, and January 25, 1919, respectively, between petitioner and Guaranty Trust Company of New York, trustee: (1)

The issuance of its common capital stock out of the remaining duly authorized and unissued shares of the 133,000 shares of the aggregate par value of $13,300,000 reserved for the purpose under the aforesaid indenture dated March 1, 1912, in exchange for an equal amount in par value per share at the time of conversion of its convertible 10-20 year 4 per cent gold bonds payable September 1, 1932, issued under said indenture dated March 1, 1912, on or at any time before September 1, 1922, but not later; (2) the issuance of its common capital stock out of the remaining duly authorized and unissued shares of the 183,530 shares of the aggregate par value of $18,353,000, reserved for the purpose under the aforesaid indenture dated March 25, 1913, in exchange for an equal amount in par value per share at the time of conversion of its 10-25 year 4½ per cent gold bonds due and payable September 1, 1938, issued under said indenture dated March 25, 1913, on or at any time before September 1, 1923, but not later; and (3) the issuance of its common capital stock out of the remaining duly authorized and unissued shares of the 179,450 shares of the aggregate par value of $17,945,000, reserved for the purpose under the aforesaid indenture dated January 25, 1919, in exchange for an equal amount in par value per share at the time of conversion of its convertible 10-year 6 per cent gold bonds due and payable September 1, 1929, issued under said indenture date January 25, 1919, on or at any time before September 1, 1929, but not later. It is further ordered, that all of said common capital stock reserved but not issued by (1) midnight of September 1, 1922, as provided in said indenture dated March 1, 1912; (2) midnight of September 1, 1923, as provided in said indenture dated March 25, 1913; and (3) midnight of September 1, 1929, as provided in said indenture dated January 25, 1919, shall be issued or otherwise disposed of only on order from this commission.

Pittsburgh & Lake Erie.—This company has applied to the Interstate Commerce Commission for authority to issue two 90-day, 6 per cent notes, one for $500,000 and one for $425,000, to renew notes previously given for the purchase of Liberty bonds in 1918. This represents the seventh renewal of the notes. This company has also applied for authority to issue 7 per cent equipment trust certificates to the amount of $2,400,000, to be used for the acquisition of 1,375, 55-ton, all-steel hopper cars costing approximately $3,508,300. For 875 of these cars it is expected to use trucks furnished by the company, which will deduct $280 each from the cost of the new cars.

Superior & Southeastern.—This 60-mile logging road, running out of Grand View, Wis., and all the property, mills and timber lands of the Willow River Lumber Company at Hayward, Wis., have been purchased by the Edward Hines Lumber interests of Chicago.

Railway Construction

Chicago, Milwaukee & St. Paul.—This company has filed an application with the Interstate Commerce Commission for a certificate of public convenience and necessity for the extension of a branch line from Blackfoot Junction, Mont., to Clearwater Junction, about 21 miles along the bank of the Big Blackfoot river in a general easterly and northeasterly direction upon a right of way heretofore acquired and a grade heretofore constructed.

Cisco & Northeastern.—Construction has been completed from Cisco, Tex., to Wayland, a point twelve miles south of Breckenridge.

St. Louis-San Francisco.—This company has let contracts for extensions to roundhouses at Afton, Okla., and Oklahoma City to the Globe Construction Company for $39,000 and $57,000, respectively; at Newburg, Mo., to C. E. Hamilton for $39,000; and at Monett, Mo., and Amory, Miss., to the Jarrett Construction Company for $39,000 and $44,000, respectively. Another contract has been let to the Ogle Construction Company, of Chicago, for the erection of a 200-ton frame coaling station at Monett, Mo., for $20,000. Work has started on the first four projects named.

The Jackson & Eastern.—This line has filed an application with the Interstate Commerce Commission under the provisions of the Transportation Act of 1920, asking permission to construct approximately 50 miles of line from Sebastopol, Miss., to Jackson.

Railway Officers

Executive

J. B. Yohe, general manager of the Pittsburgh & Lake Erie with headquarters at Pittsburgh, Pa., has been elected vice-president and general manager with the same headquarters, effective July 15.

Financial, Legal and Accounting

James E. Baldwin has been appointed assistant general auditor of the New York & Hartford, effective July 1.

Operating

B. M. Mergen has been appointed assistant trainmaster of the Salt Lake division of the Southern Pacific, with headquarters at Ogden, Utah, effective July 1.

J. E. Murphy has been appointed superintendent of the Southern division of the Kansas City Southern and superintendent of the Texarkana & Fort Smith, with headquarters at Texarkana, Tex., succeeding **G. P. Williams,** assigned to other duties, effective July 1.

Elmer Richards, superintendent of safety on the St. Louis-Southwestern, with headquarters at Mt. Pleasant, Texas, has been promoted to superintendent of telegraph, with headquarters at Tyler, Texas. Mr. Richards was born at Bowling Green, Mo., on May 20, 1864. He entered railway service in 1880 as a telegraph operator with the Chicago & Alton. For the following four years he served as a telegraph operator with the Wabash, the Atchison, Topeka & Santa Fe, and the Western Union Telegraph Co. In October, 1884, he entered the service of the Cotton Belt as manager of the telegraph office at Pine Bluff, Ark. He was promoted successively to train despatcher, assistant chief despatcher, chief despatcher and train master, and in January, 1895, became general manager of the Louisiana & Arkansas. One year later he was appointed train despatcher on the Chicago & North Western, with headquarters at Boone, Ia. He was appointed a despatcher on the St. Louis-San Francisco, with headquarters at Springfield, Mo., in 1901. He re-entered the service of the Cotton Belt as chief despatcher, with headquarters at Mt. Pleasant, Texas, in 1902, and was promoted successively to train master, assistant superintendent and superintendent. During federal control Mr. Richards was assistant superintendent of safety under federal manager A. Robertson, with supervision also over the Missouri Pacific, the Cotton Belt and the Louisiana & Arkansas. With the return of the railroads to private control, he became superintendent of safety on the Cotton Belt, which position he held at the time of his recent appointment.



E. Richards

R. M. Johnson, superintendent of the Detroit Terminal division of the Wabash, with headquarters at Detroit, Mich., has been appointed superintendent in charge of the operation and maintenance of the joint tracks of the Wabash and Pere Marquette between 18th St., Detroit, and Delray, with headquarters at Detroit, effective July 1.

Fred Meyers, superintendent of safety on the Wabash, with headquarters at St. Louis, Mo., has been promoted to superintendent of the Detroit Terminal division, with headquarters at Detroit, Mich., effective July 1, succeeding R. M.

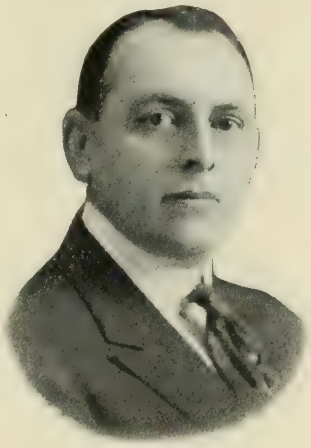
Johnson, who has been transferred to other duties. **D. G. Philips** has been appointed superintendent of safety with headquarters at St. Louis, succeeding Mr. Meyers, effective July 1.

Alfred D. Carey, whose promotion to superintendent of the Grand Trunk Pacific with headquarters at Edson, Alberta, was announced in the *Railway Age* of July 2 (page 45), was born on July 5, 1879, at Allandale, Ontario. Mr. Carey entered railway service as a brakeman with the Canadian Pacific on July 8, 1897, and was soon promoted to conductor. In July, 1907, he became a conductor on the Grand Trunk Pacific, and in April, 1912, was promoted to trainmaster, with headquarters at Mirros, Alberta. Five years later he was promoted to assistant superintendent with headquarters at Biggar, Saskatchewan. From March 1, 1918, to June 21, 1920, he served as assistant superintendent at Smithers, B. C., and upon the latter date was promoted to his present position.

Traffic

E. W. Long has been appointed division freight and passenger agent of the Seaboard Air Line, with headquarters at Charlotte, N. C., effective August 1, and **F. H. Bryant** has been appointed commercial agent at Greenville, S. C., effective July 16, succeeding F. G. Roberts, resigned.

Albert N. Breland, who has been appointed freight claim adjuster of the Chicago region of the Erie, with headquarters at Chicago, was born at Meridian, Miss., March 16, 1885. He was educated at Meridian Male College, Meridian, Miss., leaving that institution in 1910. Mr. Breland entered railway service as a tariff clerk with the Baltimore & Ohio in July, 1912, on which road he was promoted to freight claim investigator in December, 1913. In February, 1915, he was appointed freight claim investigator for the Delaware & Hudson. During the next two years he served this company in that capacity and in March, 1917, he entered the service of the Erie as freight claim investigator, which position he occupied at the time of his promotion to freight claim adjuster, following the division of the Erie operating organization into four regions.



A. N. Breland

C. C. Dana, general freight and passenger agent of the Panhandle & Santa Fe, has been appointed general freight agent of the Atchison, Topeka & Santa Fe, with headquarters at Chicago, and **T. B. Gallaher,** division freight agent of the Panhandle and Santa Fe, with headquarters at Amarillo, Tex., has been promoted to succeed Mr. Dana, effective July 15.

Oliver L. McKay, who has been appointed executive general agent of the Southern system, the Mobile & Ohio, and the Southern in Miss., with headquarters at Meridian, Miss., as noted in the *Railway Age* of July 9 (page 85), was born on May 1, 1859, at Mobile, Ala. He graduated from high school in 1877, and began railroad work on October 1, 1879. From 1885 until 1900 he served as agent of the same road at Aberdeen, N. Y. He was then transferred in the same capacity to Meridian, Miss., and retained that position until his recent appointment.

W. J. Burr and **A. B. Chown,** general agents, passenger department of the Grand Trunk at Pittsburgh, Pa. and New York, respectively, will also act in the same capacities for the Canadian National, with the same headquarters, succeeding respectively **F. G. Wood** and **F. A. Young,** who have been transferred. **D. M. Crawford** has been appointed general agent of the Grand Trunk, with headquarters at Cleveland, Ohio, effective July 15. **G. M. Thomas** and **L. J. Rouleau** have been appointed commercial agents for both companies, with headquarters at Windsor, Ont., and Sherbrooke, Que., respectively, effective July 15.

O. F. Johnson, assistant to the traffic manager of the Lehigh Valley at New York, has been appointed assistant general freight agent, with the same headquarters, succeeding **H. C. Burnett,** deceased. **T. Clem Beck,** chief of the tariff bureau, with headquarters at New York, has been appointed assistant general freight agent, and **M. J. Ormond,** foreign freight and lighterage agent at New York, has been appointed general eastern freight agent, both with headquarters at New York. **G. N. Whepley** has been appointed foreign freight agent, with headquarters at New York. **A. C. McIntyre,** city freight agent at New York, has been appointed assistant to the traffic manager at New York.

Mechanical

Elmer R. Larson, supervisor of apprentices of the Delaware, Lackawanna & Western, has been appointed special motive power inspector and **John Murray,** assistant supervisor of apprentices, has been promoted to supervisor of apprentices, succeeding Mr. Larson, effective May 10.

J. F. Hill, master mechanic of the Wheeling & Lake Erie at Brewster, Ohio, has been promoted to superintendent of motive power and cars, with the same headquarters, succeeding **George Durham,** resigned; **J. H. Douglas,** general shop foreman at Ironville, Ohio, has been promoted to master car builder at Brewster, and **W. H. Eckroate,** road foreman of engines at Brewster, has been appointed master mechanic, succeeding Mr. Hill, effective July 15.

C. G. Juneau has been appointed acting master car builder of the Chicago, Milwaukee & St. Paul, with headquarters at Milwaukee, Wis., effective June 1, succeeding **L. K. Sillcox.** Mr. Juneau was born on December 12, 1874, at Milwaukee and received a public school education. He served a blacksmith apprenticeship in the car and locomotive departments of the Chicago, Milwaukee & St. Paul, which he completed on October 1, 1899, after which he was employed for about a year as a tool dresser by the Strobel Structure Company, Chicago, returning to the Chicago, Milwaukee & St. Paul on July 21, 1900, working in the car department. On February 12, 1906, he was appointed assistant foreman of the blacksmith shop. On March 1, 1918, he was appointed general foreman of the car blacksmith department for the entire system and on June 1, 1918, was made general supervisor of the freight car department, including the blacksmith department. In March, 1920, he was placed in charge of the Milwaukee terminal and shop district and retained that position until his recent appointment.

Engineering, Maintenance of Way and Signaling

Harry Polland has been appointed general fire inspector on the Southern Pacific, with headquarters at San Francisco, Cal., effective July 1, succeeding **Niles Searls,** who has been retired.

Purchasing and Stores

E. H. Hughes has been appointed general storekeeper of the Kansas City Southern with headquarters at Pittsburgh, Kans., effective July 15, succeeding **R. C. Lowry,** resigned.

Obituary

Benjamin A. Kimball, president of the Mount Washington, died at his summer home at Lake Winnepesaukee on July 20.

Bertram Young, auditor of freight and ticket accounts of the Delaware, Lackawanna & Western with headquarters at Scranton, Pa., died at his home in Scranton on July 19 after a long illness.

EDITORIAL

Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Selecting Men for Promotion

The foremen and subordinate officers come into intimate contact with the workers—indeed, they often form the only point of contact between the employees and the management. It is essential, therefore, that they be thoroughly versed in the policies of the organization and at the same time be capable of intelligently directing the energies of the men under them and of seeing that the policies of the company are understood and made effective. Ordinarily, little thought is given on the railroads to the promotion of men from the ranks until the emergency arises and then the decision is made more or less on the impressions of the moment—in other words, is largely a matter of snap judgment. Added to this, the new foreman is often given only the crudest sort of coaching, whereas he should receive a thorough and complete course of training. Too often he is practically thrown at the job and is largely left to work out his own salvation. No wonder that misunderstandings arise, that efficiency falls off or remains low, and that the morale suffers. Is it not high time that this careless and haphazard way of handling one of the most critical matters in the operation of a railroad was more generally recognized and that definite steps were taken to improve conditions? This is only another argument for the establishment of a personnel department such as recommended by J. C. Clark in the *Railway Age* of June 18, 1920.

Be Progressive and Avoid Regrets

Evidence is steadily accumulating to show that the capacity and efficiency of locomotives can be increased greatly by using feedwater heaters. Considering the results as a whole, an average fuel saving of 15 per cent seems no more than can be reasonably expected. If applied to existing locomotives the most important advantage derived from the feedwater heater is the saving in fuel, but if it is included in the design of a new engine this device should result in a general improvement that would increase both efficiency and capacity. The saving that is assured in either case is so great as to make the higher first cost and the additional maintenance expense negligible by comparison. The handwriting on the wall is plain; the advantages are evident and feedwater heating is coming, but the railroad officers find it hard to take the first step and only here and there are installations being made. If data were available to show the percentage of new engines equipped with feedwater heaters it would probably be surprisingly small, yet it would no doubt be economical to arrange for their application on practically all new power. Putting on a device after an engine is built is unsatisfactory at best. The work is expensive and in nearly every case the engine is not well adapted for the improvement. Within a few years many roads will probably figure how they can put feedwater heaters on the engines they are building now and wonder why they did not include them in the original equipment. This has been the history of other important devices; there are only a few who are bold enough to do the pioneer work. Surely if there ever was a time that justified boldness in adopting devices that save fuel and increase the capacity of locomotives, that time is now.

Know Your Machines

When a man has acquired an automobile the most natural instinct is to take pride in his machine and find out as soon as possible just what it will do. He wants to know how fast it will go, how far on a gallon of gasolene and how much of a hill it will climb. The same relative feelings ought to be entertained by railway shop men in regard to shop machinery and equipment for the efficient operation of which they are responsible. Unfortunately many shop men neither appreciate their machines nor have accurate knowledge of what can be accomplished with them. This is illustrated by an incident that happened only recently. One of the operations incident to machining an eccentric rod strap is boring the inside diameters and a certain boring mill manufacturer stated that this work could be done on his machine in seven minutes and twenty-two seconds, including the time of set-up. The shop executive to whom he was speaking protested that the operation was taking much longer in his shop; that he did not think it could be done in anywhere near the time claimed. He was astonished when told that the record was made by a man operating a machine in the shop of which he was superintendent. Skeptical and unconvinced, it required an actual demonstration in which the record was duplicated to prove that he was wrong and the machine tool builder was right. It is time that guesswork methods of determining machine tool output were succeeded by methods involving accurate time and cost knowledge. Shop foremen and executives must *know* what their machines are doing. It will then be comparatively easy to eliminate costly practices, decide on what machine any given job can best be performed and secure the maximum shop output possible with present equipment.

How to Quickly Unload Freight Cars

The rate charged for demurrage on freight cars is one of the most important elements of efficiency that the energetic freight agent needs to keep in mind, and the whole subject is beset with so many difficulties that the problem of effectually guarding against relaxation, neglect and waste is always with us. If we can stop the countrywide loose practices in diversion of cars it will help in the present emergency, but a stiff demurrage charge will still be necessary. The present easy practices are the result of a long course of sinful carelessness, and there need be no surprise that costly penance is needed to cure them. The letter from California on this subject, which appears on a following page, sets forth radical views; but it is for that very reason that it is printed. Everybody knows that high rates, stiff rules and the abolition of the average agreement are all necessary whenever this disease is desperate—and it is desperate now. Some authority, somewhere, will have to be brave enough to ignore minor injustices. As in the rates charged for the use of cars as between one railroad and another, the formulation and adoption of a system which will always be strictly equitable is absolutely out of the question. The weakness of the past policy of the Interstate Commerce Commission in this matter is due to the Commission's hopeful but impossible theory

that exact justice can be and ought to be done. As in conducting the war against the Hun, a bold policy is the only one that will bring the desired results.

Get What You Pay For

Shop lighting systems should be maintained as carefully as other shop facilities. When a shop tool is improperly maintained, it usually gives evidence of its condition. The eye can accommodate itself to a wide variation in light intensity from bright noon sun to starlight, and for that reason it is easy to let a lighting system run down. It is possible to do shop work by torchlight, but torchlight does not promote efficiency. When a shop lighting system is not properly maintained, its efficiency may fall off as much as 50 per cent in a few weeks. A good shop lighting system which has been allowed to run down can be restored by following a few simple rules. Make some reliable employee responsible for the maintenance of the lighting system. Give him sufficient authority to enable him to get the work done and instruct him to wipe reflectors and lamps once a week; to wash them with soap and water every third or fourth cleaning period, to fill empty sockets, to replace burned-out and blackened lamps, and to make sure that the voltage rating of the lamp is no higher than the voltage at the socket when the system is in use, as a small reduction in voltage will cause a comparatively large reduction in candle power. Following these rules will boost shop efficiency and will give you what you pay for in either purchased or generated electric power.

Where Angels Fear to Tread

Many men who have acquired wealth so fast that it amazed them have been emboldened to try their hand at the more seasoned modes of money making, only to lose. Is Henry Ford following in the footsteps of the mining kings of Nevada and Montana who lost money in Wall street, or is his purchase of the Detroit, Toledo & Ironton a shrewd move by a clever man that augurs well for our railroads? Assuming that he has exercised the same good judgment that has made him an ultra-successful manufacturer, is it not reassuring to see him stepping into the railroad game at this critical moment? True, Mr. Ford places a bank account at the disposal of the D. T. & I. that would stagger a larger road in these days, but nevertheless it is safe to say that he thinks well of the railroad outlook to have made this purchase. Mr. Ford will probably learn a good deal about railroading that he never knew before the D. T. & I. declares a dividend and he may discover that the usual shipper's viewpoint on the subject of rates is based on a rather shallow knowledge of the facts. But it would be well if more business men, more manufacturers and shippers would participate actively in the management of the railroads—it would tend to enlarge the community of interest. Mr. Ford will have this great advantage, he will be the owner and manager in one, an uncommon situation since the days of Harriman and Hill.

The Missing Commissioner

Although the transportation act passed in February authorized an increase in the membership of the Interstate Commerce Commission from 9 to 11, the commission is still operating with one vacancy, because James Duncan, who with Henry Jones Ford was given a recess appointment by the President after the Senate had failed to confirm the original appointments, has not yet either taken the office or given an indication as to his intentions in the matter. Mr. Duncan was re-elected first vice-president of the American Federation of Labor after his appointment to the commission was announced, and while Mr. Ford and Mr. Potter appeared and took the oath of office and have since been sitting as members of the commission in the rate case and other proceedings it is understood that Mr. Duncan has not even communicated with the commission. Being president of the Granite Cutters' Union, it is possible that Mr. Duncan believes in the idea that the laborer is worthy of his hire so strongly that he is reluctant to accept an office the salary of which is entirely dependent upon uncertain Congressional action at some later date. It has also been suggested that it would be unpleasant for him to have to participate in the proceedings incident to increasing freight and passenger rates to pay for the increases in wages which railroad labor has received during the past two years and is still to receive for this year. It has been understood that labor has been very anxious to have representation on the Interstate Commerce Commission, but in this instance the opportunity seems to lack appeal.

Stamp Out the Dishonest Practices

One of the prime essentials for lasting success in any business undertaking is the reputation for square dealing. Sharp practice or partiality is fatal, and it matters not whether the act is that of the subordinate or the principal. In either event the head of the firm is assumed to be conversant with the methods pursued and to be in accord with them. In view of this it is highly essential that the railway managements make every effort to stamp out dishonest practices. Stories of graft in car distribution or exchange of money for preferential movement of cars through terminals are no more common today than they have been at other periods of car shortage and congestion. It is also a fact that such stories usually concern the employee or subordinate officer and that they relate to a condition which arises primarily from the efforts of some shippers to obtain more than their share of the available service. Nevertheless, the public will hold the managements very largely to account for such conditions, taking the position that these objectionable practices can obtain for but two reasons: Either the managements countenance them or the managements are too cumbersome or ineffective to apprehend and suppress them. At no time in railway history has it been so important that the railroads maintain a policy of absolute integrity and impartiality in their dealings with the public. They should leave no stone unturned in their efforts to weed out the grafters.

The Engineer in Real Railroading

The letter to the editor by "Civil Engineer," which appears in another column, recalls an old problem with some new suggestions for its solution. The plaint of the engineer in railroad service has been heard frequently and there can be no question as to the justice of the grievances he submits. "Few of us are satisfied merely with nominal increases in pay," says "Civil Engineer," "we want to see the ladder before us that we can climb." It is not as the non-engineer in railway employ may feel—that the engineer wants special favor, a personally conducted tour through the various departments to some specially prepared place of unusual dignity, but a greater measure of contact with real railroading. Trained for technical work, the engineer is assigned largely to special duties that isolate him from the actual business of transportation. What he learns of it comes through the eyes and ears

of the man on the sidelines rather than through the hard bumps that come to one who plays a real part. Engineers want a chance to get into the game and the railroads will not be the losers for making provision for such a chance. Some railroads now provide a broad training for the technical men, but most of them do not, and numerous instances may be cited where men in engineering positions who recognized the greater opportunity of the operating department have sacrificed places in their own department, obtained only after years of painstaking effort, for minor positions in the operating department that afforded them the necessary training. Under the plan proposed by "Civil Engineer," it would not be necessary for men of acknowledged ability to make such sacrifices.

Tonnage Signals Save Equipment

Tonnage trains moving at comparatively low rates of speed are frequently started out of terminals relatively close together at times when they will cause the least interference with other traffic. On many lines these trains have to negotiate fairly heavy and long grades and if required to stop on such grades in obedience to a signal indication or from other cause they may experience trouble in starting again. It is sometimes necessary for them to back up for a considerable distance to make a new start, and they may pull out drawbars or otherwise damage equipment. As a consequence, in addition to the damage and delay to the one train, following trains are blocked and the entire schedule for a division may be upset. The use of a tonnage or grade signal in connection with automatic signals on grades will eliminate many of these delays and much of the damage, as it will permit these heavy trains to proceed to the next signal past an automatic signal indicating "stop," at a speed not to exceed 10 miles an hour. One road uses for this purpose a 15-in. metal disc attached to the signal pole with a reflected light for a night indication. Another method employed by some roads is to place a motor-driven arm on a signal pole, so arranged that when the automatic arm is in the "stop" position the tonnage signal clears the 45-deg. or caution position, conferring the same rights as the disc described above. With the present shortage of equipment and the acute necessity for keeping it moving, the use of these signals (which can be installed where needed at a very moderate expense) by roads handling heavy traffic over grades will result in material savings and will speed up operation.

Supervising Officers Must Have a Chance

Maintenance of way officers must be given a better chance to develop as field executives if the roads are to get the most out of their present forces, an object of increasing importance as wage rates increase. In almost all positions the maintenance officer is now overburdened with paper work and more or less unimportant details. Under the system in vogue today the supervisor and even the division engineer are being developed into first class office men, more on the lines of accountants than as real executives. In order to fill his position to the best of his ability such an officer must have the time to outline his work properly and then to get out on the line into actual contact with the workers. So long as he is restricted to the making up of innumerable statements of little or no value to him in arriving at the actual cost of doing the work with which he is directly concerned, his value as a supervising officer is comparatively small. He must be relieved of all such work which will tend to hinder the proper administration of his duties. In nearly every supervisor's or division engineer's office better work can be performed at a less cost and with fewer men by weeding out the weak employees, encouraging the more intelligent by better pay and by the same means attracting a higher class of new men. Two $175 a month office men are worth more in work performed than three $125 men, a fact recognized in almost every big business. This is a subject well worth studying and a convincing demonstration of its need is to spend a half-day sitting quietly on the side-lines of a division engineer's office on one of his busy days. The waste of his time due to the ignorance of clerks or to their lack of interest is appalling. The result of introducing or developing higher grade office men is self-evident. The officer is then given every chance to develop the best there is in him. Work will be more satisfactorily handled, for the supervisor or division engineer can plan it more thoroughly as a result of the increased time available. The work of the gangs will improve, for his supervision will be closer and a better spirit will be developed throughout the organization as a result of his personal contact and close interest.

Interesting the Employees

If the railways are to attain the goals set for them by their Executives committee they must enlist the active interest and co-operation of every employee. An average load of 30 tons per car and an average movement of 30 miles per car per day cannot be secured by the officers alone, no matter how efficient and energetic they may be. They can only be accomplished by getting every man, down to those in the humblest positions, to contribute his best efforts to the desired end. This can only be done by carrying to these men the aim of the roads and the reasons therefor in terms which they can understand. Typical of such measures is the plan which is now being put into effect in the Chicago region of the Erie. Large posters have been prepared showing in curves the ton mileage handled by the roads at present and the increases which would have resulted if the maximum loading and car movement previously attained was now being secured. These charts have been the subject of conferences between the members of the general manager's staff and the yardmasters and foremen at each of the terminals and larger stations after which these local officers have in turn presented this information to those under their supervision. The posters are also placed conspicuously in every office and on every bulletin board. In this way every engineman, every trainman, every switch tender is informed of the drive and is asked to do his share toward bringing the transportation service of the country up to the desired point. When these men are made to realize that by leaving a car standing a day more than necessary they are withholding it from moving grain or coal which may be sorely needed next winter, a long step should have been taken toward reaching the desired goal. The transportation needs of the country so far exceed the present output of the railways that no officer can afford to overlook any means of bringing this output up to the demands.

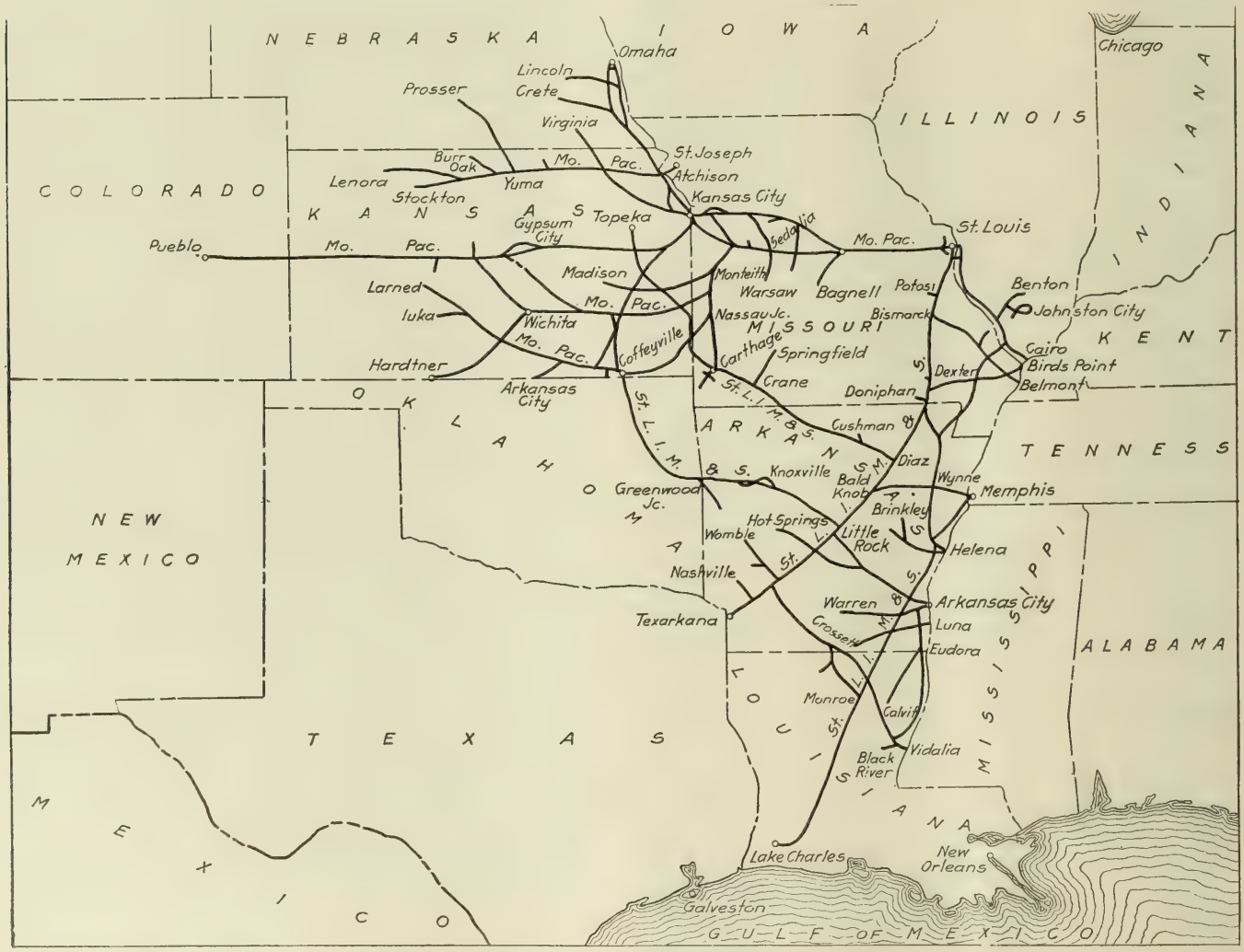
The Loan Fund

The Interstate Commerce Commission has begun to announce its findings as to requests for loans from the revolving fund as provided in section 210 of the Transportation Act. Certification to the Secretary of the Treasury of the commission's approval of loans to seven carriers for a total of $16,593,275 was reported in the *Railway Age* of July 16, page 100, and similar announcements will appear from time to time in the near future. One of the most interesting features is the bearing it is likely to have on the equipment market. The

commission has decided to use $75,000,000 of the fund in loans to cover the purchase of freight cars and $50,000,000 for freight and switching locomotives. The Association of Railway Executives at the request of the commission has recommended loans totaling $52,260,357, which is expected to cover the purchase of 45,021 cars valued at $143,569,730 and of loans totaling $26,868,629, which is expected to cover the purchase of 599 freight and 239 switching locomotives having a total value of $53,737,358. The *Railway Age* has already brought out in its article entitled "The Equipment Purchases Provided by Loan Fund" (issue of July 9, page 57) that a large portion of the orders covered by the loans recommended have already been placed—namely, something like 614 of the locomotives and 21,556 of the cars. The railways which have not yet ordered the equipment for which the loans have been recommended to the commission, are now coming into the market and are renewing inquiries or placing orders from week to week. There seems to be a tendency on the part of the railroads to confine their purchases to only those for which loans from placed by railroads, or the orders to be expected from private car lines and industrials, as well as the great amount of repair work that is in sight for the builders' shops, should also not be forgotten.

Missouri Pacific

NOTWITHSTANDING an increase in the rate per ton per mile that more than offset a decrease in the amount of traffic carried, net income on the Missouri Pacific was less by $7,870,000 in 1919 than in 1918. This comparison is made on the basis of the combined income accounts of the Railroad Administration which actually operated the property, receiving the revenue from freight and passenger and paying expenses and taxes, and the corporation which received from the government a rental for its road and paid to its bond holders interest on their securities. The corporation, receiving a rental of $14,207,000, had a surplus after the payment of interest charges of $4,241,000. This was $2,-



The Missouri Pacific

the revolving fund have been recommended; this is natural enough in view of the fact that these represent the purchases which are most urgently needed and the roads in question are the best fitted to take care of the loans if the loans are approved. However, in view of the present conditions there is some satisfaction in the realization that there are ahead of us orders for the equipment covered by the loans which are not yet placed, that is, some 224 locomotives and 23,500 cars. The other orders which may be

390,000 more than the 1918 surplus, due largely to an increase of $736,000 received in miscellaneous income and a decrease of $2,036,000 in miscellaneous charges against income, offset in part by $328,000 additional interest on unfunded debt in 1919. This decrease in miscellaneous income charges was caused by the fact that in 1918 the corporation charged itself with $2,473,000 as a net debit of revenues, operating expenses and taxes applicable to the period prior to January 1, 1918, and which amount was paid

by the Railroad Administration. On January, 1, 1919, the greatest part of these lap-over items had been cleaned up.

The results of operation of the road by the government showed a net loss to the government of $10,223,000 in 1919 as against a net income of a few thousand dollars ($37,000) in 1918. The average rate per ton per mile received in 1919 was 10.36 as against an average rate received in 1918 of 8.41—an increase of 23.19 per cent. This explains the fact that while the total tonnage of freight carried in 1919 was but 27,199,000 tons, or 3,679,000 tons (11.92 per cent) less than in 1918, and the average haul of freight was 236 miles in 1919 as against 244 miles in 1918, freight revenue in 1919 amounted to $66,560,000, or an increase of $3,073,000 (4.84 per cent). Passenger revenue also increased, the total in 1919 being $20,689,000, or $1,154,000 greater than in 1918. The rate per passenger per mile was 2.71 cents in 1919 as against 2.55 cents in the previous year. The number of passengers carried was somewhat greater, but the average passenger journey was about 2½ miles shorter, so that the amount of passenger business handled measured in passengers carried one mile was slightly less in 1919 than in 1918.

It was largely in maintenance that the heavy increase in expenses occurred. Maintenance of way and structures cost $18,940,000 in 1919, an increase of 29.44 per cent. Maintenance of equipment cost $20,781,000, an increase of 12 per cent. The two items of very largely increased expenditure on maintenance of way were ties and track laying and surfacing. Ties in 1919 cost $3,032,000 as against $1,803,000 in 1918. Rail renewal was also greater but was not very much even in 1919, the cost for rail being $465,000 in 1919, compared with $102,000 in the previous year.

Transportation expenses were kept well in hand. In 1919 transportation expenses amounted to $39,690,000—an increase over the previous year of $3,168,000 or 8.67 per cent. Besides the increases in wage scales in 1919, the Missouri Pacific had a different character of traffic. The tonnage of coal fell off very greatly, the total in 1919 being 5,229,000 tons, or 2,038,000 tons (28.05 per cent) less than in 1918. Grain tonnage also fell off sharply, amounting to $2,005,000 in 1919—a decrease of 22.97 per cent. The tonnage of products of animals and of ores also fell off. Naturally the average car load dropped off. In 1919 the average load per loaded car was 21.40 tons. In 1918 it was 23.78 tons. The train load likewise was less; the average in 1919 was 500 tons and in 1918 536 tons.

The Missouri Pacific is in highly competitive territory. During a considerable part of 1918 the pressure of all classes of traffic was so great that it was often apportioned among roads on the basis of ability to handle it expeditiously. In 1919, however, with the falling off in business, all roads suffered. They are not, however, returned to a competitive basis. It is, of course, impossible to say whether the Missouri Pacific's showing would have been better or have been worse had competitive conditions prevailed. It is obvious, however, that the road needs an increase in freight rates. Had it received 25 per cent higher freight rates in 1919 than it did, and had the company been operating the road on its own account, there would have been a surplus after the payment of interest charges of approximately $10,000,000 instead of loss of approximately $6,000,000 as shown by the combined federal and corporate income accounts.

The following table shows the principal figures for operation by the government in 1919 and 1918:

	1919	1918
Average mileage operated	7,205	7,321
Freight revenue	$66,559,805	$63,486,625
Passenger revenue	20,689,218	19,535,361
Total operating revenues	93,577,081	89,612,397
Maintenance of way and structures	18,940,384	14,632,086
Maintenance of equipment	20,781,384	18,577,894
Traffic expenses	1,015,199	1,071,359
Transportation expenses	39,689,848	36,522,014
General expenses	2,536,626	2,136,230
Total operating expenses	83,357,624	73,231,738
Taxes	3,700,523	3,144,291
Net operating income	6,488,017	13,218,384

Letters to the Editor

Car Repairers and Switchmen

To the Editor:

The accuracy of the statement in your editorial on the first page of the July 23d issue, that car repairers formerly received much less than switchmen depends on whether "formerly" refers to a time when switchmen and car repairers as bodies were on an equal footing as regards power to enforce their demands, good and bad, or whether, as is probably the case, the time meant was long after the switchmen organized and just before the shopmen formed their unions, which would make your comparison unfair.

Not so very much dust need be swept up to recollect that once upon a time a switchman got $1.80 a day for 11 hours' work and a car repairer almost that for 10 hours' work. Was not that the case in the 80's and early 90's? Let it be recorded correctly how we arrived!

Observer.

Technical Engineers Not Included in Wage Award

Chicago.

To the Editor:

On page 138 of your issue of July 23 a statement appears in the table of "advances in wages that the award of the U. S. Railroad Labor Board gives to all the various classes of employees," intimating that "Assistant Engineers and Draftsmen" will be granted an increase of 13 cents per hour. I conferred with Judge Barton, chairman of the Board, upon that particular phase of the award and he authorized me to say that "it is the opinion of the chairman of the board that assistant engineers and draftsmen are not included in the award, except where such employees are performing clerical duties." Obviously such cases are very rare. Furthermore, in reply to a telegram from a technical engineer the chairman of the board wired as follows: "Civil engineers as such had no submission presented for them and hence no question as to them decided." It was not the intention of the Board to include professional engineers in the award because they had not been properly before the Board hearing.

E. L. Brandt.

Assistant Secretary in Charge of Railroad Department, American Association of Engineers.

College Men and Other Educational Questions

New York.

To the Editor:

I have read Prof. Dixon's letter on "College Men in Railroad Work" in your issue of July 2. College men prefer college associates; this is impossible, at least among the rank and file of railroad employees, regardless of the fact that the average railroad clerk and trainman is paid compensation in excess of that which the average college graduate receives. Our colleges send forth young men with degrees in theology, law, medicine, etc. Few in the first five years can earn from their profession the compensation paid by railroads to uneducated clerks and trainmen.

If our railroads are to be successfully operated in the future colleges should be established for the purpose of sending forth young men with degrees in traffic, transportation, ac-

countancy, and maintenance both of motive power and road. If this cannot be done, large roads should establish educational departments with correspondence courses in the various branches of the service, available to applicants for employment, free and compulsory to employees. No employee should be permanently promoted except on the merits of his class standing, regardless of age in the service.

The Adamson act, government operation of railroads, and subsequent plums extended to railroad employees have made a large number of them discourteous and disloyal. The union card and age limit should be supplanted by a system similar to civil service.

JAZZ.

The Way Bill Question

BALTIMORE, Md.

TO THE EDITOR:

I have read the editorial in your issue of July 16 entitled "A Great Leak." If the "perfect way bill is a work of art" then it must have that necessary element of all art—time. With shipping tickets bunched into the small space of time from loading to despatching there is created a rush condition that is destructive of all artistic work.

The remedy lies in the management of the details of the process of way billing. There is no valid reason for not billing consignments as they are loaded, by the shipper in case of lots from private sidings, and by freight house men in case of package freight. A combination of receipt, freight expense bill, and way bill, together with as many copies as may be necessary for all desired uses, is practicable. Then install a proper audit office having sufficient time to assure the correctness of every charge, not only at large but at all small stations.

F. LINCOLN HUTCHINS.

The Relation of the Trans-Siberian Railway to the Kolchak Downfall

SIBERIA.

TO THE EDITOR:

I note in the *Railway Age* of April 2, in the report of the dinner of the Railway Business Association, that among the speakers was G. W. Simmons, who, as an American Red Cross official, visited Siberia, for a brief period. In the course of his remarks, he is reported to have given as the primary cause of the fall of the Kolchak government, the failure of the Trans-Siberian railway to function, and furthermore, that even the Americans were unable to keep the railway in operation. There were a number of reasons why the Kolchak government fell, the basic one being because of its unpractical character.

But what attention should be called to and what Mr. Simmons, either through ignorance or otherwise failed to state, is this: The Siberian railway for its entire length, as coming under the Kolchak government, was under the autocratic control of Kolchak's Military, and the operation of it was never in the hands of Mr. Stevens or of the American railway contingent. No commercial traffic was allowed by the Military, and practically no attention whatever was paid to the orders or instructions of the Inter-Allied inspectors. The minister of communications of the Kolchak government, presumably with the approval of Kolchak and his cabinet, nullified nearly everything the allied inspectors tried to do to put the operation of the railways on a proper basis. In fact, the government apparently took every means in its power to nullify the Inter-Allied railway agreement, to which it was a party. And so, admitting, for the sake of argument (what is not true), Mr. Simmons' statement that the failure of the railway was the primary cause of the downfall of the government, then the cause of such downfall was the government itself.

Neither was it true that the railway "broke down entirely." Its services were not what they should have been nor what they could have been easily made by the honest co-operation of the government with the American inspectors.

It is regrettable that Mr. Simmons, with the opportunity he had for observation, should make public such misleading statements.

AMERICAN.

A Larger Field for the Engineer and Ways to Develop It

CHICAGO.

TO THE EDITOR:

It is apparent to anyone who studies railroad organization and departmental functioning, that the relations existing between the operating and the engineering departments on many railroads have not been and are not what they could or should be for the best interests of all concerned. Instead of making the engineer's office practically that of "superintendent of property," the functions have been limited to those of survey, instrument work, mapping and designing.

This condition has worked against the interests of all concerned. The operating officers have been deprived of much intelligent and technical help not only in matters pertaining to property but even in transportation problems, the railroads have lost a considerable degree of efficiency and unquestionably have lost money in false economies and the engineers have lost an opportunity to develop a proper status for themselves and their offices. The work which they, because of their training, are best fitted to do is often delegated to men who, not having the ability to grasp the engineering features, waste thousands of dollars.

The error is one of policy or fundamental organization and rests principally with the management, although the engineers have been in part to blame. Engineers, under a false belief that engineering consists of surveying the field work, have failed to grasp the possible scope of their positions in many instances. Young engineers are inclined to give too much weight to the high-boot, flannel-shirt end of the work, neglecting the critical functions of competent record keeping, cost accounting and economic analysis. This characteristic may have led to a disinclination to assume the proper responsibilities or at least to negative aggressiveness in the matter of broadening the engineer's field of usefulness.

Heretofore, there has been no particular reason for keeping a railroad's property records up to a high standard of completeness, nor has there been any particular reason for requiring a high degree of efficiency in the expenditures for maintenance and improvement work. Now, however, the necessity for a change is indicated. No longer will incomplete records and uneconomical expenditures be tolerated. Federal valuation and the railroads' work incidental thereto have given all concerned a respect for engineering, accounting and statistical records, particularly cost records. I. C. C. Order No. 3, making mandatory the work of keeping the valuation records up to date, calls for more complete and thorough estimating, accounting and reporting than has heretofore been thought necessary. Recent legislation indicates that, in the future, expenditures for maintenance and improvements may have to be justified by economic analysis before being authorized and that the costs of doing work may be scrutinized and criticized in comparison with similar work on different roads.

All these considerations indicate that a skeleton centralized engineering department will no longer be adequate for the work involved. Proper handling of the work apparently calls for a strong divisional organization, the establishing of a competent, planning, supervisory, accounting engineer with adequate help in each unit field of action. It is plainly evident that to bring about the proper relation between the operating and engineering departments there must be, first: organization, with the lines of executive and technical supervision clearly drawn; second, adequate engineering personnel properly distributed; third, adequate authority and responsibility on the part of the engineer.

It is conceded that the property's interest must, in maintenance and improvement, be subordinated to that of transportation, hence it is intimated that the roadway engineer's position should be analogous to that of assistant superintendent assigned to the care of the property. The organization should be such as will permit the engineers to take an interest in the statistics and economics of transportation so that a percentage at least of the engineers can in time qualify for transfer or promotion into the operating or executive departments.

Preliminary to a discussion of an outline for the organization of a railroad engineering department, it is proper to consider the desires of the railroad engineer. Few of us are satisfied merely with nominal increases of pay. We want position and an assured status; we want to see before us a ladder that we can climb; we want an outlet; we want a regular and efficient organization that will clearly assign authority and responsibility and clearly indicate possible lines of promotion.

Engineering work is mostly analysis and sooner or later in our careers we reach a point where the acquired ability to analyze is directed to ourselves and our conditions. It is apparent, at least on some railroads, that the engineer's field is restricted to the engineering department, and that in the engineering department there are altogether too few worth-while positions to give many of us any great amount of encouragement. Study along these lines seems to indicate that the railroad engineers must obtain an outlet for at least part of their personnel in the operating, traffic and executive departments. The only alternative is to advocate the creation of more worth-while positions in the engineering department, or else to consider railroad engineering merely a field for obtaining a certain amount of experience, with the idea of stepping thence into some other and more lucrative line of work. The railroad field is, however, a worthwhile field for worthy men and it is well worth a big effort to attempt a proper organization of that field.

The subject is a large one and involves fundamentally the establishment of lines of procedure which embraces even the training of young engineers. It would seem advisable to advocate that engineers joining the corps be given a regularly prescribed course of training and that their progress be outlined somewhat similar to the following: A period in the field as rodman; a period in the bridge department on minor design; a period in the field as masonry, bridge and building inspector; a period in the accounting and stores department, then back to the division as lower grade instrumentman, or to the bridge department for progress as a higher class designer. Opportunity should be given some of the engineers doing bridge design to qualify as supervisors of bridges and buildings by giving them at a proper time a trial as assistant supervisors. Instrumentmen on divisions, when advanced to the highest grade, should be given opportunities as assistant supervisor of bridges and buildings, or as assistant roadmasters, to qualify as supervisors or roadmasters. Engineering supervisors of bridge and buildings and roadmasters should be given opportunity to qualify as trainmasters, or else move from those positions to that of division engineer. The latter should be given all possible chances to qualify for assistant division superintendent, etc.

The path of travel is but roughly thrown together here without much thought for consistency and co-ordination. Some such course of procedure must be drawn and fostered for the best interests of the railroad and particularly for the engineer. Such a system, when properly drawn, produces an esprit de corps, a loyalty to the company, that surely means in the end, economy and efficiency of transportation. Positions in engineering work which call for long years of service and experience should have proper salaries attached, so that transfer to other departments not having been accomplished, the engineer having arrived at such a position may feel that he has arrived somewhere.

CIVIL ENGINEER.

Economy of High Demurrage

SAN FRANCISCO, Cal., July 22.

TO THE EDITOR:

In the battle for life which is now engaging the energies of the railroads all over the country the rate for freight car demurrage is or ought to be one of the main issues, to be stressed on all fronts. The great need is freight cars. Everybody now realizes this. The great leak in our freight car wealth is the wrongful use of cars as storehouses. Demurrage is the only cure for this.

Everyone who has followed the demurrage campaigns of the last dozen years is familiar with the great reform carried out in this State under the direction of the late E. E. Mote, and knows how the six-dollar rate which was in effect here for several years was the most potent factor in car conservation ever heard of.

R. C. Munholland, the present manager of the Pacific Car Demurrage Bureau, is a worthy successor of Mr. Mote, and a recent circular from his office reviewing the history of California demurrage for twelve years is a document which all railroad men and shippers would do well to take the time to read.

This circular contains a ringing appeal, which should reach all railroads everywhere, to adopt demurrage rules *which will empty the cars,* and the argument is backed up with incontrovertible facts, and particularly the fact that in California the relaxation of the rates and rules which was ordered after the Government took the railroads did incalculable harm.

Commenting on the present situation, Mr. Munholland says:

"It is said the car shortage at the present time is 200,000 cars. Assuming that the average cost per car is $2000, it would require an investment of $400,000,000 to overcome the deficiency. Does it appear like a sane business policy to tie up capital, incur depreciation, interest and taxation on sufficient equipment to carry the peak load of four months of the year when traffic is normal or sub-normal for the balance of eight months? Why not have strict car conservation 365 days in the year and have equipment available when needed?" During the two years (1909-1911) that the six-dollar rate was in effect the results were summarized as follows:

"Shippers are careful to order no more cars than are needed, and to name the date on which they are wanted. It has increased the available track room at stations, prevented congestion or blockades at terminals and added to the efficiency of the switching service. Shippers give the matter of loading and unloading preferred attention. Shippers have taken very readily to the change, and everything considered, the $6 rate has been a distinct success, both in

keeping cars moving and getting a more equitable distribution."

A local freight train conductor testified: "Since the $6 rate has been enforced, it has helped our work at non-agency stations as well as at stations where agents are located, and it is done in one-half the time it took before. Parties who used to take the full limit, now sometimes unload in 24 hours. I have not heard a word of complaint from anyone. Sometimes I have thought it was rather hard in stormy weather when hauling was bad, but the parties found a way to release the cars before they would pay six dollars."

Considering that the purchasing value of a dollar has depreciated fifty per cent and the present cost of operation increasing at the same ratio since April, 1910, when we had the $6 rate, it is apparent that to produce the same result would now require a rate equivalent to $12 a day. The present rate of $2 a day is the cheapest storage of any character in our land, and as a result cars are being used as display rooms and storage warehouses.

Mr. Munholland concludes his circular with an appeal for a flat demurrage rate of $10 a day. He says, however: "I will recommend the adoption of our old efficient straight rules, with a minimum demurrage rate of $5 a day, with an increase of $1 in this rate, effective on the first day of every succeeding month until the desired result is obtained, i. e., real car conservation. The uniform demurrage rules and rates now in effect have not produced results. Their application has conclusively tended to increase both car detention and demurrage. * * * The California Commission has always worked for efficient rules and a high demurrage rate and against the average agreement in the best interest of shippers and carriers alike."

He summarizes the gospel of car conservation in the following sixty-three recommendations:

Proposed Changes in Demurrage Rules and Regulations

1. Increase demurrage rate to minimum of $5 per car per day with an increase in rate of $1 per day at first of each succeeding month.
2. Abolish the Average Agreement
3. Restore stringent and efficient demurrage rules similar to our former tariff.
4. Reduce free time on cars for loading to 24 hours, computed from actual spotting of car.
5. Reduce free time on export freight to a minimum of ten days or a maximum of 20 days, computed from arrival at port of exit. Shipping or embargo permits to be issued by one office for all rail lines.
6. Compute time on all cars held for unloading from 8 a. m. instead of 7 a. m., as at present.
7. Reduce free time on tank cars to 24 hours.
8. Eliminate extension of free time on account of weather conditions.
9. Charge demurrage for all Sundays and holidays after expiration of free time.
10. On cars ordered and not used assess charge of $10 when line haul involved, and $5 when moved from a point within switching limits.
11. Provide for collection of demurrage when dunnage or rubbish is not removed from cars.
12. Provide for collection of demurrage when carrier is prevented by causes beyond its control from removing cars from industrial plants after release.
13. Reduce free time on all cars and commodities to 24 hours in the event foregoing changes do not produce desired car conservation.

Furnishing Notices of Arrival of Cars

14. Give telephone notice of arrival on all cars received as quickly as possible, and confirm by postal card.
15. Whenever possible, mail postal card notices of arrival 24 hours of the day, seven days of the week.
16. Give advance notice to consignees of carload freight to enable them to take delivery immediately on arrival.
17. Encourage grain and produce dealers to establish clearing offices for purpose of receiving arrival notices and to give disposition of carload freight.

Car Distribution

18. Censor car orders at time given to prevent misuse of cars.
19. Accept car orders only in writing.
20. Place identification tags on all cars for loading to prevent misappropriation of empties.
21. Do not assign cars to any particular service unless kept fully employed at all times.
22. Give preference when possible to those who will load them promptly and heavily.
23. Eliminate use of cars for cross-town hauling, except where absolutely necessary.
24. Employ competent, well paid car distributors and assistants with full authority to make proper distribution and prevent misuse of equipment, eliminate cross-hauls and follow up delayed loads.

Demurrage Bureaus

25. Re-establish efficient demurrage bureaus throughout the United States.
26. Demurrage bureaus should publish monthly figures on car detention caused by cars being held for prospective loading, delays in spotting cars for unloading or pulling cars after released, or any other railroad delay.
27. To assist the Interstate Commerce Commission in arriving at remedial demurrage regulations, demurrage bureaus should publish statistics for each station monthly, showing cars released before free time began, in first and second day of free time, as well as cars under demurrage and the length of detention, charges and disposition of the same.

Terminal Charges

28. Reconsignment rules to be reconstructed, exceptions omitted and enforcement placed in hands of demurrage bureaus.
29. Provide charge of $10 on every car set out, held and picked up for inspection and grading of contents.
30. Provide charge of $10 on every car billed to shipper's order, notify.
31. Provide spotting charge of $5 for cars constructively placed or held on account of consignee being unable to receive them.
32. Provide charge of $1 per day on all tank and other private cars stored on carrier's rails.

Train and Yard Movement

33. Prevail on shippers to have cars ready to move and billing in hands of agents in time to move forward by first switch or train service.
34. Classify cars when placed in trains with regard to station, track and industry destination to save switching at terminals, avoid congestion and "bottling up" of yards.
35. Put on extra trains, when necessary, to move cars set out at sidings to reduce tonnage or for bad order.
36. Reduce tonnage of trains so they can get over the road without breakdown in power.
37. Standardize time and number of switches to be given daily by yard engines.
38. Use switch foreman's work list as a check on work performed and to show time cars are spotted and time pulled from industries.
39. Have disposition slip made on every car received in yard and follow up with shipper or railroad employes religiously until car is released.
40. Install track sales at strategic points to avoid back or out of line hauls.
41. Install compressed air tube system wherever practicable to facilitate handling of waybills, car and disposition orders to expedite switching or movement of cars in trains.
42. Arrange for leasing power belonging to industries or contractors to do switching and relieve power shortage.
43. Make light repairs to cars in yard without switching to repair track.
44. Advance train clerks to work ahead of local trains to prepare their work.

Miscellaneous

45. Agents should refuse to accept bills of lading for shipments destined to [large city] terminal points unless consignees' street and telephone number are shown, and the name and number of the track on which car is to be unloaded.
46. Unload and store contents of refrigerator cars if not released within free time.
47. Terminal efficiency committees should have inspectors stationed at important stations to report fresh facts for committee's action; and sub-committees should be formed at all large terminals.
48. Restrict use of railroad telegraph wires with priority given to train movement, then to car handling and other business to follow in order of importance.
49. Impose penalty for detention of cars containing company freight and publish statistics showing departments responsible.
50. Publish statistics on delays in repairing bad order cars and follow up closely.
51. Establish joint car inspectors at interchange points to prevent disputes in application of M. C. B. rules.
52. Place all minor railroads that are common carriers on a per diem instead of a demurrage basis.
53. Encourage consignees to employ public draymen to handle team track cars, as they are the most efficient car releasers.
54. By analysis and comparison encourage consignees to enlarge facilities and install improved appliances to release cars quickly.
55. Allow agents a percentage of all net demurrage charges collected at their station.
56. Number warehouses, doors or designate spots where cars are to be placed.
57. All car orders and bills of lading should be stamped with date and time received by agent at originating point.
58. Have advance man ahead of local trains, signal maintainers or track walkers take check of cars at blind sidings to save time of local freight crews and protect demurrage.
59. All diversions, whenever practicable, to be handled through commercial telegraph lines to relieve railroad wires and insure quicker action.
60. More speed in placing embargoes at the commencement of a congestion.
61. Make special arrangements with Post Office Department to speed up delivery of post card notices of arrival of carload freight. (This plan has been followed out heretofore with great success.)
62. Encourage industries to install devices for doing their own interplant switching.
63. Paving of public delivery tracks and removal of obstructions preventing quick release of cars.

GOLDEN GATE.



The North and Eastbound Classification Yard, Speeder Tracks and Tunnel Portals on the Right

New Haven Builds Freight Yards at Cedar Hill

The Largest Unit of a Comprehensive Plan for Improved Terminal Facilities Nears Completion

TO RELIEVE CONGESTION on the main line and in existing terminals, the New York, New Haven & Hartford now has under way a construction program involving an expenditure of more than $6,000,000 for yard and classification facilities. This program, which was outlined in a preliminary manner on page 1166 of the May 10, 1918, issue of the *Railway Age,* includes three main projects: a freight classification yard and engine facilities at Cedar Hill, New Haven, Conn., a classification yard and engine facilities at Pawtucket, R. I., and a freight terminal and classification yard at Boston, Mass. The Cedar Hill layout will furnish the facilities to receive trains from all lines converging at New Haven and for classifying the received cars into trains for the proper destination. The facilities at Pawtucket will serve the same purpose for the lines converging at Providence, and those at Boston for the lines converging at that point. With the completion of these facilities the necessity for extensive classification at various other terminals will be obviated and important operating economies will be effected. Of the three major projects in the program, the one at Cedar Hill is the most important.

This project involves the construction of two hump yards; one for westbound traffic, and the other for east and northbound traffic, each with receiving, classification and departure yards. The plan also provides for the construction of a receiving and departure yard for Shore Line trains, additional engine facilities, including a new 18-stall engine house, an l.c.l. transfer station with its supporting yard, a coal storage yard, a material yard and storehouse, a small machine shop, additional inspection pits and pantagraph inspection platforms for electrical equipment, including connections. The yard, when complete, will be six miles long and one-half mile wide and will furnish standing capacity for 11,000 cars.

It will contain 95 miles of tracks and 460 switches. The construction involves 2,836,000 cu. yd. of grading, 23,000 cu. yd. of concrete, 2,000 piles for masonry supports and 3,000 lin. ft. of single track trestle for inner crossings.

Important Sections Completed First

Construction was begun in June, 1917, and the work has been carried on with the idea of completing first those units or parts of units which, when placed in service, will be of the greatest value in relieving congestion. In accordance with this program six freight relief tracks with a combined capacity for 396 cars, located in the southerly limits of what will be eventually the New York-and-Maybrook receiving yard and a track connecting this unit with the Shore Line, were completed in 1917.

By the end of 1919, seven additional tracks having a combined capacity of 750 cars were completed in the northerly limits of the New York-and-Maybrook receiving yard, in addition to 44 tracks in the north-and-eastbound classification yard, four pull-out tracks extending from the classification yard into the northbound departure yard and a backhaul connection leading from the pull-out tracks to the freight relief tracks which were completed in 1917. A winter and a summer hump track between the seven tracks of the New York-and-Maybrook receiving yard and the 44 tracks in the classification yard were also completed.

In addition to this, there has been completed a northbound connection to Hartford, a loop connection to the New York-and-Maybrook departure yard for westbound movements from the Shore Line to that yard, two l.c.l. transfer platforms, 1,200 ft. long and 20 ft. wide with eight complementary tracks, a material storage yard and a 100,000-ton coal storage yard. The work now under way consists of the double tracking of the New Haven connection, and the filling in and laying of tracks for the southbound and the Shore Line receiving yards and the westbound classification yard. Two tracks will be added to the present New York-and-Maybrook receiving yard, making a total of nine tracks to be operated during 1920. An additional l.c.l. freight platform, 1,200 ft. long and 30 ft. wide, is also under construction. Each l.c.l. platform is being constructed in a slightly different manner; and in connection with this, various types and kinds of roofing and roof construction are being tried out.

The completion of these units permits the receiving of trains from either the east or the west on the seven tracks in the New York-and-Maybrook yard, the classification of these cars into trains on the 44 tracks completed in the north-and-eastbound classification yard and the use of the six freight relief tracks as a temporary departure yard for both east and west movements, or, in other words, for the New York and Western divisions and for Providence, Boston and other points east. Several units were placed in service and the classification of cars over the hump was begun on December 15, 1918. As a result of the opening of operations here the stress at other points was relieved materially, allowing a reduction in the number of switching crews at various other terminals.

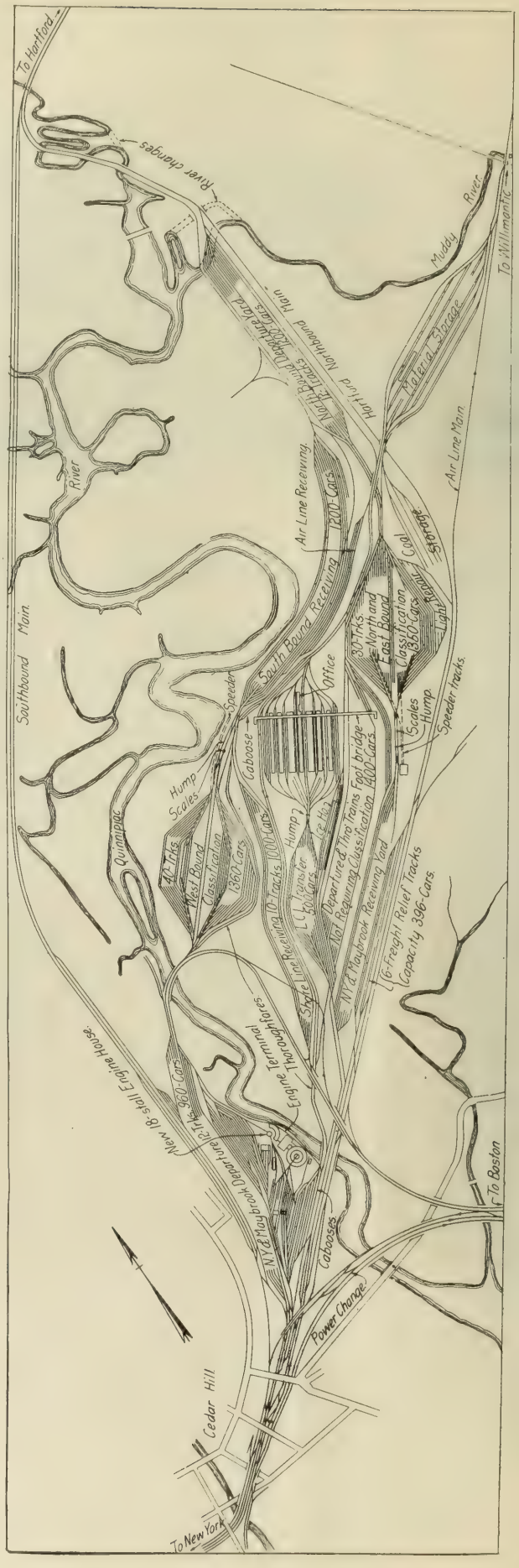
The New York-and-Maybrook receiving yard, when complete, will consist of 14 tracks, each having a standing capacity of 100 cars. Of these 14 tracks, the seven now in service as receiving tracks have been completed on the permanent line and grade. Five of the six tracks in the temporary departure yard are also included in this main unit. These five tracks as now built have a capacity for only 66 cars each, although evenually they will be extended to accommodate 100 cars. The receiving tracks are divided into two sections by a series of cross-overs, the section at the head or hump end of the yard providing space on each track for 60 cars, while each track back of the cross-over will accommodate 40 cars. By this arrangement, it is possible to receive and classify short trains without tying up an entire track. These cross-overs are permanent and will be extended all the way across the unit when it is completed and finally thrown into service as a receiving yard. The completed north and eastbound classification yard consists of 40 tracks and 4 repair tracks with a total capacity for 1,350 cars.

The completed facilities at the hump consist of a summer and a winter hump track, each provided with scales, speeder tracks leading to the north and south units of the classification yard, a garage for the hump riders cars, an office for the conductor of the hump, a car riders' building, a signal tower and auxiliary air supply facilities. Electro-pneumatic switches have been provided at the hump and the head end of the classification yard. The signaling apparatus consists of a standard electro-pneumatic outfit. Three air whistles in the New York receiving yard and one at the hump, which may be operated either by the towerman or the conductor of the hump, have been installed in amplification of the signals. These are used to convey warning to hump engines in case of trouble at the head end of the train. Floodlights have been installed throughout the hump district.

Maximum Efficiency Secured in Classification

In the design of the classification facilities, the principal objective was to ensure the passing of 180 cars an hour over the humps. Different profiles had, of course, to be developed over the winter and summer humps and one of the problems of design was the harmonizing of the grades from one hump track to the other to permit of the efficient operation of the diamond cross-overs which have been installed between these tracks to secure flexibility in the layout.

These profiles have been worked out to secure a speed of cars of from four to five miles an hour when leaving the last switch in order to make the run to the end of the yard. With wind resistance varying from 8 to 20 lb., the speeds are 4 and 5 miles per hour at the scales, accelerating to 12.5 to 15 miles an hour entering the switches and to 12.5 and 18 miles an hour leaving the last switch. Over the summer hump, the grades established were 1.0 per cent over the scales, then 1.25 per cent for 125 ft., and 3.0 per cent for 897 feet to the end of switches. Over the winter hump, the grades are 1 per cent over the scales, then 2 per cent for 80



General Plan of the Cedar Hill Yard

ft., followed by 5 per cent for 48.5 ft., 1.25 per cent for 40 ft., and 3 per cent for 100 ft. and 1 per cent for 897 ft.

With the speed of cars predetermined, it was possible to locate the switches with reference to the summit of the hump so that the desired number of cars per hour could be classified over the hump, at the same time ensuring ample time for them to clear cars following.

A Howe track scale has been provided under the winter



The New York and Maybrook Receiving Yard and Lead to Hump

hump and a Buffalo scale under the summer hump, both being of the dead-rail type. The scale pits, which are of concrete, are unusual for their size and convenience, all the scale parts being easily accessible for inspection and repairs. The two pits are connected by a concrete passageway which permits the removal of parts of either scale through one exit, although an exit is provided for each. A door is provided at the end of the passageway nearest the winter scale, permitting the heating of this pit without the necessity of heating the entire pit layout. Both pits are lighted with electricity. The weighmaster's office, which is adjacent to the winter hump, is modern in all respects and provides ample space for the office force and records, as well as for lockers, toilets, etc. The summer weigh-house is constructed in a much simpler manner.

Two speeder tracks have been installed, one for each unit of the classification yard. These have been constructed to standard gage and extend from the car riders' building down to the throat of the classification yard, where they are carried under the railway tracks by means of concrete tunnels and thence into the yard between the leads in each section. The hump cars are of the Kalamazoo type and make the round trip in 3½ min., and this, in combination with the short distance which the car riders have to walk, has greatly reduced the number of men which would ordinarily be used. A garage which provides storage for the cars as well as shop facilities for making minor repairs has been erected back of and adjacent to the car riders' office. This last building is located alongside the winter hump track and also contains lockers, toilets and other conveniences for the car riders. The remaining buildings at the hump are the office for the hump conductor and the signal tower. These are of the usual type.

The main supply of air for the operation of the switches, etc., is carried in a 4-in. and a 3-in. line from a compressor unit in the engine house to the hump, a distance of approximately 6,000 ft. Expansion bends are provided every 400 ft. and connections for tie tamping purposes occur at intervals of 150 ft. At the head end of the hump, air connections have been installed between the running rails for testing train lines before passing over the hump.

To prevent the bleeding of the supply and for use in case of accident to the main supply, two air reservoirs have been provided, one at the hump and one midway on the line. An auxiliary plant, consisting of an electrically-driven compressor connected to the main reservoir, has been installed adjacent to the signal tower. The capacity of the auxiliary plant is sufficient to handle the switches.

The Engine Terminal Facilities

In connection with the new freight terminal facilities, an 18-stall engine house has been completed which presents many interesting features. Its design was based on the use of timber in the roof construction and the supporting posts, and the outstanding feature is the plan which was developed to provide for ventilation and the removal of smoke without the use of mechanical devices or dependence upon the workmen for good results. This has been accomplished by means of ventilators permanently opened, provided in the monitors which extend over each engine pit for a distance of 31 ft. 3 in., and others, also permanently opened, provided over the doors in the inner circle wall. The action of these ventilators is continuous, insuring favorable working conditions in the interior of the house in all seasons. Because of the extent of the ventilators provided in the monitor, the efficiency of the system is not destroyed by the improper



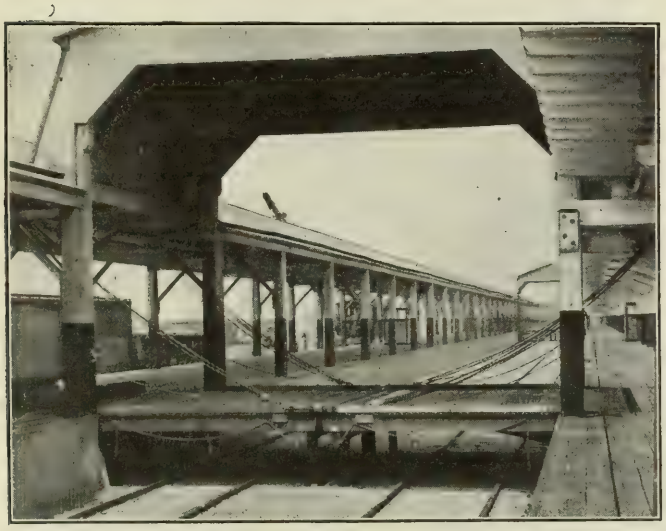
A View of the Engine Terminal Facilities

placing of locomotives on the pit; that is, when the locomotive stack does not come under the smokejack. This has been accomplished without interference with the efficient heating of the building. When desirable, additional ventilation may be had by means of the pivoted sash provided in the windows.

In planning the layout, provision was made for a 44-stall house, of which 18 stalls have been built. The center of the layout is occupied by a 95-ft. turntable, designed for a total load of 500 tons on the center pier and 150 tons on the end wheels, distributed over 20 ft. of the circle rail. The table is of the half-through girder type, operated by an electric tractor.

The posts in the inside wall of the house are on a circle of 93 ft. 5-13/32 in. radius and the house is 96 ft. 3 in. deep, the clear stall length being 95 ft. 1 in. The angle between tracks is 8 deg. 10 min. 54-6/11 sec., giving a distance center to center of posts in the inner circle wall of 13 ft. 4 in. and center to center of pilasters in the head-end wall of 27 ft. 1 in. Four 10-in. by 10-in. yellow pine posts resting on concrete piers are provided between stalls to support the roof beams. The main roof girders and the rafters are also of yellow pine and the roof consists of 2-in. matched spruce covered with a built-up roofing.

One of the drawings shows the details of the monitors,



The L. C. L. Platforms and the Connecting Bridge

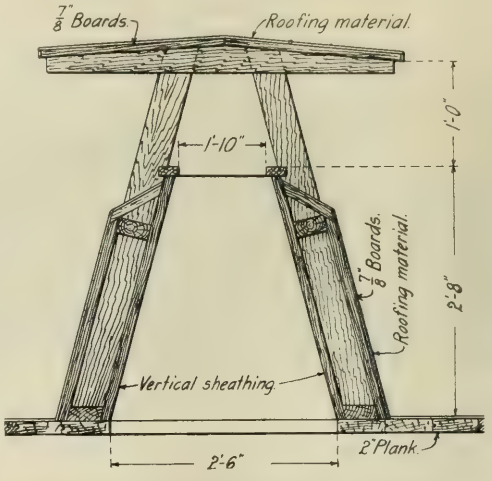
which are made up of 2-in. by 4-in. studs and 7/8-in. sheathing, covered with a built-up roofing on the weather side. The opening for ventilation is 2 ft. 6 in. wide at the main roof line, narrowing to one foot at the top, and the clear opening below the monitor roof is also one foot.

An Interesting Foundation Problem

The character of the earth foundation underlying the site complicated the work of placing the foundations, which are all of concrete supported on wood piles. Originally the site, which immediately adjoins the Quinnipiac river, was a swamp. The surface strata, approximately three feet deep, was a bog formation, directly underlaid with about 15 ft. of liquid mud. Under this was a strata of thicker mud, 15 to 20 ft. in extent, supported on stiff clay 25 to 30 ft. deep. To reclaim this land a rip-rap wall was constructed along the bank of the river. This served as a dam to prevent the filling material from wasting into the stream and in the filling-in operations the work progressed inland from the wall.

Prior to the construction of the house a complete circle of radial tracks and a 75-ft. turntable had been provided. It was necessary to continue these tracks in service, consequently the house was built in sections of from four to six stalls, each section being placed in service as soon as completed.

In preparing the foundations for the house the filling which has been placed for the radial tracks was removed by a clam-shell. The rip-rap wall adjoining the house was reinforced and the backfill made in the manner described above. After the excavation for a section was completed the piles were driven from the high level, followers being



Method of Constructing the Monitor

used. The pile driving outfit was equipped with a 3,000-lb. hammer and the piles were driven into the clay until the pentration did not exceed four inches. After standing one day test piles showed a penetration of only one inch under three blows of the hammer. However, owing to the unstable character of the formation about the clay it was considered necessary to provide against the deflection of the piles as they received their load. This was particularly neces-



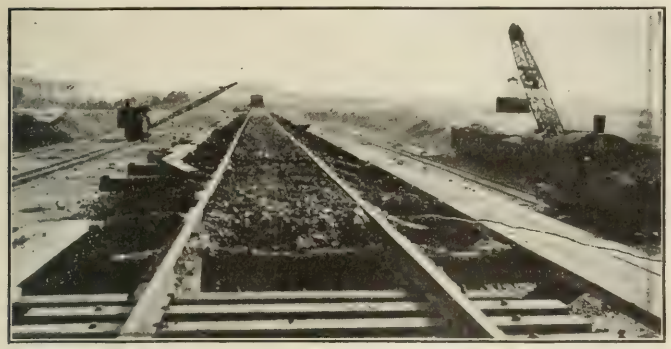
Outlet to One of the Speeder Track Tunnels

sary for the piles supporting the brick pilasters in the exterior wall anl before these piles were capped the eight piles in the clusters were tied together securely with two 1½-in. steel rods. These rods were run completely around the clusters and carried back 25 ft. into the engine pit foundations, where they were twisted around the pit piles.

The construction of the new turntable involved new circle walls and the rebuilding of the center pier, the foundation of the old pier not being capable of carrying the additional weight. This work was carried on under traffic. The change from the old 75-ft. table to the new, including the taking out of the old circle wall, was made in 20 hours.

The Interior Arrangements

The engine pits are all 79 ft. long and have been provided in all of the 18 stalls. One stall is crossed by a truck pit and the three adjacent ones by a drop pit. All the pits are of concrete, supported on piling. The engine pits have 24-in. side walls, providing good foundations for jacking operations. The walls are capped with 8-in. by 10-in. yellow pine timbers which carry the rails. Since this work was completed, one stall has been rearranged and a Whiting hoist



The Coal Yard for Winter Storage

installed. All of the pits are heated by steam coils, consisting of four rows of 1½-in. pipe all around the pit walls. These are covered with a galvanized wire grill of No. 10 wire and 1-in. mesh and are protected from injury by jacking operations by the 8-in. by 10-in. timber caps provided on the pit side walls for carrying the rails. These timbers are placed with a 3-in. offset into the pit and, with the grill, provide absolute protection. A combination of exhaust and live steam under reduced pressure with vacuum pumps to maintain circulation is used for heating purposes and, in addition to those provided in the pits, coils consisting of from 10 to 16 rows of pipe are provided on the outside and on the sectional walls.

A concrete pipe trench 5 ft. 1 in. by 7 ft. 1 in. extends around the building at the inner end of the pits. The trench carries the main steam, air and water lines and the main sewer. Owing to the character of the earth formation all branch conduits had to be supported, the air and water pipes and electric light conduits being carried on the outside pit wall and up the posts between stalls. All the piping is buried in sand to escape the action of gases and to protect it from the cinders in the filling.

Contrary to the usual arrangement the drainage is to the head-end wall rather than to the turntable pit. The main sewer runs in the pipe trench all around the house, the drainage being to the center from both ends. The cast-iron pipe sewer to the river is supported on piles and fitted with backwater gates which operate at flood tide.

The roof posts between stalls are equipped with blower sets and fittings for air, water and electric lights. They have been designed to fit any type of engine without the use of hose connections and, after use, it may be folded up out of the way on the post, drainage being secured by the automatic drip in the Barco joint. The vacuum pumps for the heating systems are located in the pipe tunnel.

This project has been carried out under the general direction of Edward Gagle, chief engineer of the New Haven, and I. D. Waterman, engineer of construction. J. M. Sullivan, assistant engineer of construction, was in direct charge of the work. The plans for the roundhouse were prepared by F. W. Mellow, architect.

Additional Rate Increases Proposed to Pay Higher Wages

A METHOD FOR PROVIDING the additional revenues needed to meet the increase in wages awarded by the Railroad Labor Board, by placing nearly half of the increase on passenger traffic, was submitted to the Interstate Commerce Commission on July 20 by Alfred P. Thom, counsel for the Association of Railway Executives, on behalf of the carriers in the Official, Southern and Western Classification territories. The proposal was submitted in the form of a supplemental application in the general rate case, Ex Parte 74, as follows:

The carriers in Eastern, Southern, and Western groups bring to the attention of the commission the fact that since the conclusion of the hearings herein, the United States Railroad Labor Board on July 20, 1920, made an award increasing the pay of railroad employees, effective May 1, 1920, the effect of which, as nearly as can now be estimated, is to increase the operating expenses of the carriers approximately $626,000,000 per annum, divided as follows:

Eastern group	$318,729,935
Southern group	69,909,491
Western group	237,281,659
Total	$625,921,085

The carriers respectfully suggest that the revenues required



One of the Many Heavy Cuts at Cedar Hill

to meet said wage award be provided in part from passenger traffic and in part from freight traffic, by increasing rates accruing from passenger traffic, both interstate and intrastate, and by increasing the percentage advances in freight and switching rates, already applied for, both interstate and intrastate, in the following manner, to-wit:

1. All passenger fares to be increased 20 per cent, with a minimum of not less than 10 cents per trip on any form of ticket. The foregoing includes: Standard local or interline fares; excursion, convention and fares for other special occasions; commutation and other multiple form of ticket; extra fares on limited trains, and club car rates.

2. All excess baggage rates to be increased 20 per cent.

3. Surcharge on sleeping and parlor cars to be made 50 per cent of the charge for space occupied either in parlor or sleeping cars.

4. Milk. Increase all rates, both passenger and freight, same total percentage applied to freight revenue.

5. Freight and switching revenues to be increased sufficiently to yield the balance of the revenue required to meet the increased operating expenses due to the Labor Board award, in addition to the percentage increase already proposed in this proceeding. The increased amounts thus to be provided from freight traffic and switching service are arrived at as follows: If the increases proposed above on traffic other than freight and switching are made effective on all such traffic, state and interstate, and if the volume of business equals that of the year ended October 31, 1919, the estimated increased revenue accruing therefrom will be as follows:

	Eastern	Southern	Western	Total
1. Passenger revenue (Inc. 20 per cent)	$111,668,982	$29,826,401	$92,332,599	$233,827,982
2. Excess baggabe (Inc. 20 per cent)	527,888	180,017	713,090	1,420,995
3. Surcharge in parlor and sleeping cars (50 per cent of P. & S. car rate)	17,556,108	5,852,036	20,231,200	43,639,344
4. Milk revenue (Inc. same as freight)	6,956,416	252,115	1,453,558	8,662,089
Total amount to be raised from above sources	$136,709,394	$36,110,569	$114,730,447	$287,550,410

The amount remaining to be provided from freight traffic and switching service and the resulting additional percentages of increase in freight and switching revenues required in order to meet the wage award are as follows:

	Eastern	Southern	Western	Total
Wage award	$318,729,935	$69,909,495	$237,281,655	$625,921,085
Increased revenue from Items 1-4 listed above	136,709,394	36,110,569	114,730,447	287,550,410
Balance to be obtained from freight and switching	$182,020,541	$33,798,926	$122,551,208	$338,370,675
Percentage of freight and switching revenue	10.00%	8.57%	8.23%	9.13%

These additional percentages added to the percentages already proposed in this proceeding produce the following total percentages of increase in freight and switching rates necessary to take care of the requirements already shown and the wage board award:

	Eastern	Southern	Western
Original application as revised at hearing	29.75%	30.34%	23.80%
Additional percentages required	10.00%	8.57%	8.23%
Total percentages required	39.75%	38.91%	32.03%

The proposed advance of 20 per cent in passenger fares is, as hereinbefore stated, based upon the assumption that the same percentage of advance is to be made in intrastate fares. Intrastate passenger traffic contributes approximately 50 per cent of the total passenger revenue. The attention of the commission is called to the fact that in many states there are statutory enactments undertaking to fix passenger fares 3 cents per mile or less. While existing rates of 3 cents per mile in such states are continued in effect by the Transportation Act, it will be necessary to give careful consideration to the situation that will arise as to proposed rates in excess of that amount. In those states where the state commissions have no power to increase passenger fares, it will be necessary for the carriers to apply to the Interstate Commerce Commission for relief. While such proceedings are being taken it is very doubtful, owing to the relation between interstate and intrastate passenger fares at important basing points, whether the proposed interstate rates can be made effective in many cases. It must, therefore, be anticipated that, for a period of several months at least, the full benefit of the proposed basis of passenger rates cannot be secured and that the carriers will in fact fall many million dollars short of securing it. It follows that, unless the situation above outlined can be met promptly, further increases on other traffic than those now proposed will be needed.

A similar situation to that above outlined as to passenger rates exists in some of the states as to the proposed increased freight rates.

The proposed advance in passenger fares is likewise based upon the assumption that the passenger traffic will remain as heavy as during the year 1919, notwithstanding the fact that the passenger traffic of said year was the largest in the history of the carriers, including as it did a large movement incident to demobilization, and notwithstanding the possible effect of said increased passenger fares and the imposition of surcharges in parlor and sleeping cars upon passenger travel and passenger revenue; and carriers state that if, as may well be, there is a falling off of passenger travel or a falling off in the number of persons occupying parlor and sleeping cars, the estimated increased revenue from passenger traffic will not be realized and it will become necessary to look to other sources of revenue to make good the resulting deficiency.

The foregoing proposals embody the suggestions of the carriers as to the manner and sources from which the increased revenue required to meet the award of the Labor Board should be provided.

They, therefore, ask that, in addition to the advances in freight and switching rates heretofore applied for in this proceeding, the commission initiate or authorize the increases in rates herein proposed or such other increases as, in the judgment of the commission, are meet and proper and as will, in connection with the increases heretofore proposed, yield the aggregate net railway operating income heretofore sought herein.

More Pay for Railroad Employees.—That the railroads can foot the bill presented to them without an addition to their revenues much greater than the award it would be nonsense to believe, so imperative is the necessity for new rolling stock and betterments.—*Brooklyn Eagle.*

The Railroad Wage Award.—It is not to be believed that the railroad labor unions so misunderstand the drift of affairs as might appear from some of their comments upon the action of the board. Certain dark hints of what the men may do to express their imputed dissatisfaction with their lot may be taken at a generous discount. It is considered good labor union tactics never to admit that a wage settlement distantly approaches justice. The public may confidently expect after a few days to see the men accept the Labor Board's decision as a good thing, and settle down to their work as they have not done at any time in the past three years.—*The Wall Street Journal.*

Brotherhood "Unit-Action" on Wage Award Fails

Labor Leaders Disagree on Merits of Labor Board's Decision and Order a National Referendum

THE SIX MILLION DOLLAR wage increase granted railway employees on July 20 by the Railroad Labor Board, proved a disappointment to the brotherhood leaders who demanded almost double that amount. Meeting in Chicago, the leaders of all of the unions affected by the award spent three days in a fruitless endeavor to promulgate "unit-action" or rather "unit-reaction." All of the brotherhoods, however, with the exception of the Order of Railway Telegraphers, individually, through their general chairman, voted either to accept the award outright, under protest or with or without recommendations to the rank and file.

When the grand council composed of the chiefs of 16 organizations, started the third day of deliberations over the award, (July 23) the various brotherhoods and unions had alined themselves as follows:

Accepted Outright

Brotherhood of Railway Trainmen.
Brotherhood of Locomotive Engineers.
Brotherhood of Locomotive Firemen and Engineers.
Masters, Mates and Pilots of America.
Brotherhood of Stationary Firemen and Oilers.

Referred to Rank and File with Recommendations of Acceptance

International Association of Machinery.
Sheet Metal Workers' International Alliance.
Switchmen's Union of North America.
United Brotherhood of Maintenance of Way Employees and Railroad Shop Laborers.
Brotherhood of Railway Car Men of America.
International Brotherhood of Electrical Workers.
International Brotherhood of Boilermakers, Iron Ship Builders and Helpers of America.
International Brotherhood of Blacksmiths, Drop Forgers and Helpers.

Ordered Referred to Employees Without Recommendation

Brotherhood of Railway Signalmen.
Railway Employees' Department, American Federation of Labor.
Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees.

Rejected

Order of Railway Telegraphers.

Undecided

Order of Railway Conductors.

The line-up outlined above was held through a session of heated debate on July 22, in which those of opposing opinions attempted to argue all the groups to their viewpoints. The unions which had flatly accepted refused to yield, and those which had decided to call referendums with the recommendation to accept would go no further. The conductors later accepted the award but did so only after adopting a resolution of protest.

"However disappointing the decision is," said L. E. Sheppard, president of the Order of Railway Conductors, "the conductors feel that the public interest demands its acceptance and they do accept it with the reservation that a new petition will be submitted asking further consideration in respect to certain matters."

E. L. Hardy and A. M. Everett, respectively chairman and secretary of the United Brotherhood of Maintenance of Way Employees and Railroad Shop Laborers, also protested the award and asked that the Board fix a date for the introduction of a proposed schedule of further increases.

E. J. Manion, head of the Order of Railway Telegraphers, in explaining that organization's action said:

"The Order of Railroad Telegraphers has been discriminated against by the Board. We received generally a smaller award than any other organization and its representatives have accordingly referred the award to the membership for a strike vote or such other action as it shall determine."

Referendum Order Promulgated

Executives of the railroad brotherhoods, at a secret session on July 24 prepared an order for a nation-wide referendum by railway employees on the award. The completed order was a strong plea against a strike. Beginning before the passage of the Adamson law, it recites the history of railroad wage disputes. It pays incidental compliments to William G. McAdoo for concessions made the railroad men, but in each instance adds that they were not granted all they were entitled to. It reviews the hearings before the Railroad Labor Board, emphasizes that "your representatives did their very best" and points out that an attempt "to obtain a rehearing was denied."

"The Labor Board," the order continues, "is the highest court of appeal in this controversy. No higher tribunal is created by the Transportation Act, and its decision must either be accepted or rejected without further negotiation."

The order then recites the merits of the employees' service and continues: "Although the award was much less than the employees should have been awarded, much less than they were entitled to, and although they are, and have a right to be, disappointed with the amount of increase in wages granted, more than 84 per cent of them have agreed through their representatives to accept the award."

There follows an appeal to the federated shop crafts to vote in support of the action of the majority. The concluding section instructs the men to meet and prepare ballots on the rejection or acceptance of the order. It is estimated that no tabulated returns on any vote by the men will be received prior to September 1.

Outlaw Organizations Reject Award

The delegates selected to represent the various "outlaw" rail organizations of the country, voted unanimously to reject the proposals of the Board, because they contained no provision restoring the seniority rights for the men who struck last April. Power to settle the controversy was vested in John Grunau, president of the Chicago Yardmen's Association, by the delegates with the understanding that no negotiations would be opened unless the switchmen, firemen, and engineers be given their seniority rights.

A new policy by the federal government in regard to the outlaw unions which have crippled switchyards for two months was put into effect on July 23, bringing virtually an ultimatum to return to work by the morning of July 26 or face grand jury action under the Lever act. In dealing with the insurgents the government has brought to light the possibility of a new fight between the Brotherhood of Railway Trainmen and the Switchmen's Union of North America, which was formed in 1900 after the trainmen's organization had been defeated in the switchyards strike. The Switchmen's Union of North America was given contracts with

the roads to furnish switchmen. Recently, however, the union has been unable to supply men at Columbus, Ohio, and at Buffalo, N. Y. The roads involved appealed to the trainmen's organization and obtained help. The only organization now able to fill the outlaw strikers' places is the trainmen's and, if it should take over the switchmen's union contracts, the latter, it is said, will be virtually forced out of existence.

Federal subpoenas were issued for 60 railroad officers and labor executives at the request of District Attorney Charles F. Clyne, on July 23. The subpoenas are the outcome of the "outlaw" switchmen's strike, engineered, it is alleged, by John Grunau, a short time ago, which tied up yard traffic and hampered railroad operations thruout the nation.

Grunau and 27 of his associates were arrested at the time, but federal attorneys evidently delayed action after the rail wage decision. The officers summoned will appear before the grand jury on July 28 to tell what they know of Grunau's operations.

Expressmen Apply for Increased Wages

Representatives of the four organizations of employees of the American Railway Express appeared before the Labor Board on July 22 and applied for wage increases. These employees, numbering more than 70,000 were not included in the $600,000,000 award. They are asking from 25 cents an hour to $35 a month increases as well as improved working conditions. L. R. Gwyn, representing the American Railway Express, presented the side of the express companies before the Board. He indicated that the companies' attitude toward the application was not hostile, but at the same time pointed out that the companies now are operating under a deficit and have been so operating for a considerable time.

Senator Harding on Railroads

Senator Warren G. Harding, Republican nominee for president, in his recent speech accepting the nomination, clearly outlined the railroad issue and its principles for his party as follows:

"I am thinking of the railroads. In modern life they are the base of all our activities and interchanges. For public protection we have enacted laws providing for a regulation of the charge for service, a limitation on the capital invested and a limitation on capital's earnings. There remains only competition of service on which to base our hopes for an efficiency and expansion which meet our modern requirements. The railway workmen ought to be the best paid and know the best working conditions in the world. Theirs is an exceptional responsibility.

"They are not only essential to the life and health and all productive activities of the people, but they are directly responsible for the safety of traveling millions.

"The government which has assumed so much authority for the public good might well stamp railway employment with the sanctity of public service and guarantee to the railway employees that justice which voices the American conception of righteousness on the one hand and assure continuity of service on the other.

"The importance of the railway rehabilitation is so obvious that reference seems uncalled for. We are so confident that much of the present day insufficiency and inefficiency of transportation are due to the withering hand of government operation that we emphasize anew our opposition to government ownership, we want to expedite the reparation, and make sure the mistake is not repeated.

"It is little use to recite the story of development, exploitation, government experiment and its neglect, government operation and its failures. The inadequacy of trackage and terminal facilities, the insufficiency of equipment and the inefficiency of operation—all bear the blighting stamp of governmental incapacity during federal operation.

"The work of rehabilitation under the restoration of private ownership deserves our best encouragement. Billions are needed in new equipment, not alone to meet the growing demand for service, but to restore the extraordinary depreciation due to the strained service of war.

"With restricted earnings and with speculative profits removed, railway activities have come to the realm of conservative and constructive service, and the government which impaired must play its part in restoration. Manifestly the returns must be so gaged that necessary capital may be enlisted and we must foster as well as restrain.

"We have no more pressing problem. A state of inadequate transportation facilities, mainly chargeable to the failure of governmental experiment, is losing millions to agriculture, it is hindering industry, it is menacing the American people with a fuel shortage little less than a peril.

"The one compensation amid attending anxieties is our new and needed realization of the vital part transportation plays in the complexities of modern life. We are not to think of rails alone, but highways from farm to market, from railway to farm, arteries of life blood to present day life, the quickened ways to communication and exchange, the answer of our people to the motor age."

Comparative Value of Timber Cut from Live and Dead Trees*

Prejudice exists in certain quarters against the use of timber cut from dead trees, and some purchase specifications insist that only timber cut from live trees will be acceptable. As a matter of fact when sound dead trees are sawed into lumber, and the weathered or charred outside is cut away, there is no method known to the Forest Products Laboratory by which the lumber can be distinguished from that cut from live trees, except that the lumber from dead trees may be partially seasoned when sawed.

All the information available at the laboratory indicates that timber cut from insect or fire-killed trees is just as good for any structural purpose as that cut from live trees of similar quality, provided the wood has not been subsequently injured by decay or further insect attack. If a tree stands on the stump too long after it is killed, the sapwood is likely to become decayed or badly infested by wood-boring insects; and in time the heartwood also will be similarly affected. The same thing is true of logs cut from live trees and not properly cared for. Until the wood becomes affected by these destructive agents, dead tree wood should be just as strong and just as durable as sound live tree wood.

In considering the subject it may be useful to remember that the heartwood of a living tree is entirely dead, and in the sapwood only a comparatively few cells are living. Most of the wood cut from trees is dead, therefore, regardless of whether the tree itself is living or not. Such being the case, purchase specifications, instead of providing that material must not be from dead trees, should state that material showing evidence of decay or insect infestation exceeding a specified limit will not be accepted.

The membership of the National Union of Railwaymen of England on June 1 was 481,081.

*From Technical Notes No. 101 issued by the United States Forest Products Laboratory, Madison, Wis.

New Policy for British Railways Outlined

Sir Eric Geddes Flatly Opposes Nationalization—Regrouping and Other Changes Suggested

London, July 1.

A SCHEME for a proposed regrouping of the railway lines of England and Scotland was outlined in the *Railway Age* of May 7, 1920. The article in question, quoted from Modern Transport, pointed out that such a scheme was under consideration by the Ministry of Transport and aimed to show how far the idea had been worked out at that time. Sir Eric Geddes has since outlined this scheme in more detail and in addition has also pointed out the policies the Ministry of Transport is ready to advocate for the future welfare of railway transportation in the United Kingdom. Sir Eric's ideas are presented in some detail below. American readers will be interested particularly in his flat-footed statement against the advisibility of nationalization and will no doubt readily come to the conclusion that Sir Eric has been reading their own Transportation Act.

Opposes Government Ownership

"The experience of other lands," says Sir Eric, "proves that state management would never pay the market price for the best brains, which is a handicap you could never get over. The evidence that I have collected shows that state management is costly, lacks initiative and becomes red tape. Another thing which must impress everyone was summed up in the Report of the Royal Commission in Italy that politics corrupted railway management, and railway management corrupted politics. I do not believe that in this country, with our national characteristics, with our constitutional practice, it would be possible for the state to run and manage the railways as well as private ownership."

The government, therefore, after considering the disadvantages of state ownership of the railways has decided not to recommend nationalization. The government having ruled out nationalization, Sir Eric Geddes, Minister of Transport, has isued the following outline of his proposals as to the future organization of transport undertakings in Great Britain, and their relation to the state. It has yet to be seen whether this scheme will be adopted.

Regrouping

Sir Eric Geddes, in his new scheme, proposes that the railways of Great Britain should be formed into a limited number of groups—say five or six for England and Wales and one for Scotland. The Irish railways naturally will be dealt with, under the new legislature in regard to Ireland. The groups are to be determined on the basis of operating economy and all direct competition between the groups will, as far as possible, be eliminated. The groups proposed to be formed are approximately as follows:

1. *Southern*—The South Eastern & Chatham, the London, Brighton & South Coast, and the London and South Western.

2. *Western*—The existing Great Western System and the Welsh lines.

3. *North Western*—The London & North Western, the Midland and the Lancashire & Yorkshire, and the North Staffordshire and Furness.

4. *Eastern*—The Great Northern, the Great Central and the Great Eastern.

5. *North Eastern*—The existing North Eastern and the Hull and Barnsley railway.

6. London Group—(Local lines).

Scotland. 1. A Scottish group for the whole of Scotland.

Amalgamation to Be Voluntary

In each case the group would absorb the smaller and independent standard gage lines within its area, but railways which may be classified as "light," whether existing or future, will be wholly excluded from the grouping arrangement, and proposals with regard to these light railways are indicated later on.

It is hoped that the amalgamation of the companies in the respective groups will be carried out voluntarily, but as the scheme depends on the amalgamation, powers will be sought in a future Transport Bill to compel amalgamations (on terms failing agreement to be settled by some tribunal), in any cases where they are not voluntarily completed in a reasonable time to be specified.

It is recognized that a more logical grouping of the existing systems might result if regard were had exclusively either to geographical or to operating considerations; but the amalgamation of complete undertakings, as the initial step, will avoid many of the difficulties which would arise if undertakings had to be divided. It would be open to the new group of companies to exchange between themselves lines which project from the territory of one group into that of another, and at a later stage it may become necessary to require them to do so.

Management

Each of the group railways will have a board of management, and in order to secure efficiency and uniformity, and avoid undue cost, the number of members composing the board should be limited to probably 21. The composition of the board is considered to be of the greatest importance, and while in the past the directors of railway companies have all been appointed by the shareholders, the government is of opinion that the time has arrived when the workers—both officers and manual workers—should have some voice in management.

The board of management should, in the opinion of the government, be comprised of representatives chosen as follows:

(a) of the shareholders, who should form a majority on the board, and of whom a proportion should hold large trading interests;

(b) of employees, of whom one-third might be leading administrative officials of the group, to be chosen by the rest of the board, and two-thirds members elected from and by the workers on the railway.

Finance

The act of parliament should lay it down that rates and fares shall be fixed at such a level as, with efficient and economical management, will in the opinion of a prescribed authority enable railway companies to earn a net revenue substantially equivalent, on some pre-war basis to be settled in the act, to the combined net revenue of all the companies absorbed in the group. With due care and economy it should be possible for group companies to improve on their pre-war return; but in that event the government is of opinion that such surplus revenues should not accrue entirely to the companies. The state would be very materially extending the "charter" of the companies and is entitled to participate in such surplus revenues, and settlement of a suitable sliding

scale to regulate their division presents no insuperable difficulty.

Development Fund

It is not contemplated that the government's share of the surplus revenues should be thrown into the general revenue of the country. Much development work has to be done, which is beyond the financial resources of the localities, and the intention is that the government's share of these surplus profits should be funded for development purposes, to assist backward districts, to develop light railways, and for other appropriate purposes in connection with transportation, as may be approved by Parliament in the act.

Rate-Fixing Machinery

The financial stability of the groups, on the one hand, and reduction of rates on the other can, in the opinion of the government only be assured if there is adopted a procedure for fixing rates which, whilst being flexible will command the confidence of the railways and traders. The Statutory Rates Advisory Committee is now engaged upon a systematic review of railway rates and charges, the principles on which they are to be fixed, the machinery by which they shall be governed, and the committee's reference will later be extended to cover fares.

The machinery for dealing with the railway rates and charges of the country is generally admitted to rest upon an unsatisfactory basis; but it is hoped to place the whole system of rates and charges upon a sound footing, after the Rates Advisory Committee has reported.

The first object of the revision will be to secure financial equilibrium to the railways of Great Britain as a whole, and it is anticipated that, having regard to the size and diversity of traffic conditions in each group, the revision in aiming at this result will also secure an approximate equilibrium within each of the proposed groups. If, however, revenue were not obtained at least equal to the basic revenue agreed upon, the procedure contemplated is, that the Rates Advisory Committee—or whatever body may be appointed to exercise its functions—should be asked to consider modifications in the scheme and to make recommendations to the Minister as today.

It is not possible at this stage to indicate in detail what machinery should be set up for dealing with appeals from traders on railway rates. The Rates Advisory Committee is conducting an exhaustive inquiry, and the government must await its report before it can embody any proposals in a bill.

The government does not propose to give to the companies any financial guarantee. It proposes to set up a flexible rates machinery, which will enable appropriate charges to be levied, and to leave the railway companies to rely upon this machinery for the maintenance of the financial position of the groups at the level agreed.

The earnings of the companies must, of course, be subject to the normal fluctuations of traffic and to the express stipulation that the undertakings are being managed with due care and economy. This stipulation is considered essential to the protection of the public; but on the other hand it is proposed to grant to the companies a right of appeal to a judicial tribunal if the Minister of Transport refused, upon their application, to put the machinery for revising rates in motion.

Wages and Working Conditions

It is proposed to provide by the bill for a permanent machinery to deal with the questions of railway wages and working conditions, and on the lines of the two boards which have been established temporarily by agreement, namely, the Central Wages Board consisting of equal numbers of managers and men with an appeal to the National Wages Board consisting of four managers, four men, and four users of the railway, with an impartial chairman.

Future Powers of the Government in Relation to Railways

It will be proposed to confer certain powers upon the state in relation to railways. These powers may be conveniently grouped under the following headings:

(a) For the protection of the public.

(b) For the economical operation of the railway systems of the country.

(c) To safeguard national interests.

(*a*) *For the protection of the public.*

(1) With regard to the protection of the public, the state would have the right to require adequate service and adequate facilities, including minor extensions in the geographical area which it is proposed to allot to each group company. A group company, should however, have a right of appeal to a tribunal to be prescribed if it contends that the requirement involves a capital expenditure which would seriously interfere with its finances.

(2) Subject to the same right of appeal, the state should have power to require alterations, improvements and additions necessary for public safety.

(*b*) *For the economical operation of the railway systems of the country.*

(1) In order to obtain the best standards of permanent way, rolling stock, plant, and equipment which are necessary to secure the financial returns to the groups and yet keep railway rates as low as possible, the state must (subject to a similar right of appeal by the companies) have power to impose such standards.

(2) The state ought to have the right to require co-operative working, including granting of running powers, common user of rolling stock, and facilities on equitable terms, the pooling of traffic and receipts where competition is causing waste, and the common user of workshop and manufacturing plant.

(3) In order that the public may know and the government be in a position to judge of the working of the railways, the ministry should have full power to prescribe the form of accounts, to regulate the manner in which they are compiled, and to require the compilation of such statistics and returns as are, in the opinion of the minister necessary, with a right to inspection.

(*c*) *To safeguard national interests.*

The railways should be required to submit for approval their proposals involving capital expenditure and also their plans for raising capital required.

It is necessary, in view of the fact, that the state is to provide machinery for adjusting rates intended to produce a certain net result, that the state should approve, and if necessary, have power to require, adequate reserves for depreciation and renewals to be made before dividends are issued. This again should be subject to a right of appeal to the prescribed tribunal.

Light Railways

It is proposed to exclude light railways from the grouping arrangements. Light railways must rely largely for their prosperity and development upon the good will and assistance of the main-line companies in whose district they lie. It is essential that the main-line companies should have no grounds for fearing competition from an ambitious light railway company, or combination of light railway companies. It should therefore be provided that where a group railway can prove to the satisfaction of the Ministry of Transport, that the light railway is changing in character, and is, in fact, becoming an ordinary railway, or is competing for main-line traffic, the group company may absorb

the light railway on fair terms, and make it a part of its own system.

In so far as traffic for which transport facilities are required justifies the provision of standard gage lines operating more or less under the same conditions as lines owned by main line companies, the Minister shall have power to insist that the group companies should provide the lines which are necessary. Different considerations apply to light railways i.e. lines of much lighter construction with less onerous conditions of operation attached to them, constructed whereever possible along the verge of roads, and subject to less stringent regulations than with regard to standard railways.

If this means of transport is to be developed for the benefit of agriculture and other industries, the state must encourage private enterprises or local authority enterprise, by some financial assistance in the construction and development of light railways throughout the country. The policy of grouping light railway systems so far as possible, as a means of securing economy in management, maintenance, repairs, etc., is considered wise, and experience has already shown that this can be done successfully.

It should be the policy of the ministry to stimulate the development of light railways constructed, equipped, and worked on the cheapest lines possible. It may be found that the present procedure under the Light Railway Acts, by which powers to construct light railways are sought and granted, may require to be modified.

Docks and Canals

The government has no present intention of altering the status of the dock undertakings of the country, but some of the temporary powers conferred upon the Minister of Transport by the Ministry of Transport Act, 1919, in connection with non-railway owned docks should, in their opinion, be retained and extended to railway owned docks.

The future of canals involves questions of great difficulty and complexity. The best advice available is being sought, and the whole subject is about to be investigated by a committee, which has been set up under the chairmanship of Neville Chamberlain, and pending the receipt of the report of this committee, the government feels that they are not in a position to formulate a policy.

From the above it will be seen that workers as well as shareholders are to be represented in the proposed scheme of the Minister of Transport, on the Board of Management by which each group will be controlled, the shareholders, which would include large traders, constituting a majority on the board, while administrative officials and workers on the railway are to constitute respectively one-third and two-thirds of the minority.

It is also noticeable that the financial side of the scheme does not sufficiently consider the interests of the shareholders. If the revenue of the company groups, shows an improvement on their pre-war return, the government is to take part of the surplus, and to devote it to the development of backward districts and the general encouragement of transport. If, on the other hand, there is a loss apparently the whole of it is to fall on the shoulders of the shareholders.

The Parliamentary Secretary to the Ministry of Transport Arthur Neal, M. P., in discussing Sir Eric Geddes' proposed scheme says, that "short of nationalization, which had been ruled out, and short of attempting to put back private ownership to exactly the same position it held before the war, he knew of no scheme which held out such possibilities or advantages to the country as did the present scheme." He further stated, "Railways, or any form of transport, must not be looked upon as a kind of charity."

However, it must remain to be seen whether Sir Eric Geddes' scheme is adopted or not, and this will not formulate until after the government has received the report of the Rates Advisory Committee, which is now studying the question of the raising of the railway rates and fares.

Disapproval of the scheme is fairly general throughout the commercial centers, and an important member of the London Chamber of Commerce stated, that he thought there was room for improvement in the handling of traffic, but he considered that the new scheme of the Minister of Transport would merely add greater confusion to a position, which is at present unsatisfactory to the whole trading community. The business men of London he pointed out, are so used to gradually improving and building up existing concerns, that through the experience gained during many years, they regard with great anxiety the drastic proposals foreshadowed by the Ministry of Transport, believing, that there will arise in consequence serious difficulties and delays which would be obviated by the continuance of the present systems of railway working on pre-war lines. He further stated, that he was of opinion that the railway systems should be given back their pre-war freedom, and the Ministry of Transport could watch and arrange for gradual improvements of the system, as circumstances opened up, from time to time. This opinion is also held by the greater majority of the trading community.



From the South African Railways and Harbours Magazine

Quite Trifling

"The Goods"—I know I cost you an awful lot, dear, but you can't say that my traveling expenses are very heavy.

(The Railway Administration contends that the cost of living is not materially affected by the railway charges on commodities.)

Watching the Performance of An Engine Terminal

The New York Central Plan for Checking Up the Efficiency of Every Locomotive Terminal

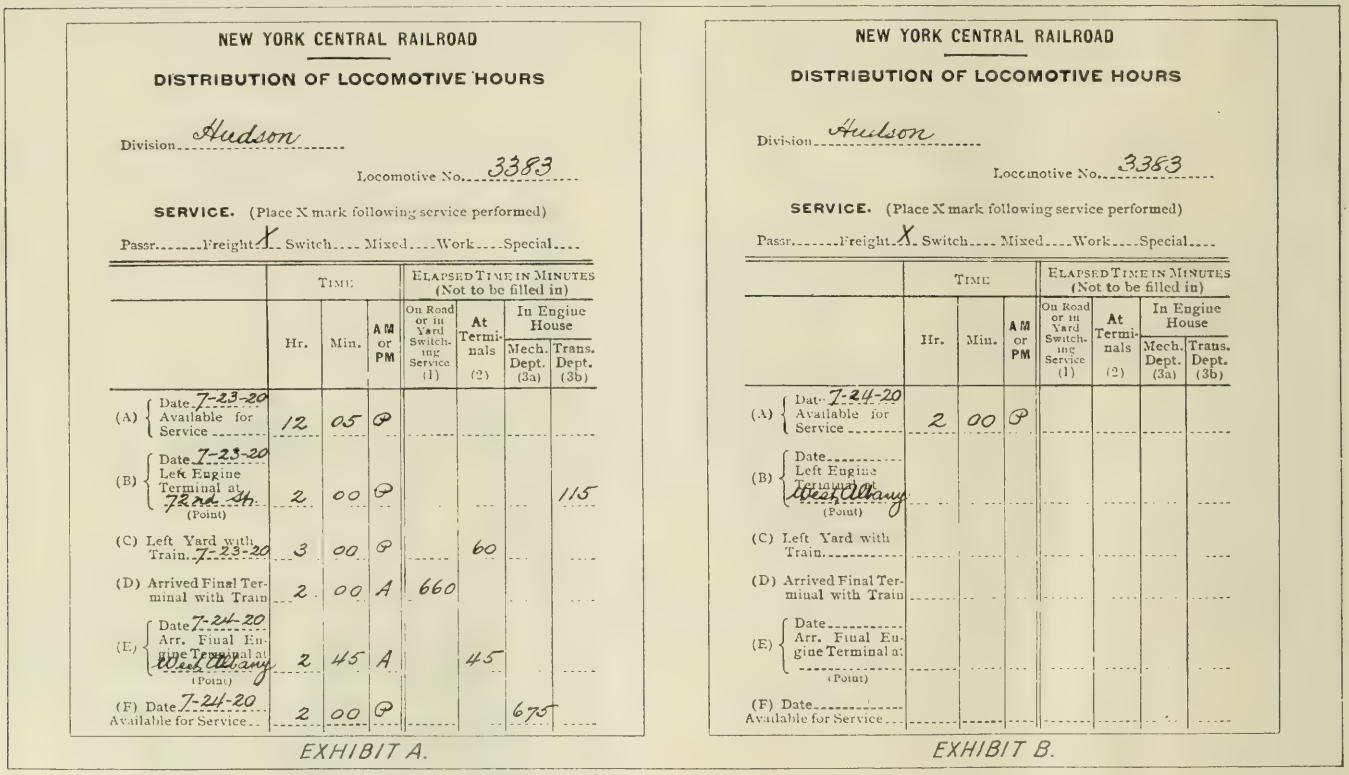
EVERY ONE REALIZES that an engine terminal is one of the most vital spots on the railroad, but it takes a first-hand knowledge of the actual time consumed by locomotives in terminals to bring us to a full appreciation of the tremendous import of terminal efficiency. That the performance of a terminal can be improved by additional mechanical facilities or a stronger operating personnel goes without saying, but the problem of the hour is that of getting better results with the facilities at hand. It is idle to talk about improving facilities until it is known that these are being utilized to the fullest extent. How much more readily would executives grant appropriations for terminal improvements if they could be assured that existing facilities were already being utilized to the utmost limit?

It may be said, then, that an accurate periodical statement of the performance of every engine terminal in terms of the time required to despatch locomotives in a satisfactory condition would be of the greatest value to operating and mechanical officers. These figures are not a novelty by any means. Several American railroads have attempted a statement of this character and for years preceding the war these statistics were compiled regularly in Germany. The Operating Statistics Section of the Railroad Administration and more recently the Interstate Commerce Commission have required some very detailed information on this subject, but each railroad has been left to its own devices with respect to utilizing these figures locally, and because the compilation of this report has proved an onerous task for many railroads. The practical use of this data as an index to individual terminal conditions has been attempted by very few railroads.

A Bit of History

It is perhaps due to the fact that a highly practical and economical method for obtaining an accurate account of the distribution of locomotive-hours eventually originated on the New York Central that a monthly report giving the time consumed by locomotives of each class at every terminal became a reality on that railroad. When, commencing in August, 1918, the Operating Statistics Section of the Railroad Administration called for a monthly report of the distribution of all locomotive-hours, the New York Central sought, as did many other railroads, to obtain this information through the mechanical and transportation departments, on whom was placed the responsibility for reporting the distribution of locomotive-hours within their respective jurisdiction. It was assumed that the mechanical department would secure a daily report from each engine terminal and that the transportation department could obtain the necessary data from the despatcher's train sheets. It will be recalled, however, that the summer of 1918 was not a propitious moment at which to saddle so elaborate a report on any department of a very busy railroad. Washington had demanded the figures, but proposed no practical means for obtaining them and doubtless more than one railway executive in those busy war days wondered if "the charge of the light brigade" was not to be enacted over again.

It was estimated that to furnish the required information on the New York Central alone would require at least two



NEW YORK CENTRAL RAILROAD

DISTRIBUTION OF LOCOMOTIVE HOURS

Division Hudson

Locomotive No. 3383

SERVICE. (Place X mark following service performed)

Passr. ____ Freight X Switch ____ Mixed ____ Work ____ Special ____

	Time			Elapsed Time in Minutes (Not to be filled in)			
	Hr.	Min.	AM or PM	On Road or in Yard Switching Service (1)	At Terminals (2)	In Engine House: Mech. Dept. (3a)	In Engine House: Trans. Dept. (3b)
(A) Date 7-23-20 Available for Service	12	05	P				
(B) Date 7-23-20 Left Engine Terminal at 72d St. (Point)	2	00	P				115
(C) Left Yard with Train 7-23-20	3	00	P		60		
(D) Arrived Final Terminal with Train	2	00	A	660			
(E) Date 7-24-20 Arr. Final Engine Terminal at West Albany (Point)	2	45	A		45		
(F) Date 7-24-20 Available for Service	2	00	P			675	

EXHIBIT A.

NEW YORK CENTRAL RAILROAD

DISTRIBUTION OF LOCOMOTIVE HOURS

Division Hudson

Locomotive No. 3383

SERVICE. (Place X mark following service performed)

Passr. ____ Freight X Switch ____ Mixed ____ Work ____ Special ____

	Time			Elapsed Time in Minutes (Not to be filled in)			
	Hr.	Min.	AM or PM	On Road or in Yard Switching Service (1)	At Terminals (2)	In Engine House: Mech. Dept. (3a)	In Engine House: Trans. Dept. (3b)
(A) Date 7-24-20 Available for Service	2	00	P				
(B) Date ____ Left Engine Terminal at West Albany (Point)							
(C) Left Yard with Train							
(D) Arrived Final Terminal with Train							
(E) Date ____ Arr. Final Engine Terminal at ____ (Point)							
(F) Date ____ Available for Service							

EXHIBIT B.

Fig. 1. Locomotive Waybill Cards

and in some instances as high as ten extra clerks on each operating division. After compiling the report for two consecutive months it was found that, in addition to proving an expensive burden, the statistical results were far from authentic. It was then that the officer in charge of statistics for this railroad hit upon a plan that soon resulted in simplifying the compilation of this data and made this report a source of the most valuable information relating to each locomotive terminal.

Origin of the Locomotive Waybill

F. A. Hasbrouck, the originator of the plan, who had in mind a ticket which was attached to his automobile every time it was left at a garage and on which was recorded the time at which the car entered and left the garage felt a similar card could be designed to follow every locomotive, on which could be recorded the time at which the locomotive was available for service, and other events in sequence.

Fig. 1, exhibits *A* and *B* show the card or locomotive waybill, which may be considered as the foundation of this system.

The first entry on the waybill is made by the engine des-

AVERAGE TIME - (BLANK) ENGINE TERMINAL

	Total dispatchments	In Enginehouse: Mech. dept. hrs. min.	Mech. dept. per cent	Trans. dept. hrs. min.	Trans. dept. per cent	Initial terminal delay hrs. min.	Initial terminal delay per cent	Final terminal delay hrs. min.	Final terminal delay per cent	On road hrs. min.	On road per cent
EAST DIVISION											
Passenger:											
Last month	609	5 06	39.9	1 16	9.9	1 31	11.9	- 32	4.2	4 21	34.1
This month	667	5 09	42.8	1 23	11.5	1 33	12.9	- 26	3.6	3 31	29.2
Freight											
Last month	438	8 43	39.6	2 58	13.5	2 17	10.4	- 51	3.9	7 11	32.6
This month	593	7 28	37.9	1 22	6.9	2 27	12.4	- 54	4.6	7 32	38.2
Switch:											
Last month	3	13 02	48.8	3 40	13.0	- --	----	- --	---	10 13	37.8
This month	12	1 25	8.3	4 49	28.1	- --	----	- --	---	10 53	63.6
Other											
Last month	3	3 03	17.3	1 50	10.4	- 50	4.7	2 05	11.5	5 52	55.8
This month	2	4 30	22.5	2 13	11.5	1 15	6.2	1 15	6.2	10 45	53.6
WEST DIVISION											
Passenger:											
Last month	577	4 12	43.5	1 12	12.1	1 28	15.2	- 26	4.8	2 20	24.1
This month	602	4 13	39.3	1 14	11.5	1 25	13.2	- 36	5.6	3 16	30.4
Freight:											
Last month	414	7 37	32.6	2 18	9.8	1 33	6.6	1 02	4.4	10 53	46.6
This month	566	7 08	31.7	1 48	8.0	1 25	6.3	1 06	4.9	11 04	49.1
Pusher freight											
Last month	89	3 20	14.0	1 51	7.8	- 46	3.2	- --	---	17 48	75.0
This month	203	3 42	15.4	- 54	3.7	- 47	3.3	- --	---	18 40	77.6
Switch.											
Last month	1633	3 48	15.5	3 33	14.5	- --	---	- --	---	17 10	70.0
This month	1385	4.05	17.6	3 24	14.7	- --	---	- --	---	15 40	67.7
Other:											
Last month	44	9 53	26.6	16 13	43.7	- 47	2.1	- 17	0.8	9 57	26.8
This month	21	8 58	18.6	28 36	59.4	- 48	1.6	- 25	0.9	9 23	19.5

Fig. 2. Monthly Engine Terminal Report

patcher at the terminal from which the locomotive is to depart and states the time at which the locomotive is available for service. The second entry is made by the engineman and records the time that the locomotive left the terminal; that is, the time that the locomotive is delivered to the engineman. At this juncture the waybill is handed to the engineman, who later enters the time at which the train left the yard and retains the card until he reaches the destination of his run, when the time of arrival is entered. The time at which the locomotive arrives at the final engine terminal is then entered on the card, which subsequently goes into the hands of a designated employee at this terminal. The card is held here until this same locomotive is again ready for service. The time at which the engine is again ready for service constitutes the final entry on this card and is also used as an initial entry for the following card. Each succeeding card thus covers a complete cycle of locomotive events, as is shown in exhibit *A*, and carries an overlapping figure to insure the proper sequence of events as illustrated in exhibit *B*.

Fundamental Advantages of the Plan

From the foregoing it will be noted that the figures which are to be used as a basis for the report are not only obtained directly at the source, but in such a manner as to avoid any additional clerical force. These are considerations of fundamental importance in connection with statistics of this character. To insure a complete report, the completed card waybills are first delivered to one of a number of checkers located at strategic terminals. These men have a tally sheet with a column for every locomotive operating within their territory, and it is their duty to see that an unbroken sequence of card waybills is submitted for every locomotive in active service. It is also their duty to see that a special monthly report submitted by the motive power department gives a full account of the number of hours that locomotives are held awaiting repairs and in the shops as well as stored. The figures reported by the motive power department are subject to check, as the total time acknowledged by this department must tally with the elapsed time as shown on the locomotive waybill cards issued just prior to and following the interval in the shop. The issuance of these waybills is discontinued during the time that the locomotive is held in the shop.

Having passed through the hands of the checker, the waybill cards are forwarded to the supervisor of statistics at the general offices in New York. Upon receipt of these cards the first operation is that of computing the elapsed time between each event as recorded on the waybill. This information is entered in the four right hand columns of the cards shown in exhibit *A*. This operation is accomplished by skilled computers with remarkable rapidity, as one clerk can ordinarily compute and enter the time on 400 or more cards within a seven-hour day. An additional computer can check the accuracy of these figures by noting if the total time as computed on each of these cards tallies with the total elapsed time between the initial and final entries on the card. When all the required figures have been entered on the card the work of summarizing these time intervals is greatly simplified by the use of mechanical tabulating machinery, although this method involves the perforation of a tabulating card for every waybill and is by no means essential to the successful operation of the system.

The Scope of the Report

The monthly report summarizing the time locomotives of each class are held at each terminal by the mechanical and transportation departments, respectively, is prepared for distribution within 15 days after the close of the month. The report embodies a separate statement for each important terminal, of which Fig. 2 is a typical example.

There are about 386 engine terminals on the New York Central, serving 5,646 miles of railroad. The report is printed does not include all of these, but the data available from which the performance of any one of these terminals can be quickly determined, or the performance of any group or even any individual locomotive by a process of mechanically sorting and tabulating the cards. The report as compiled goes to the operating and mechanical officers of each of the 24 operating divisions on the New York Central and to as many subordinate employes as request a copy. It will be noted by glancing at Fig. 2 that where two divisions are served by an important terminal the performance of the locomotives assigned to each division is shown separately, and it will be appreciated by those who have ever been a witness to the disputes that frequently arise between the officials of adjacent operating divisions over the relative

attention accorded their power in a common terminal that this report will settle very definitely any argument of this character.

Some idea of the scope of this work will be conveyed by the fact that from 60,000 to 70,000 despatchments per month are involved and that there are approximately 3,500 locomotives on the New York Central, of which about two-thirds are in active service. From eight to ten checkers stationed at various terminals are employed, while the force required in the general office in connection with this work hardly exceeds a dozen employees. The regular publication of a report of this character for over 2,000 locomotives in active service by almost any other method would require a small army of clerks; and if the information which is vital to the accuracy of the report were not obtained directly at the source and independent of any extraneous factors, the report could not be regarded as nearly so authentic.

Conclusions

The object in compiling this report originally was to comply with a request for a statement of the distribution of locomotive hours submitted to the Operating Statistics Section on Form OS4 (described in the *Railway Age* of January 3, 1919, page 47). Had there been no other objective to the work, this method would have doubtless recommended itself for its simplicity and efficiency, and on this ground it can be recommended to those railroads which have not as yet discovered any satisfactory plan for obtaining the information in regard to the distribution of locomotive-hours that is now being required by the Interstate Commerce Commission, in their order of Jan. 1, 1920.

The usefulness of this work, however, has by this time far transcended mere compliance with a request for certain data; it is rapidly becoming an important operating factor on the New York Central, and can be made equally valuable on any other railroad interested in the performance of its engine terminals and locomotives. An accurate statement of the facts concerning the distribution of locomotive-hours at each terminal should have an obvious effect on every division superintendent and master mechanic and it can hardly fail to prove a stimulus to roundhouse foremen and train despatchers if given the right sort of publicity.

Mr. Gompers Dissatisfied

Samuel Gompers, president of the American Federation of Labor, has issued a statement commenting on the award of the Railroad Labor Board as follows:

"Much has been said in the press about the estimated aggregate wage increase granted to the railroad men of the country by the railroad wage board. The figure, $600,000,000, is large and it sounds imposing and awesome. Most of us have no adequate idea of what so much money means or would look like.

"An entirely unfair impression gains ground by reason of this bulking of the issue. The honest method of applying the increase is to apply it to the individual. It is estimated that the average wage of a section worker, under the award, will be $101 per month, or less than $25 a week. The average wage of an engineer will be about $280 per month, or less than $70 per week. These are averages, so a great many hundreds of workers in these classifications will get less than the estimated average.

"The two classifications just cited are the highest paid and the lowest paid. In intermediate classifications are the firemen, the conductors and brakemen, the baggagemen, telegraphers, carpenters, car repairers, boiler makers, machinists, gang foremen and so-called unskilled workers. The standard of living that is possible for these classifications is not that which is possible to men doing like work in other industries. Consider the meaning of a wage of from less than $25 a week for section men, less than $45 for machinists, less than $39 for carpenters, less than $40 for telegraphers. Consider this in relation to cost of living figures just issued by the Department of Labor, which show that the index number for 22 listed basic commodities is today 269 in comparison to 100 in 1913.

"A sop has been thrown to each railroad worker under the operation of the Esch-Cummins law. Collectively they may feel themselves morally bound to accept it, but the whole theory of that act, whether as to wages, conditions of employment of the workers or the guaranteed dividends of the railroad companies, is an indictment against the Esch-Cummins law of which time will convict the authors.

"The railroad men are disappointed; and they have a right to be. The first test of the wage-making side of the Esch-Cummins act is to them as much of a disappointment as it well could have been. It is indicated that the railroad employees will not strike to enforce a fairer consideration of their needs, but it must not be forgotten that if the award had been so low as to compel consideration of other means of redress, the men could have struck only at the risk of injuring their own cause.

"There are other phases of the railroad situation equally serious. The country wants to know how this wage increase is to be met. The problem of how even to come this near to an adequate wage is one that is causing all manner of authorities and would-be authorities to gasp in amazement and to hunt for a solution.

"This whole clamor and speculation is an evidence of the intellectual bankruptcy of railroad statesmanship and of railroad operating genius. The railroad executives have the guarantee of the government that a 6 per cent dividend will be supplied by the government if it can not be earned by the roads. The situation need cause them no particular worry, the only question being one of how to best extract the required amount from the public. The whole consideration of the matter has thus far brought forth only two proposals —direct and indirect taxation. We are told that freight rates must be increased to meet the extra cost. If they are not increased the extra cost must be met by the government.

"It does not seem to have occurred to either the government or the railroads that it might be possible to increase railroad operating efficiency to a point that would eliminate the extra cost.

"I venture to say that it is possible to so increase the operating efficiency of the railroads as to not only afford a proper wage to the workers, but to also allow a proper return to railroad investors.

"First and foremost, the business of railroads is to carry the commerce and the people of the country and to provide for those engaged in railroading an adequate living according to American standards. American ability and ingenuity has come to a sorry pass if it must confess failure to put the railroads in condition to do that work in that manner.

"The question of ownership is not involved. The question is one of making the roads do what they were built to do and what they must do. The present condition and the present state of fright over the outlook is a terrific indictment of railroad executive brains. The audacity seems to have gone out of railroading. The fertility of imagination which made American railroads the greatest in the world has been sapped in the money markets. The ideals of achievement have been buried under the aspiration for stock jobbing.

"When the actual operating forces of our railroad systems were dethroned by the financial powers, railroading lost that vital spark that must return to life and virility if the problem is to be solved.

"Let operating brains be put to work and the solution of the railroad problem will be found. The answer is not in levying taxes. It is in real railroading."

New Priority Order for New England Coal

Coal Movement Generally Is Considerably Improved—Car Service Circulars

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION, Division 5, on July 26 issued Service Order No. 11, a new priority order intended to meet the coal requirements of New England, superseding Service Order No. 6, issued on June 19, which had been found ineffective for the purpose. The new order is similar to that issued for the benefit of lake coal and is based on plans and recommendations worked out by committees of railroad officers and coal operators and submitted to the commission. The order recites that the inhabitants of New England are in a large measure dependent upon bituminous coal, which to meet their requirements must be transported from mines in Pennsylvania, Maryland, West Virginia and Virginia to New England by rail and water at the rate of approximately 1,250,000 net tons each month and that the rate at which the coal has been transported to New England by rail and water has been short of the requirements by about 350,000 net tons each month.

The new order is much more specific than the former order, in that the required tonnage is apportioned between the various mines and priority is granted both in car supply and transportation for that tonnage via New York, Philadelphia, Baltimore and Norfolk to the extent determined to be necessary by the managers of the coal exchanges at the ports and an embargo is directed against the movement of other coal until the fixed requirements have been met.

Service Order No. 6 is rescinded effective August 2, which is the effective date of the new order, the important parts of which are as follows:

"It is further ordered, That effective August 2, 1920, and until the further order of the commission the common carriers hereinbefore described be, and they are hereby, authorized and directed to give preference and priority in the supply of cars for and in the transportation of bituminous coal in the following respects:

(1) To the extent determined to be necessary by J. W. Howe, who is hereby designated as agent of the commission therefor, to cause the transportation and consignment to the Tidewater Coal Exchange, Inc., New York, N. Y., for transshipment by water to New England as part of a pool or pools of tidewater coal as nearly as may be each calendar month the quantity of bituminous coal hereinafter designated namely: (a) 122,000 net tons of coal from coal fields served by The Pennsylvania Railroad Company east of Pittsburgh, Pa., (b) 5,000 net tons from coal fields served by The Monongahela Railway Company, (c) 84,000 net tons of coal from coal fields served by The Baltimore & Ohio Railroad Company on and east of its Connellsville and Monongah divisions including coal fields served by the Cumberland & Pennsylvania Railroad Company, (d) 20,000 net tons of coal from coal fields served by The New York Central Railroad Company in the State of Pennsylvania, and (e) 19,000 net tons of coal from coal fields served by The Western Maryland Railway Company.

(2) To the extent determined to be necessary by the said J. W. Howe, who is hereby designated as agent of the commission therefor, to cause the transportation and consignment to the Tidewater Coal Exchange, Inc., Philadelphia, Pa., for transshipment by water to New England as part of a pool or pools of tidewater coal as nearly as may be each calendar month the quantity of bituminous coal hereinafter designated, namely: (a) 50,000 net tons of coal from coal fields served by The Pennsylvania Railroad Company east of Pittsburgh, Pa., (b) 40,000 net tons of coal from coal fields served by The Baltimore & Ohio Railroad Company on and east of its Connellsville and Monongah divisions, including coal fields served by the Cumberland & Pennsylvania Railroad Company, (c) 5,000 net tons of coal from coal fields served by The Western Maryland Railway Company, and (d) 5,000 net tons of coal from coal fields served by The New York Central Railroad Company.

(3) To the extent determined to be necessary by the said J. W. Howe, who is hereby designated as agent of the commission therefor, to cause the transportation and consignment to the Tidewater Coal Exchange, Inc., Baltimore, Md., for transshipment by water to New England as part of a pool or pools of tidewater coal as nearly as may be each calendar month the quantity of bituminous coal hereinafter designated, namely: (a) 160,000 net tons of coal from coal fields served by The Baltimore & Ohio Railroad Company on and east of its Connellsville and Monongah divisions including coal fields served by The Cumberland & Pennsylvania Railroad Company, (b) 50,000 net tons of coal from coal fields served by The Pennsylvania Railroad Company east of Pittsburgh, Pa., and (c) 40,000 net tons of coal from coal fields served by The Western Maryland Railway Company.

(4) To the extent determined to be necessary by E. M. Graham, who is hereby designated as agent of the commission therefor, to cause the transportation and consignment to members of the Lamberts Point Coal Exchange, Norfolk, Va., at Lamberts Point, Norfolk, Va., whose coal is consigned to designated pools in care of said exchange, or to the Newport News Coal Exchange, Inc., Newport News, Va., at Newport News, Va., or to the Sewells Point Coal Exchange, Inc., Norfolk, Va., at Sewells Point, Norfolk, Va., for transshipment by water to New England as part of a pool or pools of tidewater coal as nearly as may be each calendar month the quantity of bituminous coal hereinafter designated, namely: (a) 360,000 net tons of coal from coal fields served by The Norfolk & Western Railway Company east of Welch and Jacobs Fork Branch Junction, W. Va., (b) 85,000 net tons of coal from coal fields served by The Chesapeake & Ohio Railway Company east of Huntington, W. Va., and (c) 185,000 net tons of coal from coal fields served by The Virginian Railway Company, and (d) 20,000 net tons of coal from coal fields served by Norton & Northern Railway.

"It is further ordered, That the common carriers hereinbefore described in the territory hereinbefore designated, be, and they are hereby, authorized and directed to place an embargo on the supply of cars for and the movement of all other bituminous coal in carloads to any other consignees or destination; *provided,* that this order shall not apply to cars furnished, placed or assigned under any order or direction heretofore or hereafter entered by the commission, and with respect to territory affected by Service Order No. 10 shall apply to each producer and shipper on each day only after said Service Order No. 10 has been complied with and not before, and *provided further,* that after a producer and shipper of bituminous coal, served by any of the said common carriers in said territories, has on any day shipped to any of the said coal exchanges as hereinbefore provided at any of the said ports a percentage (to be determined and announced for each coal producing district served by The Pennsylvania Railroad Company, The New York Central Railroad Company, The Baltimore & Ohio Railroad Company, Cumberland & Pennsylvania Railway Company, Philadelphia & Reading Railway Company, The Western Maryland Railway Company and Monongahela Railway Company, by the said J. W. Howe, who is hereby designated as agent of the commission therefor; and The Chesapeake & Ohio Railway Company, Norfolk & Western Railway Company, The Virginian Railway Company. The Interstate Railroad Company and Norton & Northern Railway, by the said E. M. Graham, who is hereby designated as agent of the commission therefor) of the total number of cars to which the producer and shipper is entitled on said day then this em-

bargo shall not apply to the said shipper for the remainder of the said day, and he shall be permitted during the remainder of the said day to ship the remainder of the cars to which he is entitled to any consignees and destinations he may desire, including the coal exchanges hereinbefore set forth and the said ports;

"It is further ordered, That bituminous coal in carloads consigned under this order in the manner hereinbefore set forth shall not be subject to reconsignment except upon a permit and direction therefor issued by the said respective agents of the commission, which permit and direction shall be issued by them only on a showing that the coal so to be reconsigned will go to a pool or pools at one of the ports hereinbefore referred to for New England;

"It is further ordered, That shippers having credits in a pool at any of the tidewater ports hereinbefore referred to, which credits have been obtained by the shipment into the said pool of coal consigned under this order, shall not be permitted to draw against the said credit and ship from the said pool to any destination except destinations in New England;

"It is further ordered, That the percentages hereinbefore referred to shall be subject to change from time to time by the said respective agents of the commission upon one day's notice to the carrier or carriers concerned;

"It is further ordered, That each of said common carriers by railroad shall establish such rules and regulations respecting the placement of cars for unloading and of vessels for loading at such piers as will effect the preference and priority in transportation hereby directed, including the dumping of cars."

Car Service Circulars

The Commssion on Car Service, in Circular CCS-62, has issued an explanation of the critical coal situation in eastern territory which occasioned the issue by the Interstate Commerce Commission of its Service Order No. 7 on June 19, 1920. The circular says the situation is thoroughly understood by all coal loading railroads in that section, but so that railroads not so directly concerned both east and west may more fully understand the problem which the eastern railroads face, the following facts are presented:

"The country's stocks of bituminous coal were very largely consumed last November and December during the pendency of the bituminous coal miners' strike. During that time the extraordinary requirements of the central west had to be met very largely by shipments from eastern territory, mainly from Pennsylvania and West Virginia. One consequence was the movement of an extraordinary number of eastern coal cars into the west. Many of these cars failed to return with reasonable promptness, and as a result the Interstate Com-Commerce Commission issued its Service Order No. 2.

"Production of bituminous coal during the winter, largely because of the aforementioned dislocation of coal-carrying equipment, was relatively greater west than east. While the production in the west may have permitted some replacement of private stocks during that period, this was not so in the east. The eastern territory opened the new coal year, April 1st, practically bare of stocks, and the eastern roads fully realized that extraordinary efforts were necessary if the required coal reserve for eastern consumers was to be built up.

"Plans were laid by the carriers late in March for an immediate increase in coal production. Labor troubles on the railroads made this program impossible of accomplishment. Since April 1 production of bituminous coal in the country as a whole has averaged about 9,000,000 tons per week, and that relatively greater in the west than in the east, whereas, if the situation before us is to be met, production during that period should have averaged not less than 11,500,000 tons per week.

"In consequence, we are at the present moment facing the necessity of making up at least 20,000,000 tons of lost bituminous production and building up reserves for the coming winter. One part of the program is the movement during the lake season of 30,000,000 tons of bituminous coal over Lake Erie docks for transshipment beyond the lakes. We are now dangerously far behind this program. Another item is a coal year program of 25,000,000 tons for New England, also far behind. Both of these necessitate record performance. It is well to point out further that many industries in the east have already been forced to suspend operations for lack of coal, and there have been instances where public utilities have ceased operation. At the present moment there are practically negligible stocks of bituminous coal ahead of many of the public utilities in some of the larger eastern cities, among which may be mentioned Boston, New York, Philadelphia, Baltimore, Washington, Cleveland and Detroit. Not the least of our troubles is the utter inability of many railroads to assemble reasonably protective fuel stocks; in fact, many roads have not yet succeeded in purchasing their coal requirements.

"This picture of the situation is presented to you, not with the thought that you are unmindful of the requests that have been made upon you, but rather that you may be in possession of additional information with which to meet protests which may be made by your patrons with respect to the action which has been taken to restrict the use of coal-carrying equipment for loading other commodities."

In Circular CCS-63 the Commission calls attention to the fact that the Geological Survey has no appropriation from the Federal Government which would permit it to undertake the assembling and reporting of statistics of coal production currently. "It is, under such circumstances, necessary that they rely upon the co-operation of the carriers through the American Railroad Association and the Commission on Car Service to keep the country advised currently with respect to the conditions of production of these important basic commodities. This is a valuable and patriotic service on the part of the carriers, and it is worthy of note that the final and accurate figures as assembled by the Survey indicate that the current estimates based upon the figures furnished by the railroads are within 2 per cent of accuracy. This record compares very favorably with any reports of production of basic commodities made by any of the Federal Government departments.

"In this same connection we would advise that the figures currently reported by the Geological Survey showing percentage of full time worked and lost by mines in the different producing districts will currently indicate a potential capacity of the mines somewhere between 900 and 950 million tons per annum. This is fully 75 per cent in excess of the country's maximum requirements, a point well borne in mind in considering the coal situation, especially as the excess thus disclosed above current annual requirements is greater than the excess indicated by present mine ratings."

Coal Production

Although unable to maintain as good a car supply for a six-day week as during the five-day week preceding, the railroads provided transportation sufficient to produce 10,969,000 tons of soft coal during the week ending July 17, according to the weekly bulletin of the Geological Survey. This was the largest output in any week since March 27, before the switchmen's strike began, and, except for that week, the largest since the middle of January. In comparison with the latest full time week, June 20 to 26, the output showed an increase of 413,000 tons, or 4 per cent. In five working days of Fourth of July week an average rate of production of 1,923,000 tons had been reached and the heavy black line of 1920 production on the chart published in the bulletin had crossed the dotted 1917 line. The lead thus established was maintained during the week of July 17, but the present rate is still far short of that of the summer of 1918.

Production during the first 169 days of the coal year has been 282,945,000 net tons, nearly 17,000,000 tons behind 1917 and nearly 31,000,000 tons behind 1918, but 44,750,000 tons ahead of 1919. Cumulative production of anthracite since January 1 now stands at 46,931,000 tons, an increase over the corresponding period of 1919 of 3,238,000. During the week ended July 10, the loss attributable to car shortage dropped from 35.3 to 23.7 per cent of full time.

Movement to the Lakes

Movement to the lakes during the week ended July 17 continued at about the same rate which has prevailed since Service Order No. 5 of the Interstate Commerce Commission became effective. The total tonnage of bituminous coal dumped at Lake Erie ports was 603,808. Total shipments from the beginning of the season to July 17 were 5,288,000 tons, compared with 10,374,000 tons in 1918 and 11,849,000 tons in 1919. The rail movement of bituminous coal to New England during the first three weeks of July has shown a marked increase over the general average and also over the corresponding period of 1919. The number of cars forwarded to New England destinations through five Hudson gateways during the week of July 17 is reported at 6,154, and the total for eight weeks beginning May 23 has been 36,108, as compared with 29,792 in the corresponding period of 1919.

The Interstate Commerce Commission on July 24 issued an amended copy of Service Order No. 10, the priority order for lake coal which was issued on July 20, providing that the order shall not apply to coal loaded in cars furnished, placed or assigned under any order or direction *heretofore* or hereafter entered by the commission. In the original issue of the order the word "hereinbefore" was used in place of "heretofore" and the effect would have been to abolish the assigned car rule.

The amount of coal necessary to keep the Northwest warm during the coming winter has been variously estimated at 20,000,000 to 28,000,000 tons, according to A. F. McGee, Minnesota state coal commissioner, who has been in Washington presenting the fuel situation in the Northwest and advocating the carrying out of the program providing for the movement of 4,000 cars daily to Lake Erie ports.

The publication of the Commission's priority order for lake coal has resulted in some dissatisfaction in other parts of the central west. For instance, at Cleveland, Ohio, the Retail Coal Dealers' Board of the Chamber of Commerce, through its executive committee, adopted a resolution requesting the directors of the Chamber to take immediate legal action to restrain the railroads affected by the ruling from enforcing its provisions. This action was taken on the grounds that "the carrying out of this order would make it practically impossible to purchase coal for consumption in Cleveland in such quantity as will protect that city against suffering during the coming winter."

President Wilson Interested

President Wilson, through Secretary Tumulty, on July 23, addressed a telegram to the governors of the New England states regarding the New England coal situation, saying that the President has kept in touch with the various departments handling this important matter and was able to state that as a result of these conferences, coal in sufficient quantities for the needs of that community will be delivered to New England. A similar telegram was sent to the governors of the Northwestern states depending largely upon lake coal.

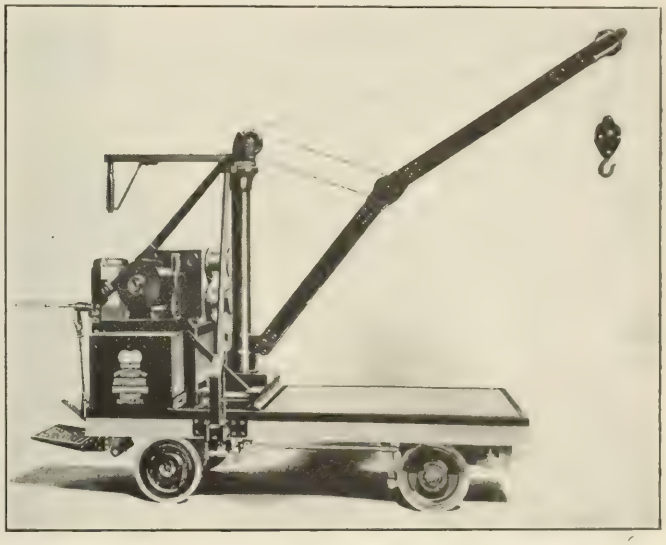
The Illinois Public Utilities Commission on July 23 resumed its hearings on the complaints of the Chicago Real Estate Board, which is endeavoring to obtain more coal for Chicago. Representatives of the various coal-carrying roads in the Chicago district testified before the board and presented car loading figures to show that the movement of coal into the Chicago district has exceeded the movement of this commodity in previous years and that, because of the reconsigning of coal to other points, only a small percentage of the total tonnage remains in Chicago.

The situation brought out by the hearings of the Illinois Public Utilities Commission has been further blackened by strikes of mine workers in the Illinois and Indiana fields. According to Examiner John Bowlun, of the state commission, all of the mines in the St. Louis (Mo.) district will soon be closed and miners are said to be leaving all of the larger mines in southern Illinois. Various estimates placing the number of strikers from 30,000 to 50,000, have been given to Mr. Bowlun. The estimated cut in production in Illinois has been approximately 100,000 tons daily. Government officials are watching the progress of this strike closely, however, and it is not unlikely that steps will be taken in the near future to insure the resumption of production.

Electric Crane Trucks

The Transportation Engineering Corporation, New York, is offering its type "E" and "H" trucks, fitted with electric cranes of 1,000 and 3,000-lb. capacity. The 1,000-lb. cranes are furnished for hand or electric operation and are built in two different post heights —23-in. and 35⅝-in.—and over-all heights of 70-in. and 84¾-in. measured from the platform of the truck.

The 3,000-lb. electric crane is a recent development which has a compensating boom and is equipped with a swivel base so that the boom can swing through an angle of 180 deg. The hoist and boom control are driven through a worm gear by a motor which is the same size as the one used for driving the truck. The boom is raised and lowered and the hoist operated by conveniently located controllers. A clutch is so arranged that one control only can be used at a time.



Type "E" Truck Equipped with 3000-lb. Crane

The truck is equipped with portable side arms, which when lowered prevent the truck from tipping when a heavy load is lifted on either side of the truck. Effort has been made to mount the crane so as to take up as little platform space as possible, thus making the truck serviceable for load-carrying purposes. All moveable parts are bushed and provision is made for ample lubrication. The trucks manufactured by the Automatic Transportation Company, Buffalo, N. Y.

Today there are not enough cars and locomotives. The shortage of equipment is the direct cause of the existing troubles of manufacturers and merchants, and one of the reasons for the prevalence of abnormal prices. Yet there are persons who cannot or will not see that it is necessary to enable the railroads to put billions into their properties and that this financing cannot be accomplished without rates that will provide a margin of profit above operating expenses.—*Providence Journal.*

William K. Vanderbilt

WILLIAM KISSAM VANDERBILT, the head of the Vanderbilt family, died in Paris of heart disease on July 22, at the age of 70 years. Mr. Vanderbilt was better known here and abroad as a capitalist and sportsman, but he did have the advantage of a careful training in railroad work and as the head of the Vanderbilt family with its great financial interest in the New York Central and related Vanderbilt properties, he had a great influence in guiding American railway development.

William Kissam Vanderbilt was the second of the four sons of William H. Vanderbilt, and the grandson of Commodore Cornelius Vanderbilt, the founder of the Vanderbilt fortunes. He was born at New Dorp, Staten Island, N. Y., on December 12, 1849. He did not receive a college education, but studied under private tutors here and later in Geneva, Switzerland. It being the idea of his grandfather that he should have a thorough training in railway management, he was given a position at the age of 19 as a clerk in the office of C. C. Clarke, at that time treasurer of the Hudson River Railroad. He then worked up through the various grades on this and the combined New York Central & Hudson River until in 1877 he was elected second vice-president of the latter. He held this position until 1882 when he was elected president and chairman of the board of directors of the New York, Chicago & St. Louis, being in 1883 elected also chairman of the board of directors of the Lake Shore & Michigan Southern.



W. K. Vanderbilt

It may briefly be said that he was in charge of these two lines while his older brother, Cornelius, was in charge of the New York Central & Hudson River until he took over the management of his brother's interests, a short time before the latter's death. At any rate in 1898, he relinquished these positions and thereafter, for a number of years carried on his railway activities as a director in the several Vanderbilt railroad properties rather than as an actual railway man. It should, therefore, be noted that from September, 1899, on he was a director in the New York Central & Hudson River; the Lake Shore & Michigan Southern; the Michigan Central; the New York, Chicago & St. Louis; the Pittsburgh & Lake Erie; the Cleveland, Cincinnati, Chicago & St. Louis; the Lake Erie & Western; the Chicago, Indiana & Southern; the Chicago & North Western; the Rutland; the New York & Ottawa; the Chicago, St. Paul, Minneapolis & Omaha; the Lake Erie, Alliance & Wheeling; the Dunkirk, Allegheny Valley & Pittsburgh, and the New York & Harlem, these being the roads that were generally understood as forming what is known as the Vanderbilt system.

It has been said that since the time of Commodore Cornelius Vanderbilt, the Vanderbilts have been known as a family rather than by the name of a particular individual. In a similar way, it might also be added in reference to William K. Vanderbilt himself, that his career insofar as it relates to his railroad interests would more properly be treated as a history of the growth and expansion of the New York Central System during those years in which he was head of the family, rather than as a sketch of the work carried out by Mr. Vanderbilt, himself. Lack of space, however, prevents so elaborate a treatment of the subject as would be required to carry out that idea.

As noted above, the Vanderbilt fortunes were founded by Commodore Cornelius Vanderbilt who in 1810 established a ferry line between Staten Island and New York City. The Commodore in time went into shipping on a more extensive scale and operated boats from New York along the coast and to France. At the time of the gold rush he also established a line to California by way of Nicaragua. About 1853, the Commodore realized the opportunities to be gained in the then comparatively new method of transportation—railroads—and the great interest, which the Vanderbilts afterwards built up in railways was begun with an investment in shares of the property which has since become the New York Central Railroad. The investment which was thus started grew under the guiding hand of William H. Vanderbilt, son of the Commodore, then under that of Cornelius, oldest son of William H. and of William K, the second son.

Many interesting stories are told of the manner in which the two brothers worked together and many instances as reported of the manner in which the older brother was eager to rely on the ability and keen judgment of the younger. These characteristics were also brought out in the latter's management of the Lake Shore & Michigan Southern, particularly as shown in William K.'s choice of a practical railroad man as president and operating head of the road. This same policy was continued when William K. Vanderbilt became the head of the family in his choice of an operating man as president of the New York Central & Hudson River. Chauncey M. Depew had been president of that road under Cornelius Vanderbilt, but under William K. was chosen chairman of the board of directors, the position which he has held to this day.

Another of the important developments carried out under the lead of William K. Vanderbilt after his brother's death was the series of consolidations and absorptions which he brought about with the idea of bringing under closer management the many properties in which the Vanderbilts were interested. He thus put under the control of the New York Central, the Lake Shore & Michigan Southern and the Michigan Central, and consolidated with it the West Shore. He also decided in favor of a lease by the New York Central of the Boston & Albany, insuring the permanency of the Central's connection with Boston and New England. Through consolidating control of the Cleveland, Cincinnati, Chicago & St. Louis, and the Lake Erie & Western; and the building of railroads into the coal fields, he placed the

system in a stronger and more strategic position in the competitive territory immediately to the south of the New York Central and the Lake Shore Lines. He is also generally credited with being the man who enabled the New York Central to acquire the great area of land which has lately become of increasing importance and value—the Grand Central zone.

President A. H. Smith of the New York Central on July 24 issued a notice in which in part he expressed the following appreciation:

"Grandson of Commodore Cornelius Vanderbilt, first president of the New York Central, son of William H. Vanderbilt, the second president, he entered the railroad service in his early manhood. In 1877 he became vice-president, and for nearly fifty years he had faithfully served our companies as a director, with clear vision, keen intelligence, sound judgment and absolute integrity. He had guided the development, extension and consolidation of the New York Central lines. His great influence with his associates in these matters has been due to the recognition, not only of extraordinary ability and foresight, but to the universal recognition of his sense of the right thing to do.

"That sense of right regarded not only a particular corporation of which he was a director, but the interests of the state and the nation as well. In all matters affecting the interests and well being of the officers and employees of our company, justice and fairness guided his actions. We mourn his loss, we reverence his memory, not only because he was one of the great factors in the development of one of the greatest transportation systems in the world, and because he was one of the great builders of our nation, but because he had always been our true and loyal friend."

Handling Coal With a Monorail System

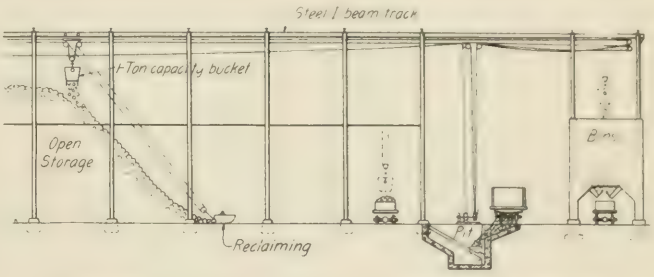
A METHOD OF HANDLING COAL has been developed which possesses considerable flexibility in application since it is adapted not only for the storage of railroad coal for winter use, but may be applied also to power plants and retail coal pockets. The scheme embodies two basic units, a track hopper pit and an overhead monorail system. The track hopper pit receives the coal from bottom dump cars while the monorail supports the bucket which transports the coal from the pit to the storage pile, coal pockets, or power-plant bunkers, or it serves for the reclaiming bucket whereby the coal is taken from the storage pile and loaded on cars, engine coal tenders or placed in coal pockets. The equipment is handled entirely by one man by means of a motor-driven hoist. The hoist is of a reversible, two-drum type and is regulated by clutches. One drum controls the backward and forward movement of the bucket and the other regulates the hoisting. The bucket ordinarily used is of one-ton capacity and embodies a special feature whereby an automatic latch releases the load only when the bucket comes in contact with the material pile. When reclaiming material from the pile, a clam shell bucket is used and operated in like manner.



The Monorail Serving Individual Hoppers

Considerable latitude is allowed in the supports for the trolley track. These supports may be either of steel or wood at the option of the individual users. Provision is also made for the use of a cableway system in place of the monorail.

The operation of the conveyor system is simple, the operator being stationed close to the track hopper, where he can observe the filling of the coal bucket. The coal flows from the hopper into the bucket through a chute which is under the control of the operator. The point of deposit of the contents of the bucket in the storage is also under the will of the operator, who can stop the bucket at any point in its travel along the monorail. The manufacturers make a point of the manner of dumping the bucket, since this takes place when the bucket is in contact with the pile. Hence the material falls gently with a minimum of breakage. When the bucket is raised from the pile after dumping, the latch is closed automatically so that the bucket is ready to receive another load.



Suggested Application of the Monorail System

This type of material handling equipment is known as the Godfrey Conveyor, and is manufactured by the Godfrey Conveyor Company, Elkhart, Ind.

COMPULSORY COMMON SENSE.—Women employed by the Pennsylvania Railroad in car cleaning and other outdoor work have received notice that the wearing of high-heeled shoes is disapproved. These women have also been reminded of the requirement that they wear the prescribed uniform.



Photo from Keystone View Company, N. Y.

Tank Cars on the Alsace-Lorraine System

General News Department

Employees in the machine and car shops on the Sante Fe system have agreed to work nine hours per day, instead of eight, beginning July 19, until the shortage of equipment is overcome.

The Chicago, Milwaukee & St. Paul car repair shops at Milwaukee, Wis., were destroyed by fire on July 18. The building was 600 ft. by 1,500 feet and the estimated loss is $250,000. More than 100 freight cars were also destroyed.

The Brotherhood of Railway Trainmen has issued a warning to members "on vacation" that they cannot hope to return to the organization except as novices. The statement reviews the "vacation" episode and affirms the opposition of the organization to the "rebel" movement.

Fines aggregating $240 and costs, for violation of smoke regulations, were imposed on the Baltimore & Ohio at Pittsburgh, Pa., on July 23. Cases brought by the city against the Pennsylvania were dismissed on payment of costs, and following an agreement with the law department of the railroad.

The Brooklyn Rapid Transit Co., New York City, operating subway and elevated lines in the boroughs of Brooklyn and Manhattan, will open two new lines between the two boroughs on August 1, the city having completed the tunnels beneath the East River at Sixtieth street and at Whitehall street. The new lines opened will aggregate a length of about seven miles.

The Cunard Terminal Company has been incorporated in New Jersey, with a capital of $40,000,000, to operate the freight terminals to be established by the Cunard Steamship Line in Weehawken, N. J., opposite 42nd street, New York City. The State of New Jersey has made further grants to this company of privileges on riparian lands. The plans of the company contemplate eight large warehouses on eight piers.

The Eastern Texas Railroad Company (headquarters at Lufkin, Texas) has been enjoined from removing or abandoning its tracks, the order having been granted on July 9 in the fifty-third district court. The suit was brought by the state of Texas. The defendant company, which is a part of the St. Louis Southwestern System, had filed an application for permission to abandon the property and remove the tracks.

The decennial celebration of the establishment of the United States Forest Products Laboratory at Madison, Wis., was held in that city on July 22 and 23, at which time an opportunity was offered to make a detailed inspection of the laboratory and of the work which it is doing. A program was also presented at which the work of the laboratory was reviewed and conferences held to promote the interests of forestry in this country. The celebration was in the general charge of Howard F. Weiss, former director of the laboratory, while those participating in the program included John Foley, forester, Pennsylvania System; Lieutenant-Colonel W. B. Greeley, forester, United States Forest Service, and Hon. Emanuel L. Phillip, governor of Wisconsin. In reviewing the work of the laboratory during the ten years since its creation, Carlisle P. Winslow, director, estimated that the results secured from the experimental work done to date are saving the industries of the United States $40,000,000 annually. This laboratory is supported jointly by the United States Forest Service and the University of Wisconsin.

Car Inspectors' Convention

The annual convention of the Chief Interchange Car Inspectors' and Car Foremen's Association, will be held at the Windsor Hotel, Montreal, Que., September 14, 15 and 16.

Railroad Administration Settles With Steamship Companies

The Railroad Administration has closed settlement with the Clyde Steamship Company for its compensation, depreciation, maintenance and all other claims arising from federal operation, including payment for the steamship Onondaga, lost in 1918. Settlement has also been closed with the Mallory Steamship Company, including the same items and payment for the steamship San Saba sunk by a German mine in 1918. The lump sum payment to both companies was $4,019,782, less previous payments on account.

Electric Railways Commission Preparing Report

The Federal Electric Railways Commission met in Washington last week in its final session for the purpose of formulating its report to the President. This report is supposed to include the suggestions of the commission as to what are the best solutions of the present-day problems of the electric railways and communities served by them. This commission has for more than a year been studying the electric railway problems of the United States. A comprehensive investigation was made for the commission by its executive secretary, Charlton Ogburn. This investigation chiefly dealt with the finances of the electric railways, their franchise relations, their traffic figures, their need of increased fares and possible economies of operation. All of the evidence gathered has been analyzed by Delos F. Wilcox, public utility expert of New York, for the benefit of the commission. It is expected that the commission's report will be made within a few days. The members of the commission are: Phillip H. Gadsden, Royal Meeker, Eugene Meyer, Louis B. Wehle, Charles E. Elmquist, Edwin F. Sweet, Charles W. Beall, William D. Mahon, and George L. Baker.

I. C. C. Trying to Lower Interest Rates

The Interstate Commerce Commission is making an effort to hold down the rate of interest which the railroads are required to pay in raising capital for equipment and additions and betterments. In its recent announcement regarding the proposed distribution of the $300,000,000 loan fund, the commission expressed the opinion that the contributions of private capital which it is endeavoring to have the railroads obtain to supplement loans from the government fund should be obtained at reasonable interest charges. Acting in conformity with the views thus expressed, the commission announced on July 22 that it had certified to the Secretary of the Treasury a number of loans to carriers contingent upon the respective carriers raising their contributions of capital at rates of interest varying from 6 to 7 per cent, depending upon the nature of the loan and the circumstances in each case. The commission has pending before it a number of applications with respect to which the applicants claim it is impossible to secure private capital necessary to match loans from the government, except at rates of interest substantially higher than those which the commission has thus far authorized in the certificates issued. A hearing was to be held before Division 4 of the commission at Washington this week.

Labor Organizes for Political Action

The National Campaign Committee of the 16 "associated recognized standard" railroad labor organizations has distributed a pamphlet containing instructions for executing their plan for rewarding their friends and defeating their enemies politically. The pamphlet tells how to start local campaign committees in each district to begin the work of organizing the locality for political action, with instructions to make a thorough canvass and interview all the voters,

with the object of ascertaining their attitude toward labor's political program. Whenever a voter is found who is friendly to labor's program he is to be asked to sign a card on which he promises to vote and try to get others to vote for labor's non-partisan political program and agrees to make a contribution to the expense of the campaign. After the local campaign committees have been organized the chairmen are to get into touch with each other and arrange for the organization of congressional campaign committees in each congressional district. The officers of the congressional committees are in turn to organize state committees for the purpose of working in connection with senatorial elections. The pamphlet expresses an expectation that labor will be able to assist in placing new faces in both houses of the National legislature.

Railroad Earnings for April and Four Months

The railroads of the United States in the month of April earned $29,604,417 less than their expenses and taxes, according to the compilation issued by the Interstate Commerce Commission. This record, shown in the large table, covers 188 Class I roads and 15 switching and terminal companies. The deficit for April compares with a net operating income in April, 1919, of $26,002,383. Operating revenues for the month were $401,604,695, an increase of $12,000,000; but the operating expenses, $404,480,142, show an increase of $60,000,000. The operating ratio for the month was 100.72 as compared with 88.52 in April, 1919. For the four months ended with April the report shows a net operating income of $37,063,134. As the government has been guaranteeing the roads during this period at the rate of about $75,000,000 a month, this represents a loss to the government for the four months of about $263,000,000, although there may be some adjustments in the maintenance accounts. The receipts for this period include approximately $50,000,000 back mail pay to be taken into the January accounts so that for this year's operations the railroads actually show a deficit. For the four months' period railway operating revenues increased $271,000,000, while the operating expenses increased $277,000,000; and taxes increased $17,000,000. For the corresponding four months of 1919 the net operating income was $64,926,926.

The largest loss in April was in the Eastern district, the railroads of which had a deficit of $24,000,000. The Southern roads had a net operating income of $1,598,000, and the Western roads showed a deficit of $7,200,000. For four months the Eastern roads had a deficit of $44,499,000, the Southern roads earned $30,013,000, and the Western roads earned $51,549,000.

Federal lap-over items settled during the month are included in the table for roads that have indicated that estimates were not included for substantially all unaudited corporate items. The war taxes of the corporations are included for March and April, 1920, only. In making comparison with the federal figures for 1919 it should be noted that in addition to war taxes the corporate figures for 1920 include some items classified principally under general expenses and hire of equipment, that did not enter into the accounting under federal control. The war taxes included in railway tax accruals for April, 1920, are: Eastern District, $1,034,225; Southern District, $457,742; Western District, $1,331,534; United States, $2,833,501; for four months of 1920: Eastern District $1,953,331; Southern District, $939,161; Western District, $2,730,203; United States, $5,622,695.

The Roadmasters' Convention

Plans are nearing completion for the annual convention of the Roadmasters & Maintenance of Way Association, which will be held in St. Louis, September 21-23. At a recent meeting of the executive committee of that association, the following program was arranged for:

TUESDAY

10 a. m. Convention called to order. Opening business, reading of minutes of last meeting, address of president, etc.

11 a. m. Committee report of The Economical Weights of Rail for Various Classes of Traffic, J. B. Baker, engineer maintenance of way, Central Region, Pennsylvania System, Cleveland, O., chairman.

2 p. m. Paper—"The Maintenance of Track Joints."

3.30 p. m. Committee report on "The Equation of Track Values," L. C. Ayers, assistant superintendent, Norfolk & Western, Crewe, Va., chairman.

7.30 p. m. Paper—"Methods of Increasing the Efficiency

RAILWAY REVENUES AND EXPENSES FOR APRIL AND FOUR MONTHS ENDING APRIL 30

Item	April				Four months			
	Amount		Per mile of road operated		Amount		Per mile of road operated	
	1920	1919	1920	1919	1920	1919	1920	1919
1. Average number miles operated	235,120.64	234,189.50	.....	.....	234,815.00	234,181.01	.....	.....
Revenues:								
2. Freight	$267,946,936	$265,675,547	$1,140	$1,134	$1,204,325,993	$1,042,105,545	$5,129	$4,450
3. Passenger	93,186,502	89,565,251	396	382	360,353,400	345,334,892	1,535	1,475
4. Mail	7,580,491	4,306,948	32	18	*85,361,413	17,120,811	363	73
5. Express	11,824,460	11,239,431	50	48	48,916,930	33,563,783	208	143
6. All other transportation	9,800,071	9,249,641	42	40	43,375,986	36,355,022	185	155
7. Incidental	10,860,857	9,071,818	46	39	43,801,739	40,074,743	186	171
8. Joint facility—Cr.	565,366	542,319	2	2	2,357,728	2,193,912	10	10
9. Joint facility—Dr.	159,988	163,684	.....	.....	750,828	653,851	3	3
10. Railway operating revenues	401,604,695	389,487,271	1,708	1,663	1,787,742,361	1,516,094,857	7,613	6,474
Expenses:								
11. Maintenance of way and structures	75,940,376	63,520,866	323	271	266,327,053	235,828,644	1,134	1,007
12. Maintenance of equipment	111,670,570	94,802,625	475	405	464,978,748	381,032,680	1,980	1,627
13. Traffic	5,121,415	4,027,826	22	17	20,076,888	14,082,071	86	63
14. Transportation	194,440,328	168,871,263	827	721	839,641,387	693,325,634	3,576	2,961
15. Miscellaneous operations	4,603,446	3,693,781	19	16	17,911,622	14,304,356	76	61
16. General	12,908,286	10,360,166	55	44	47,699,943	41,119,632	203	176
17. Transportation for investment—Cr.	204,279	505,920	1	2	1,109,080	2,051,971	5	9
18. Railway operating expenses	404,480,142	344,770,607	1,720	1,472	1,655,526,561	1,378,341,046	7,050	5,886
19. Net revenue from railway operations	†2,875,447	44,716,664	†12	191	132,215,800	137,753,811	563	588
20. Railway tax accruals	22,940,531	16,015,364	98	68	79,298,317	61,731,471	338	264
21. Uncollectible railway revenues	65,507	58,243	.....	.....	366,643	238,569	1	1
22. Railway operating income	†25,881,485	28,643,057	†110	123	52,550,840	75,783,771	224	323
23. Equipment rents (Dr. Bal.)	2,145,254	1,574,661	9	7	9,065,715	6,077,928	39	26
24. Joint facility rent (Dr. Bal.)	1,577,678	1,066,013	7	5	6,427,991	4,778,917	27	20
25. Net of items 22, 23 and 24	†29,604,417	26,002,383	†126	111	37,063,134	64,926,926	158	277
26. Per cent of expenses	100.72	88.52	.....	.....	92.60	90.91	.....	.....

*Includes approximately $50,000,000 back railway mail pay. §Credit items. †Deficit.

REVENUES AND EXPENSES OF RAILWAYS

FOR FIVE MONTHS OF CALENDAR YEAR, 1920

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Chicago & Alton	1,050	$7,039,099	$2,452,619	$10,669,533	$1,476,699	$3,005,999	$137,061	$5,011,701	$298,748	$9,991,054	93.64	$678,479	$329,047	$348,718	$107,305
Chicago & Eastern Illinois	1,131	7,598,748	1,974,543	11,187,410	1,290,349	3,693,220	102,948	4,813,070	307,129	10,265,374	91.75	922,036	470,000	449,991	1,349,554
Chicago, Detroit & Can. Grd Trunk Jct.	62	455,826	74,891	639,781	72,054	133,426	5,704	325,278	15,895	552,316	86.32	87,464	21,934	65,511	—198,812
Chicago & Erie	269	3,489,092	304,033	4,268,170	461,862	807,125	64,812	2,379,136	141,319	3,875,095	90.74	395,074	198,636	196,118	—200,845
Chicago & North Western	8,154	38,024,180	13,610,652	58,977,889	8,612,402	13,981,062	437,740	29,678,091	1,500,946	54,744,090	92.82	4,233,799	3,300,621	928,192	—1,077,370
Chicago Great Western	1,496	5,866,016	2,115,169	9,088,601	1,880,834	2,331,020	143,636	4,382,259	258,607	9,078,733	99.89	9,867	306,429	—297,186	—428,360
Chicago, Indianapolis & Louisville	654	3,716,752	1,226,749	5,656,958	661,675	1,829,163	115,945	2,540,062	147,211	5,366,874	94.87	290,084	244,643	45,320	—497,641
Chicago Junction	12	.....	.....	1,244,618	249,504	299,465	1,439	1,216,344	45,852	1,812,604	145.63	—567,986	14,733	—582,719	—132,730
Chicago, Milwaukee & St. Paul	10,629	42,229,337	11,388,899	62,154,806	9,539,915	16,218,818	511,540	31,096,606	1,871,125	59,616,644	95.92	2,538,161	3,237,524	—724,739	—746,859
Chicago, Rock Island & Gulf	463	1,865,458	468,491	2,614,882	387,454	392,983	37,153	1,027,743	63,549	1,914,661	73.22	700,221	81,534	618,520	515,350
Chicago, Rock Island & Pacific	7,612	33,488,236	12,227,694	51,121,766	8,592,574	12,603,542	561,011	23,281,658	1,142,744	46,426,998	90.81	4,694,769	2,143,269	2,547,501	1,283,177
Chicago, St. Paul, Minneapolis & Omaha	1,749	7,850,025	3,140,013	12,213,376	1,280,691	2,285,347	114,163	5,731,642	355,601	7,833,554	64.13	2,379,822	643,076	1,734,244	669,917
Chicago, Terre Haute & Southeastern	374	1,742,703	118,503	1,923,130	283,004	702,373	21,043	840,230	53,710	1,908,080	99.21	15,049	94,500	—79,451	—116,669
Cincinnati, Indianapolis & Western	321	1,232,377	255,021	1,674,181	255,573	621,346	37,884	778,891	83,419	1,781,924	106.43	—107,742	64,717	—172,466	52,349
Cincinnati Northern	250	1,104,493	93,403	1,277,746	216,064	285,736	16,159	478,950	27,425	1,024,312	80.17	253,435	50,625	202,803	—6,522
Cleveland, Cinn., Chicago & St. Louis	2,408	22,313,904	6,934,267	33,208,257	3,596,868	7,177,744	473,651	13,529,278	642,036	25,659,624	77.26	7,548,633	1,060,815	6,484,030	2,455,170
Colorado & Wyoming	43	89,065	4,481	360,060	58,780	87,866	1,156	177,909	20,487	346,197	96.14	13,863	25,000	—11,137	—90,365
Colorado & Southern	1,099	4,066,649	980,686	5,688,663	869,124	1,399,782	49,700	1,997,573	199,954	4,553,311	80.04	1,035,352	281,354	752,792	15,092
Delaware & Hudson	858	11,873,164	1,191,579	13,996,379	1,583,055	4,606,162	117,398	7,377,066	620,758	14,414,426	102.98	—418,047	399,642	—818,128	—941,340
Delaware, Lackawanna & Western	956	17,984,447	4,660,097	26,539,971	3,135,805	6,565,605	358,140	13,940,936	665,181	25,062,768	94.43	1,477,203	1,743,750	—267,639	—4,692,267
Denver & Rio Grande	2,585	10,837,328	2,473,075	14,509,016	1,751,990	3,406,631	161,228	4,799,072	399,129	10,720,750	73.89	3,779,265	626,000	3,137,926	1,944,517
Denver & Salt Lake	255	717,819	117,608	890,649	313,558	421,757	4,087	589,700	37,912	1,367,014	153.48	—476,364	51,332	—527,764	7,683
Detroit & Mackinac	376	473,281	167,910	717,851	129,167	208,600	13,187	380,445	36,005	767,044	106.85	—49,192	72,113	—121,304	37,807
Detroit, Grand Haven & Milwaukee	195	1,135,810	216,639	1,592,243	245,929	412,862	22,950	1,085,872	56,767	1,824,211	114.56	—231,968	16,848	—249,142	—399,453
Detroit, Toledo & Ironton	454	1,637,920	66,266	1,833,312	347,539	415,884	24,607	942,970	71,096	1,800,515	98.21	32,797	44,445	—12,447	353,078
Duluth & Iron Range	298	1,654,166	113,071	1,943,606	441,915	543,068	3,201	757,075	82,430	1,830,250	94.16	113,356	104,579	8,346	—368,660
Duluth, Missabe & Northern	407	2,328,866	240,325	2,857,950	790,083	784,397	13,576	1,059,382	101,303	2,757,485	96.48	100,465	157,065	—56,633	—2,339,248
Duluth, South Shore & Atlantic	614	1,231,206	449,783	1,953,695	363,636	388,043	26,290	1,063,910	56,744	1,925,068	98.53	28,626	116,000	—87,469	—3,712
Duluth, Winnipeg & Pacific	178	822,655	138,489	978,579	136,447	197,867	15,734	466,143	43,460	859,657	87.84	118,922	52,204	66,717	5,022
El Paso & Southwestern	1,027	4,152,221	1,094,307	5,681,763	1,069,406	1,077,322	64,703	1,540,560	186,701	3,979,390	70.03	1,702,373	422,074	1,279,834	—402,118
Elgin, Joliet & Eastern	832	7,553,326	.....	8,805,920	813,529	2,243,918	33,444	3,666,042	159,469	6,916,018	78.53	1,889,901	256,140	1,633,436	—504,821
Erie	1,989	27,558,013	4,975,822	36,799,363	4,902,231	13,312,950	396,494	20,002,760	1,094,925	40,028,195	108.77	—3,228,832	1,229,520	—4,479,393	—1,821,395
Florida East Coast	764	3,335,819	2,038,203	6,217,981	649,159	877,501	46,417	2,155,054	115,979	3,910,549	62.89	2,307,432	197,517	2,109,574	1,602,961
Fonda, Johnstown & Gloversville	88	183,231	340,379	549,744	66,341	53,553	2,173	202,138	32,765	356,971	64.93	192,774	25,025	167,748	30,224
Ft. Smith & Western	253	537,675	143,377	732,755	187,979	181,243	21,012	317,268	34,215	747,791	102.05	—15,036	2,500	—40,597	—68,072
Ft. Worth & Rio Grande	235	427,255	298,034	787,269	201,335	131,121	9,034	431,599	31,380	804,469	102.18	—17,200	18,925	—36,178	83,520
Galveston, Harrisburg & San Antonio	1,383	6,559,478	2,159,811	9,493,913	2,846,474	2,438,917	149,576	3,724,391	294,634	9,562,010	100.72	—68,097	339,279	—415,695	—1,632,519
Galveston Wharf Co	13	.....	.....	516,747	133,954	12,279	1,611	187,345	11,329	420,991	81.46	95,750	75,600	20,150	28,904
Georgia Railroad	328	1,764,053	667,972	2,639,869	300,591	556,084	52,305	1,418,697	91,989	2,420,683	91.70	219,186	29,750	189,429	—339,131
Grand Trunk Western	350	4,226,669	976,244	5,759,656	578,547	1,741,208	76,420	2,814,697	192,540	5,437,197	94.40	322,460	233,527	89,039	—836,529
Great Northern	8,175	29,528,432	7,167,116	43,767,523	9,114,362	9,338,038	364,279	19,242,374	960,994	39,646,913	90.59	4,120,609	3,719,549	390,223	—1,398,611
Green Bay & Western	252	360,469	91,070	489,510	102,115	115,590	5,334	220,342	13,690	457,065	93.37	32,445	34,344	—1,899	—10,763
Gulf & Ship Island	307	838,167	223,346	1,176,490	302,691	277,120	24,517	480,758	57,618	1,144,923	97.31	31,567	56,988	—25,658	55,355
Gulf, Colorado & Santa Fe	1,919	6,988,361	2,381,416	10,366,794	2,595,104	2,164,329	112,020	4,333,132	264,563	9,445,184	91.10	921,610	432,883	487,655	8,186
Gulf, Mobile & Northern	469	1,104,157	267,908	1,505,194	415,241	334,706	48,707	648,529	66,381	1,513,564	100.56	—8,370	65,955	—74,765	35,046
Hocking Valley	3,502	4,309,435	487,634	5,094,238	625,329	1,777,893	50,425	2,039,220	140,635	4,635,433	90.99	460,804	338,431	122,373	442,087
Houston & Texas Central	877	2,917,913	1,077,882	4,435,961	1,147,880	917,416	60,343	1,792,426	130,622	4,048,109	91.25	387,852	212,794	171,084	—41,577
Houston, East & West Texas	190	836,124	247,054	1,171,913	497,649	175,027	12,815	547,463	29,242	1,262,196	107.70	—90,283	42,445	—134,124	—273,158
Illinois Central	4,799	38,773,757	10,233,309	54,600,326	9,100,395	14,372,090	498,068	23,018,975	1,220,055	48,650,564	89.10	5,950,262	2,849,405	3,092,648	1,936,098
Illinois Terminal	24	340,906	.....	361,802	18,987	43,110	3,538	89,919	23,390	178,944	49.45	182,858	5,748	177,101	—52,343
Indiana Harbor Belt	120	.....	.....	2,957,347	611,149	633,290	11,934	2,080,176	90,267	3,426,816	115.87	—469,469	51,706	—521,322	—211,169
International & Great Northern	1,159	4,863,207	1,289,690	6,845,583	1,625,478	1,760,763	90,500	3,744,963	228,202	7,466,150	109.06	—620,568	162,503	—786,878	—27,780
Kanawha & Michigan	176	1,507,990	241,906	1,840,465	317,726	744,358	12,967	724,475	61,283	1,860,808	101.10	—20,344	125,000	—145,347	—72,577
Kansas City, Mexico & Orient	272	480,812	81,967	613,626	228,963	209,064	14,678	327,054	46,187	825,946	134.60	—212,320	38,515	—250,884	27,434
Kansas City, Mexico & Orient of Texas	465	493,262	104,957	665,747	300,339	224,236	14,977	378,931	49,059	967,541	145.33	—301,794	31,419	—333,541	—6,015
Kansas City Southern	779	5,414,862	1,148,720	7,229,952	1,084,664	1,619,050	142,681	2,765,902	275,269	5,885,457	81.40	1,344,495	325,048	1,018,107	639,464
Lake Erie & Western	741	3,394,716	306,825	3,983,474	540,943	1,139,061	75,012	1,777,403	121,542	3,652,855	91.70	330,619	205,001	125,179	283,944
Lake Superior & Ishpeming	34	218,803	1,236	248,825	90,213	92,707	1,126	79,387	12,888	276,321	111.05	—27,496	22,589	—50,085	—80,514
Lake Terminal	12	.....	1,150	494,617	73,759	140,226	.....	350,231	259	564,476	114.12	—69,859	29,319	—99,178	—85,560
Lehigh & Hudson River	96	838,640	17,591	934,149	125,153	217,507	8,099	501,544	34,981	887,284	94.98	46,865	43,351	3,486	—112,615
Lehigh & New England	230	1,643,490	11,247	1,724,326	206,874	387,012	31,114	632,813	62,112	1,317,757	76.42	406,569	66,129	340,440	159,945
Lehigh Valley	1,435	20,120,948	2,618,071	25,058,606	4,064,645	7,962,530	276,482	14,999,183	596,243	28,006,315	111.77	—2,947,709	970,000	—3,918,832	—4,291,999
Long Island	398	2,274,480	4,969,702	8,231,848	1,383,568	1,991,951	61,072	5,348,442	265,801	9,115,990	110.74	—884,141	512,956	—1,399,101	—2,003,033
Los Angeles & Salt Lake	1,108	4,569,991	2,052,588	7,370,910	1,056,063	1,432,738	103,580	2,620,888	178,528	5,617,207	76.21	1,753,702	388,402	1,364,499	156,715
Louisiana & Arkansas	302	1,384,519	250,369	1,721,606	306,741	228,600	22,647	558,995	38,875	1,154,470	67.05	567,136	83,379	483,643	524,238
Louisiana Ry. & Navigation Co	343	1,338,039	203,901	1,633,171	407,712	284,323	23,718	714,204	57,097	1,487,055	91.05	146,116	70,000	76,034	214,774
Louisiana Western	207	1,400,348	522,223	2,069,896	457,846	378,010	31,878	523,568	64,951	1,469,154	70.97	600,742	100,551	499,769	19,105
Louisville & Nashville	5,040	34,975,944	9,691,066	48,198,840	7,882,385	12,632,575	831,003	21,069,496	1,078,948	43,743,294	90.76	4,455,546	1,456,276	2,996,482	—1,089,390
Louisville, Henderson & St. Louis	199	482,055	166,380	713,258	198,965	80,062	13,296	225,458	25,708	543,489	76.19	169,769	21,645	148,090	—46,034

REVENUES AND EXPENSES OF RAILWAYS

FOR FIVE MONTHS OF CALENDAR YEAR, 1920—Continued

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Maine Central	1,216	$4,873,710	$1,718,618	$7,303,130	$1,544,435	$1,889,210	$52,752	$4,311,845	$211,568	$8,013,598	109.72	—$710,568	$452,708	—$1,163,327	—$408,642
Maryland, Delaware & Virginia	82	266,365	103,734	395,584	39,985	176,399	2,893	320,936	11,479	551,692	139.46	—156,109	10,000	—166,109	130,273
Michigan Central	1,862	19,844,597	7,612,703	31,377,212	3,823,924	7,914,834	333,031	13,998,439	598,991	27,179,907	86.62	4,197,305	1,239,500	2,954,211	—2,129,997
Mineral Range	101	261,653	1,513	272,681	70,103	92,280	1,472	149,898	5,595	319,347	117.11	—46,665	18,000	—64,665	—40,014
Minn. & St. Louis	1,646	4,701,799	1,083,355	6,305,423	918,818	1,689,312	81,731	3,172,470	173,765	6,037,858	95.75	267,565	282,544	—15,900	446,044
Minn., St. Paul & Sault Ste. Marie	4,243	11,232,217	3,049,432	16,122,546	2,796,793	3,406,404	171,831	7,875,319	443,373	14,785,712	91.71	1,336,834	1,394,747	—58,982	—1,112,751
Minnesota & International	194	358,598	146,589	545,691	107,916	95,101	2,446	269,144	18,396	493,003	90.34	52,688	28,599	24,086	44,620
Mississippi Central	164	248,899	101,193	384,778	145,116	155,101	9,814	218,215	40,305	568,551	147.75	—183,773	19,615	—203,550	—126,885
Missouri & North Arkansas	364	472,672	208,648	755,631	280,294	161,416	13,872	363,702	38,582	857,866	113.52	—102,236	30,161	—132,430	188,558
Missouri, Kansas & Texas	1,715	9,994,078	5,217,235	14,747,577	2,620,407	4,136,231	173,506	5,167,413	475,226	12,655,273	85.79	2,092,304	537,231	1,553,137	967,818
Missouri, Kansas & Texas of Texas	1,762	6,511,084	3,561,087	11,284,239	2,644,560	2,260,169	134,627	6,385,872	401,651	11,954,267	105.94	—670,029	297,810	—969,725	—837,330
Missouri, Oklahoma & Gulf	329	797,396	110,455	959,457	222,188	268,193	10,760	507,088	46,042	1,055,299	109.98	—95,842	59,066	—155,075	239,974
Missouri Pacific	7,299	31,204,866	7,988,711	44,167,860	8,778,662	9,769,265	614,415	18,336,877	1,198,031	38,918,270	88.11	5,249,590	1,218,651	4,016,393	3,112,805
Mobile & Ohio	1,076	5,842,561	905,565	7,386,258	1,233,478	2,284,537	146,172	3,385,070	227,970	7,281,669	98.58	104,589	301,956	—197,676	490,027
Monongahela	108	1,193,866	119,408	1,349,786	539,974	265,645	2,679	550,153	32,674	1,391,126	103.06	—41,340	28,879	—70,219	—349,536
Monongahela Connecting	7	.....	.....	1,263,918	124,975	184,834	2,798	570,399	31,642	914,649	72.36	349,268	14,881	334,387	443,191
Montour	56	379,683	6,714	401,206	113,017	228,277	5,737	167,022	36,398	560,098	139.60	—158,892	11,902	—170,794	—42,346
Morgan's La. & Tex R. R. & S. S. Co.	460	2,875,452	863,326	4,074,276	934,088	757,619	54,850	1,325,277	117,057	3,202,299	78.59	871,977	201,909	668,163	482,016
Nashville, Chattanooga & St. Louis	1,247	6,746,418	2,049,427	9,790,723	1,451,993	2,663,185	252,446	4,077,428	250,916	8,739,101	89.25	1,051,621	219,500	831,121	1,015,059
Nevada Northern	166	691,637	48,075	768,425	138,795	134,832	4,500	206,640	23,046	508,511	56.17	259,913	41,337	218,576	66,080
New Jersey & New York	47	63,891	386,270	488,395	50,070	87,771	7,089	307,519	11,592	464,041	95.01	24,355	11,509	12,833	40,571
New Orleans Great Northern	284	763,392	218,043	1,026,204	212,265	222,384	17,398	417,383	46,347	917,986	89.45	108,218	58,453	49,727	56,075
New Orleans, Texas & Mexico	191	711,160	196,603	963,360	256,536	191,761	20,131	326,473	39,305	834,255	86.59	129,105	58,500	70,521	52,537
N. Y. Central	6,069	73,239,024	33,210,085	129,156,093	17,248,989	32,906,284	1,214,835	64,755,151	3,395,694	121,698,872	94.23	7,451,221	5,033,034	2,403,488	—6,981,243
New York, Chicago & St. Louis	574	9,220,957	416,482	10,060,193	1,081,822	1,875,554	182,069	4,330,999	310,832	7,804,309	77.57	2,255,884	195,000	2,058,936	—115,822
New York, New Haven & Hartford	1,965	19,070,201	18,544,849	44,919,039	6,701,459	10,925,321	244,090	24,189,543	1,554,644	44,466,064	98.99	452,975	1,695,000	—1,250,880	—1,917,545
New York, Ontario & Western	569	2,523,065	642,719	3,935,102	759,429	1,123,909	46,813	2,267,075	127,450	4,324,675	109.89	—389,573	127,283	—516,859	700,847
New York, Susquehanna & Western	135	1,132,964	301,134	1,641,203	212,781	386,996	12,904	1,265,917	43,303	1,921,895	117.10	—280,692	109,283	—392,969	—320,949
Newburgh & South Shore	7	.....	.....	635,162	70,133	159,326	.....	418,783	21,561	669,804	105.45	—34,642	38,433	—73,075	—168,922
Norfolk & Western	2,201	24,824,278	3,437,339	30,300,435	4,685,192	10,572,147	250,767	12,569,574	681,397	28,901,891	95.38	1,398,544	1,845,000	—448,815	—4,298,508
Norfolk Southern	905	2,248,601	722,058	3,241,996	648,217	598,197	55,958	1,528,981	133,407	2,965,397	91.46	276,599	81,998	193,968	282,079
Northern Pacific	6,655	30,215,224	7,413,256	42,405,531	9,244,118	8,380,412	386,352	17,181,591	1,056,166	36,849,911	86.89	5,555,619	3,539,334	2,009,999	2,804,184
Northwestern Pacific	538	1,368,484	950,271	2,679,491	566,031	374,671	25,813	1,203,284	75,434	2,257,169	84.23	422,322	128,012	293,850	216,846
Oregon Short Line	2,348	12,836,280	2,796,810	17,413,008	2,089,207	2,860,792	134,241	5,373,828	573,041	11,367,861	65.28	6,045,147	1,260,798	4,783,618	2,164,980
Oregon-Washington R. R. & Nav. Co.	2,223	8,992,321	2,682,239	13,089,563	2,050,079	2,195,174	163,266	5,387,469	575,333	10,525,989	80.42	2,563,573	869,969	1,693,313	767,929
Panhandle & Santa Fe	773	2,325,652	666,136	3,267,215	744,964	1,125,343	19,770	1,451,075	82,054	3,421,533	104.72	—154,317	102,181	—256,436	378,988
Peoria & Pekin Union	19	140,376	20,218	629,725	75,992	171,242	867	391,073	22,467	661,641	105.07	—31,916	47,500	—79,416	129,809
Pere Marquette	2,230	9,840,054	2,341,769	14,030,405	1,894,069	3,491,695	192,853	7,105,038	486,057	13,222,046	94.24	808,359	320,557	486,526	1,426,496
Perkiomen R. R.	41	394,697	46,277	472,726	37,961	21,448	68	200,002	1,422	260,994	55.21	211,732	10,518	201,215	29,177
Philadelphia, Bethlehem & New England	10	.....	.....	487,204	78,474	80,815	2,177	371,879	7,702	541,047	111.05	—53,843	5,150	—58,993	—81,284
Philadelphia & Reading	1,126	27,908,607	4,118,904	34,188,619	3,405,211	9,692,645	236,293	17,020,593	797,017	31,257,135	91.42	2,931,484	760,778	2,168,964	3,045,239
Pittsburgh & Lake Erie	224	8,876,442	1,150,335	10,946,697	2,138,268	4,823,962	87,295	4,411,448	273,619	11,748,339	107.32	—797,242	604,712	—1,402,414	—2,201,382
Pittsburgh & Shawmut	103	612,280	26,307	643,829	118,852	153,019	7,062	244,313	25,284	548,531	85.19	95,299	590	94,708	209,886
Pittsburgh & West Virginia	63	585,273	45,813	715,438	196,187	293,003	8,277	311,287	45,319	900,531	125.86	—185,092	71,663	—257,281	103,030
Pittsburgh, Shawmut & Northern	109	518,843	33,514	567,206	123,675	274,014	9,640	288,296	44,944	740,586	130.57	—173,381	9,439	—183,336	—21,224
Port Reading	21	576,440	.....	771,441	78,966	61,715	98	462,315	6,225	609,318	78.98	162,122	32,772	129,351	224,026
Richmond, Fredericksburg & Potomac	117	2,158,461	1,577,181	4,726,083	391,221	744,142	36,349	1,867,017	122,674	3,201,816	67.74	1,524,267	145,220	1,378,876	721,171
Rutland	415	1,165,752	528,579	2,109,863	410,300	582,367	23,992	1,130,881	69,204	2,224,988	105.45	115,125	92,985	208,124	—90,758
St. Joseph & Grand Island	158	969,054	185,551	1,267,078	329,703	205,465	10,231	679,660	62,435	1,297,401	102.39	—30,323	57,481	—87,842	35,825
St. Louis, Brownsville & Mexico	548	1,996,557	862,223	3,096,838	662,649	510,676	45,572	1,090,790	114,041	2,419,355	78.12	677,483	56,500	619,863	57,896
St. Louis-San Francisco	4,757	23,706,408	9,160,657	54,974,331	5,157,265	7,892,990	296,544	14,391,401	1,021,699	28,706,796	82.07	6,267,536	1,130,218	5,131,857	1,167,511
St. Louis, San Francisco & Texas	134	563,952	89,367	674,507	149,378	132,717	8,708	404,108	30,929	725,839	107.61	—51,331	9,400	—60,748	10,955
St. Louis Southwestern	947	6,691,334	842,619	8,004,634	1,072,153	1,478,464	175,994	2,100,795	217,788	5,069,499	63.33	2,935,135	250,051	2,684,943	1,943,258
St. Louis Southwestern of Texas	897	2,611,851	581,592	3,562,751	1,092,009	1,195,177	67,369	2,023,285	145,805	4,522,106	126.92	—959,355	123,468	—1,085,161	408,699
San Antonio & Aransas Pass	736	1,134,268	438,242	1,792,254	590,022	497,332	31,749	1,027,051	91,080	2,236,093	124.76	443,839	75,000	519,108	13,156
San Antonio, Uvalde & Gulf	317	370,484	198,405	601,807	200,638	114,256	10,540	293,956	27,237	646,626	107.44	—44,818	11,000	55,914	5,866
Seaboard Air Line	3,563	13,661,611	4,121,612	20,706,939	3,440,558	4,832,886	411,857	10,116,398	618,919	19,670,163	94.98	1,036,776	750,000	282,818	370,328
South Buffalo	11	291,395	.....	657,638	41,747	85,674	3,271	415,021	9,690	555,403	84.45	102,234	21,480	80,754	3,538
South Buffalo	11	226,393	.....	533,150	33,975	69,060	2,218	327,641	7,659	440,552	82.63	92,598	17,900	74,698	22,643
Southern Ry.	6,976	40,174,512	13,442,816	60,972,417	7,995,323	11,197,891	768,177	26,238,275	1,493,818	48,302,250	79.21	12,670,167	1,982,015	10,680,479	8,662,729
Alabama Great Southern	313	2,935,986	880,676	4,195,032	456,057	1,013,586	86,380	1,554,892	100,865	3,243,304	77.31	951,728	151,929	799,324	361,634
Cincinnati, New Orleans & Tex. Pacific	338	5,500,472	1,528,600	7,730,699	874,239	2,020,211	131,468	2,797,594	175,143	6,062,140	78.41	1,668,559	354,496	1,413,016	514,111
Georgia Southern & Florida	402	1,359,449	660,478	2,250,160	302,297	487,488	35,328	1,035,525	56,732	1,977,970	85.68	340,191	92,750	228,247	172,881
New Orleans & Northeastern	207	2,120,640	500,055	2,991,070	442,377	631,695	52,256	1,153,615	73,588	2,374,814	79.39	616,256	198,262	417,581	465,742
Northern Alabama	110	522,662	69,893	633,425	135,129	32,309	7,755	283,752	10,417	469,364	74.09	164,061	21,124	142,885	156,765

REVENUES AND EXPENSES OF RAILWAYS

FOR FIVE MONTHS OF CALENDAR YEAR, 1920—Continued

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.					
Southern Ry. in Mississippi	278	$455,723	$245,191	$785,813	$228,630	$122,019	$14,854	$425,931	$27,475	$818,909	104.21	—$33,096	$49,000	—$82,113	—$31,722
Southern Pacific	7,090	42,913,950	20,343,575	71,732,292	11,662,411	15,290,152	594,229	27,890,713	1,695,336	58,881,052	82.08	12,851,240	3,822,869	9,015,489	2,816,870
Southern Pacific S. S. Lines	...	2,140,228	88,668	2,325,380	85,897	1,902,064	57,345	2,309,936	125,174	4,480,416	192 67	—2,155,036	49,996	—2,205,032	—2,157,136
Spokane International	157	500,046	86,888	604,349	84,293	57,117	12,011	197,269	25,492	376,987	62.37	227,362	25,199	201,852	131,142
Spokane, Portland & Seattle	538	2,371,140	710,682	3,361,989	797,056	415,585	30,804	1,112,913	112,762	2,500,147	74.36	861,842	416,263	445,297	156,406
Staten Island Rapid Transit	25	372,828	377,432	825,659	145,033	179,781	5,981	512,759	46,857	890,411	107.84	—64,752	75,000	—139,923	—167,207
Tennessee Central	292	866,001	223,683	1,192,578	211,574	258,551	22,913	553,897	51,215	1,098,126	92.08	94,453	27,273	66,546	275,282
Texarkana & Ft. Smith	93	599,118	198,801	785,263	102,096	77,737	5,372	229,854	23,372	440,379	56.08	344,883	63,870	280,991	244,258
Texas & New Orleans	469	2,520,368	780,757	3,733,187	948,526	1,081,648	39,006	1,266,257	97,876	3,625,073	97.10	108,114	111,659	—8,903	—43,741
Texas & Pacific	1,946	9,612,698	4,814,875	15,903,277	2,967,413	3,487,169	181,472	6,973,802	439,303	14,256,466	89.64	1,646,810	586,600	1,056,661	230,425
Toledo & Ohio Central	476	3,506,090	315,918	4,050,901	558,780	1,322,003	48,107	1,998,125	100,810	4,043,263	99.81	7,638	187,411	—179,799	66,553
Toledo, Peoria & Western	247	420,150	249,356	749,920	118,570	174,451	11,034	401,177	37,209	742,441	99.00	7,479	42,500	—35,021	50,667
Toledo, St. Louis & Western	454	3,718,755	155,042	4,124,390	663,515	810,063	43,368	1,680,458	68,349	3,265,374	79.17	859,016	155,000	703,722	408,652
Trinity & Brazos Valley	368	594,302	97,130	739,680	345,688	233,598	9,917	354,264	40,979	984,446	133,09	—244,766	41,189	—286,063	—18,576
Ulster & Delaware	128	229,818	78,829	449,610	82,280	102,406	9,506	305,364	32,454	534,588	118.90	—84,978	25,000	—109,976	22,544
Union R. R. (of Pennsylvania)	40	.....	.....	3,312,894	373,648	953,767	1,397	2,206,569	38,746	3,574,126	107.88	—261,232	36,640	—297,872	—605,450
Union Pacific	3,614	32,163,940	7,869,221	46,475,328	6,523,927	8,767,449	310,029	14,032,262	1,376,185	32,136,724	69.14	14,338,604	2,031,635	12,304,338	804,870
Utah	98	708,142	3,489	713,770	70,372	143,392	925	166,584	12,611	393,883	55.18	319,887	22,289	297,598	143,670
Vicksburg, Shreveport & Pacific	171	1,151,055	460,815	1,773,222	218,288	299,538	31,086	672,069	52,813	1,292,364	72.88	480,858	64,878	415,832	291,263
Virginian	523	4,947,324	303,158	5,853,289	695,996	1,243,473	31,540	2,385,413	126,696	4,482,312	76.57	1,370,976	277,904	1,093,064	892,622
Wabash	2,478	14,031,581	3,913,175	20,319,582	3,644,713	5,894,655	376,123	10,913,395	693,679	21,659,683	106.60	—1,340,101	637,233	—1,979,395	—2,888,419
Western Maryland	754	5,958,227	406,253	6,876,736	1,241,207	2,477,588	169,560	2,746,376	225,577	6,925,401	100.71	—48,665	236,400	—285,065	140,476
Western Pacific	1,031	4,167,164	810,970	5,277,791	916,132	914,548	119,201	1,818,086	168,849	4,044,573	76.63	1,233,219	294,377	938,563	829,886
Western Ry. of Alabama	133	653,898	358,959	1,149,898	150,398	232,249	26,741	402,493	37,047	865,999	75.31	283,900	33,775	250,118	8,153
Wheeling & Lake Erie	511	4,811,892	304,556	5,629,132	844,381	1,452,807	56,843	2,514,020	140,071	5,024,941	89.26	604,191	323,900	278,998	391,463
Wichita Falls & Northwestern	328	767,355	234,357	1,079,723	281,096	173,886	6,505	563,887	62,870	1,088,243	100.78	—8,520	54,729	—63,515	42,626
Yazoo & Mississippi Valley	1,381	8,622,473	2,433,449	11,841,640	2,423,833	2,793,661	115,590	4,539,697	286,071	10,181,834	85.98	1,659,806	396,050	1,260,435	—206,503

of Maintenance of Way Forces," F. G. Jonah, chief engineer, St. Louis-San Francisco, St. Louis, Mo.

8.30 p. m. "The Americanization of Tony," and other moving pictures of maintenance forces engaged in track work; furnished by the Pennsylvania System.

9.15 p. m. Reception by members of the ladies' auxiliary

WEDNESDAY

9.30 a. m. Committee report on "The Relative Economy of Treated and Untreated Ties, the Various Kinds of Wood and the Treatment," W. F. Muff, roadmaster, Atchison, Topeka & Santa Fe, Newton, Kan., chairman.

11.30 a. m. Paper—"Where Are Our Ties Coming From?" Dr. Hermann von Schrenk, consulting timber engineer, St. Louis, Mo.

2 p. m. Committee report on "Supervision (including consideration of the proper length of roadmasters' or supervisors' territory, the supervision and training of foremen, etc."), W. Shea, general roadmaster, Chicago, Milwaukee & St. Paul, Chicago, chairman.

3.30 p. m. Committee report on "The Construction of Highway, Street and Farm Crossings," J. B. Martin, supervisor of track, New York Central, Elkhart, Ind., chairman.

4.30 p. m. Adjournment to inspect exhibit of the Track Supply Association.

6.30 p. m. Annual banquet.

THURSDAY

9.30 a. m. Committee report on "Relative Economy of Repairing Frogs, Switches and Crossings by Welding," M. Lipman, division engineer, Eastern Region, Pennsylvania System, Philadelphia, Pa., chairman.

11.00 a. m. Business session, including election of officers, selection of location for next convention, etc.

12.30 p. m. Adjournment.

Thursday afternoon will be spent in a tour of inspection of the railway terminals of St. Louis.

Track Supply Exhibit

The Track Supply Association will present its exhibit at the Hotel Statler, St. Louis, simultaneously with the convention of the Roadmasters' Association. It has already received about 50 applications for space and nearly all of the area available has been assigned, indicating that the exhibit will surpass those of previous years in the number of exhibitors, as well as in the educational character of the exhibits. Those who have reserved space to date are as follows:

Air Reduction Sales Company ..... New York City
American Hoist & Derrick Company ..... St. Paul, Minn.
American Steel & Wire Company ..... Chicago
American Valve & Meter Company ..... Cincinnati, Ohio
Anchor Company, The ..... New York City
Balkwill Manganese Crossing Co. ..... Cleveland, Ohio
Bethlehem Steel Co. ..... Philadelphia, Pa.
Buda Company ..... Chicago
Bucyrus Company ..... South Milwaukee, Wis.
Carbic Mfg. Company ..... Duluth, Minn.
Chamberlain, M. E. ..... St. Louis, Mo.
Chicago Malleable Castings Co. ..... Chicago
Chipman Chemical Engineering Co. ..... New York City
Crerar Adams & Co. ..... Chicago
Diamond State Fibre Company ..... Bridgeport, Pa.
Elliot Frog & Switch Company ..... East St. Louis, Ill.
Fairbanks, Morse & Co. ..... Chicago
Fairmont Gas Engine & Railway Motor Car Co. ..... Fairmont, Minn.
Hauck Mfg. Company ..... New York City
Hayes Track Appliance Company ..... Richmond, Ind.
Ingersoll-Rand Company ..... New York City
Kalamazoo Railway Supply Co. ..... Kalamazoo, Mich.
Lundie Engineering Company ..... New York City
Maintenance Equipment Company ..... Chicago
Mudge & Company ..... Chicago
National Lock Washer Company ..... Newark, N. J.
Oxweld Railroad Service Company ..... Chicago
P. & M. Company ..... Marion, Ind.
Positive Rail Anchor Company ..... New York City
Q. & C. Company ..... New York City
Rail Joint Company, The ..... New York City
Railroad Supply Company ..... Chicago
Railway Review ..... Chicago
Ramapo Iron Works ..... Hillburn, N. Y.
Reading Iron Company ..... Reading, Pa.
Ruby, E. L. ..... Philadelphia, Pa.
Sellers Mfg. Company ..... Chicago
St. Louis Frog & Switch Company ..... St. Louis, Mo.
Simmons, Boardman Publishing Co. ..... New York City
Templeton, Kenly & Co., Ltd. ..... Chicago
Track Specialties Company ..... New York City
Union Switch & Signal Company ..... Swissvale, Pa.
Verona Tool Works ..... Pittsburgh, Pa.
Wharton, Jr., & Co., Inc., William ..... Easton, Pa.
Woolery Machine Co. ..... Minneapolis, Minn.
Wyoming Shovel Works ..... Wyoming, Pa.

Traffic News

The South Carolina Traffic Association has been formed by commercial interests of the principal cities in that state. Preliminary action was taken at Spartanburg on July 20.

M. C. Lysle has resigned as assistant traffic manager of the West Texas Chamber of Commerce to accept the position of traffic manager of the Phoenix Refining Co., with headquarters at Tulsa, Okla.

Grain doors on inbound carloads of grain are the property of the carrier and should be preserved, says a circular issued by the commission on car service. While the reclamation of these doors is well understood and protected at most of the larger grain markets, it appears that this is not true at all points, especially at smaller stations. Inasmuch as these grain doors are worth at the present price of lumber about two dollars each, the circular calls upon each road to check its practice in this respect to see that proper protection is being secured at all points.

A car supply 50 per cent of normal and a lack of efficiency in handling existing equipment are two factors that are expected to result in a serious handicap for the lumbermen throughout the Northwest unless some remedy is found immediately, according to testimony of lumbermen at a meeting of the West Coast Lumbermen's Association at Portland, Ore., on July 9. Orders for lumber were stated to be below normal and the car supply below orders, but the opinion was expressed that better handling of cars rather than more equipment is the big need for the present.

The Interstate Commerce Commission on July 27 suspended, until January 1, 1921, the provisions of Section 28 of the merchant marine act which provide that reduced export and import rates shall be allowed only on goods for shipment in American-owned vessels. The provisions were suspended at the request of the United States Shipping Board upon certification from it that adequate shipping facilities in vessels documented under the laws of the United States are not available. The provisions had previously been suspended for 90 days on an order of June 14.

The Board of Railway Commissioners for Canada, on July 23, ordered a reduction of more than 50 per cent in an application of the United States Ordnance District Salvage Board, New York, for relief in connection with a bill for demurrage amounting to $7,535, which accrued at Drummondville on 74 tank cars of United States Government ownership sent over the Canadian Pacific to remove a large quantity of acid in the plant of the Aetna Explosives Company. The board finds that in this case, although the cars were not wanted elsewhere, the full penalty rate was insisted upon by the railway, and declares the old blanket rate of $1 per day to be sufficient for the service rendered.

The Interstate Commerce Commission has issued a partial advance summary of traffic statistics for Class I steam roads for the month of May and five months ended with May, which is incomplete as it lacks returns from 24 roads, including several of the larger systems. For the roads reporting this shows that during the first five months of 1920 they handled 128,406,000,000 net ton miles of freight as compared with 108,526,000,000 during the corresponding period of 1919. For the month of May the net ton miles were 28,242,000,000 as compared with 24,067,000,000. The passenger service train miles show an increase for five months from 159,000,000,000 to 167,000,000,000 and for the month of May from 33,000,000,000 to 34,000,000,000.

The New York Central, carrying out its purpose to resist the order of the New York State Public Service Commission, second district, calling for a general reduction of passenger fares on September 1, has entered suit in the United States District Court, at New York City, to restrain the Public Service Commission from enforcing its order. The order applies to local fares between Albany and Buffalo, which, until the advance (to three cents a mile), was made by the United States Railroad Administration, under the War Act, had for many years been calculated on the uniform rate of two cents a mile. This rate, in the territory named, is specified in the charter under which the road is operated. The railroad company contended in court that under the Transportation Act of 1920 the order of the Public Service Commission was unconstitutional. That Act provides that rates which were made under Federal control are to continue in effect until changed by proper regulatory authorities; and it is argued that the Public Service Commission is not such an authority. On behalf of the Commission it was argued that the repeal of the Federal Act, to take effect September 1, automatically reinstates the former laws. The hearing was before Judges Ward, Hough and Cooper, and decision was reserved.

Livestock Shippers Ask Conference on Rates

Attorneys for the following organizations: National Live Stock Shippers' League, American National Live Stock Association, The National Wool Growers' Association, Corn Belt Meat Producers' Association, Cattle Raisers' Association of Texas, The Kansas State Live Stock Association, and American Farm Bureau Federation have petitioned the Interstate Commerce Commission for a conference to be attended by representatives of the commission, carriers and live stock organizations to agree upon some equitable plan of applying the rate increases requested by the carriers in Ex Parte No. 74. The following matters are suggested for specific consideration:

1. Maximum and the ratio of percentage increases.
2. Uniformity of shipping contracts.
3. Preservation of market differentials.
4. Adjustments to preserve relationships and to avoid discrimination, (a) between markets, and (b) between live stock and the products thereof.
5. Stocker and feeder rates.
6. Competitive state versus interstate rates.
7. Preservation and extension of the application of through rates.
8. Use of and charges for stock yards; feeding rules and charges; and such other rules pertaining to transportation as may be agreed to.

Petitioners point out that a similar request was previously contained in their brief, but that, due to the lack of knowledge of the amount of increase to be allowed, it was impracticable for these suggestions to be given previous consideration. The suggestion is made that in order to avoid postponing the effective date of the new tariffs or schedules, the livestock rates and rules may be made effective upon short notice immediately following the requested conference.

Freight Traffic Situation

The transportation situation as to coal is fully covered in an article elsewhere in this issue.

The freight traffic situation in the East remains unchanged. That is to say, progress is being made, all along the line, in relieving the congestion, but the total volume of freight moving continues so large that conditions are bettered only one notch at a time. Industries depending on bituminous coal get relief from day to day, but continue anxious because the measure of relief is so small.

General freight still requires very careful attention; and at Philadelphia, and other places, the Pennsylvania was forced last week to put out embargoes in various directions. These embargoes are not absolute, but in most cases are used as the readiest means of enforcing the permit system; the shipment of carload freight to congested terminals is only on permits which are granted after assurance that the cars can be disposed of promptly. In the South the movement of perishable freight has been attended with some difficulty. Watermelons have had to be carried in cattle cars. State and municipal road builders continue their complaints at the preference given to coal shippers; in the South they have secured little relief in the shape of flat bottom gondolas with low sides. In Georgia and Alabama the logging business suffers from lack of cars.

In the western wheat-growing states the 1920 bumper crop

is demanding more and more transportation facilities. In Kansas the situation has been reported as particularly acute, inasmuch as the state has comparatively little storage capacity. While some wheat has been moved in that state, the movement has been largely from local elevators and the wheat in storage is estimated at more than two and one-half million bushels. The remedial measures which have been taken by the federal and co-operative bodies have resulted in the movement of an increased number of grain cars into the western grain district. However, both railroad men and shippers complain that a large percentage of these cars are not grain tight and are therefore unfit for this traffic.

Extension of Marine Act Provision Asked

Admiral Benson, chairman of the Shipping Board, has announced that the board would further certify to the Interstate Commerce Commission, the desirability of extending until January 1, 1921, the period of suspension of the provision of Section 28 of the merchant marine act, which prevents American railroads from making preferential rail rates for commodities moving in import and export, except when moved in American ships.

In making the announcement Admiral Benson said: "The section of the act is in the interest of American commerce and shipping. Congress had in view that the movement of our commerce to and from any foreign port, should not be restricted, and so required the Shipping Board to authorize the commission to suspend the provisions of the section, if American shipping facilities were inadequate. The board has decided that the 90 days' suspension now in effect does not afford ample opportunity for proper inquiry into the subject.

The Increased Freight Rate in Canada

The full text of the application of the Railway Association of Canada to the Board of Railway Commissioners for an increase of 30 per cent in freight rates for all commodities, giving increased operation and wage charges as the reason, reads as follows:

The Railway Association of Canada, on behalf of the railway companies, members thereof, and of all other railway companies within the jurisdiction of the board, hereby applies to the board under the provisions of section 325 of the railway act, and such other sections thereof as may be applicable, for authority to make a general advance of 30 per cent in the tolls at present charged for the carriage of freight by the said companies. In the support of such application the applicant respectfully states:

1.—During the period since the outbreak of the war, the scale of expenditure of the said railway companies on capital maintenance and operating accounts has increased to an extent unprecedented and has greatly exceeded the aggregate increases in freight and passenger revenues granted during the period.

2.—As a concrete example of the great burdens under which the railway companies are laboring, reference may be made to the result of the wage increase granted in 1918. The so-called 25 per cent advance in freight rates, granted under order-in-council No. P. C. 1863, effective August 12, 1918, was intended to reimburse the railway companies for the increased wage expense to which it was then estimated they would be put, through the application of the rates of wages and working conditions which had then recently been called the McAdoo award, and supplements thereto, and which had been made applicable to Canada by order-in-council No. P. C. 1768, effective August 1, 1918. Contrary to all expectations, such increase in revenue proved far from sufficient to accomplish the purpose for which it was intended. During the year 1919 the increase in wages granted as above mentioned amounted on Canadian railways to more than $80,000,000. Apart from this increase in wages, the prices of the principal supplies and materials in use on the railways, have increased more than 100 per cent since the beginning of the war period.

3.—In order that the railway companies may maintain their system in such a state of efficiency as to enable them to serve the interests of the public in a proper manner, it is essential that they be accorded an advance in tolls of at least the extent applied for herein.

4.—The increase in rates sought by this application is based entirely on present costs and does not take into consideration any increase in wages or costs which may occur hereafter.

Commission and Court News

Interstate Commerce Commission

The commission has suspended, from July 28 to November 25, the proposed cancellation of the existing fabrication-in-transit privilege at St. Louis of 1½ cents per 100 lb. on structural iron and steel originating at Chicago, Gary, or at points east thereof, and destined to Memphis, New Orleans, and certain other Mississippi Valley points, as published in a Missouri Pacific tariff.

The commission's attention having been directed to the fact that from time to time new passenger stations are opened for business, and that until fares are published to and from such new stations the only basis available is the fare to or from the next more distant point from which fares are published, and as the publication of specific rates to or from such new stations upon the authorized basis per mile applicable in the same territory usually results in reductions in charges, an order has been issued authorizing carriers to establish reduced fares to and from newly established stations on old lines, fares to and from which have heretofore been provided by use of the fare to or from the next more distant point, such fares to be based on distances in miles and fractions of a mile at the authorized rate per mile.

The Commission has issued an order authorizing the railroads in Central, Southeastern, Southwestern, Trunk Line and New England passenger association territories to establish and maintain until January 1, 1921, joint passenger fares that exceed the aggregates of the intermediate fares where such intermediate fares have been reduced to meet the fares of shorter lines or routes; provided that if the carriers desire to continue beyond January 1 any of such higher fares, they shall file applications for permission to do so with the commission on or before October 31. The commission has also granted an application of the carriers for permission to file on 10 days' notice reduced interline passenger fares which represent some reductions under the rates in effect as of March 1.

State Commissions

Delegations of farmers and business and professional men attended the hearing of the Minnesota Railroad and Warehouse Commission on July 17, on the question of abandoning the Duluth & Northern Minnesota between Knife River, Minn., and Finland, a distance of about 50 miles. The abandonment of the road, they declared, would delay settlement and development of this section for many years. The railroad company has asked permission to tear up the track, pleading that virtually all the timber has been cut and that there is no longer any use for the road.

Court News

Liability for Obstructing Flow of Stream by Bridge

The Indiana Appellate Court held that a railroad which partially filled open trestle approaches to a bridge over a natural water course, causing flood waters to wash away part of adjoining owner's land, was liable for the resulting damage. —Pittsburgh, C. C. & St. L. (Ind.) 125 N. E. 780.

Unexplained Breaking of Window in Passenger Car

In an action by a passenger for injuries caused by the unexplained breaking of a car window, where there was no evidence to show any defects in the glass or the apparatus holding it, it was held the passenger could not recover on the doctrine of res ipsa loquitur. The passenger's burden of proving the railroad's negligence does not shift, even where the maxim res ipsa loquitur applies, since the presumption is always rebuttable. McKinney v. New York, Westchester & Boston, 179 N. Y. Supp. 535.

Foreign Railway News

LONDON.

The Prussian-Hessian section of the German State railroads has decided to allow advertising on railroad lines, railroad stations, and in railroad cars.

Australian Railway Fares and Rates Increased

LONDON.

The Australian interstate railway passenger fares and freight rates have been increased by 14 per cent.

Japanese Expecting Railway Loans Here

Baron Takahashi, Japanese Minister of Finance, announced in the House of Peers on July 21, according to press despatches from Tokio, that a loan of 100,000,000 yen for the South Manchurian railroad probably would be floated in the United States in the near future.

Railway Construction in Bulgaria

LONDON.

The Board of Trade Journal says that the Bulgarian government has decided to accept the principle of giving concessions to private individuals for the construction of local lines instead of building them itself as was previously intended. In all there is about 380 miles to be constructed, and there is an urgent demand for rolling stock, rails, metal sleepers, etc.

German Railroad Employees Form a Union

LONDON.

In a meeting recently of representatives of all the railroad employees, with the exception of the Bavarians, it was decided to found a union of all German railroad employees. Already 350,000 members belong to this new organization. The resolution giving the board of directors the power to proclaim general strike in case of need is of special importance. Instead of sixty and more professional unions which are in existence now, the statutes of the new union allow for only nine professional organizations.

Bill to Electrify Japanese Roads

Cable advices from Tokyo under date of July 7, received in banking sources in New York, say that a bill has been introduced by the government in the Japanese Parliament, creating the Imperial Electric Railway Company. The aim of the bill is to establish electrical power supply for railroads and to convert steam railroads to electric. The capital will be 100,000,000 yen ($50,000,000), of which one-half will be invested by the government and its dividend will not exceed 10 per cent. In case insufficient profit is made to warrant the paying of six per cent, no dividends will be paid on stock owned by government, but will be applied for dividend on the privately owned stock.

Tenders Wanted for Steel Rails for Egypt

It is learned, writes Consul Hamilton C. Claiborne from London, England, under date of June 25, that the Surveyor-General of Egypt invites tenders for the supply of cut rails in accordance with specifications and conditions available at Survey Office, Giza. Contractors are invited to put in their offers for any quantity available for immediate delivery or for deliery during the current financial year. Tenders should show quantity, weight per yard, rate per ton of 1,000 kilos, period required for delivery, place of delivery, and any other details necessary. Tenders must be presented on or before March 1, 1921. The London agent of the Egyptian Government has been communicated with in respect of this matter, and it is understood that the tenders from American firms will be accepted and given equal opportunity with those of British firms, provided deliveries, qualities, and specfications are satisfactory.

Passenger Train Mileage in England

LONDON.

It is unofficially stated that the passenger train mileage for the period January 1 to April 25, 1920, is found to be equivalent to about 80 per cent of the mileage for the same period in the "boom" year, 1913. It is a figure which might be expected in view of the large increase in the percentage of locomotives under and awaiting repair. The slowing-up of passenger schedules permits trains being made heavier, thus giving increased carrying capacity.

The examination of the new mail line services which have come into operation on eleven of the British railways this month, shows an increase of 4 per cent as compared with the passenger train mileage on March 1, 1919. For the purpose of this calculation the additional passenger trains which have been allotted to local and suburban services have been excluded.

Electrification on London & South Western Postponed

The London & South Western railway has decided to postpone the electrification of a portion of its line between Cobham and Leatherhead to Guilford, as mentioned by the chairman at the general meeting in February last. This decision has been come to as a result of various circumstances which have arisen during the past three or four months, among which are the following:

(1) The abnormal increase in the cost of all material required for the electrical equipment of the permanent way and rolling stock.

(2) The refusal of the manufacturers to give firm quotations or to guarantee delivery within a reasonable period.

(3) The impossibility of raising fresh capital while the present uncertainty as to the future position of the railways continues.

Railway Construction in Australia

LONDON.

An article in the Times Engineering Supplement states that the acute shortage of steel and articles made from it is being emphasized by responsible officials in Australia. All the states are wanting new railways to open up inaccessible arable regions, and all the governments in Australia are promising them. There is a big program of railway construction in New South Wales alone, but the railway commissioners find it difficult to place orders for the requisite steel. The chief railway commissioner, Mr. Fraser, stated recently that he could not proceed with a certain line because he could not obtain the steel necessary to build a bridge required at one end of it. He mentioned that steel ordered in Great Britain before the war had not yet come to hand and that such steel plates as were being delivered were arriving only in very small quantities. He stated that the steel being made in New South Wales was not of the kind wanted for general railway construction.

A railway proposal estimated to cost $50,000,000 is before the Commonwealth Government. A group of influential West Australians have combined to promote the construction of a great developmental railway to connect the central and northern portions of Western Australia with the Northern Territory, and they also propose trans-Australian lines in Western Queensland and New South Wales. The idea is being favorably regarded by the Commonwealth government which is sending an expedition to investigate and report.

GOVERNMENT OPERATION has left the country with an insufficient number of cars and locomotives, and with an unusual proportion of the existing equipment out of order. There is to be a shortage of cars for a long time to come. It is well to know where responsibility for it chiefly lies. But the really important thing just now is to look ahead and make arrangements for the most efficient use of such cars as the country has in working order.—*Boston Transcript.*

Equipment and Supplies

Locomotives

THE CENTRAL PILAR (Cuba) will have 1 locomotive built by the Baldwin Locomotive Works.

THE CENTRAL ADELA (Cuba) will have 1 locomotive built at the Baldwin Locomotive Works.

THE CENTRAL JOSEFITA (Cuba) will have 1 locomotive built by the Baldwin Locomotive Works.

THE CENTRAL ARAUJO (Cuba) will have 1 locomotive built by the Baldwin Locomotive Works.

THE CENTRAL CESPEDES (Cuba) will have 1 locomotive built by the Baldwin Locomotive Works.

THE CENTRAL ESTRELLA (Cuba) will have 1 locomotive built by the Baldwin Locomotive Works.

THE CENTRAL LA FRANCIA (Cuba) will have 2 locomotives built by the Baldwin Locomotive Works.

THE CUBA CANE SUGAR CORPORATION, 123 Front street, New York, has ordered two locomotives from the Baldwin Locomotive Works.

THE CORDOBA CENTRAL (Argentina) has ordered 15 Mikado locomotives from the American Locomotive Company. These locomotives will have 21½ x 24 in. cylinders, and a total weight in working order of 163,000 lb.

THE HAVANA CENTRAL, reported in the *Railway Age* of July 23 as being in the market for 10 Consolidation type locomotives, has ordered this equipment and two extra tenders from the American Locomotive Company. The locomotive will have 18 x 24 in. cylinder, and a total weight in working order of 126,000 lb.

THE CHICAGO & NORTH WESTERN, reported in the *Railway Age* of June 25 as inquiring for 20 Pacific and 50 Mikado locomotives, has ordered 20 Pacific and 30 Mikado type locomotives from the American Locomotive Company. The Pacific locomotives will have 25 x 28 in. cylinders, and a total weight in working order of 264,000 lb.; the Mikado locomotives will have 27 x 32 in. cylinders, and a total weight in working order of 302,000 lb.

Freight Cars

THE CHICAGO, INDIANAPOLIS & LOUISVILLE is inquiring for 200 flat cars.

THE TEXAS COMPANY, Houston, Tex., is inquiring for 2 all-steel box cars.

THE ATCHISON, TOPEKA & SANTA FE is inquiring for 100 draft sill reinforcements.

THE KATANGA RAILWAY (Africa) is inquiring for 12 cattle cars of 15 tons' capacity.

THE BOUGHTON & HARLAN COMPANY, Chana, Ill., is inquiring for three or four box cars.

THE CHESAPEAKE & OHIO is inquiring for 200 hopper car bodies of 57½ tons' capacity.

THE LOW-MOOR IRON COMPANY OF VIRGINIA, Low Moor, Va., is inquiring for from 3 to 10 coke cars.

THE CUYAMEL FRUIT CO., New Orleans, La., is inquiring for 50 cane cars, 50 banana cars and 20 box cars.

THE OTIS STEEL COMPANY, Cleveland, Ohio, is inquiring for 10, 70-ton gondola and 10, 50-ton hopper cars.

THE CHICAGO, MILWAUKEE & ST. PAUL contemplates contracting the repair of 100 box cars and 1,000 gondola cars.

THE CARNEGIE STEEL COMPANY, Pittsburgh, Pa., has ordered 20, 75-ton flat cars from the Standard Steel Car Company.

THE PUBLIC SERVICE CORPORATION OF NEW JERSEY has ordered 1,000, 55-ton hopper cars from the Standard Steel Car Company.

THE ROGERS-BROWN IRON COMPANY, Buffalo, N. Y., has ordered 4, 55-ton hopper cars from the Pressed Steel Car Company.

PETER P. BECK, 22 Thames street, New York, is in the market for from 50 to 100 second-hand hopper cars of 50 tons' capacity.

NEW JERSEY ZINC COMPANY, New York, reported in the *Railway Age* of July 16 as being in the market for 45, 55-ton hopper cars, has ordered this equipment from the Pressed Steel Car Company.

THE BRIER HILL STEEL COMPANY, Youngstown, Ohio, reported in the *Railway Age* of July 2 as inquiring for 50 to 100, 70-ton hopper cars, has ordered 100 of these cars from the Pressed Steel Car Company.

THE ATCHISON, TOPEKA & SANTA FE was reported in the *Railway Age* of March 26 as having ordered 1,500 refrigerator cars from the American Car & Foundry Company. Later and more complete information is to the effect that this item was incorrect. The order in question was for 2,500 refrigerator cars, divided equally between the Haskell & Barker Car Company and the American Car & Foundry Company.

Iron and Steel

MITSUI & COMPANY, 65 Broadway, New York, is inquiring for 3,500 tons of 80-lb. rail for the Tientsin-Pukow Railway.

Miscellaneous

THE H. R. MACMILLAN EXPORT COMPANY, LIMITED, British Columbia, has received an order for 4,000,000 feet of creosoted ties from the Government of India.

Signaling

THE LEHIGH VALLEY has ordered from the General Railway Signal Company, Rochester, N. Y., an interlocking machine, with 31 working levers, to be installed by the railroad company's forces at State Line, N. Y.

Railway Construction

TEXAS & PACIFIC.—Improvements are under way on the joint track with the Missouri, Kansas & Texas, between Ft. Worth, Tex., and Whitesboro, which will involve an expenditure of $1,000,000. Included in the improvements are the lengthening of passing tracks, the strengthening of bridges, the replacing of 75-lb. rails with 85-lb. rails, and the replacement of wooden trestles with permanent waterway openings.

WICHITA FALLS, RANGER & FT. WORTH.—This company has completed its line into Breckenridge, Tex., the first train arriving in that city on June 27.

WICHITA FALLS SOUTHERN.—This road is under contract to build into Breckenridge, Tex., from the north, within the next six months.

SHIPBUILDING SCHOOLS will be opened in all large shipyards in the vicinity of Philadelphia to train young men who wish to enter the shipbuilding industry, according to the announcement of C. S. King, Philadelphia manager of the Atlantic Coast Shipbuilders' Association, which is backing the project.

THE TRUTH IS that our lines, as a result of years of oppression and attack by public bodies, are in a dangerous condition, and this condition has become chronic. It is necessary first of all to give them an entirely new income footing and this can be done only through additions to rates.—*Journal of Commerce and Commercial Bulletin, New York.*

Supply Trade News

W. B. Curtiss has been appointed assistant to George E. Emmons, vice-president in charge of manufacturing of the General Electric Company. Mr. Curtiss will act as the personal assistant to Mr. Emmons in matters pertaining to production in the factories of the company, including the plant in Schenectady.

James A. Galligan, sales agent for Pickands, Brown & Co., Chicago, has been appointed sales manager and assistant to Vice-President C. D. Caldwell, of the By-Products Coke Corporation, Chicago. Mr. Galligan served as district coke representative in the middle west under the United States Fuel Administration.

B. B. Milner, now engineer of motive power and rolling stock of New York Central, has completed arrangements for becoming associated with the Oriental organization of Frazar & Co., 30 Church street, New York, and will sail for his new headquarters in the Tokio, Japan, offices of Sale & Frazar, Ltd., some time this fall.

Lesley C. Paul, formerly editorial representative of the Electric Railway Journal, is now connected with the publicity department of the **Westinghouse Electric & Manufacturing Company** as technical editor in charge of railway publicity. Mr. Paul has for five years been connected with the McGraw-Hill Company in circulation and editorial work and for the past three years he has been on the editorial staff of the Electric Railway Journal in the New York and Chicago offices. He is a graduate of the engineering course of the University of Colorado, 1915.

A large interest in the **Youngstown Steel Car Company,** Youngstown, O., has been acquired by the **Youngstown Sheet & Tube Company,** and the **Brier Hill Steel Company,** both of Youngstown. The plant represents an investment of about $1,000,000 and will be used chiefly for repair work. It is intended to later erect additional works for the building of steel cars complete and plans have been outlined for a plant to cost at least $5,000,000. These plans for the development of the company have been worked out by James A. Campbell, president of the Sheet & Tube Company and by W. A. Thomas, director and member of the executive committee and former president of the Brier Hill Company.

Edward B. Ellicott, formerly colonel in the chemical warfare service of the A. E. F., has become associated with **A. M. Castle & Co.,** iron and steel merchants, Chicago, as chief engineer. In addition to his being in charge of the erection of the new plant of A. M. Castle & Co., at Seattle, Wash., and buildings to be erected in Chicago, he will be engaged in the operating and manufacturing activities of the company and associated interests. Previous to entering the service, Mr. Ellicott was city electrician of Chicago for 8 years and chief electrical engineer of the Sanitary District of Chicago for 11 years. During a leave of absence from his duties in this city and at the request of exposition officials he was chief chemical and electrical engineer of the Louisiana Purchase Exposition at St. Louis, Mo.

The Bourne-Fuller Company, Cleveland, Ohio, and the **Upson Nut Company**, Cleveland, Ohio, have effected a consolidation under the name of the Bourne-Fuller Company, Cleveland, Ohio. The ownership and management of these companies has been identical for the past eight years. The Upson Nut Company plants will continue operation as the Upson Works of the Bourne-Fuller Company, the product of its nut and bolt departments being marketed under the same trade-marks as in the past. The officers of the company are: **B. F. Bourne**, chairman of the board of directors; **H. A. Fuller,** vice-chairman of the board of directors; **R. S. Hall,** president; **L. H. Elliott,** vice-president and treasurer; **F. K. Moore,** vice-president; **F. H. Chapin,** vice-president; **W. A. Hitchcock,** vice-president; **F. H. Ulmer**, secretary and auditor; **J. W. Morna,** cashier; **J. E. Stanton,** assistant auditor; **V. M. Nader,** assistant auditor; **W. J. Fleming,** manager of sales, and **H. C. Graham,** assistant manager of sales, nut and bolt department.

Harry R. Warnock, general superintendent of motive power of the Chicago, Milwaukee & St. Paul, has become associated with the **Standard Stoker Company,** New York, as vice-president in charge of the mechanical department, with headquarters at New York. Mr. Warnock was born at Newcastle, Pa., on July 16, 1870. He began railway work as a freight brakeman with the Pennsylvania Lines West of Pittsburgh in June, 1889, and later in the same year went to the Pittsburgh & Lake Erie as a brakeman. In September, 1891, he was promoted to locomotive fireman and later was locomotive engineer, which position he held until May, 1900. From that date until July, 1904, he served consecutively as engine despatcher, roundhouse foreman, and general foreman, resigning on the latter date to become master mechanic of the West Side Belt with headquarters at Pittsburgh, Pa., where he remained until October, 1905, when he became master mechanic of the Monongahela Railroad. He remained in this position until September, 1913, when he was appointed superintendent of motive power of the Western Maryland. On December 15, 1917, he was appointed general superintendent of motive power of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago.

Complaint Against Pittsburgh Basing Point Dismissed

The Federal Trade Commission has announced the dismissal of the application filed by the Western Association of Rolled Steel Consumers, et al, for the issuance of a formal complaint against the United States Steel Corporation, et al. This case, known as the "Pittsburgh Basing Point for Steel Prices" case, was dismissed by vote of three to two commissioners; Commissioners Murdock, Colver and Gaskill voting for dismissal, and Commissioners Thompson and Pollard voting against dismissal.

In its study and determination of the case the Commission held numerous public hearings, received the testimony of many witnesses, considered briefs filed by opposing counsel and heard oral argument for and against the application.

The application was filed by fabricators or manufacturers of finished steel products in the Chicago, Duluth, and Birmingham districts against producers of steel. They advanced the proposition that the practice of the steel manufacturers in fixing the price of steel, which is made and used at such centers as Chicago, Duluth, and Birmingham, upon the price f. o. b., mill at Pittsburgh, plus the freight rate from Pittsburgh to such centers, operates as a discrimination in price in favor of Pittsburgh fabricators as against fabricators in Chicago, Duluth and Birmingham districts, in violation of Section 2, of the Clayton anti-trust act, and also was an unfair method of competition in violation of Section 5 of the Federal Trade Commission act.

Car Heating Decision—A Correction

In the June 12 issue of the *Daily Railway Age*, page 1754, appeared a statement regarding a decree entered in a suit by the Vapor Car Heating Company against the Good Car Heating & Lighting Company, which concluded as follows: "By reason of this decision, the Gold Car Heating & Lighting Company may continue to make and sell its vapor valve and its vapor system of heating railway cars without infringing any of the patents of the Vapor Car Heating Company." Examination of the full decree of the United States District Court for the Southern District of New York in this case indicates that the above statement is not strictly correct and may be misleading.

The Vapor Car Heating Company brought suit against the Gold Car Heating & Lighting Company under several patents, including No. 758,436, only three claims of which were in issue. The only vapor device passed on by the court was the Gold No. 1112 vapor valve. The decision of the court was that this valve infringes all three of the claims sued on,

but that those three claims were too broad to be sustained. This decision will be appealed for review by the United States Circuit Court of Appeals.

In the same case the court held that some of the Gold Car Heating & Lighting Company's convertible systems, including its Excelsior Vapor valve used in connection with these equipments, infringes valid claims of patents of the Vapor Car Heating Company and the court enjoined the further manufacture, use, sale or offer for sale of such infringing convertible systems, referring the case to a Master in Chancery for an accounting for all damages suffered by the Vapor Car Heating Company. This decision does not affect the convertible system now being furnished by the Gold Car Heating & Lighting Company.

The court also held that the Gold platform operating device for end train pipe valves infringes valid patent rights owned by the Vapor Car Heating Company, and enjoined the Gold Company from further manufacturing, using or selling such devices, within the life of the patent, which expires in October, 1921. Both of these injunctions are now in full force.

Obituary

Jacob W. Paul founder of the Verona Tool Works, Pittsburgh, Pa. died at his home at Oakmont, Pa. on July 21, on the eve of his 91st birthday. Mr. Paul founded the Verona Tool Works in 1873 and was president at the time of his retirement, 30 years ago, when he was succeeded by his son, Harry S. Paul.

M. Sergey Friede, head of the importing and exporting firm of **M. S. Friede,** 120 Broadway, New York, an authority on Russia and until recently one of the leading figures in Russian-American trade, died suddenly at Aix-les-Bains, France, on July 20. Mr. Friede was born in Russia in 1861. He was educated in the government schools there, at the Russian Engineers Polytechnic Institute and later at the University of Zurich, Switzerland. During the 30 odd years in which he engaged in developing trade between Russia and America Mr. Friede traveled widely in European and Asiatic Russia and did considerable in trying to arouse interest in this country in trade with Russia. He did no small business in exporting railway supplies to that country especially, and had a great deal to do with the building of the Trans-Siberian railway when it was under construction in the way of furnishing materials, particularly ties, for that work.

Trade Publications

Aeroil Kerosene Burners.—An eight-page illustrated bulletin known as No. 12 has been recently published by the Aeroil Burner Company, Union Hill, N. J., describing the line of Aeroil kerosene burners adapted for the melting of tar, pitch, asphalt, etc. Complete data and price lists are given for the various sizes, as well as photographs of actual installations.

Luitwieler Non-Pulsating Pumps.—The Luitwieler Pumping Engine Company, Rochester, N. Y., has recently issued a series of 12 to 18-page illustrated bulletins devoted to the various styles of pumps, etc., manufactured by this company. Automatic electric and hydro-pneumatic pressure water systems are described in addition to considerable data on sizes, capacities, tests and results.

Niagara Conoidal Fans.—The Buffalo Forge Company, Buffalo, N. Y., has recently issued a large size, 52-page illustrated catalogue known as No. 421, which is devoted to the line of conoidal fans manufactured by this company. Complete tables are given regarding sizes, capacities and pressures, etc., and are accompanied by illustrations and working drawings, showing actual installations.

Coaling Stations.—The Roberts & Schaefer Company, Chicago, has recently issued two folders directing attention to the distinctive features of the coaling stations constructed for the railroads by that company. One of these illustrates various types of reinforced concrete station structures; the other is a pictorial exposition of the mechanical features of these stations, including the hoisting machinery, automatic tram cars, undercut coaling gates, R. and S. gravity sand plants, etc.

Manganese Crossings.—The Balkwill Manganese Crossing Company, Cleveland, Ohio, has issued its 1920 supplement No. 1 to the standardized specifications for manganese crossings which were issued in 1919. It contains a number of drawings of crossings which have been designed since the original specifications were issued, adapting the articulated form of cast-manganese construction to crossing designs.

Thermit Pipe Welding.—The Metal & Thermit Corporation, New York, has recently issued a 24-page illustrated booklet on the welding of pipe by the thermit process. The text is descriptive of the methods employed from the preparation of the ends of the pipe to the pouring of the thermit metal or superheated liquid steel. The photographs illustrate the text and also show results of strength tests.

Transformers.—Miniature catalogue 4-A-1, giving a complete list of distribution transformers with list prices, has just been issued by the Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa. Distributed-shell, rectangular-core, and simple-shell construction with auxiliary apparatus has been outlined clearly. Single-phase, 25 and 60 cycle and three-phase 60 cycle transformers oil-insulated and self-cooled, with their voltage ratings are listed and the standardization of distribution transformers by various associations is discussed.

Driving Box Wedge.—The operation and construction of the Franklin automatic adjustable driving box wedge, which is claimed to maintain wedge adjustment under all conditions and increase the life of crown bearings and rod bushings, is described fully in a four-page pamphlet, bulletin No. 601, distributed by the Franklin Railway Supply Company, New York. Instructions are also given for applying the wedge on new and existing power and a drawing is included showing its proportions and the space that should be provided for wedges when designing new engines.

Superheated Steam in Yard Engines.—Bulletin No. 10, published by the Locomotive Superheater Company, New York, presents data obtained in tests made of two engines in switching service, one using superheated steam and the other saturated. Three classes of switching work were included in the test. An indicator was used and careful readings were taken, the results showing decidedly superior performance for the superheater locomotive over that using saturated steam. Detailed information of the tests is given in the pamphlet and a comparison of the performance of both locomotives is given in tabular form.

Bolt, Nut and Rivet Machinery.—A complete line of equipment for the manufacture of bolts and nuts is described in catalogue No. 20, issued by the Acme Machinery Company, Cleveland, Ohio. The machines include single and multiple bolt cutters with or without power feed and lead screws, special staybolt cutters, bolt pointers, nut tappers, nut burring machines, nut machines, bolt machines and upsetting and forging machines. The Acme die head manufactured by this company is also described and instructions are given for making or recutting dies. A set of tables of data pertaining to screw threads, bolts, nuts and rivets is included.

Turret Lathe Practice.—A reference book on vertical turret lathe practice in railroad shops has been issued by the Bullard Machine Tool Company, Bridgeport, Conn. The book contains 43 pages, 9 in. by 11 in., and is well illustrated. Detailed illustrations and descriptions of methods of tooling pistons, packing rings, air pump cylinders and rings, cylinder heads, crossheads, rod brasses, driving boxes, eccentrics and straps, throttle boxes, crankpin washers, engine truck centers, etc., are given. The book is extremely valuable as a reference for quick, efficient methods of setting up these locomotive parts and performing necessary machine operations.

Bearings and Their Lubrication.—The Vacuum Oil Company, New York, has published a 32-page pamphlet which contains an extended discussion of the lubrication of various forms of bearings. The subject is introduced by illustrating and describing the more common forms of bearings used on various types of machinery. This is followed by a brief description of the usual method of applying the lubrication either directly or through distributing systems. Space is also given to the general discussion of lubrication in relation to the quality of oil; and the latter part of the publication is devoted to considerations affecting the selection of oil for any given purpose.

Railway Financial News

ARKANSAS & LOUISIANA MIDLAND.—The highest combination bid offered at the receiver's sale of this road on June 8 provided for the operation of the line between Monroe, La., and Bastrop, and the junking of that portion of the line north of Bastrop, including the branch to Hamburg, Ark. Prior to this, on May 26, the court ordered abandonment of operation of that portion of the line north of Bastrop. These bids were set aside for another tendered at a hearing on July 5, by the Frost-Whited interests of Shreveport, La., calling for the operation of the line between Monroe, La., and Crossett, Ark. In connection therewith it is reported that the prospective owners contemplate an extension north of Crossett to Pine Bluff, Ark.; the construction of a connection from Monroe, La., to the Tremont & Gulf at Eros, La.; the purchase or use of the Winnfield branch of the Louisiana Railway & Navigation Company, and the inauguration of through trains to and from New Orleans, La. The order of July 5 gave the purchasers 60 days from that time in which to complete their arrangements, but on the petition of the owners and receivers the court modified the order on July 18, restricting the time given the purchasers to July 31.

ATCHISON, TOPEKA & SANTA FE.—The Interstate Commerce Commission has authorized this company to continue, in accordance with the indenture dated June 1, 1910, between petitioner and the Guaranty Trust Company of New York, the issuance of its common stock in an additional amount not exceeding $9,243,000 out of the remaining duly authorized and unissued shares of the 436,860 shares reserved for the purpose in exchange for and against the surrender and cancellation of an equal amount in par value per share at the time of conversion of its 50-year 4 per cent convertible gold bonds, issue of 1920, at any time before June 1, 1923.

BIRMINGHAM & SOUTHEASTERN.—This road, operating between Union Springs, Ala., and Eclectic, 48 miles, was placed in the hands of receivers on July 26 by order of Judge Henry D. Clayton, of the United States District Court at Montgomery, Ala. The action was taken on petition of the Atlanta & West Point Railroad.

CANADIAN PACIFIC.—See Edmonton, Dunvegan & British Columbia.

CENTRAL OF GEORGIA.—The Interstate Commerce Commission has authorized this company to guarantee the principal and interest of $1,000,000 of 5 per cent, first mortgage, 30-year bonds of the Ocean Steamship Company of Savannah issued under the first mortgage dated July 1, 1890, due July 1, 1920, but extended by agreement for five years to July 1, 1925, with interest at 7 per cent.

EDMONTON, DUNVEGAN & BRITISH COLUMBIA.—This road, according to a press despatch from Edmonton, Alberta, is to be operated by the Canadian Pacific for a period of five years, with an option to purchase the line at any time within that period, a contract having been made to that effect last week. The road extends from Edmonton northward into the Peace River country, operating about 600 miles. The winter timetable, as printed in the Official Guide for July, shows a train running twice a week, each way, over the main line and branches.

PITTSBURGH & LAKE ERIE.—The Interstate Commerce Commission has ordered a hearing at Washington on July 30 on the application of this company for an order authorizing it to issue equipment trust certificates to the amount of $2,400,000 at 7 per cent; also, on the company's application for an order authorizing the issuance of two 90-day notes for $500,000 and $425,000, respectively, at 6 per cent; also for an order authorizing the issuance of 6 per cent promissory notes, one for one year, for $625,000, payable to the Western Transit Company, and six months' notes for an aggregate of $1,500,000 payable at the Union Trust Company of Pittsburgh.

Railway Officers

Operating

L. M. Rose, trainmaster of the Missouri & North Arkansas at Harrison, Ark., has resigned, effective July 16, and the position of trainmaster has been abolished.

Andrew J. Farrell, trainmaster of the Philadelphia & Reading at Tamaqua, Pa., has been appointed superintendent of the Shamokin division with the same headquarters, effective July 8.

W. B. Kirkland, trainmaster on the Stockton division of the Southern Pacific, with headquarters at Tracy, Cal., has been transferred to the Sacramento division, with headquarters at Sacramento. **J. J. Sullivan** has been appointed trainmaster of the Stockton division, succeeding Mr. Kirkland.

George D. Dager, who has been appointed superintendent of the Adirondack division of the New York Central with headquarters at Utica, N. Y., as noted in the *Railway Age* of June 18 (page 1958), served as trainmaster of the same division prior to this promotion. Mr. Dager was born at Little Falls, N. Y., on January 10, 1870. He received a public school education and began railroad work on April 8, 1884, as telegraph operator for the New York Central, to which road he has given his entire railroad service. In November, 1892, he was appointed freight agent and on July 13, 1897, was sent to Albany, N. Y., as train despatcher. He was promoted to chief train despatcher on August 7, 1900, and appointed trainmaster at Albany on October 1, 1906. He was transferred to Utica in March, 1911.

William G. Choate, whose promotion to general manager of the Gulf Coast Lines with headquarters at Houston, Texas, was announced in the *Railway Age* of June 18 (page 1958), was born on November 28, 1866, at Taunton, Mass. He was educated at Hobart College, graduating in the class of 1887. He entered railway service as a rodman in the engineering department of the Union Pacific in 1887. Two years later he was promoted to assistant engineer on the Colorado Division and then to roadmaster. In 1891 and 1892 he was in charge of standard gaging and grade improvement work on the Denver & Rio Grande. In the latter year he was appointed superintendent at Rio Grande Junction, Texas. In 1901 he was placed in charge of the construction of a line from El Paso, Tex., to Douglas, Ariz. He returned to Rio Grande Junction as division superintendent in 1905. Three years later he was appointed general manager of the Oklahoma Central for the bondholders' committee. He was appointed superintendent of the Louisiana division of the Gulf Coast lines in 1916, and in November, 1917, was promoted to assistant to the president. In March, 1918, he was also made general manager of the Houston Belt & Terminal, in addition to his duties as assistant to the president of the Gulf Coast Lines. During the period of federal control he served as assistant general manager in charge of operation. On return to private control he retained this position and he occupied it at the time of his recent promotion as above noted.

Traffic

G. G. Early has been appointed general agent on the Wabash, with headquarters at Philadelphia, Pa., effective July 16.

C. H. Atherton has been appointed chief of the traffic bureau of the Louisiana Railway & Navigation Co., with headquarters at Shreveport, La.

O. J. DeLamotte, formerly with the Red River & Gulf, has been appointed traffic manager of the Glenmora & Western succeeding **C. N. Nesom,** resigned.

G. F. Sherry, chief clerk in the traffic department of the Houston, Tex., Chamber of Commerce, has been appointed

traffic manager of the Jonesboro, Lake City & Eastern, with headquarters at Jonesboro, Ark.

J. E. Buckingham, general baggage, mail and express agent of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been appointed assistant general freight and passenger agent of the Colorado & Southern, with headquarters at Denver, Col., effective August 1. **L. H. Stebbins,** assistant general baggage, mail and express agent of the Burlington, with headquarters at Chicago, has been promoted to succeed Mr. Buckingham.

Henry F. Bell, who was appointed foreign freight traffic manager of the Erie, with headquarters at New York, as noted in the *Railway Age* of March 26 (page 1079), served as assistant to the assistant director, division of traffic of the Railroad Administration, in charge of export and import section, from January, 1919, until the termination of federal control. Mr. Bell was born at Islington, Eng., on December 7, 1876. He was educated in public schools and began railroad work on July 1, 1895, as messenger in the chief engineer's office of the Southern at Washington, D. C. In June, 1896, he was transferred to the traffic department and remained there as stenographer, until 1898, when he became secretary to the freight traffic manager. In 1903 he was transferred to the executive department, as secretary to the president, who was then **W. W. Finley.** He retained that position until the death of Mr. Finley, on November 25, 1913. On January 1, 1914, he was appointed commercial agent of the Southern at Havana, Cuba. On May 15, 1918, he was appointed assistant to the manager, inland traffic, War Industries Board. He served in that capacity until appointed to the position mentioned above, which he held at the time of his recent promotion.



H. F. Bell

Mechanical

R. W. Anderson, assistant superintendent of motive power on the Chicago, Milwaukee & St. Paul, lines east of the Missouri river, with headquarters at Milwaukee, Wis., has been promoted to superintendent of motive power of the lines east of the Missouri river, with the same headquarters, effective June 16, succeeding E. J. Brennan.

Charles I. Walker, whose promotion to master car repairer on the Southern Pacific, with headquarters at Los Angeles, Cal., was announced in the *Railway Age* of June 18 (page 1958), was born on December 3, 1875, at Hillsboro, Mo. Mr. Walker entered railway service as an apprentice car builder with the St. Louis, Iron Mountain & Southern on July 27, 1891, and during the next seven years served in several branches of this department. In June, 1898, he entered the service of the Mexican National, with headquarters at Laredo, Tex., as a car builder. In September, 1898, he went with the St. Charles Car Company at St. Charles, Mo., and in August, 1900, with the Pullman Company at Chicago, where he was later promoted to assistant foreman. In July, 1904, he returned to the Mexican National at Laredo, and on February 1, 1905, was promoted to master car builder on that system. He was appointed foreman in the passenger repair department of the Cincinnati, Hamilton & Dayton, with headquarters at Lima, O., in July, 1906. In October, 1907, he became a shop foreman on the Southern Pacific, and shortly thereafter was appointed draftsman. After a short service as inspector, he was transferred, in May, 1919, to the general freight car department at San Francisco, Cal., where he was located at the time of his recent promotion.

R. W. Anderson, assistant superintendent motive power of the Chicago, Milwaukee & St. Paul, Lines East, with headquarters at Milwaukee, Wis., has been appointed superintendent motive power, with the same headquarters. Mr. Anderson was born on May 6, 1877, in Madison County, Iowa. He began railroad work as a machinist's apprentice for the Des Moines Union in January, 1892. In January, 1897, he went to the Chicago, Rock Island & Pacific as machinist, and retained that position until May, 1903, when he was promoted to assistant roundhouse foreman. Some months later he became roundhouse foreman. He entered the employ of the Chicago, Milwaukee & St. Paul as machinist at Mitchell, S. D., in September, 1904, and in November, 1905, was appointed assistant roundhouse foreman at the same place. He was transferred as machinist to the Idaho division in September, 1907, and in June of the following year was promoted to mechanical foreman of the same division. From May, 1908, until August, 1911, he served as roundhouse foreman at Avery, Idaho. He was then transferred to Miles City, Mont., and while there was appointed district master mechanic in November, 1912. He retained that position until June, 1918, when he was promoted to assistant superintendent motive power, as mentioned above.



R. W. Anderson

Engineering, Maintenance of Way and Signaling

H. N. Rodenbaugh, who was principal assistant engineer, valuation department of the Southern Railway, prior to the government control, and regional engineer of the Southern and Pocahontas regions during federal control, has been appointed chief engineer of the Florida East Coast, with headquarters at St. Augustine, Fla., succeeding **E. Ben Carter,** who has resigned. Mr. Rodenbaugh was born at Norristown, Pa., on November 20, 1879, and was graduated from the University of Pennsylvania in 1901. He entered railway service in January, 1902, as a draftsman in the office of the chief engineer of the Norfolk & Western, leaving that company in July, 1903, to go with the Alan Wood, Iron & Steel Co., Conshohocken, Pa., as yard superintendent. In June, 1904, he returned to railway service as an assistant engineer in the office of the chief engineer maintenance of way and structures of the Southern, with headquarters at Washington, D. C. Leaving the Southern in October, 1905, he became assistant engineer of bridges and buildings of the Carolina, Clinchfield & Ohio at Bristol, Va. In June, 1906, he was appointed principal assistant engineer of the Virginia & Southwestern, leaving this position in January, 1908, to become structural engineer of the Philadelphia & Reading, with headquarters at Philadelphia, Pa. In June, 1909, he returned to the Southern as an assistant engineer of bridges, serving subsequently as an engineer in charge of terminal construction, supervising engineer, principal assistant to special engineer for valuations and principal assistant engineer, valuation department, until July, 1918, when he was appointed engineering assistant to the regional director of the Southern region of the Railroad Administration. In March, 1920, he was promoted to regional engineer of the Southern and Pocahontas region, serving in this capacity until his recent appointment as noted above.

EDITORIAL
Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

It Is Up to the Railway Managers

CONGRESS has passed constructive railroad legislation. The railroads have been returned to private operation.

The Railroad Labor Board has made a wage award which is satisfactory to most classes of employees and which has greatly reduced labor unrest in the railroad field.

The Interstate Commerce Commission has granted almost all the advances in rates for which the railway managers have asked.

Congress, the Railroad Labor Board and the Interstate Commerce Commission have "passed the buck" to the railway managers in a way that has no precedent in the railroad history of the last fifteen years. For years all governmental agencies have "passed the buck" to the railroad managers by failing to do their duty and then criticizing the railroad managements because they did not operate the properties efficiently and move the country's business. Recently every department of the federal government which has touched the railroad question has dealt with it liberally and wisely.

The railroad problem is not solved. The difficulties of moving an overwhelming traffic with wholly inadequate facilities are still to be overcome. The work of raising capital in an unfavorable market and of making vast improvements and enlargements in railroad plants still remains to be done. No longer, however, can the railway managers truly say that governmental agencies are denying them the opportunity to expand facilities and operate efficiently.

The solving of the railroad problem under private ownership and management is now strictly up to the railway managers, and to them almost alone. They recognize this fact and are going to act accordingly. Daniel Willard, president of the Baltimore & Ohio Railroad and chairman of the Advisory Committee, said in a statement in Chicago on August 1, "Whether private ownership and operation of railroads in this country continues or not now depends upon the railway managers themselves. The Congress has done its duty, the agent of Congress has done its duty and I firmly believe the railway managers will do their duty also."

The adequate performance of their duty will involve a long, hard pull. But finally in the railroad business the game has once more become worth the candle.

"Let's go!"

Have Faith in Fuel Supervision

Fuel efficiency affects and is affected by nearly all the activities of the railroad. It is a sort of will-o'-the-wisp whose whereabouts can evade some of the most skilful operating and mechanical men. Fuel efficiency calls for organized effort, all departments must pull together and the least that any railroad can do towards promoting fuel efficiency is to provide a staff of earnest, intelligent men who can devote their entire effort to saving fuel in every conceivable way. But their work must be carefully planned to get results; mere hard work will not suffice. The activities of each department so far as they affect fuel consumption must be coordinated, the requirements of each department must not be overlooked, nor should the responsibility of each department towards fuel efficiency be forgotten. With a sound organization, earnest and intelligent men on the job and a plan of action that takes into account every factor affecting the situation, wonders can be accomplished at this critical moment. Is this work properly organized on your railroad? Have you faith in the men that are working to reduce your fuel bill, and confidence in the results that will follow?

Put Your (Store) House in Order

The time will unquestionably come when executives will be required to prove in the most specific terms that they have left no stone unturned toward effecting the most economical operation of their property. In this event may it not prove highly embarrassing to admit a loss through the waste and abuse of materials that annually amounts to no less than $75,000,000, as disclosed by the Stores Section of the Railroad Administration? This section was under the direction of some very practical men and the occasion was unique in that an opportunity existed not only to study the methods employed by every railroad, but the actual results obtained with respect to handling material. The Stores Section pointed the way to some very material savings. It showed what a strong organization could accomplish, what improved methods for distributing and salvaging material would result in, what good accounting practice would disclose. Moreover, it established the fact that a very large majority of delays to equipment undergoing repairs that were attributed to material shortages occurred on railroads which did not have a properly organized supply department. This is a significant fact and one that cannot well be overlooked by any operating or mechanical official opposed to the modernized conception of the service of supply. No railroad can afford to neglect the proper conduct of this service.

Why the Low Standard of Car Maintenance?

The high percentage of bad order freight cars in the face of the present shortage of equipment is probably generally considered as the accumulated result of war service. Acceptance of this explanation leads to the obvious conclusion that once this accumulation is reduced to a normal percentage, conditions will again be satisfactory. But the maintenance of freight equipment never has been on a satisfactory basis and responsibility for the present bad order situation can not completely be explained on the basis of war service. The tendency has always been to keep up only such repairs as are essential to movement in trains and to the loading of the kind of traffic for which the car happens to be needed at the time the repairs are made. Furthermore, the percentage of bad order cars tells nothing of the condition of the serviceable equipment and this has always tended toward the minimum average consistent with safe movement rather than the maximum average practicably obtainable. In times

of stress, when every car is needed continuously, instead of possessing a large reserve of serviceability the equipment immediately begins to congest the repair tracks. Emergency measures must then be adopted to reduce the number of bad order cars, but too frequently these measures are merely further reductions in the standards of maintenance. It does not seem difficult to locate the cause of these conditions and while they have existed so long that they have come to be accepted with more or less complacence, a remedy is applicable which will raise the average standard of maintenance. The cause lies in the rules of interchange. These rules, designed to facilitate the maintenance of equipment in interchange, but placing numerous restrictions about the repairs of cars on foreign lines, fail to provide any force by which the inertia of these restrictions may be overcome. The simplest means of applying the remedy is through the prices for labor and material, which are now fixed to represent an average of the bare cost of the work for which billing charges may be made. These prices should be set high enough not only to protect the roads that made repairs from loss, which many of them must sustain under the average cost price basis, but to yield a profit on repairs to every car for which a bill may be rendered. Not only will this provide an incentive to make repairs on foreign cars when they are needed and to make them thoroughly, but it will remove the temptation now existing for roads whose costs are high to neglect repairs on their own equipment because the payment of repair bills is cheaper than doing the work themselves. Such a scale of prices, by bringing into harmony the individual interests and the common interests of the railroad corporations, will effect an improvement in maintenance which would provide a reserve of serviceability to meet peak traffic loads without immediately resorting to unsound emergency measures.

Little Improvement in 116 Years

History records that when Trevethick built his first locomotive in 1804 he "conveyed the exhaust steam to the chimney by means of a pipe which he turned upward." He discovered that the blast of steam caused the fire to burn much better and therefore called the appliance the blast pipe. Stephenson applied the same arrangement in the Rocket, and this method of inducing draft has been used ever since. It has the merit of simplicity, though it is admitted to be inefficient in the extreme. Tests have shown that several hundred horsepower are required to draft large simple locomotives at high speeds. In one case on a Mallet compound the exhaust consumed 950 hp., which was equal to the power delivered at the drawbar. Attempts to use other methods than the steam jet for creating draft have not been successful. Admitting that the exhaust jet is a necessary evil it would seem that the roads should reduce the loss due to its use to a minimum by careful design of the front end. As a matter of fact, data on front end design are very inadequate. The last comprehensive series of tests to determine front end proportions were conducted in 1902. Investigations have been made since, but they have been of limited scope. For that reason designers are obliged to fall back on formulas developed for European locomotives and probably not strictly applicable to conditions in this country. While the general subject of front end design requires further investigation, one detail has received attention in recent years. Various types of exhaust nozzles have been tried, some with remarkable success. By the use of a nozzle having internal projections the evaporating capacity of the boiler has been increased as much as 35 per cent. By comparison with circular nozzles the so-called waffle iron nozzle has shown an increase of 39 per cent in draft, a decrease of 22 per cent in exhaust pressure and an increase of 76 per cent in draft efficiency. On another type of locomotive the cylinder back pressure was reduced 6.65 lb. per square inch, the draft remaining practically unchanged. This was equivalent to an increase of 188 hp. in the output of the locomotive. These examples show clearly what can be accomplished by improved front end design. The entire subject deserves thorough investigation. However, there is no excuse for any road clinging to Trevethick's design and failing to take advantage of the possibilities for increased power and reduced fuel consumption that can be obtained by the redesign of exhaust nozzles.

Cost of Electric Train Operation

Maintenance and power costs as shown in the abstract of the paper by Reiner Beeuwkes, electrical engineer, Chicago, Milwaukee & St. Paul, published in this issue, will be of much interest to all railroad men interested in electrification. Hydro-electric power is purchased from power companies by the St. Paul for operating electric trains and the rate of charge is based on a 60 per cent load factor. The load factor is maintained at as high a figure as practicable by a power indicating and limiting system. When the power demand reaches a certain value the trolley voltage is automatically reduced and train speed is also reduced. Reductions of train speed, of course, mean increased train and enginemen's expense and increased time in getting freight over the road, but the power limiting device may be adjusted to such a value that increase in the cost of the power due to the low load factor can be balanced against the increased charges due to the slower train movement. Other railroads that expect to use electric motive power at some time in the future will have problems to solve which are distinctly different from those of the St. Paul, but a careful study of the data compiled by Mr. Beeuwkes will be a valuable asset in determining the advisability of adopting electrification for certain divisions.

Manual Block Signals and Car Mileage

At many locations in manual block signaled territory where frequent meets occur the inferior train is required to stop while a brakeman throws the switch to the passing siding with consequent delay to the superior train which may be waiting. Not only does the stop itself cause a delay but a more serious one may result from the pulling out of a drawbar should the train taking siding be a heavy tonnage train. In many cases the entering end of the passing siding is located adjacent to the block station while the block signals may be placed on each side of the station, pipe connected and operated by levers in the station. At such locations many needless stops and considerable time can be saved by the installation of a small dwarf interlocking machine in the station so arranged that the operator can operate the switch for trains entering the siding. As a concrete example, at one station on a double track line in manual block territory, the entrance end of the passing siding on the eastbound main is nearly opposite the station, while a trailing crossover between the two main tracks is located just west of the station, the westward manual block signal being at the west end of the crossover, while the eastward block signal is located at the clearance point between the eastbound main and the passing siding. The passing siding is used frequently during the day, a stop being required for each train using it. Only a casual examination is necessary to show that train operation could be materially bettered at this place by the in-

stallation of a dwarf machine in the station and a two-arm home signal governing the eastward main and passing siding. By locating the westward manual block signal east of the cross-over instead of west of it a westbound train with work to do at the station could pull by the block signal, and use the crossover and passing siding without causing unnecessary delay to a train waiting for this block to be cleared at the block station in the rear. With the signal located as at present, west of the crossover, a westward train using the crossover keeps the block occupied, thus holding any trains operating under positive block at the block station to the rear. The rearrangement described above would mean an investment of about $1,500 and would materially improve train operation. With the existing necessity for the most efficient operating practices the correction of such conditions where they prevail is one means of helping to increase the average daily car mileage which is so vitally important at the present time.

Greater Use of Track Standards

Students of track maintenance have frequently voiced the thought that the American track structure is in need of strengthening. This view is advanced, not so much on considerations of safety as because of the belief that heavier construction would withstand the vicissitudes of traffic with smaller expenditures for upkeep and a longer service life. This subject is worthy of special study at present because the general need of extensive rehabilitation makes this a most opportune time to undertake improvements in the component parts of the track. Such betterments may be in the form of larger or heavier sections, as in the case of rail, or they may comprise strengthened designs, as in the case of special track work. Any change from the prevailing practice on a given road affords renewed opportunity to take advantage of the excellent work done by the American Railway Engineering Association in promoting standards of various kinds. In the case of special track work the standards of the Manganese Track Society completed or now in preparation merit careful consideration. The general adoption by the roads of standards of design and practice which have been perfected through joint study by the manufacturers' experts and railway engineers is very desirable. Not only will it result in a general improvement of the structures, but it will be of even greater advantage in promoting economical production.

Engine Terminal First Aid

Nearly one-fourth of all the locomotives in this country are undergoing or awaiting repairs. This is not a profitable situation for the railroads. It does not indicate that locomotives are generally receiving the attention while in service that is calculated to prolong the period of serviceability; nor does it indicate that the terminal equipment is equal to the occasion. It is the slight but invaluable first aid treatment that in many instances will keep the man on his feet; it is first aid treatment promptly administered at every terminal that will keep the engine on its wheels. Suppose that it does cost more to do a certain job in a roundhouse than in the back shop. It may cost more to bandage a man's head at a first aid station than it would in the general hospital, but that is not the question. Terminals must be fitted to do all that can be done to keep locomotives in a serviceable condition and they should be equipped to do this as cheaply as possible. A correct diagnosis of engine trouble is the first consideration and inspection should be systematized and placed in competent hands. Having outlined the work to be done, the terminal organization should be equal to the occasion whether it be a major operation or a flesh wound. What would happen if, after making an incision, the surgeon lacked the instruments with which to continue the operation? What is happening in hundreds of roundhouses every day for want of adequate tool equipment?

Flue Shop Equipment

As the machine shop is often the little neck of the bottle of railway repair shop output, so the poor arrangement or lack of equipment for repairing boiler tubes and flues limits the output of many boiler shops. The importance of remedying this condition is deeply impressed on all who are closely in touch with present railway shop operation. Many shops are in need of additional flue repairing equipment to replace that which is worn out, or to take care of the larger number of tubes and flues that must be handled. Pending the arrival of additional machinery, however, very much can be done to relieve the situation by keeping present flue shop equipment in good repair and rearranging it to secure the maximum output. Attention has already been given to the latter question in some shops and an efficient routing system developed to handle flues through the shop with the least possible delay. Such a system usually involves placing the flue cleaner, various furnaces, hot saw, expander, welder, swager and tester in such relative positions that a rack of flues from the erecting shop passes through the various operations, from cleaning to testing, in one continuous direction, with no lost motion and no interference with other shop work. The safe-end storage racks should be conveniently located and ample space provided for storing the tested flues. Convenient arrangements for the easy handling of incoming and outgoing flues are absolutely essential. Superheater flues should be handled in the same way as the smaller tubes, but in a separate section of the boiler shop, as any attempt to combine the operations will result in confusion. If improved flue shop layouts are studied and the one best suited to each particular shop installed, locomotives delayed in back shops waiting for tubes and flues will be practically unheard of and just so much more power will be available for the movement of traffic.

The Builders' Capacity for Car Repairs

It is estimated that the car building industry has a capacity for turning out 25,000 new freight cars a month. The orders on hand on June 1, including both foreign and domestic equipment, were but little more than enough to take care of two months capacity output. It is probable that the action of the Interstate Commerce Commission in granting increased rates to meet the present high cost of operation, will tend materially to increase car orders during the remainder of the year. Considering the difficulties of securing material deliveries, however, it is improbable that an output averaging 50 per cent of the capacity can be obtained during the remainder of the year, irrespective of the volume in which orders may be placed. On this basis it is evident that there is an available and unutilized capacity of an average of at least 12,000 to 15,000 cars per month, a large portion of which may be made available for heavy car repairs. As in the case of new cars, the extent to which this capacity can be utilized depends on the ability to secure materials. The commercial difficulties, however, would be much less than in the case of new cars, because the material needed for heavy repairs and in many cases for extensive betterments to old equipment has already been provided by the railroads.

With the difficulties which may be encountered by the railroads in getting cars out of service and delivering them to the builders, as well as in delivering the material required, it is improbable that a maximum output of heavy repairs of more than 50,000 can be obtained from the builders during the remainder of the year. While this is only about 6 per cent of the average number of heavy repairs turned out by the railroads themselves during an equal period, it will include the class of work which, under present labor conditions, is most difficult for the railroads to undertake and its effect on the efforts of the roads to reduce the present abnormal percentage of bad order cars will be proportionately greater than the actual number involved. The advantages to the railroads of outside car repairs have been pointed out by Daniel Willard in his statement before the Interstate Commerce Commission on July 8. The advantage to the public of every increase in the output of repaired cars, and especially those which have been thoroughly overhauled will also react to the advantage of railroads in enhancing their reputation as good public servants. Full advantage should be taken of this opportunity.

Reduce the Time Required for Unloading Cars

Since it is now generally realized that the traffic of the country must be handled during the next few months with the equipment at present in use increased capacity can be secured only to the extent that the cars now available can be made to render more service. This can be accomplished only by reducing the time now required for a car to make a trip so that it can make more trips in a given period and thereby serve more patrons. The time required for a trip is the sum of that consumed by the patron in loading and unloading and that used by the road in moving the car. The roads have undertaken to improve that part of the movement which is within their control by setting as their goal an average of 30 miles per car per day, an increase of nearly 25 per cent over that for 1919 and over 10 per cent above the maximum figure ever before attained. While this average includes the time the car is in the hands of the shipper, the roads aim to see that no stone is left unturned on their part to secure the desired result.

As the present shortage of equipment is reacting more adversely on the shippers than on the roads, it is to their selfish interest as a class to co-operate in this movement. That there is opportunity for much improvement on their part as well as on the part of the roads is indicated by the fact that railway men in nearly every terminal are experiencing difficulty in securing the prompt release of cars set for unloading. Figures from one large terminal showing an average daily release of only one car in three set are typical, indicating that the shippers are taking an average of three days to release cars after they are set on industrial or team tracks. As a matter of fact, the actual delay is more than this owing to the practice of not starting to count time until the 7 a. m. following the placing of the car. An investigation of conditions in this terminal indicated that it would be entirely feasible to reduce this average time for unloading to two days, which in itself would save one day's delay to 400 cars daily. This would result in not only releasing the equipment for other loading but would also serve in large measure to reduce the congestion throughout the terminals, for not only do these cars occupy team and industrial tracks unduly long but the fact that these tracks are so occupied makes it necessary to hold other cars in the classification yards until the space is available on which to place them for unloading. The holding of these cars in the classification yards further serves to interrupt the orderly conduct of work there and contributes still more to the congestion on the roads as a whole.

The prompt movement of cars can only be secured through the active co-operation of the shippers. That many are giving co-operation is an acknowledged fact; that more can do so is self-evident. While this co-operation must necessarily come from the shippers, railway traffic and operating officers can promote it in large measure by pointing out to offending patrons their responsibility as individual shippers to the shippers as a whole. In this way it will be possible to make the limited supply of cars now available go farthest in meeting the needs of all.

Automobile Transportation Costing as Much as Railroad Transportation

The Interstate Commerce Commission has granted the railways advances in rates which, it is estimated, will increase their total earnings about $1,580,000,000 annually. This will make the country's total annual bill for railroad service about $6,700,000,000. The air will soon be filled with outcries from the advocates of government ownership of railroads and the self-appointed spokesmen of the plain and long-suffering American people because of the enormous increase in the cost of living which, it is alleged, this advance in rates will cause. There are about 22,000,000 families in the United States. It will be pointed out that the advance in rates will amount to $50 per family and that it will make the total railroad "tax" average about $350 per family.

But the great and over-burdened American public uses more than one kind of transportation. For example, it also uses automobile transportation, and the amount it is now spending for automobile transportation throws much light on what it can afford to pay for railroad transportation. Railroad transportation is a necessity. This is especially true of freight transportation. Without it industry would speedily be paralyzed and the people brought to the verge of ruin and starvation. Most automobile transportation is not a necessity. Eighty-seven per cent of all the automobiles in service are passenger cars. The *Railway Age* has no disposition to criticize anybody who makes, or sells, or uses automobiles, but it is unquestionable that passenger automobiles are run chiefly for the comfort and pleasure of those who use them. The public would be greatly inconvenienced, but would not be brought to ruin and starvation if all passenger automobiles should quit running today.

And yet, startling as the statement will be to most persons, the American public apparently has been for sometime spending more for running and riding in automobiles than for all its railroad transportation—freight, passenger, express and mail combined. Statistics which the *Railway Age* has compiled indicate that the amount spent by the American public for automobile transportation in the year 1919 was almost $5,500,000,000. This was $300,000,000 more than it paid in rates for railroad transportation. It was almost the same as the total amount the public paid for railroad transportation, including the deficit incurred by the government. In the year 1920, as near as we have been able to estimate, the American people will spend for running and riding in automobiles over $6,020,000,000.

These estimates, however, include nothing for expenditures made by the public for the construction and maintenance of highways for the automobiles to run on. Nor do they include anything for the economic cost of automobile accidents. If data regarding these points were available they probably would disclose the astonishing fact that even after the advance of $1,580,000,000 in railway rates has been

made the American public will be spending as much for its automobile transportation, most of which is a luxury, as for its railroad transportation, most of which is a necessity.

When the critics of the advances in railway rates and the advocates of government ownership talk about the American public not being able to stand a railroad "tax" of about $350 per family, the question naturally arises as to how they account for the fact that the American public is able to and does voluntarily pay over $280 per family for using automobiles? As already indicated, the increase in railway rates which has just been granted will amount to about $75 per family. The public can meet it without any increase in its total cost of living by the simple expedient of reducing its use of automobiles.

The reader who has never given any study to the data regarding the comparative amounts that the American public is paying for the two kinds of transportation, railroad and automobile, doubtless will have some curiosity regarding the details of the American public's automobile bill. In the year 1919 the number of motor vehicles of all kinds registered in the United States was 7,623,551, and at an average cost of $1,200 they represented an investment of $9,148,260,000. The valuation placed by the Interstate Commerce Commission on all the railroads in its recent rate decision was only $18,900,000,000. Therefore, the public now has invested in automobiles almost one-half as much as the valuation placed by the commission on the railways. The *Railway Age* has gathered information regarding the details of the nation's automobile bill in 1919 from various sources, and, so far as we have been able to ascertain, it was made up as shown in the accompanying table.

It is estimated that the number of new cars which will be built and sold this year will be 2,250,000, while the number that will be retired from service will be about 1,525,000. This would result in a net increase in cars in service of 725,000, or 9½ per cent. It seems safe to assume that an increase of 9½ per cent in the number of cars in service will cause an increase of at least 9½ per cent, or $522,270,000, in the country's automobile bill. This will make it in 1920 approximately $6,020,000,000.

TABLE I

Depreciation on 7,623,551 cars at 20 per cent on an average cost of $1,200 each	$1,829,000,000
Interest—7,623,551 cars, average cost of $1,200 each, or a total of $9,148,261,200, at 6 per cent	549,000,000
Gasoline consumption of 2,178,729,000 gallons at 25 cents per gallon	554,682,250
Lubricating oil—7,623,551 cars, average consumption per car of 8.33 gallons, at $1.25 per gallon	729,280,225
Tires—30,000,000 manufactured at an average cost per tire of $33	1,000,000,000
Accessories and parts used in repairs, etc	621,722,048
State license fees	65 000,000
Insurance premiums—60 per cent of all cars insured, at $72 per car	329,337,432
Garage storage and service charges, average $15 per car per month	1,372,239,180
Labor cost for repairs—63,026 garages and service stations employing an average of 5 men each, at an annual wage of $1,000 each	310,180,000
Total cost of operation, maintenance and depreciation in 1919	5,497,555,220
Increase in costs of operation, maintenance and depreciation, based on the increase in the number of cars in operation in 1920, 725,290 cars, or 9.5 per cent	522,267,746
Total cost of operation, maintenance and depreciation in 1920	6,019,822,966

It can not be said that the automobile is any longer a luxury of the rich. There is now one for about every 13 persons in the country, or about one for every 2½ families. It has become a very democratic institution. The expense of owning and running automobiles is being incurred voluntarily by the same large consuming public which doubtless in the last analysis pays the bill for railroad transportation. As long as the public is voluntarily and gladly spending, including the cost of building and maintaining highways, around 6½ billion dollars a year for automobile transportation, it seems doubtful if it will find it very difficult to pay a substantially equal bill for the essential service of railroad transportation.

Rate Advance Decision

THE decision of the Interstate Commerce Commission in the great rate advance case is the most favorable indication yet afforded as to whether the railroad problem of the United States can be and will be solved under private ownership and management and government regulation.

The Commission gave as thorough and intelligent consideration as was possible to the tendencies of railway earnings and expenses up to the end of April, 1920, which when it arrived at its decision, was the latest time up to which helpful data regarding them were available. It held that the value of the railways for the purposes of this decision was $18,900,000,000. It concluded that it was desirable to allow them to earn on this amount the entire 6 per cent authorized by the law, which would mean an annual net operating income of $1,134,000,000. It fixed the freight and passenger rates in the various territories in a way which, so far as can be foreseen at this time, is adapted to enable the railways as a whole, and those of each group, to earn 6 per cent on the values that the commission credits to them.

If any fair criticism can be made of the commission's conclusions it applies to its conclusions regarding the values on which the return to be allowed should be computed. The railways as a whole claimed a value, based on their book figures for investment in road and equipment, improvements on leased railway property, materials and supplies, and government allocated equipment, of $20,616,573,399. Six per cent on this would have been $1,236,994,403. The aggregate amount carried as book cost of road and equipment alone on December 31, 1919, was $20,040,572,611. Six per cent on this would have been $1,202,434,356. The value allowed by the commission to the railways as a whole is over $1,700,000,000 less than the carriers claimed should be allowed, and over $1,140,000,000 less than the book cost of road and equipment alone as reported to the commission. The total net operating income which the commission seeks to provide by the rates fixed is approximately $100,000,000 less than the carriers claimed they were entitled to, and about $68,000,000 less than 6 per cent upon their book cost of road and equipment alone would have been. The Eastern lines claimed a property investment of $9,368,698,698, on which a return of 6 per cent would be $562,121,921. The commission allows them a value of $8,800,000,000, on which 6 per cent would yield $528,000,000, or $34,000,000 less than they asked for. The Southern lines claimed a property investment of $2,283,990,948, on which 6 per cent would have been $137,039,457. The commission allows them a value of $2,000,000,000, on which 6 per cent would be $120,000,000, or $17,000,000 less than they asked for. The Western lines claimed a property investment of $8,963,833,753. The commission allows them a valuation of $8,100,000,000, on which 6 per cent would be $486,000,000, or $51,000,000 less than the amount they asked for.

However, estimates made by the Bureau of Railway Economics indicate that the actual results produced by the advances granted may be somewhat different from those these figures would indicate. Its estimates indicate that the total increases in earnings that the advances granted will yield if applied to state as well as interstate rates will be $1,580,000,000, of which $283,000,000 will be derived from passenger train service and $1,300,000,000 from freight service. Its estimates indicate that the Southern Lines will get about $50,000,000 less increase in total earnings than they asked for, while the Eastern and Western roads will average about what they asked for. Nothing but actual experience will determine just what gross earnings and net operating income the rates will produce.

An interesting and important question is as to how the

net operating income which it is assumed the railways will be able to earn under the new rates will compare with the net operating income earned by them in past years under private operation. In determining this the book cost of road and equipment must be taken as a basis. On this basis the percentage of return earned in the year ended June 30, 1910, was 5.68 per cent; in 1911, 4.92 per cent; in 1912, 4.69 per cent; in 1913, 5.01 per cent; in 1914, 4.12 per cent; in 1915, 4.17 per cent; in 1916, 5.90 per cent; in the year ended December 31, 1916, 6.17 per cent; and in the year ended December 31, 1917, 5.31 per cent. The property investment reported as of December 31, 1919, was $20,040,572,611. Upon this the net operating income of $1,134,000,000 which the commission holds the roads should be allowed to earn would amount to 5.65 per cent. Apparently, the only years in which the railways have earned a larger percentage of net return on their property investment than that allowed were 1910 and 1916. On the other hand, it must be recognized that there never was a time when the return the railways had to pay in issuing new securities and in refunding old lines was as high, and when, therefore, the return they needed to earn was as large as now. It must also be borne in mind that every railway which earns over six per cent on the valuation put on it by the commission must pay one-half of the excess to the government, and, while this will not reduce the percentage earned by the railways, it will reduce the percentage of return they will be allowed to keep.

The commission does not say by exactly what reasoning it arrived at the conclusion that the total value of the railroads is only $18,900,000,000, which, as already indicated, is over $1,140,000,000 less than their book cost of road and equipment and $1,700,000,000 less than the total investment in property, supplies, etc., claimed by them. It simply sets forth that it considered all the available relevant facts, including the book cost and the information it has thus far obtained in making its detailed valuation. Evidently the commission's conclusion is the result of the application of its best judgment to the facts. The *Railway Age* has no doubt that the complete and detailed valuation the commission is making will result in a larger figure than that which it used as a basis for deciding the rate case, but there does not seem to be at present tangible ground for fair criticism of the way in which it has applied its judgment to the available facts. It probably has acted as intelligently and fairly as practicable with the data available. That is all that any reasonable person could ask.

There seems no reason for doubting that for months and even years to come the railways will have all the business that they can handle. Therefore it seems safe to assume that their total earnings will be increased at least as much in proportion as the rates are advanced. The future of operating expenses is much more problematical. It does not seem probable, however, that wages and the prices of materials will continue to increase, and it does seem probable that increased efficiency in operation will be secured. On the whole, therefore, it seems likely that the rates fixed by the commission will yield approximately the net operating income it has anticipated.

If this should be the case will the railways be able to raise the large amounts of new capital required to make needed enlargements in the capacity of their properties? The average return they will be able to pay will not be as large as those of most industrial concerns, but, apparently, their return will be more certain. The commission might have held, under the law, that they should be allowed to earn only 5½ per cent on the valuation which it fixed, but it actually did decide that they should be allowed to earn 6 per cent. After two years it has the legal power to determine whether they should be allowed to earn either more or less than 6 per cent. In view of the attitude in its decision it does not seem at all likely it will reduce the return allowed unless in two years actual experience shall have shown the railways can raise sufficient capital with a smaller return. Even after the two years have expired the investor in railway securities will continue to have the same advantage he will have during the next two years of knowing with a reasonable degree of certainty what return he will get.

It would appear that as a result of the decision most of the railways should be able to raise substantial amounts of new capital, and that its results should be a revival of the expansion of railroad facilities. One of the most important facts to be considered is the effect the decision will have on the attitude of investors toward the Interstate Commerce Commission and government regulation. Many persons who once favored regulation had recently about reached the conclusion that no class of concerns which were subjected to it would ever be allowed to charge rates and make net returns which would enable them to enjoy reasonable prosperity. The commission's decision will tend to restore confidence in railroad securities because it will go a long way to restore confidence in the Interstate Commerce Commission.

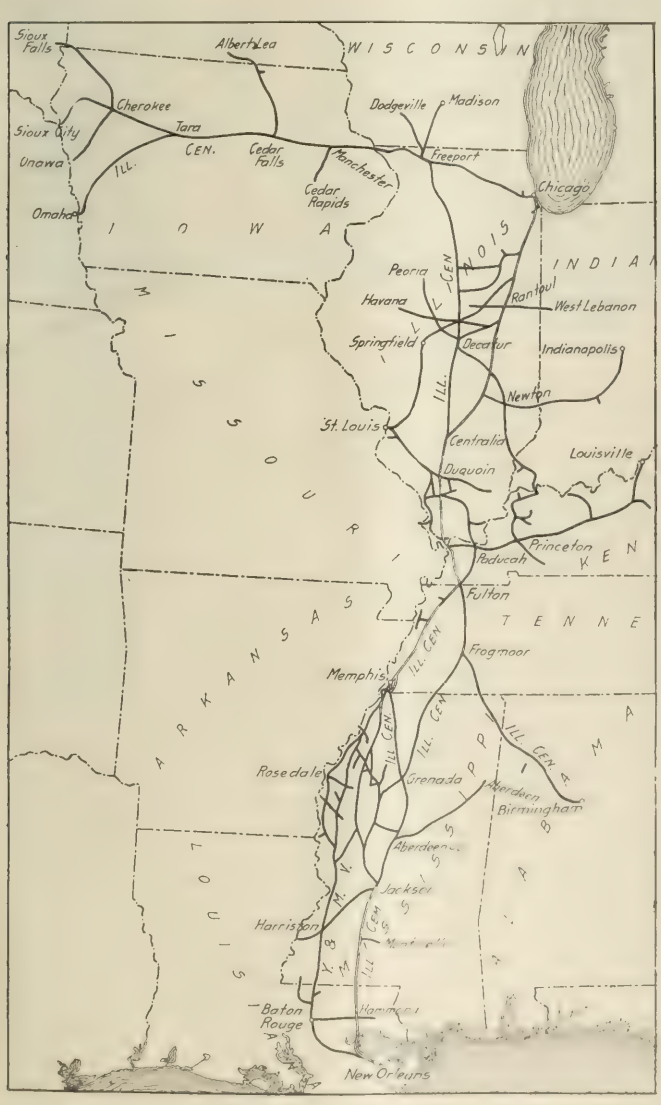
Illinois Central

About 40 per cent of the tonnage carried on the Illinois Central consists of bituminous coal. In view of this fact and the labor difficulties which occurred in the coal industry in 1919, particularly in the territory served by the road, it might have been expected that the operating revenues in 1919 would show a marked decline from 1918. This, however, did not prove to be the case. The freight revenues in 1919 were less than in 1918, a total of $75,821,000 in 1919 as compared with $79,271,000 in 1918, but the passenger revenues increased from $20,543,000 in 1918 to $24,300,756, or more than sufficient to compensate for the loss of freight business. The result, therefore, was that the total operating revenues in 1919 were $107,887,000, as compared with $107,320,000 in the preceding year. Operating expenses however, followed the usual trend that was typical of 1919. They totaled $98,911,000, representing an increase of nearly $9,000,000 from the total of $90,184,000 in 1918. This decrease was carried to the railway operating income, so that the road earned for the government in 1919 only $3,737,000 as against $12,085,000 in 1918. The standard return for the Illinois Central in 1919 was $17,896.000.

The Illinois Central operated in 1919 an average of 4,793 miles of line, although at the end of the year its total mileage was 4,800. Of this, it owns 2,271 miles—this including nearly all of the lines in Illinois and the connection to Indianapolis, Ind. It operates 10 miles owned by proprietary corporations. It leases 1,420 miles, all but 20 of which is represented by the mileage of the Chicago, St. Louis & New Orleans, which gives the Illinois Central its main line to New Orleans, La., and to Birmingham, Ala., and Louisville, Ky. A total of 867 miles is operated under contract or agreement, the larger part of which mileage is represented in the Dubuque & Sioux City operating from East Dubuque, Ia., across Iowa to Sioux City and Sioux Falls, Ia., and to Omaha, Neb. There are also 220 miles operated under trackage rights. This brief resumé will indicate the wide variety of territory served by the Illinois Central and show to how great an extent it is able to balance varying conditions of traffic in different sections. Of the total of 4,800 miles, 790 is double track. The main artery from Chicago south to New Orleans, La., is double track its entire length with

the exception of the stretch between Memphis, Tenn. and Jackson, Miss., where there are paralleling lines of the Yazoo & Mississippi Valley. No one who has seen the large piers of the Illinois Central and the Yazoo & Mississippi Valley on the river front at New Orleans can fail to appreciate the importance of this line between Chicago and New Orleans, or to realize how much more important it is likely to become as the shortest link between the growing port of New Orleans and the industrial and agricultural region adjacent to Chicago.

Unfortunately, the annual report of the Illinois Central as issued to stockholders does not contain the usual details of operating expenses or general operating results, this making it difficult to study the operating results for 1919 as



The Illinois Central

carefully as might be desired. Further than that the reports made to the Operating Statistics Section of the Railroad Administration included the Yazoo & Mississippi Valley and are not cumulative for the year. The figures for the combined operation of the two roads as reported to the Operating Statistics Section indicate that the high figure for net ton miles per mile of road per day which in March, 1918, reached as high as 8,256 was not maintained in 1919, when the monthly average ran only from 5,030 to 7,000. The net ton miles per train mile, however, showed a measurable increase over 1918.

The expenditures for additions and betterments on the Illinois Central and the subsidiary companies operated by it, in 1919 totaled $9,444,000, of which $8,458.000 was for road, $814,000 for equipment and $172,000 was general. The largest items under the head of road were for grading, $1,833,000, and for bridges, trestles and culverts $1,678,000.

These expenditures were reflected chiefly on the work in progress on the line revision and grade reduction between Dawson Springs, Ky., and Scottsburg, Ky., grade elimination work in Chicago, etc. During the year 17 new Mikado locomotives were added. There was an increase in tractive effort of locomotives totaling 896,000 lb. and the freight equipment was increased by 1,619 cars. The road received 3,650 of the Railroad Administration standard cars and its equipment will be further increased during the coming year by means of the loan which the road will receive from the revolving fund provided by the Transportation Act. This loan, which was approved by the Interstate Commerce Commission on July 8, is for $4,511,750. It will permit the road to buy 75 locomotives, 200 flat cars, 200 cars, 52 caboose cars and 100 refrigerator cars, having a total cost of $12,072,000.

The standard return for the Illinois Central in 1918 was $16,283,000. This was increased in 1919, however, to the extent of an amount estimated at $1,614,000, representing additional compensation due from the government on the cost of completed additions and betterments placed in service in the two years ended December 31, 1919. The corporate railway income in 1919 was $18,109,000 as compared with $17,047,000 in 1918, the net income for the year being $12,169,000 as compared with $10,957,000 in 1918. There was an increase of $676,000 in interest on the funded debt and $407,000 in interest on the unfunded debt. The report shows an increase in the funded debt itself amounting to $22,596,000, the principal item in this total being $16,000,000, fifteen year, 5½ per cent bonds issued to provide funds in part to pay for new equipment contracted for prior to Federal control but delivered to the road subsequent thereto.

The following table shows the results of operation of the Illinois Central in 1919 and 1918 under federal operation. The figures are not combined with the corporate figures:

	1919	1918
Mileage operated	4,793	4,778
Freight revenue	$75,831,459	$79,271,487
Passenger revenue	24,300,756	20,543,263
Total operating revenue	107,886,835	107,320,261
Maintenance of way and structures	19,595,657	16,301,104
Maintenance of equipment	29,897,946	26,615,299
Traffic expenses	947,429	855,542
Transportation expenses	45,384,834	43,214,596
General expenses	2,692,923	2,587,348
Total operating expenses	98,911,080	90,184,411
Taxes	5,204,668	5,036,610
Operating income	3,737,239	12,085,072

New Books

Proceedings, Association of Railway Electrical Engineers, 1919, *6 in. by 9 in., 235 pages of text, illustrated. Published by the Association of Railway Electrical Engineers, Chicago, Ill.*

This book contains the proceedings of the semi-annual convention of the A. R. E. E. held at Atlantic City, N. J., June 23, 1919, and the proceedings of the eleventh annual convention held at Chicago, Ill., October 28 to 31, 1919. The subjects discussed cover the electrical problems of the steam railroads and include the following: electric headlights, electric headlight handbook, illumination, electric arc welding, train lighting equipment and practice, electric headlight forms, electrification, railway stationary power plants and the question of amalgamating the A. R. E. E. with the American Railroad Association as a division of Section III—Mechanical.

Letters to the Editor

Relation Between Maintenance of Way Expenses and Traffic

CHICAGO.

TO THE EDITOR:

The standard contract between the carriers and the director general covering the use of the railroads by the federal government provides for an adjustment, due to difference of use. In cases where the use was materially different from the "test period use" the question arises as to the influence of this use on maintenance of way expenses.

Some engineers maintain that an increase of traffic, say of 100 per cent, will increase the maintenance of way expenses by a lesser amount than 100 per cent because they can see no reason for any increase in certain of the sub-divisions of the maintenance of way account. Wellington, in his "Economics of Railway Location" on pages 127 and 569, touches on this subject and shows that while in theory an increase of traffic adds only to certain of the items of expense, yet upon the whole the facts are that an increase in traffic nearly always results in a proportionate increase in maintenance of way expense. A brief study of railway statistics covering the ten years prior to December 31, 1917, seems to confirm Wellington's statement, and I am calling attention thereto because of the importance of this factor in the adjustments for use which the carriers must soon make with the government.

M. W.

Railroads Need Lubricating Engineers

CHICAGO.

TO THE EDITOR:

Since oil companies contracted to furnish lubrication on a ton-mileage basis there has been a reduction in the enormous waste of oil that occurred when lubrication was in an embryo state and locomotive valves were oiled by hand, through cups in the cab, or by lubricators on the steam chest. Since that time greases for rod cups and driving boxes have superseded oil and waste. Much has also been accomplished in power plants, machine shops, etc., by the use of force-feed lubrication systems and reclamation of used oils. And yet today there are great possibilities for railroad companies and large plants of all kinds to reduce their lubrication costs considerably by the creation of a lubrication department, employing a lubrication engineer for the purpose of designating the correct lubricant to be used where and as required.

At present railroads employ various systems; on one the choice of oils used in power plants, shops, etc., is entirely in the hands of the purchasng agent, who may or may not be qualified to judge the relative values of certain oils for certain purposes, but whose judgment is more often influenced by the price. With another road approval of the superintendent of motive power or master mechanic is necessary on the requisition to the storekeeper. In some cases the power plant engineer is permitted to name the brands of oils and greases required; in others he uses what is given him. The average superintendent of motive power or master mechanic is very much interested in anything pertaining to locomotives or rolling stock, but usually is indifferent regarding power plant and shop lubrication, or what oils are used on railway motor cars, speeders and other outside lubrication.

If the railroad carries a contract with an oil company for supplies, the lubrication engineer representing that company is usually permitted to visit power plants, shops, oil houses, etc., and to discuss the requirements with power plant engineers, shop superintendents, etc., otherwise he is frequently *persona non grata.*

If the railroad employed a lubrication engineer to handle the requirements in conjunction with the mechanical officers and purchasing agent, and in conjunction with the general storekeeper to direct their distribution, consulting the lubrication engineers of the reliable oil companies who carry a staff of efficient men for that purpose, the purchasing agent and mechanical officers would be relieved of a task that in most cases they are not fully competent to perform. The correct oils, etc., would be used where needed, and the correct quantities used, also a correct record would be maintained, oil houses kept in proper condition, reclamation systems installed where needed, and a general saving in money effected. In other words, efficiency in lubrication would be secured.

E. G. L.

A Thing of Beauty, Not Always a Joy Forever

WATERBURY, Conn.

TO THE EDITOR:

Your editorial appearing in the issue of July 16 under the caption "Put Your (Round) House in Order" struck a responsive note. Our town has a fine railway station. The tower thereon is very imposing. So much so, in fact, that your correspondent just had to ask questions about it. The station agent or somebody informed me that it was a duplicate of a famous tower in an Italian city where the president of the road happened to be wintering—or summering (I forget just which, but believe it was both). The president was so impressed with the tower that he had it boxed up and brought home—or obtained the plans and had it built here.

On this same railroad there is a roundhouse (strange, though true, as I have been in it) wholly inadequate for many years. It looks sadly dejected, both inside and out. Insufficient smoke jacks caused an atmosphere which nearly choked the visitor. There were no lights to speak of, outside of the oil torches, and a machinist stated that they couldn't get men to work there and that he himself was "through." Other things could be mentioned, including the hand-turned table, etc.; but it really isn't quite necessary, as you have quite a sufficient picture of the lay-out and can imagine the rest.

The contrast in the two departments—the engineering department and the mechanical department—would seem to indicate that the president was, in old times, an engineer. The tower indicated elegance and elaboration. The roundhouse was a personification of misery and cold. "Raw-hiding," I could easily see, was the prod in the interior of this asphyxiating nest of engine failures which the president knew (if he really knew of its existence at all) as merely a roundhouse.

Perhaps—who knows—as a result of your propaganda a little tower money may be left over to be used elsewhere. In such a case I advise that they call in the poor old roundhouse foreman, magnanimously hand him a check for the left-over amount and say, "Pete, this is for your department, by order of the president. Go downtown and buy three smoke jacks, half a dozen electric light globes, two feet of electric light wire and pay two dollars down on a block and tackle. And be careful, as we had a hard time getting this appropriation through."

AN OLD ROUNDHOUSER.



Expediting the Movement of L. C. L. Freight

Use of Motor Trucks for Interchange and Trap Car Shipments at Cincinnati Promotes Service

A system of transferring less-than-carload freight between local freight stations in a city whereby the time required for its movement is reduced 52 hr. and at the same time the cost of handling is decreased 35 cents per ton, is of particular interest to students of transportation at this time when terminal congestion is so prevalent and operating costs have risen everywhere. When at the same time 15 per cent of the existing platform area in the freight stations is released for other use, nearly 200 cars are released from continuous trap car service for the handling of other commodities, and the switching of these cars through already congested terminals, involving an estimated 300,000 switching cuts annually, is done away with, the advantages are even more striking. These are some of the results which are being secured through the handling of all trap car and interchange l. c. l. freight in Cincinnati by motor trucks under a system developed by the Motor Terminals Company.

System Includes All Stations in City.

Briefly, this system involves the loading of package freight at the stations onto five-ton demountable containers or truck bodies which are transferred to and from motor chassis mechanically and are transferred from one station to another on motor trucks. Starting as an experiment between the central freight station of the Big Four and its four outlying sub-stations in May, 1917 (described in the *Railway Age* of Sept. 7, 1917, page 427), it has spread until it is now in operation in all of the freight stations in Cincinnati, 20 in number, except the Norfolk & Western, on which the installation of the necessary equipment is now approaching completion. It is also in operation in the Chesapeake & Ohio station in Newport, Ky., and the Louisville & Nashville station in Covington, both across the river from Cincinnati. Considering inbound and outbound as individual stations where separate buildings are provided, a total of 35 stations are now served by this system as indicated on the attached list. These include six separate stations of the Baltimore & Ohio, five of the Big Four, three each of the Chesapeake & Ohio and the Louisville & Nashville, two each of the Pennsylvania and the Southern and one of the Norfolk & Western. The distance between these stations ranges from a minimum of one-half mile to a maximum of 9½ miles as shown on the map, while the average haul approximates three miles.

The principal stations of the Baltimore & Ohio, the Big Four and the Chesapeake & Ohio are located a short distance west of the business center of the city in the vicinity of the Union Central Depot, while the main stations of the Louisville & Nashville and the Pennsylvania are located near the station of the latter road, one mile east. The central freight station of the Southern is situated midway between these two groups. The interchange of freight between roads is handled through these downtown stations. Most of the roads also operate one or more sub-stations in outlying sections of the city, the traffic from which passes through the central stations of the owning roads for consolidation. Both the traffic moving in interchange between roads and that moving between the main and sub-stations of the individual roads is now transferred by motor trucks. The interchange movement comprises 76 per cent of the total tonnage as compared with 24 per cent transported between the main and sub-stations of the same road.

The Motor Terminals Company, which has developed this system of freight interchange, is a corporation independent of the roads and performs this service under contracts with the individual lines. The arrangement stipulates that the railways load, unload and despatch the demountable bodies and provide the superstructures and the labor necessary for the handling and transference of the bodies to and from the trucks. The Cincinnati Motor Terminals Company, a subsidiary of the Motor Terminals Company, operating locally in Cincinnati, provides the system of transportation, the hoists by which the bodies are moved, the truck and the

bodies, and transfers the bodies from one station to another, receiving for this service from 80 cents to $1.25 per ton, depending on the length of haul between stations.

The Equipment Required

The special facilities required in this service include the motor trucks, demountable bodies and facilities at the freight houses for transferring these bodies from the trucks to the floor of the station. The trucks used in this service are standard White five-ton chassis with certain minor features specially designed for this purpose. Sixteen of these trucks are now employed at Cincinnati.

The demountable bodies are of weatherproof steel frame and wood construction. They are 17.5 ft. long, 8 ft. wide

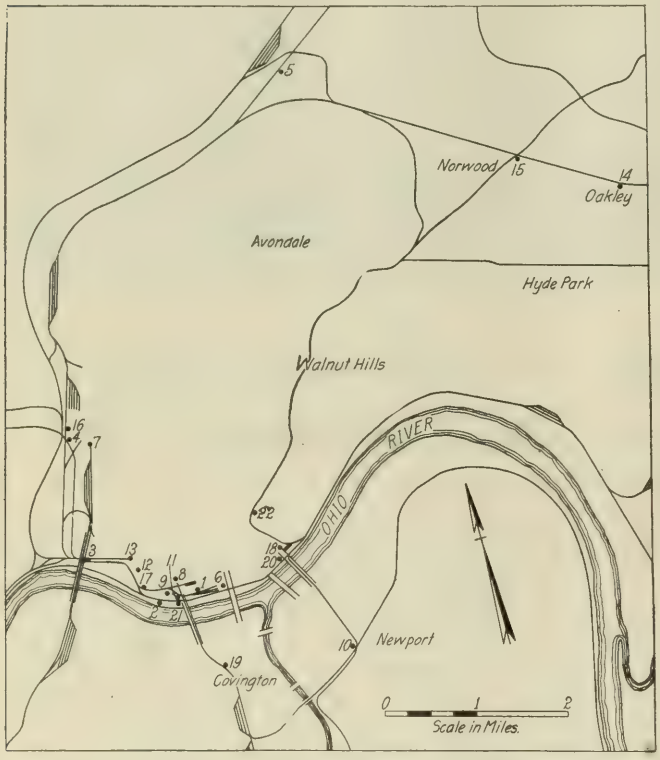


Fig. 1. Location of Freight Houses in Cincinnati and Suburbs

and 7 ft. high (inside dimensions) and have a capacity of 10,000 lb. They are provided with double doors in each side and end, which doors are interchangeable. The doors are equipped with protection bars and are sealed to protect the contents from pilferage. A total of 225 of these demountable bodies have been provided at Cincinnati.

In installing the necessary equipment for the transference of the demountable bodies from the freight house floor to the trucks and vice versa at the station no uniform type of construction was adopted, but plans were drawn to meet the conditions existing at each individual point. In some houses driveways were provided within the structure on which the trucks may be backed; at some points where this construction was adopted it was necessary to depress the driveways to secure the requisite overhead clearance, while at others the trucks drive in at the street level. At other stations where conditions do not lend themselves readily to such a plan, the trucks drive alongside or back up to openings in the side of the house and the bodies are then transferred into the house and then trolleyed longitudinally a sufficient distance to clear the doorway. From one to six driveways are provided at each house, a total of 68 being installed at the 34 houses. This plurality of driveways has been designed to reduce the trucking distance to the bodies within the house. Thus, whereas the average distance from car to car in the Vine street station of the Southern was 450 ft. this distance has been reduced to 56 ft. through the installation of four locations for the truck bodies.

The superstructures which are constructed over the driveways and the floor locations of the demountable bodies are designed to meet the particular clearances and other local conditions at the various houses with the minimum cost for building alterations. They are of light steel construction and support the electric hoists which have been designed specially for this purpose with a novel weaving device to insure the accurate aligning of the body with the chassis. They are equipped with Sprague standard hoist units of 7½ to 10 hp. for lifting and 2½ hp. traveling motors, with conveniently located electric controls. A recent development is the addition of an arrangement whereby the lifting stirrups may be attached to the body automatically. A hoist is provided at each driveway, or 68 in all.

The Operating Details

In operation, the Terminals Company provides a plurality of bodies which are placed on the floor of the house at the various locations, one body being provided for each movement demanded at each location. As freight is received for transference to other stations either from drays at the outlying outbound stations or from cars at the cen-

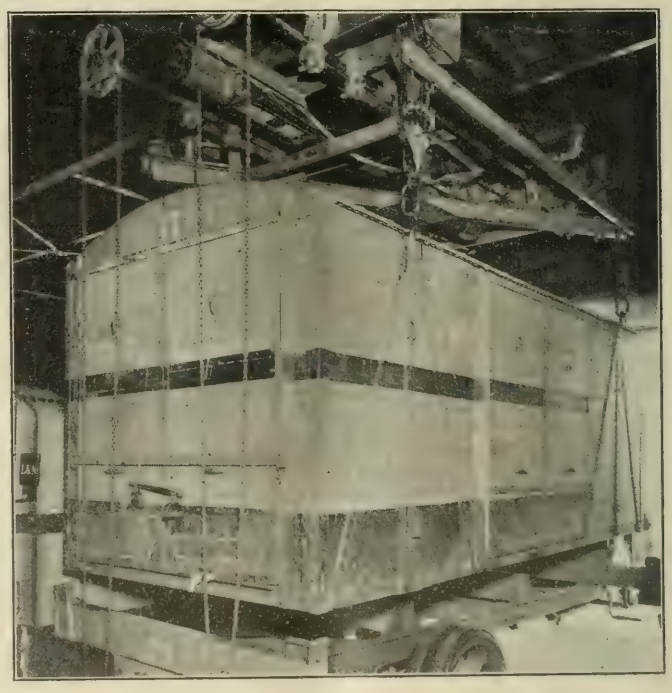


Fig. 2. Demountable Body Loaded and Sealed Being Lowered Onto a Chassis in an Interior Runway

tral inbound stations, it is trucked direct to the proper body and stowed therein by railway employees. When the container is filled, the doors are applied and seals attached, also by railway employees. The truck despatcher is then notified that the body is awaiting movement and is given its destination in order that he can arrange for it to be picked up. Immediately after the body is closed, the way-bills are taken to a small office usually on the floor of the house adjacent to the driveway, where the way-bills of the freight in the container are abstracted on a summary sheet, one copy of which is retained by the forwarding road, another with the way-bills is given to the truck driver for delivery to the receiving road, and the original is given to the driver for the Cincinnati Motor Terminals Company. The operation of preparing this abstract normally requires only five or ten

minutes. The way-bills at all times travel with the freight and no shipments are divided where it is possible to avoid it.

While the container is being placed on his truck, the



Fig. 3. Loaded Container Being Removed from Chassis at Exterior Runway at Receiving Station.

driver scans the total weight shown on the summary sheet to insure that the capacity of the container and the truck have not been exceeded. He then signs a receipt for the

	Railroad	Station		Superstructures	Number of Locations	Number of Locations	Body Capacity each Structure	Total Body Capacity
1.	C.C.C.&St.L.	Central Ave.	Inbound	6	3	2 of 6 1 of 4	16
"	C.C.C.&St.L.	Central Ave.	Outbound	2	2	4	8
2.	C.C.C.&St.L.	Front St.	Inbound	2	1	10	20
3.	C.C.C.&St.L.	Sixth St.	Inbound and Outbound	2	1	2	4
4.	C.C.C. St.L.	Brighton	Inbound and Outbound	2	1	2	4
5.	C.C.C.&St.L.	Ivorydale	Inbound and Outbound	1	1	4	4
6.	Southern	Vine St.	Inbound	4	4	2 of 10 1 of 8	38
"	Southern	Vine St.	Outbound	4	4	10	40
7.	Southern	Lincoln Park	Inbound and Outbound	1	1	4	4
8.	C. & O.	Fourth St.	Inbound	1	1	10	10
9.	C. & O.	Park St.	Outbound	4	4	4	16
10.	C. & O.	Newport	Inbound and Outbound	1	1	2	2
11.	B. & O.	Smith St.	Inbound	5	5	2	10
"	B. & O.	Smith St.	Outbound	5	5	2	10
12.	B. & O.	Sixth and Baymiller	Inbound East Side	4	4	2	8
"	B. & O.	Sixth and Baymiller	Outbound West Side	4	4	3	12
13.	B. & O.	Kenyon Ave.	Outbound	6	6	2	12
14.	B. & O.	Oakley	Inbound and Outbound	2	1	1 of 1 1 of 2	3
15.	B. & O.	Norwood	Inbound and Outbound	1	1	4	4
16.	B. & O.	Brighton	Inbound and Outbound	1	1	4	4
17.	L. & N.	West End	Inbound and Outbound	2	2	16 16	32
18.	L. & N.	East End	Inbound	4	2	4	10
"	L. & N.	East End	Inbound and Outbound	4	2	2	6
19.	L. & N.	Covington	Outbound Side	1	1	4	4
20.	Pennsylvania	East End Butler St.	Inbound South House	1	1	5	5
"	Pennsylvania	East End Butler St.	Inbound Middle House	1	1	10	10
"	Pennsylvania	East End Butler St.	Inbound East House	1	1	6	6
"	Pennsylvania	East End Butler St.	Outbound North House	1	1	8	8
21.	Pennsylvania	Smith St.	Inbound and Outbound	1	1	6	6
22.	N. & W. C.L.&N	Court St.	Inbound and Outbound	1	1	6	6
		Total		75	64		324

Fig. 4. Tabulation of Cincinnati Freight Houses Indicating Motor Transfer Facilities

container and the way-bills and proceeds to destination with the truck. On arrival at the outgoing house he delivers the bills to the foreman of the house, who receipts for them on the original summary sheet which the driver turns into the Terminal Company as its record for the purpose of billing. The schedule under which he operates allows the driver five minutes for the operations at the house, including the delivery of the container from his truck to its proper place on the floor and the delivery to him of another body.

All handling of freight into and out of the bodies is done by railway employees, the activities of the Terminal Company employees being limited to the handling of the demountable body as a unit and under seal. Normally the bodies are opened immediately on receipt and the transfer of the contents to outgoing cars is undertaken. Under average conditions this consumes about 30 min. The average load of a container is 4.37 tons as compared with the rated capacity of 5 tons. While no minimum shipment is defined in the contract between the Terminal Company and the roads, the Terminal Company agrees to move any body tendered to it, and both have agreed that two tons shall be considered a minimum load for the purpose of compensation.

The routing of trucks from one station to another is centralized in the hands of a despatcher employed jointly by the roads. This despatcher is in constant, instant communication with the various houses through a private telephone system connecting all stations. As the bodies are loaded the

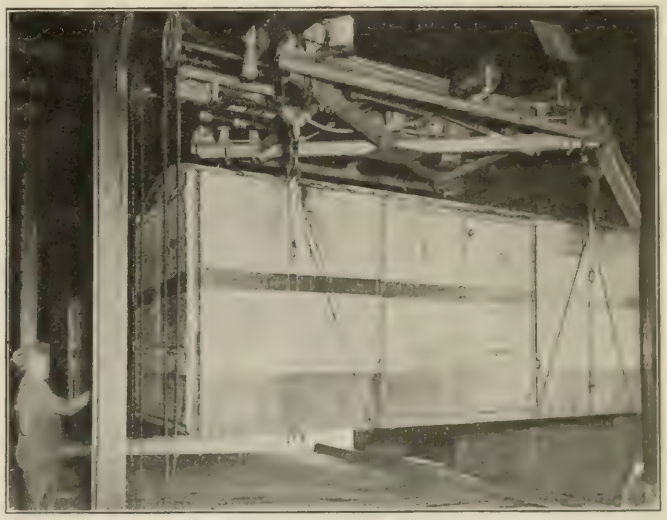


Fig. 5. Lowering Loaded Container Onto Freight House Floor at Receiving Station

foremen of the different houses advise him of this fact; likewise as a body is being transferred from a truck the driver communicates with the despatcher and receives his next assignment. By this means he can be in practically continuous service, making approximately 26 separate trips per day of 10 hr. As indicative of the rapidity with which these bodies are handled at individual stations, the average interval between the receipt of bodies at the Pennsylvania station is eight minutes.

The Results Demonstrated by This System

From May 10, 1919, to April 1, 1920, 176,723 tons of freight were handled by this system. At the present time an average of 660 tons is being moved daily, while a maximum of 764 tons has been handled in one day, and the facilities now installed afford an estimated capacity of 1,200 tons.

This system has demonstrated a number of advantages over the trap car and transfer by teams previously employed. In the first place, the average time consumed in movement has been greatly reduced. The average time formerly required in trap car service between one main station and that of its connecting line averaged 62 hr. and between a main and a sub-station of the same road 55 hr.; while

that required for movement across the streets by dray was 72 hr. The weighted average of the time required was 62 hr. With the new system 98 per cent of the freight received is handled and delivered within the limits of a 10-hr. day, effecting an average saving of 52 hr. Over 75 per cent of the freight handled is received at the outgoing station in

THE CINCINNATI MOTOR TERMINALS CO.
DISPATCHING RECORD
CINCINNATI, OHIO, Apr 19-1920.
TRUCK No. 23

FROM	TO	LEAVE	DUE	L	E	C	DELAY
29X	10A	7 10	7 30			2	
10A	2F	8 25	8 20	1/2			35 Min.
2F	10A	8 25	8 30			1/2	At PHEE
10A	2F	8 35	8 45	1/2			
2F	10A	8 50	9 00			1/2	
10A	2F	9 50	9 15	1/2			
2F	3A	9 20	9 45		3		
3A	2F	9 55	10 20	3			
2F	10C	10 25	10 40		2		
10C	5B	10 45	11 00	2			
5B	22A	11 50	11 10			1/2	
22A	12A	11 15	11 20	1/2			
12A	10D	11 25	11 40		2		
10D	2F	11 45	12 00	12	1/2		
2F	22A	1 15	1 25			1	
22A	12A	1 30	1 35	1/2			
12A	23Z	1 40	1 45		1/2		
23Z	12A	1 55	2 00	1/2			
12A	5B	2 05	2 10			1/2	
5B	7A	2 20	2 40	2			
7A	6A	2 45	2 55			1/2	
6A	8A	3 00	3 20	3			
8A	3A	3 25	3 40	2			
3A	2F	3 45	4 10	3			
2F	29X	4 20	4 30			1/2	

Dispatcher C. J. Meyers.

Fig. 6. A Typical Day's Record for a Chassis

time to forward it the day of its receipt to the inbound station.

This saving in time is effected while also securing a marked reduction in cost. A study of the costs of handling this freight prior to the inauguration of the motor truck system showed an average of $1.718 per ton, while under the



Fig. 7. Trucking Freight from Demountable Bodies Direct to Outgoing Cars

contracts now in effect the average cost is $1.37 per ton, a reduction of 35 cents per ton or 20 per cent. A further advantage has been the entire elimination of loss and damage claims in interchange movement. Prior to the adoption of this system losses in transit between stations were not unusual and claims were frequent. The contract between the Motor Terminals Company and the railways provides that the Terminal Company shall pay all claims for damage to freight while in its possession, but in the period of over a year in which this system has been actively in operation not a single claim has been filed.

A further advantage accrues through the reduction of platform space required for the movement of this freight, this saving being 14.18 per cent of the total platform area in the inbound house, while a similar reduction is effected in the outbound house, the magnitude of which depends on the methods of operation. The space thus released is made available for the handling of other traffic, thereby increasing the capacity of the station to that extent.

One of the most important advantages from the railway standpoint has been the removal of this trap car service from the rails by transferring this freight to motor trucks. It has been estimated that 66,862 car days have been dispensed with, releasing approximately 200 cars for other service. This has also made available for through cars the track room formerly occupied by these trap cars at the stations, again increasing the capacity of the stations. It has also eliminated a large amount of switching incident to the movement of these cars from one station to another, effecting an estimated annual reduction of 300,000 switching cuts.

After having been in operation on this large scale for a year, this system is receiving the unanimous commendation of the local freight agents of the various roads under whose supervision this interchange is conducted. It has also received the approval of the shippers the movement of whose products has been expedited materially. This is particularly true of those shippers whose traffic is handled through the outlying sub-stations and who are therefore in a position to observe the reduction in the time required to handle their shipments at destination.

Adler's Highway Crossing Signal

THE MARYLAND & PENNSYLVANIA has in service at four crossings in and near Baltimore, Md., some highway crossing signals which are actuated by electrical apparatus controlled by a circuit normally open, devised by Charles Adler, Jr., of Baltimore. To give notice of any failure in the circuit—which, with the usual closed circuit arrangement, would be given by the continuous ringing of the bell—Mr. Adler provides an electric lamp, which is a part of the bell circuit, and which serves to give to the approaching engineman a signal that the ringing apparatus is in working order. If the lamp does not show up the engineman is to assume that the bell is dead, and he must then reduce his speed so as to pass over the crossing at a rate not dangerous to wayfarers. The lamp has a reflector and is hooded so as to be visible in the daytime, as well as at night. Mr. Adler proposes to set it on a post 1,200 ft., or more, short of the crossing, as is necessary, of course, if it is to serve as an adequate safeguard, in time of fog, on roads traversed by fast trains; but in the present installations it is fixed on the post with the bell at the crossing.

These bells are controlled by an open circuit interlocking relay which silences the bell when the first pair of wheels reaches the insulated joints at the crossing. Thus a train standing on the crossing does not keep the bell ringing. Mr. Adler has applied for patents. He reports satisfactory service for over a year at a crossing where formerly residents had been annoyed by the ringing of the bell for hours—or days—when the control circuit had failed; and, of course, he shows a saving of battery power as compared with any closed circuit arrangement.

Increased Rates Authorized by I. C. C.

Intended to Meet Wage Award and Put Roads on 6 Per Cent Income Basis Prescribed by Law

WASHINGTON, D. C.

GENERAL increases in freight and passenger rates, which it is estimated should produce an increase in revenues of approximately $1,550,000,000 if applied to intrastate as well as interstate traffic were authorized by the Interstate Commerce Commission in an order dated July 29 and made public on Saturday, July 31, in the general rate case, Ex Parte 74. The increases are intended to be sufficient to enable the railroads to pay the increases in wages recently awarded by the Railroad Labor Board, amounting to $618,000,000 a year, and to increase the net operating income of the carriers to 6 per cent on a valuation of $18,900,000,000, which would be $1,134,000,000 a year. The decision was rendered in about three months after the filing of the original applications.

The commission allows the 20 per cent increase in passenger and baggage rates and the 50 per cent surcharge for Pullman passengers proposed by the roads, but makes the increase on milk traffic 20 per cent instead of the percentages proposed for freight. On freight traffic it allows practically the amount asked except for the roads in the Southern district, that asked for an increase in freight rates of 38.91 per cent and are allowed 25 per cent. The eastern roads, that applied for 39.75 per cent on freight, are allowed 40 per cent. The western roads as a group asked for 32.03 per cent, but the commission places the lines west of the Colorado common points in a separate Mountain-Pacific group, which it allows 25 per cent, and gives the roads in the rest of the western territory 35 per cent.

These percentage increases, the commission finds, should enable the carriers to earn the 6 per cent return under present conditions and are predicated upon the assumption that the volume of traffic will be approximately the same as that for the year ending October 31, 1919, which the railroads took as the basis for their estimates after making adjustments for known increases in expenses, except that in the case of the Southern roads the percentage asked for was reduced on the ground that the Southern roads in the first four months of this year have been showing results more favorable than those indicated by the estimates based on last year. The decision also assumes that the roads as a whole could have made a net operating income of about $200,000,000 without the wage or rate increases as this was the result for the year ending October 31, 1919, after making the readjustments.

After a meeting of the traffic members of the general rate committee of the Association of Railway Executives in Washington on August 2, and after a conference with the traffic bureau of the Interstate Commerce Commission, it was announced that the roads expected to be able to file tariffs putting the passenger rates into effect on August 20 and the freight rates into effect on August 25, but later the date was changed to August 26 for both classes of service. Supplemental applications will also be filed with the various state railroad commissions as rapidly as possible, asking them to put into effect on intrastate traffic the same percentages of increase as were authorized by the Interstate Commerce Commission for interstate traffic. Application will also be filed with the Canadian Railway Commission for authority to apply the same percentages on joint rates from points in the United States to Canada and a similar application will be made by the Canadian roads.

Assuming that the estimate of $1,550,000,000 is approximately correct, the commission has allowed the roads as a whole about $100,000,000 less than they asked for, by adopting a temporary valuation for the purpose of the rate case $1,700,000,000 less than the property investment account of $20,600,000,000 on which the roads based their applications. The original application of the roads was for $1,018,000,000 and a supplemental application for $626,000,000 to meet the wage award was filed on July 22. A large part of the reduction under the amounts asked by the railroads results from the decrease of the percentage on freight traffic for the Southern district. The Southern roads asked for a total of about $190,000,000 and received about $140,000,000.

The new division of the western lines makes it difficult to calculate the effect with anything like exactness without an analysis of the freight earnings of the individual lines, but it is estimated that the average for the western lines will amount to nearly as much as the 32 per cent which they ask. The Southwestern lines at the time of the original application asked that they be treated as a separate group and allowed an increase of 32 per cent when the western lines as a whole were asking for 24 per cent on freight, but they did not file a supplemental application after the wage award.

The commission said that the eastern roads had apparently been "conservative" in estimating their revenue needs, that the southern roads had "substantially overestimated" theirs and that the roads west of the Colorado common points are as a whole in a substantially better condition than other carriers in the western territory, while the rates in that region are already higher than in the territory east thereof.

The commission gives no explanation of the processes by which it determined the approximate temporary valuation; simply saying that its figures had been arrived at "from a consideration of all the facts and matters of record." This is less than the total of the property investment account, but is sufficient to cover the outstanding securities. The greatest reduction in valuation was made in the figure for the western roads. Neither does the commission give an estimate of the amount of revenue which the rates should produce and there is little indication of the method by which it determined the percentages except that it has compared the estimated freight revenues for 1920 based on the results for the first four months with the carriers' exhibits based on the readjustment of last year's figures. This method gives an assumed freight revenue for the western lines of $1,803,000,000 as compared with $1,475,000,000 for the year ending October 31, 1919, and for the southern lines of $518,000,000 as compared with $390,000,000. The eastern roads had a deficit for the first four months and the commission makes no attempt to predicate an assumption as to their earnings for the full year except to say that the results have been even more favorable than the carriers predicted. Some of the statistics submitted by the roads are declared to be open to criticism in some respects, but they were accepted by the commission as at least making a plain case as to the need for substantial increases in revenues.

Increases in freight rates similar to those granted to the steam roads are allowed to the boat lines and electric lines subject to the commission's jurisdiction.

The rates are to become effective in not less than five days' notice after tariffs are filed. The percentage method of increasing rates as proposed by the railroads was approved by the commission for the purposes of this case in view of the emergency and it declined to make the exceptions asked by various shippers as to particular commodities, although it expects that necessary readjustments will be worked out as promptly as possible.

The commissioners were unanimous as to the increases to be allowed although Commissioners Eastman and Woolley

joined in a concurring opinion objecting to the method adopted by the commission in reaching its conclusions.

The increases allowed, when applied to the entire traffic of the roads, both state and interstate, assuming a volume of business approximating that of the year ending October 31, 1919, are estimated by the Bureau of Railway Economics at $283,000,000, or 20 per cent, for the passenger train service, and about $1,263,000,000, or about 34.5 per cent, for the freight service.

The original application of the eastern roads was for approximately $550,000,000, or 30 per cent on freight traffic. After the wage award the eastern roads asked for $136,000,000 on passenger train service, and an additional $182,020,541, or 10 per cent, on freight service. They are to receive about $691,000,000 on freight service, and $133,000,000 on passenger train service, a total of $824,000,000. The western roads asked originally for about $350,000,000, or about 24 per cent, on freight, and later asked for $114,000,000 on passenger train service, and $122,551,208, or 8.23 per cent, additional on freight. They should receive, assuming an average of 32 per cent, about $468,000,000 on freight, of which $138,000,000 would go to the Mountain-Pacific group, and about $114,000,000 on passenger, a total of $582,000,000.

The southern roads asked originally for about $120,000,000, or about 31 per cent, on freight, and later for $36,000,000 on passenger, and $34,000,000, or 8.57 per cent additional on freight. They should receive about $104,000,000 on freight, and about $36,000,000 on passenger, a total of $140,000,000.

These estimates are made with an allowance for the effect of the interterritorial rates, which it is estimated would reduce the percentage for the eastern lines to about 38.6, and increase the percentage of the southern roads to 26.6, reduce the western percentage to 34.7, and increase that of the Mountain-Pacific district to 26.25.

The $1,134,00,000 net operating income which the commission proposes to allow, is only slightly in excess of the operating income for 1916, when the roads earned $1,100,000,000, or 6.17 per cent on their then property investment account of $17,842,000,000. It is, however, greater than the standard return which the roads have been guaranteed since January 1, 1918, by about $200,000,000.

The form of the report seems to indicate that the commission had prepared its opinion based on the original application, and then revised it to cover the amount of the wage award.

An abstract of the report follows:

Abstract of Report of the Commission

In this proceeding the carriers seek authority, pursuant to the provisions of section 15a of the interstate commerce act, to increase their freight revenues to a basis that will enable them to earn an aggregate annual net railway operating income equal, as nearly as may be, to 6 per cent upon the aggregate value of the railway property of such carriers held for and used in the service of transportation. The applications, filed in the latter part of April and the early part of May, 1920, were made at our suggestion to assist us in complying with the provisions of that section. Similar applications were filed on the part of certain carriers by water.

Section 15a of the act provides that in exercising our powers under that section we shall "initiate, modify, establish, or adjust" rates for the carriers as a whole, "or as a whole in each of such rate groups or territories as the commission may from time to time designate." In making their proposals the carriers have observed generally those three groups, but the carriers in New England and in the southwest have brought to our attention the peculiar financial needs of the railroads in those territories. The New England carriers do not propose a change in the grouping suggested by the carriers generally, but certain of the southwestern lines ask that we carve out of the western territory a separate southwestern group. This separate application of the southwestern lines is opposed by many shippers served by these carriers and by other carriers in the western group.

The record shows that the principal railroads serving the territory west of the Colorado common points, especially the so-called transcontinental railroads as a whole, are in a substantially better financial condition than other carriers in the western territory. It also shows that the rates, generally speaking, are materially higher in the region west of the Colorado common points than in the part of the western territory lying east thereof. Considering the whole situation, it is our view that the territory west of the Colorado common points and the traffic to and from that territory may properly be given separate treatment.

We find that for the purposes set forth in section 15a the groups should be as follows:

Eastern Group

Its limits for the purposes of this proceeding may be established as follows: The Atlantic seaboard from the Canadian border to Norfolk, Va., the main line of the Norfolk & Western Railway from Norfolk, Va., to Kenova, W. Va., the main line of the Chesapeake & Ohio Railway from Kenova, W. Va., to Cincinnati, Ohio, the Ohio River to Cairo, Ill., the Mississippi River to the mouth of the Illinois River, at or near Grafton, Ill., the Illinois River from Grafton, Ill., to Pekin, Ill., a line south and east of the Atchison, Topeka & Santa Fe Railway from Pekin, Ill., through Joliet and Streator, Ill., to Chicago, Ill., a line drawn from Chicago, Ill., to include the southern peninsula of Michigan, and thence following the international boundary to the Atlantic seaboard; including that portion of the Virginian Railway extending south of the southern boundary, and excluding those portions of the Southern Railway, Louisville & Nashville Railroad, Mobile & Ohio Railroad, Atlantic Coast Line Railroad, and Seaboard Air Line extending north of the southern boundary.

Southern Group

The territory commonly known as the southern classification territory, embracing that section of the United States lying west of the Atlantic Ocean; south of the main line of the Norfolk & Western Railway from Norfolk, Va., to Kenova, W. Va., thence south of the Chesapeake & Ohio Railway to Cincinnati, and thence south of the Ohio River to Cairo, Ill.; thence east of the Mississippi River to New Orleans, La., and the mouth of the Mississippi River; and north of the Gulf of Mexico, from the Mississippi River to the Atlantic Ocean; including also those portions of the Southern Railway, Louisville & Nashville Railroad, Mobile & Ohio Railroad, Atlantic Coast Line Railroad, and Seaboard Air Line Railway extending north of the northern boundary and excluding that portion of the Virginian Railway extending south of the northern boundary.

Western Group

The territory lying west of the western boundaries of the eastern and southern groups as above described; south of Lake Superior and of the international boundary line; north of the Gulf of Mexico and the Rio Grande, and on and east of a north and south line running as follows: Following the boundary line between the state of North Dakota and the state of Montana and the boundary line between the states of South Dakota and Wyoming and Nebraska and Wyoming to the line of the Union Pacific extending east from Cheyenne, Wyo.; then following the line of the Union Pacific westward to Cheyenne and from Cheyenne running southward through Denver, Colorado Springs, Pueblo and Trinidad, Colo.; then following the line of the Atchison, Topeka & Santa Fe Railway through Raton and Las Vegas, N. Mex., to Albuquerque, N. Mex.; then south along the line of the Atchison, Topeka & Santa Fe Railway to El Paso, Tex.

Mountain-Pacific Group

All that territory lying between the line last described and the Pacific Coast, not including Alaska.

The grouping herein approved differs somewhat from that proposed by the carriers, and, inasmuch as the record deals principally with the three major groups, it will be advisable to deal with the evidence as presented. In analyzing the results of operation for the various groups of carriers for the constructive year devised by them, and for the first four months of 1920, we shall group the carriers as they were grouped in the applications.

In establishing rates for the two-year period we have no discretion as to the amount of the fair return, except that we may add to the 5½ per centum provided by law "a sum not exceeding one-half of 1 per centum of such aggregate value to make provision in whole or in part for improvements, betterments, or equipment, which, according to the accounting system prescribed by the commission, are chargeable to capital account." Having determined the per cent, we are called upon to perform the administrative task of establishing rates that will yield in the aggregate as nearly as may be that per cent until March 1, 1922.

Evidence has been submitted tending to show that we should accord to the carriers the maximum per cent authorized by Congress. The high rates of interest now prevailing are cited by the petitioners, and our attention is called to prominent instances where large railroads with recognized financial standing have been obliged within recent months to pay interest rates well in excess of 6 per cent on new capital. The evidence shows that the New York Central Railroad Company recently sold $36,000,000 of 15-year equipment notes, carrying an interest rate of 7 per cent, and that notes carrying the same rate of interest were sold by other carriers, as follows: Pennsylvania Railroad Company, $50,000,000 of 10-year collateral notes; Northern Pacific Railroad, $4,500,000 of 10-year equipment notes; Atlantic Coast Line Railroad, $6,000,000 of 10-year collateral notes; Louisville & Nashville Railroad, $7,500,000 of 10-year collateral notes. Discounts and commissions raised the total cost of the capital to these carriers to 7½ per cent per annum.

Efficiency in Operation

Much has been said concerning the necessity of additional equipment and the efficiency of the present management of the carriers. It is the view of the carriers that existing facilities are inadequate, and they state specifically that they need immediately at least 100,000 freight cars, 2,000 locomotives, and 3,000 passenger cars. Shippers are unanimously of the opinion that the transportation service has been and is unsatisfactory, and many of them urge upon us the necessity of granting such increased rates as may be necessary in order that the service may be improved. Others raise the question whether considerations other than inadequacy of facilities—notably labor difficulties—are not equally responsible for the admittedly poor service. Especially during recent months a shortage of labor at crucial points, due in part to strikes, has contributed more largely than any other single factor to the unsatisfactory condition that has existed and still exists. Witnesses for the carriers were unable to state explicitly what economies in operation, if any, may be presently effected. On the other hand, the opinion was expressed that certain increases in operating expenses are apparently unavoidable. During the war, passenger traffic was unusually remunerative because of troop movements, elimination of unnecessary trains and heavy loading of passenger cars. The movement of troops has practically ceased, and it is the view of the carriers that a larger number of passenger trains will have to be operated. During the war, in part because of war necessity, there was a marked increase in the loading of freight cars. It is apparent that there may be increases in expenses not related to the general increase in prices, which may offset any economies that may be effected in other directions.

Property Investment

The calculations of the carriers as to the increases in revenue needed by them are predicated upon the assumption that the commission should permit a return of 6 per cent on the book figures for investment in road and equipment, improvements on leased railway property, materials and supplies and government allocated equipment, hereinafter referred to as book cost. Their contention is that the aggregate value of the property of the carriers in each group, held for and used in the service of transportation, is substantially in excess of the aggregate of the amounts shown as their respective book costs.

The carriers recognize the infirmities inherent in the investment accounts as carried upon the books of the carriers, as a measure of the value of the respective properties taken separately; but they contend that it is appropriate for us to use the aggregate of such figures as the basis of our calculations, tested in the light of the work of our bureau of valuation as thus far progressed, the tendencies thereby shown, and the conclusions to be drawn therefrom by those familiar with the work so far done, and also by consideration of such matters of common knowledge or within the knowledge of the commission as bear upon the subject.

The aggregate amount carried as book cost of road and equipment by all classes of carriers reporting to us, as of December 31, 1919, is set out below according to the territorial groups defined in the applications of the carriers:

Eastern group	$9,038,194,615
Southern group	2,183,923,124
Western group	8,818,454,872
Total, all groups	$20,040,572,611

Considerable evidence of a general character as to the various elements of value has been produced herein, which we have carefully scrutinized.

While the valuation under section 19a of the interstate commerce act is still incomplete, the work has progressed so far that the results are of value and informative in reaching the determination we are now required to make. So far as the work has produced results, either as to particular roads, or as showing general tendencies and principles, we have given consideration thereto.

We have also before us the investment accounts of the carriers. Since 1907 there have been mandatory regulations by us as to the manner in which the accounts should be kept. In the administration of section 20 of the interstate commerce act we have had frequent occasion to investigate, and in many cases to correct, errors apparent in the investment accounts; other errors have been discovered and brought to our attention in the progress of the work of valuation under section 19a.

The probable earning capacity of the properties under particular rates prescribed by law and the sums required to meet operating expenses, separately and collectively, are indicated in the record. There is also evidence which tends to show the amount and market value of the bonds and stocks of the carriers.

In properly appraising all these elements of value we are mindful of the fact that the carriers are operating units and going concerns. This fact has been given due consideration in the light of the financial history of the transportation system of the United States, as developed by the record and as known to us. The needs for working capital, and materials and supplies on hand, have been considered and allowance therefor has been made.

From a consideration of all of the facts and matters of record, and those which, under section 15a of the interstate commerce act, we are both required and authorized to consider, we find that the value of the steam-railway property of the carriers subject to the act held for and used in the service of transportation is, for the purposes of this particular case, to be taken as approximating the following:

Eastern group, as defined by the carriers	$8,500,000,000
Southern group, as defined by the carriers	2,000,000,000
Western group, as defined by the carriers, including both the Western and Mountain-Pacific groups herein designated	8,100,000,000
Total	$18,600,000,000

It is not deemed necessary, for present purposes, to apportion the aggregate value of the properties in the western group so as to show the value of the properties in the western and Mountain-Pacific groups as we have here defined them. Many of the important railroads are in and serve both groups into which we have divided the carriers' western group.

The record does not permit the estimation of the aggregate value of the properties of electric railways, other than those operated by steam roads, or of the boat lines, both of which have been made the subject of independent representations in this proceeding.

The Constructive Year

In estimating their financial needs for the immediate future the carriers have based their figures on the actual performance for the 12-month period ended October 31, 1919, with certain adjustments to be subsequently described. This period was considered by the carriers more representative of normal conditions than the calendar year 1919 for the reason, among others, that the bituminous coal strike, began on November 1, 1919, ending early in December. Accounting committees were formed in the eastern, southern and western groups, and in December, 1919, questionnaires were sent by those committees to the carriers in each group with a view to obtaining a "constructive" showing for the year ended October 31, 1919. Without discussing in too great detail the methods and bases employed in compiling the questionnaires it may be stated that an effort was made to devise a constructive year that would reflect increased prices of materials, wages, taxes and rates effective when the questionnaires were answered, to wit, January and February, 1920. This information was intended to show, as nearly as practicable, what increased revenues the carriers would require to enable them to earn 6 per cent on the book cost of their properties, on the basis of the tonnage actually moved during the year ended October 31, 1919, and on the basis of the prices, wages, taxes, and rates effective when the questionnaires were answered. Still further adjustments of the figures were subsequently made to make provision for increases in prices, additional railway-mail pay, and other items that became effective after the answers to the questionnaires were received.

The difficulty of making an accurate statistical analysis of the results of railway operation during the constructive year devised by the carriers is due in part to the incompleteness of their own figures. The questionnaire requested the individual railroads to follow the general instructions therein set forth. A number of small carriers failed to answer the questionnaire, and we are asked to assume that the directions—which were none too specific—were accurately and faithfully followed by the other carriers. The evidence indicates that such an assumption is unwarranted. An exhibit filed by the southern carriers shows that in adjusting freight revenue for the constructive year only six of them showed a credit to freight revenue; some of them made no adjustment whatever of freight revenue; and still others showed a debit. There is no adequate explanation of record of such widely divergent results, but they strongly indicate that the method followed by the various carriers in responding to the questionnaire was not uniform. To the extent that different methods were employed the results are subject to criticism. A specific request by us that the carriers furnish "all underlying details and formulas upon which the constructive increases estimated for 1920 were based for the three groups" met with a response so general in character that it does not serve the purpose intended. Numerous other criticisms of the carriers' figures for the constructive year—some of which are justified by the facts—were made at the hearing. The inadequacy of the data furnished by the carriers increases substantially the difficulty of forecasting the results of operation for the two-year period.

Some of the important adjustments of revenues and expenses made subsequent to the filing of the questionnaire were based on data hastily obtained, in part by telegraph, from a few carriers regarded as typical. There is no assurance that this information was compiled on a uniform basis and no proof that it is accurate. The agents of the individual carriers by whom the information was originally compiled were not present at the hearing. Although an honest effort has apparently been made to provide the best information that could be obtained in the limited time available, it is necessary to call attention to the fact that the details of a number of the adjustments, both in the original questionnaire and subsequent thereto, can not be accepted as accurate.

The proposals of the carriers as considered throughout the hearings made no allowance for increased wages not then effective. In the course of the hearings it was stated that a decision of the United States Railroad Labor Board would soon be forthcoming granting certain increases in the wages of railway employees, and it was generally agreed that we should give due consideration to the award of that board when made. On July 20, 1920, after the close of the hearings and oral argument, the Labor Board announced a decision awarding approximately $618,000,000 as increased wages. In discussing the results of operation in each group we shall deal first with the evidence as presented, without reference to the award of the Labor Board, and shall thereafter refer to the award and to its effect upon the expenses of the carriers in the several groups.

Revenue Needs of Carriers in Eastern Group

The eastern carriers ask that they be permitted to earn an annual net railway operating income of $559,409,933, which represents 6 per cent on a book cost of $9,323,498,898. That the rates of transportation now in effect fall far short of yielding the return sought by the eastern carriers is indicated by the following:

NET RAILWAY OPERATING INCOME

As sought by the carriers	$559,409,933
Actual, year ended October 31, 1919	220,981,068
Year ended October 31, 1919, adjusted	112,465,003
Year ended October 31, 1919, finally adjusted	18,008,219

It will be noted that the eastern carriers estimate that on the basis of the costs effective when the adjusted figures were compiled they will fall short by over $500,000,000 annually of earning the net railway operating income to which they claim they are entitled. The carriers proposed to obtain all the additional revenue from freight traffic, and estimated that a general increase of 30 per cent in charges for freight transportation was needed.

The following table compares the "standard return" of class I carriers in the eastern group with the figures shown in the last preceding table:

NET RAILWAY OPERATING INCOME, EASTERN GROUP

Standard return	$354,711,079
Actual year ended October 31 1919	220,981,068
Year ended October 31, 1919, adjusted	112,465,003
Year ended October 31, 1919, finally adjusted	18,008,219

Not only has there been a sharp decline in railway operating income during the last three or four years, but the operating ratio has increased at a rate that causes serious concern. For the period of five years, beginning with 1912 and ending with 1916, the eastern carriers were spending out of every dollar of operating revenue received approximately 71 cents for operating expenses. This increased to 75.03 cents in 1917, to 85.82 cents in 1918, to 88.51 cents in 1919, and to 97.68 in the first four months of 1920. When it is considered that operating expenses do not include railway tax accruals, uncollectible railway revenues, joint facility rents, hire of equipment, rents for lease of road, interest on funded and unfunded debt, and other fixed charges, dividends, and certain other items, the above figures are significant. The operating ratio for the first four months of 1920 means that during that period, after payment of operating expenses, there was left 2.32 cents out of each dollar for the payment of taxes and the other items just mentioned. During the period of six years, beginning with 1912 and ending with 1917, it took approximately 28.79 cents out of every dollar of operating revenue to pay the items mentioned which are not included in operating expenses and which are not considered in determining the operating ratio.

If the basis of the carriers' calculations be accepted as proper, an analysis of the results of operation for carriers

in the eastern group during the first four months of the calendar year 1920 indicates that the eastern carriers were conservative in estimating their revenue needs. It will be recalled that these carriers, after finally "adjusting" the figures for the constructive year, arrived at a net railway operating income of $18,008,219. The actual results of operation for the first four months of the current calendar year show a net railway operating deficit of $870,210. Because of unusual conditions that obtained in the eastern group during the early part of the year it is unsafe to assume that the results for the first four months fairly indicate what the results will be for the year, and the figures are referred to merely to show that during this period the situation was even more unfavorable than the carriers predicted.

The tonnage for the year 1919, the first 10 months of which were included is the lowest since 1915.

It is estimated that the wage award made by the Labor Board under date of July 20, 1920, will add approximately $314,562,000 annually to the operating expenses of the carriers in the eastern group.[1] This is equivalent to 12.2 per cent of the total railway operating revenue of the eastern carriers, as finally adjusted by them for the constructive year.

Revenue Needs of Carriers in Southern Group

The financial condition of the carriers in the southern group as a whole is more favorable than that of the carriers in either of the other groups. The southern carriers ask that their rates be increased sufficiently so that they may earn a net railway operating income of $136,049,091, which represents a return of 6 per cent on a book cost of $2,267,484,847. The extent to which present rates fall short of yielding the return sought by these carriers is shown by the following:

Net railway operating income as sought by the carriers..	$136,049,091
Standard return	138,231,029
Net railway operating income actual, year ended October 31, 1919	51,208,428
Adjusted net railway operating income, year ended October 31, 1919	36,743,074
Finally adjusted net railway operating income, year ended October 31, 1919	16,269,429

It will be noted that on basis of the predictions of the carriers the net railway operating income for this district will be approximately $120,000,000 lower annually than the sum which the carriers contend they should receive under the law. They estimated that a general increase of approximately 31 per cent in freight revenue would be necessary to return the amount claimed.

During the six years ended 1917 the railway operating income of these carriers averaged $126,000,000 annually; during the four years ended 1915 it averaged $108,000,000 annually; during 1916 and 1917 it averaged $163,000,000 annually; in 1918 it was $147,711,910, which was greater than in any previous year except 1916 and 1917. In 1919, however, it declined to $75,546,591. During the six years ended 1917 the operating ratio of these carriers varied from 65.04 in 1916 to 74.1 in 1914. In 1918 it was 77.66, and in 1919 it rose to 86.08, and for the first four months of 1920 it was 86.22. During the six years ended 1917, 27.05 cents out of every dollar of revenue earned by the carriers of this district was required to pay railway tax accruals, uncollectible railway revenues, rents for use of joint facilities, equipment, and leased roads, interest on funded and unfunded debt, dividends, and other income deductions.

The reports of class I carriers of this district to us for the first four months of 1920 how a net railway operating income of $23,399,151. Deducting the railway mail pay applicable to prior years stated by the carriers to have been taken into account in those months, in amount $8,287,241, leaves $15,111,910 as the actual result of operations. This figure should be compared with the estimate of $16,269,429 made by these carriers on the basis of a whole year's operations. The southern carriers substantially overestimated their needs, even assuming that the basis of their calculations is correct. As $15,111,910 covers only class I roads, $80,519 may be added for the remaining carriers, which produces an aggregate of $15,192,429.

During the period 1914 to 1919, inclusive, the net railway operating income of the first four months in each year averaged 32.15 per cent of the aggregate for the year. Equating the actual results of the first four months of 1920 on this basis produces an estimated net railway operating income of $47,254,834. Subtracting from this figure the carriers' estimate of $943,920 for increased allowances to private car owners, and $7,820,000, their estimate of increased fuel costs, reduces it to $38,490,914. Comparing this result with $136,049,091, which the carriers urge they are entitled to receive under the law, indicates a deficiency of $97,558,177 in net railway operating income.

The amount of freight and other transportation revenue, excluding passenger, mail, and express, reported to us for the first four months of 1920 by class I carriers aggregated $152,443,828. To this amount $8,226,302 has been added to cover revenues of carriers other than class I carriers, resulting in a gross estimated revenue of $160,670,130. During the years 1915 to 1919, inclusive, freight and other transportation revenue, excluding passenger, mail, and express, for the first four months of each year averaged 31 per cent of the aggregate for the year. Equating the actual revenues of the first four months of 1920 upon this basis produces estimated revenues for an assumed period of twelve months of $518,290,742.

It is estimated that the wage award made by the Labor Board under date of July 20, 1920, will add approximately $68,598,000 annually to the operating expenses of the carriers in the southern group. This is equivalent to 11.8 per cent of the total railway operating revenue of the southern carriers as finally adjusted by them for the constructive year.

Revenue Needs of Carriers in Western Group

The western carriers ask that their rates be fixed on a basis that will permit them to earn a net railway operating income of $537,833,024, which represents a return of 6 per cent on a book cost of $8,963,883,753. The extent to which the rates of transportation now in effect fall short of yielding the return sought by these carriers is indicated by the following comparison:

Net railway operating income as sought by the carriers....		$537,883,024
Standard return		401,215,984
Actual net railway operating income year ended October 31, 1919	$293,212,870	
Less corporate income charges—net debit.....	28,027,616	
		265,185,254
Adjusted net railway operating income year ended October 31, 1919		76,831,658
Finally adjusted net railway operating income year ended October 31, 1919		184,939,759

It will be observed that on the basis of the predictions of the carriers, the net railway operating income for this district will be approximately $350,000,000 lower than the annual sum to which they claim to be entitled. They estimated that a general increase of approximately 24 per cent in freight revenue was required to return the amount claimed.

During the six years ended 1917 the railway operating income of the carriers averaged $386,000,000 annually; during the four years ended 1915 it averaged $347,000,000 annually; during the years 1916 and 1917 it averaged $464,000,000 annually; in 1918 it dropped to $330,320,330; and in 1919 it declined further to $302,857,219. During the six years ended 1917 the operating ratio ranged from 62.69 to 67.68; in 1918 it rose to 78.14, in 1919, to 80.96, and for the first four months of 1920 to 86.06.

The reports of the class I carriers of this district to us

[1] The carriers estimate that the wage award will add approximately $625,000,000 annually to the operating revenues of all carriers. A statement received from the Labor Board states the figure as approximately $618,000,000. For the purposes of this report we have used the latter figure.

for the first four months of 1920 show a net railway operating income of $56,104,721. Deducting the railway-mail pay applicable to prior years, stated by the carriers to have been taken into account in these months, in amount $27,790,388, leaves $28,314,333 as the actual result of operations. Adding to this figure $1,209,969 to cover net railway operating income of carriers other than class I, produces $29,524,302.

During the period 1914 to 1919 the net railway operating income of the first four months in each year averaged 23.29 per cent of the aggregate for the year. Equating the actual results of the first four months of 1920 on this basis produces an estimated net railway operating income of $126,768,149, the net railway operating income of an assumed period of twelve months, on the basis of operating costs which prevailed during the first four months of 1920. Subtracting from this figure $3,789,728, which is the estimate of the carriers for increased allowances to private car owners, and $21,254,298, their estimate of increased fuel costs for the year, reduces it to $101,724,123.

The amount of freight and other transportation revenue, excluding passenger, mail, and express reported to us by class I carriers for the first four months of 1920, aggregated $498,001,006. To this amount $16,462,794 has been added to cover revenues of carriers other than class I carriers, resulting in a gross estimated revenue of $514,463,800. During the years 1915 to 1919, inclusive, freight and other transportation revenue, excluding passenger, mail and express for the first four months of each year, averaged 28.52 per cent of the aggregate for the year. Equating the actual revenues of the first four months of 1920 upon this basis produces $1,803,870,266, as the estimated revenues of an assumed period of twelve months based on the operations of the first four months of 1920.

The carriers estimate that the wage award made by the Labor Board under date of July 20, 1920, will add approximately $234,840,000 annually to the operating expenses of the carriers in the western group. This is equivalent to 11.2 per cent of the total railway operating revenue of the western carriers, as finally adjusted by them for the constructive year.

Extent and Method of Obtaining Needed Additional Revenue

As above noted, in the original applications the carriers proposed to obtain the desired additional revenue by general percentage increases in the respective groups, applicable to freight traffic only. No increases were suggested upon passenger, express, or mail traffic. In their amended proposals, following the wage award of the Labor Board, they propose to make increases upon all classes of traffic.

Passenger Traffic

During the last nine years there has been a substantial increase in the number of revenue passenger miles. The increase for the country as a whole from 1911 to 1919 was over 40 per cent.

Passenger fares were increased to a minimum rate of 3 cents per mile on June 10, 1918, resulting in an increase of 50 per cent where 2 cents per mile was the basic fare, 20 per cent where 2½ cents applied, and no increase where the fare was 3 cents or higher. It appears that rates per passenger mile have increased since 1916, as follows: In the eastern group, 27 per cent; in the southern group, 27½ per cent; and in the western group, 22½ per cent. The relatively small increase in the western group is due to the fact that a 3-cent basis prevailed more generally in that territory than in other parts of the country.

In part because of conditions growing out of the war the passenger traffic has become relatively more profitable during the last three years. A reduction in the number of passenger trains occurred simultaneously with a substantial increase in the number of passengers carried, resulting in heavier loading of passenger cars and trains. In 1919 the number of passenger miles was 30 per cent greater than in 1916, but the number of passenger-train miles was 12 per cent less. Thus, in spite of the curtailment in service, the passenger revenue for the railroads as a whole was greater by $470,362,485 in 1919 than in 1916. This increase in revenue is regarded by the carriers as net, "almost more than net, because it was actually moved in fewer trains."

Following request of counsel for certain shippers, the carriers provided for the record an analysis of the freight and passenger earnings and expenses for certain designated railway companies for the calendar year 1919. In making this analysis, the expenses that could not be allocated solely to freight or passenger traffic were apportioned generally in accordance with instructions issued by us on January 1, 1920. A recapitulation of the figures showing the ratio of freight and passenger service expenses to freight and passenger revenues is as follows:

Railroad	Operating ratio freight service	Operating ratio passenger service
Atchison, Topeka & Santa Fe	74.53	67.84
Atlantic Coast Line	89.54	80.21
Baltimore & Ohio	97.88	75.96
Chicago & North Western	90.41	75.93
Chicago, Burlington & Quincy	85.8	67.98
Erie System	95.74	89.72
Great Northern System	80.70	84.08
Louisville & Nashville	95.3	76.9
New York Central	91.45	60.22
Cleveland, Cincinnati, Chicago & St. Louis	83.45	63.84
Pennsylvania Railroad, East	98.16	99.16
Michigan Central Railroad	81.20	58.50
Southern Railway	98.50	78.40

It will be noted that in the great majority of instances the operating ratio was decidedly more favorable for the passenger traffic than for the freight traffic. However, there appears to be a wide discrepancy between the figures presented for the various lines, and too much reliance should not be placed upon this showing. Resumption of more frequent train service will tend to increase the operating ratio for passenger traffic. The carriers contend that it is uncertain whether an increase in the general level of passenger fares will yield increased revenue proportionate to the increase in the fare level, because of possible reduction in travel following a material increase in fare.

The foregoing would seem to indicate that such increase as is approved upon passenger traffic may properly be less than the percentage increase applied to freight traffic.

There has also been suggested the desirability of obtaining additional revenue for the rail carriers from an extra charge placed upon passengers in sleeping and parlor cars. Such a charge amounting to one-half cent per mile was in effect for a brief period during federal control. A charge of this character has much in its favor. Unquestionably the service is more valuable to the passengers, and more expensive to the rail carriers.

The Pullman Company opposes the re-establishment of a surcharge for Pullman occupancy on the ground that such a charge reduces the travel in cars of that type. It submitted a statement showing the revenues by weeks for the period March 1 to September 30, 1918, compared with corresponding weeks of the previous year. The surcharge imposed by the director general was in effect from June 10 to November 30, 1918. The statement submitted by the Pullman Company shows that beginning with the third week of June there was a reduction in the revenue as compared with the same weeks of the previous year, whereas, during the period from March 1 to June 15, the earnings in 1918 were greater than in 1917. These figures appear, in part at least, to sustain the contention that the surcharge operated to reduce revenues.

An analysis of the situation, however, indicates that factors other than the surcharge were in part responsible for the decreased revenue from passengers in sleeping and parlor cars in 1918, as the very large reduction in service rendered

during that year undoubtedly accounts for a portion of the reduction in revenue. It is well known that the policy of the Railroad Administration at that time was to discourage luxury travel and reduce the mileage of sleeping and parlor cars, particularly the latter.

Figures quoted above in this report[2] indicate that the total number of passenger miles in 1918, notwithstanding that the surcharge was in effect for half the year, increased 8 per cent over the previous year and were greater than in any year prior thereto, which indicates that travel on the whole was not materially affected by the surcharge.

In the amended application of the carriers following the wage award, it is proposed that a surcharge on passengers in sleeping and parlor cars be established amounting to 50 per cent of the charge for space occupied in either class of equipment. The carriers estimate that a charge of this amount will produce in their three groups respectively approximately the following amounts of revenue:

Eastern group	$17,556,108
Southern group	5,582,036
Western group	20,231,200
Total	$43,639,344

We conclude that increases as indicated next below may be made by all steam railroads subject to our jurisdiction serving the territory embraced in the groups hereinbefore designated.

1. All passenger fares and charges may be increased 20 per cent. The term "passenger fares" may be considered to include standard local or interline fares; excursion, convention, and other fares for special occasions; commutation and other multiple forms of tickets; extra fares on limited trains; club car charges.

2. Excess baggage rates may be increased 20 per cent, provided that where stated as a percentage of or dependent upon passenger fares the increase in the latter will automatically effect the increase in the excess-baggage charges.

3. A surcharge upon passengers in sleeping and parlor cars may be made amounting to 50 per cent of the charge for space in such cars, such charge to be collected in connection with the charge for space, and to accrue to the rail carriers.

4. Milk and cream are usually carried in passenger trains, and the revenue therefrom is not included in freight revenue. Rates on these commodities may be increased 20 per cent.

Switching and Special Services

The carriers' original petitions asked for percentage increases in freight revenue only. In their reports to us, revenue from switching and certain other special services is stated separately from freight revenue, and therefore, accepted literally, the proposal would result in no increases on switching service. However, it is conceded that the submission of the proposal in this form was due to a misunderstanding, and it is now proposed to apply increases to switching and other special services as well as to freight rates proper.

No substantial reasons have been developed for exempting charges for switching from the general increases. It is our opinion that the charges for this service should be increased, together with the charges for transit, weighing, diversion, reconsignment, lighterage, floatage, storage (not including track storage), and transfer, where the carriers provide separate charges against shippers for such services. The charges for other special services are not to be subject to the general increases herein authorized. The percentage to apply should be determined by the percentage applicable in the group where the service is performed, except that at points on the boundary line between two groups taking different percentages the higher percentage should apply.

It should be understood that where tariffs now provide for the absorption by one carrier of the charges of another carrier in specific amounts such absorptions should be revised in harmony with the increases in charges herein authorized.

[2] [The table has been omitted from this abstract.—Ed.]

Freight Rate Increases

In their original applications the carriers proposed general percentage increases in freight rates in the respective groups as follows: Eastern, 30 per cent; Southern, 31 per cent; Western, 24 per cent.

Following such general percentage increases, they indicate their willingness, where necessary, to revise rates to restore in so far as is deemed practicable existing recognized relationships and differentials, and as to coal and grain in certain important situations such readjustments are proposed in this proceeding. It is stated that the percentage method is not only on the whole the fairest to all interests by distributing the burden in proportion to the haul, but that it is the only way in which the desired increased revenue may be obtained without complications and delays due to tariff difficulties and to the lack of accurate statistics from which to determine the amount of revenue which may reasonably be expected from flat or maximum increases on particular commodities.

It would be desirable, if it were possible, to determine definitely the commodities, the sections of the country, and even the individual rates which can best bear the burden of increases, and the relationships of the rates and differentials which will be disturbed by a percentage increase. This is precluded by the necessity of prompt action upon the main issues presented.

Percentage Increases Versus Flat Increases and Maintenance of Differentials and Relationships

Many shippers have directed their testimony and argument principally to the method of increasing the rates rather than to the amount of the increases. Shippers are far from unanimous in their views and may be divided into three groups: (a) those who seek the preservation of existing relationships and differentials either by specific or flat increases or by applying the percentage increase to base rates and employing in connection therewith differentials from and to other points; (b) those who advocate a percentage advance in all instances, contending that differentials should increase in the same ratio as all other rates and charges; and (c) those who advocate a percentage increase with a maximum.

While established or "differential" relationships of rates are not general, there are many such adjustments; some fixed by the carriers and others by us, and it is contended by some shippers that in such cases it is desirable in readjusting the rates to maintain the differentials.

Many relationships in cents per unit were disturbed by the increases made by the director general, except upon a few commodities of heavy movement which were subjected to specific increases in cents or dollars and cents per unit. A relatively small proportion of these relationships have subsequently been restored.

It is evident that there are many competitive situations where no recognized differentials have ever existed but where, nevertheless, the rates have been made to reflect competitive conditions. Such situations greatly outnumber those where "fixed relationships" have been established.

In favor of maintaining differentials, it is said that they have been fixed in most cases after careful investigation, and that they represent the proper measure of differences in the rates; that often they represent the maximum differences which will permit more distant shippers to compete with those in close proximity; that to increase rates by a percentage tends to decrease the radius in which goods are marketed, and thus by lessening competition prices are advanced; and that in all cases the margin of profit has not increased proportionately to prices.

Those who oppose maintaining differentials at this time contend that the value of the dollar expressed in terms of

commodities shipped today is in reality but one-half its former value, and, therefore, a differential which was fixed at a given amount several years ago should, to have the same economic effect, be greater today; that there have been general increases in the prices of practically all commodities, in wages and in the charges for nearly all services, and that differentials should not be made an exception to the rule; and that as increased operating costs are the underlying reason for the proposed increased rates, the additional service represented by the differential, being more expensive than heretofore, should pay greater rates as well as other services.

The adoption of specific increases in cents per unit instead of percentage advances will, of course, maintain existing relationships. However, the carriers almost uniformly oppose this method and it is not generally advocated by shippers. Further, the difficulty of its adoption is apparent because of the lack of reliable statistics from which to determine the probable additional revenue from a given increase. It should also be noted that everyone who advocated this method insisted that flat increases be applied but once to combination rates. The complicated nature of tariff publication to make such an arrangement effective, when different percentages of increase are being made in different groups, is apparent.

Without attempting to pass finally upon the question whether in given cases differentials should or should not be maintained, it is evident that no general program of maintaining differentials can be made effective coincident with the increases here approved without materially delaying their effective date, as definite testimony covering individual situations is before us in only a very few cases. To maintain differentials by applying the percentage increases to basing rates and adding thereto existing differentials can not be done without materially lessening the amount of additional revenue to be derived by the carriers, as generally differentials are added to rather than deducted from base rates.

After carefully considering the situation we find that with the exceptions hereinafter noted general percentage increases made to fit the needs of the groups of lines serving each of the four groups must be considered for present purposes the most practicable. This conclusion is without prejudice to any subsequent finding in individual situations.

Provisions for Improvements, Betterments, or Equipment

Section 15a of the interstate commerce act contains the following proviso:

Provided, That during the two years beginning March 1, 1920, the commission shall take as such fair return a sum equal to 5½ per centum of such aggregate value, but may, in its discretion, add thereto a sum not exceeding one-half of one per centum of such aggregate value to make provision in whole or in part for improvements, betterments or equipment, which, according to the accounting system prescribed by the commission, are chargeable to capital account.

The increases here authorized are intended to yield the additional ½ of 1 per cent. The record leaves no doubt as to the needs of the country for additional transportation facilities. All carriers participating in the increases will be expected to make appropriate provision for additional improvements, betterments, or equipment of a character chargeable to capital account and to make report to us semi-annually, as of December 31 and June 30, showing what portion of the increased revenue resulting from the increases here authorized has been devoted to that purpose.

Conclusion As to General Increases

We are of opinion and find that the following percentage increases in the charges for freight service, including switching and special services,[3] together with the other increases hereinbefore approved, would under present conditions result in rates not unreasonable in the aggregate under section 1 of the act and would enable the carriers in the respective groups, under honest, efficient, and economical management and reasonable expenditures for maintenance of way, structures, and equipment, to earn an aggregate annual railway operating income equal, as nearly as may be, to a return of 5½ per cent upon the aggregate value, for the purposes of this proceeding, of the railway property of such carriers held for and used in the service of transportation and ½ of 1 per cent in addition; eastern group, 40 per cent; southern group, 25 per cent; western group, 35 per cent; Mountain-Pacific group, 25 per cent.

In view of the different percentages of increase herein approved, it becomes necessary to make provision for rates between the various groups:

(1) Where rates are constructed by the use of combinations upon gateways between any two groups, the through rates should be increased by applying to each factor its respective percentage.

(2) Rates between points within a group and points on the border line of such group should be increased according to the percentage applicable to the group. Where a river constitutes a boundary line between two groups, points on both banks thereof shall be considered as border-line points.

(3) Joint or single-line through rates between points in one group and points in other groups should be increased 33⅓ per cent.

(4) In cases where the rates over different routes between the same points would, by a strict application of the varying percentages of increase herein approved, be subject to different percentages, the lowest percentage applicable to any of the routes may be applied to the rates over all of such routes.

In the construction of rates in accordance with these findings it is not intended that the group boundaries hereinbefore designated should be strictly observed, but the territorial boundaries heretofore recognized should be observed. For example, Richmond, one of the so-called Virginia cities, should continue on the basis which it has heretofore enjoyed.

The above findings apply to all steam railroads subject to our jurisdiction, including so-called "short lines," but not to railroads in Alaska.

While the New England carriers are included in the eastern group and are subject to the percentage for that group, the evidence as to the disproportionate needs of the New England lines makes it desirable that the carriers give careful consideration to the divisions of joint rates accruing to these lines.

Individual Commodities

Considerable evidence was presented with respect to the rates upon a number of individual commodities, including coal, lumber, cement, fruits and vegetables, petroleum, brick, sand, gravel and rock, asphalt, slag, grain, live stock, packing-house products, ore, bullion, potash, salt, fertilizers, and terra cotta.

Various issues have been raised or are presented as to these commodities, the principal of which are as follows: (a) Whether there should be departures from the general percentage increases by maintaining differentials or by the application of specific increases instead of percentages; (b) whether maximum increases should be provided in order to avoid the full percentage increase upon relatively high rates from distant points of production to important markets; (c) whether because of the high cost of production and marketing of some commodities, the percentage increases proposed by carriers will result in a cost delivered at points of market or consumption so great as to curtail production and distribution, an undesirable situation at this time of world shortage of commodities; (d) whether a more general necessary use warrants a lower transportation charge; (e)

[3] The increases should apply to special services in accordance with our findings under the caption "Switching and Special Services," *supra*.

whether the rates effective June 24, 1918, before General Order No. 28 became effective, should be made the basis of readjustment now by applying thereto a 25 per cent increase and superimposing thereon the percentage increases now found reasonable. Our general conclusions as to the impracticability of specific increases or of attempting now to maintain differentials dispose of a number of these contentions. It should also be said that while we do not here sanction specific increases in lieu of percentages, we are not to be understood as expressing disapproval of increases of that character made by the director general. Such increases were made under war conditions and under circumstances that do not now exist.

Our attention was called at the hearing to a number of formal complaints now pending, and we are asked to except from the general increase the rates in issue in those complaints. This would have the effect, during the pendency of those proceedings, of giving the rates in question a preferred standing and of exempting them from the general increase. In our opinion, a fairer disposition will be attained by applying the general increase to these rates, with the understanding that this action is without prejudice to any future findings.

Coal.—Carriers serving the Pennsylvania-Ohio-West Virginia coal fields propose to continue the existing differentials in coal rates, and have worked out a scheme of rates to effect that result. Carriers in the southern and western groups propose to ignore existing differentials in coal rates within those groups. The proposal of the eastern lines to preserve existing relationships is approved, and carriers in the other groups should work out a similar plan for restoring the relative adjustments of coal rates now obtaining in those groups. An effort should be made promptly to devise rates in each group that will yield, as nearly as practicable, the same revenue in the aggregate as would be afforded by a straight percentage increase on the bases herein approved.

Lumber.—Lumber moves in large volume, and it is under ordinary conditions a commodity of comparatively low value and highly competitive in nature. It is produced in almost all parts of the country. The greatest consuming region is in the middle west and the states east of the Mississippi River and north of the Ohio, including New England. Lumber from both the west and the south is marketed in large volume in this region, and the competition between the two producing sections is keen.

There is no definite or fixed relationship in the rates from the south and the west to the consuming territory described, but carriers from each of these sections have endeavored to maintain rates relatively so adjusted as to permit free movement from each. The volume of production in the west has grown materially in the past decade, until today it is such that if excluded from eastern markets it is claimed a considerable curtailment of production will result.

The director general applied a maximum increase of 5 cents upon lumber, which had the effect of maintaining in most cases the existing spread in cents per 100 pounds between southern and western lumber in the northern and eastern markets. The western lumber producers urge in this proceeding also the adoption of a maximum.

Most of the southern producers, including those in the Carolinas and others who ship on comparatively short hauls to the northern markets, urge the application of a straight percentage increase.

For the purposes of this report it is our opinion that the percentages hereinbefore approved should apply to this commodity.

Petroleum and its products.—The principal sources of the petroleum marketed in the United States are in the southwest, which will be termed the midcontinent field; in Wyoming, in California, and in Mexico.

In the past ten years many refineries representing a considerable investment have been established in the midcontinent field and the refined oil there produced is marketed to a considerable extent in the middle west and in the states east of the Mississippi and north of the Ohio.

In competition with the refineries of the midcontinent field in the northern and eastern markets are the refineries of Mexican petroleum located along the Atlantic coast and other refineries in the northern and eastern states, which obtain their crude oil in large part from the midcontinent and other fields through pipe lines, though some of these refineries use rail transportation for the movement of their crude oil.

The director general imposed on petroleum a flat increase of 4½ cents per 100 pounds in lieu of the standard 25 per cent. The midcontinent shippers claim that a percentage increase now applied without modification to petroleum will in all probability tend to restrict the long-haul movement by rail. Other shippers contend that the percentage increase should be applied without exception.

It is concluded that no exception to the general percentage increases herein approved need at this time be made upon petroleum or its products. As has been observed in connection with other situations, the carriers should give careful consideration to the effect of the percentage increases approved on petroleum and, if necessity arises, should arrange for such modifications as the situation may seem to warrant.

Fruits and Vegetables.—Fruits and vegetables are produced in large volume in the far western states and in the south, particularly in Florida. These products are shipped in season to practically all sections of the country, but the most important consuming territory lies east of the Mississippi river and north of the Ohio. Comparatively long hauls to the latter territory are involved both from the south and from the Pacific coast states, and it has been contended that the effect of the proposed percentage increases applied to these rates will produce charges so high as to restrict consumption because of the resultant high delivered cost.

It has been shown that in some instances it has not been possible to market profitably some fruits and vegetables, but the facts before us in this proceeding do not warrant the conclusion that transportation charges are the controlling factor in producing this result, or that the percentage increases applied to the present rates will in fact have the effect feared by the fruit and vegetable shippers.

The western apple producers claim that in the past they have had difficulty in marketing in the east and that percentage increases will add materially to this difficulty. It appears, however, that the size, varying widely from year to year, of the eastern and western crops, respectively, is an important factor in determining the prices received by western growers and the ability to market in the east.

A number of the fruit and vegetable rates covering long hauls, upon which there is a heavy movement, are now before us in other proceedings, and our prior observations as to the effect of our present findings with respect to rates so pending upon complaint are applicable. It is concluded that no exceptions to the general percentage increases will now be made.

Sand, Gravel, Rock, and Slag.—The director general increased rates on sand, gravel, and stone by specific amounts. Rates on slag in the east were increased 25 per cent and in the south generally by 1 cent per 100 pounds, the same as applied to sand and gravel.

Shippers of all of these commodities contend that the 1-cent increase made by the director general averaged much more than 25 per cent, and that to apply to the present rates the percentage increases proposed by the carriers will produce rates so high as to materially restrict movement. The eastern shippers of sand and gravel also contend that the different method under General Order 28 of increasing the rates on slag as compared with sand and gravel has resulted

in preference of slag. The eastern carriers concede that rates on slag should not be less than upon sand and gravel.

We are not convinced that exceptions should be made at this time from the percentages approved for traffic generally. However, the record does suggest that rates in eastern territory are out of proportion to those in the other groups. The carriers have indicated a willingness promptly to readjust rates in cases where hardship results from the general percentage increases, and their special attention is called to these commodities to the end that such action may be taken as the facts may seem to warrant.

Live Stock and Packing-House Products.—Shippers contend that the condition of the live-stock industry is such as to make it probable that the full percentage increase proposed by the carriers will discourage production and distribution. Live stock is produced throughout the country, but the consuming markets in the north and east are to a considerable extent dependent upon the stock produced in the west and southwest. Drought conditions have prevailed here and there in recent years and the present condition of the producers does not appear favorable. However, it is not clear that this results from transportation charges.

The director general in increasing rates on live stock applied a maximum of 7 cents per 100 pounds, while the full 25 per cent increase was applied to packing-house products. To apply again a maximum to live stock, as requested by shippers, without similar maximum upon packing-house products, will in all probability tend to lessen the movement of the southwestern and western stock to local packing plants and increase the movement to the larger and more distant plants in the middle west.

One of the principal difficulties of which complaint has been made by the live-stock producers is the lack of prompt and efficient service. To encourage the long-haul movement as against the short-haul movement under present conditions of car supply would tend to increase rather than reduce the transportation difficulties.

From Montana to Chicago the rate on cattle is 55 cents and on hogs 62 cents per 100 pounds. These are among the highest rates now in effect applicable to heavy movements. Under the general basis of increase herein approved, these rates would be advanced 18 cents and 21 cents, respectively, approximately one-fifth cent per pound.

It is concluded that the facts before us at this time do not warrant any exception to the percentage method of increasing the rates on either live stock or packing-house products.

Iron ore.—A considerable proportion of the iron ore consumed in the United States originates on ranges in Minnesota and Michigan near the head of Lake Superior. This ore moves to furnaces on Lake Michigan and Lake Superior; to furnaces on Lake Erie and in Pennsylvania, Ohio, and other states. The movement is by rail to the upper lake ports, and when destined beyond, by lake vessels to the lower lake ports.

Because of the keenly competitive situation between the respective furnaces, the director general adopted a specific increase of 30 cents per ton upon iron ore in lieu of a percentage, which was applied to the movement from the Michigan and Minnesota ranges to the upper lake ports, but not from lower lake ports to eastern destinations, thus resulting in an equal increase in cents per ton for the rail transportation to each of the competing furnaces. Under this plan the rates of the western carriers up to the lake ports were increased approximately 57 per cent, whereas the rates of the eastern carriers from the lower lake ports were not increased.

In this proceeding the eastern carriers propose first to apply an increase of 22 cents per ton and then impose thereon the general percentage increase. The testimony of ore shippers is conflicting, some proposing no further increases from the ranges to the lake ports, some favoring double increase in the rates from the lower lake ports, others proposing no exceptions to the general percentage increases proposed on traffic generally.

The returns made by the principal ore-carrying roads from the Minnesota ranges to Lake Superior ports indicate that such lines are in a much more prosperous condition than the western carriers generally.

It is concluded that at this time no increases should be made in the rates on iron ore from the Minnesota or Michigan ranges to Lake Superior or upper Lake Michigan ports. Other rates on iron ore may be increased according to the percentages herein approved.

Other Ores.—In some of the western states there is a considerable movement of low-grade ores, some of which are valued at $5 per ton or less. Shippers of these low-grade ores contend that further increases in the rates thereon will result in curtailing or destroying their movement. The evidence before us in this proceeding, however, does not warrant exceptions to the general increases at this time.

Grain and Grain Products.—On grain and grain products we are asked to apply in connection with such percentages as may be approved a maximum increase. For the same reasons that have led to the conclusion that neither specific nor maximum increases are desirable, we find that upon this record no exception should be made of the general percentages upon these commodities, except as noted.

There are in the middle west a number of important grain markets through which it has been customary to maintain an equalization of the rates from important producing states to important consuming regions, under which the sum of the rates into and out of the various markets is in most cases equal. This adjustment differs from an ordinary differential basis in that it is in substance providing an equal through charge over various routes between the same points by the use of sums of proportional rates rather than the establishment of joint through rates or of transit. The application of different percentages in the various groups will result in dislocation of this equalization.

Carriers and shippers unite in recommending that this equalization be continued because of the keenly competitive situation of the various markets and of the lines of railway serving such markets. However, sufficient detailed information to cover fully the situation is not before us upon this record. We find that the grain rates into and out of these markets may be increased by the general percentages herein approved, with the understanding that the carriers will, within thirty days after the service of this report, file tariffs restoring the equalization through the grain markets now enjoying that basis. This should be done after conference with interested shippers, and, if desired, we will lend our cooperation in the premises.

Port Differentials

The eastern carriers express of record their willingness to preserve existing relationships between the rates to and from the eastern ports. No objection to this proposal was made. This result can be readily accomplished for the reason that all rates in official classification territory between the ports and points west of the Buffalo-Pittsburgh line are based on the New York-Chicago rates. The base rates may be increased and existing port differentials maintained. It is our view that in filing the increased rates here authorized a provision of this character should be made.

Applications of Boat Lines

There have been filed in this proceeding applications for increased rates by a number of boat lines. The record shows that the expenses of the boat lines have increased in general at least in the same proportion as expenses of the railroads. Authority is therefore granted to boat lines subject to our jurisdiction to increase their rates to the same extent as in-

creases are herein granted to railroads operating between the same points or in the same territory. In the construction of rail-and-lake rates the present parity between Chicago and Duluth should be maintained.

Freight Rates of Electric Lines

Petitions have been filed in this proceeding by a national organization of electric lines, seeking permission to increase their rates in the same proportion as the rates of trunk lines are advanced. The operating costs of these lines have, on the whole, increased in approximately the same ratio as those of steam railroads. In some instances there is competition between the electric lines and the steam railroads. We conclude that the freight rates of electric lines may be increased by the same percentages as are approved herein for trunk lines in the same territory. This is not to be construed as an expression of disapproval of increases, made or proposed in the regular manner, in the passenger fares of electric lines.

Minimum Carload Charge, Minimum Class Scale, and Minimum Charge per Shipment

There is now in effect, with certain important exceptions, a minimum charge of $15 per car on carload traffic, applicable to line-haul movements. Their are also minimum class rates in the three classification territories. We find on the record no explanation of the underlying basis of the minimum carload charge or the minimum class scales, and no justification for increasing them. It is our understanding that these minima were imposed as a revenue measure in connection with rates substantially lower than those authorized in this report. We also find that the minimum charge per shipment for less-than-carload traffic should not be increased.

Specific Divisions

In many cases divisions between carriers are in the form of specific amounts per unit. It is obvious that unless divisions of this character be increased, such lines will receive no benefit from the increases herein approved, while the other carriers will receive more than the respective percentage increases applicable to the traffic. It is concluded that where carriers earn specific amounts as their compensation out of through rates or fares, such amounts should be increased in the same percentages as the through rates or fares. Where the divisions of carriers participating in through rates or fares are in fixed amounts per unit and are absorbed by other carriers, such absorptions should be increased in the same percentage as the through rates or fares.

Joint Rates To and From Foreign Countries

Nothing herein should be construed as authorizing any increases in the proportions of joint through rates to or from points in foreign countries accruing in such foreign countries. The proportions of such rates accruing within the United States may, however, be increased to the extent herein approved for domestic rates in the same territory.

Fourth Section Departures

In instances where the approval herein of different percentages of increase results in departures from the provisions of the fourth section of the act the carriers will be expected either to correct such departures by tariffs filed not later than November 1, 1920, or to file on or before that date applications seeking permission to continue such departures. Temporary fourth section relief will be granted by appropriate order.

Disposition of Fractions

In computing and applying all increased rates authorized herein fractions will be treated as follows:

Where rates are stated in amounts per 100 pounds or any other unit, except as provided in the succeeding paragraph, fractions of less than ¼ of a cent will be omitted. Fractions of ¼ of a cent or greater but less than ¾ of a cent will be stated as ½ cent. Fractions of ¾ of a cent or greater will be increased to the next whole cent. This rule will also be followed in computing passenger fares.

Where rates are stated in dollars per carload, including articles moving on their own wheels, when not stated in amounts per 100 pounds or per ton, amounts of less than 25 cents will be dropped; thus, $25.24 will be stated as $25. Amounts of 25 cents or more but less than 75 cents will be stated as 50 cents; thus, $25.65 will be stated as $25.50. Amounts of 75 cents or more but less than $1 will be raised to the next dollar.

Outstanding Orders of the Commission

An order will be entered modifying outstanding orders of the commission to the extent necessary to permit the carriers to make effective the increases herein authorized.

Effective Date of New Rates and Subsequent Adjustments

In view of the existing situation it is important that the increased rates be made effective at as early a date as practicable. The increases herein approved may be made effective upon not less than five days' notice to the commission and to the general public by filing and posting in the manner prescribed in the interstate commerce act. The authority herein granted will not apply to any rates, fares, or charges filed with this commission to become effective later than January 1, 1921.

Most of the factors with which we are dealing are constantly changing. It is impossible to forecast with any degree of certainty what the volume of traffic will be. The general price level is changing from month to month and from day to day. It is impracticable at this time to adjust all of the rates on individual commodities. The rates to be established on the basis hereinbefore approved must necessarily be subject to such readjustments as the facts may warrant. It is conceded by the carriers that readjustments will be necessary. It is expected that shippers will take these matters up in the first instance with the carriers, and the latter will be expected to deal promptly and effectively therewith, to the end that necessary readjustments may be made in as many instances as practicable without appeal to us.

An appropriate order will be entered.

Individual Opinions

Commissioner Eastman, in a concurring opinion, said in part:

I concur in the conclusions of the majority with respect to the increases in rates which should be permitted, but reach these conclusions by a somewhat different path. In the transportation act, 1920, Congress has attempted to lay down a rule by which we may be guided in determining the general level of railroad charges. In my opnion this rule can not now be applied. Under present conditions any forecast of traffic and expenses for the next 12 months is largely a leap in the dark. But the controlling fact is that any valid determination of "aggregate value" is now impracticable.

For some time the commission has been diligently engaged in the enormously difficult task of ascertaining and assembling the valuation data required by section 19a of the interstate commerce act; but it has not yet fixed final "value" for any road, and preliminary reports are available on but little more than 15 per cent of the mileage of the country. Nor have we as yet determined the principles by which "value" for rate-making purposes is to be estimated from the data accumulated. These principles are of vital consequence

to the country. It is my conviction that the valuation doctrines which are prevalent in railroad and public utility circles and which have been urged upon us are fundamentally unsound in many respects and subversive of the public welfare. Discussion of this subject, however, must be reserved for another occasion. For the present it is enough to say that even if the controlling principles had been enunciated, upon the evidence now before us any present finding as to "aggregate value" is without adequate foundation. I know the good faith in which the majority have proceeded, but I feel sure that it is not in the public interest, and I can not believe it necessary under the law that such an estimate should now be made. It will almost certainly be misunderstood and misinterpreted and may have an unconscious influence upon our valuation work for the future from which it ought to be free. As a side light upon the situation, it will, I think, be conceded that something more than estimates of this kind will be necessary when it comes to enforcing the closely related portion of the act which provides for a division with the government of any income which a carrier may earn in excess of 6 per cent upon value.

I was one of those who opposed the early termination of federal control of railroads. The truth in regard to federal control was then obscured, in part by natural misunderstanding of circumstances arising out of war conditions and in part by propaganda which was often deliberately mendacious. It was my hope that federal control might be continued, because it was evident that the transition back to private operation would create additional disturbance in a time of unsettlement and unrest, that existing railroad facilities could be made to do more work and meet more nearly the transportation needs of the country under unified control than under the control of many separate companies, that the additional facilities which are so greatly needed could now be provided more easily and more economically by public than by private capital, and that disturbances resulting from both rate increases and labor difficulties could be reduced to minimum if the government retained direct responsibility for the roads.

It was also my hope and belief, if federal control were continued for a reasonable period, that it could gradually be developed, in the light of experience and by genuinely constructive measures, into a system of administration which would preserve the manifest advantages of unified operation and direct governmental responsibility for the transportation system, avoid the dangers which are presumed to inhere in governmental operation by providing a management remote from political influences and free from undue centralization, and enlist the co-operation of labor by recognizing its just claim to some voice in the management.

The situation, however, received the careful consideration of Congress, and after long deliberation other conclusions were reached which were embodied in the transportation act, 1920. It is our plain duty to do everything possible to make the plan of operation adopted by Congress a success. Viewing the matter in this light, I am impelled to the conclusion that under existing conditions liberality in estimating the revenue needs of the carriers is desirable. Poor service is crippling our industries, curtailing production, and raising prices. As between high rates and poor service, the former is the lesser evil. While high rates will not at once bring good service, they may help to achieve this result. To provide good service the railroads greatly need additions and improvements and must secure large sums of capital for that purpose.

Summing the matter up, conditions are critical and they have not been made less so by the transition from federal to private control. The evil of poor service we have with us, and it is certain that the health of the nation will suffer seriously unless this evil is cured. It is my best judgment that the railroads can not function successfully without materially increased rates, and I am also persuaded that it is in the best interest of the country that the present plan of operation should receive without delay the best test that can be given it. Under all the circumstances, it follows that it would be a mistake if the railroads were now accorded rates designed to produce substantially less revenue than their responsible executives with unanimity assert that they need in order that good service may be provided. What revenue will actually be produced no one can tell. If the rates prove unduly high, they may later be reduced. The present proceeding has nothing of finality about it and in many respects is similar to a suspension case, where the question is whether or not certain proposed rates shall be permitted to take effect without suspension, a matter left by the act to the discretion of the commission. I therefore,, concur in the increases of rates which the majority have approved.

I am authorized to say that Commissioner Woolley joins in this expression of opinion.

Commissioner McChord commented on this opinion, saying:

The concurring report of Commissioners Woolley and Eastman injects into this case large political questions of governmental policy which are nowhere in issue here. The Congress has, for the time being, settled the question of government operation of the railroads by restoring them to private operation, hedged around by comprehensive laws vesting broad powers in this commission to regulate them. It is the duty of this commission to enforce the law as Congress has written it. The questions involved in this case are so great and so vital to the American people that no such suggestions as are here made should be injected to further complicate the extremely delicate and vital situations that now confront this commission, the public, and the railroads.

The commission has attempted to deal with this case under the law in a broad, comprehensive, common-sense way, realizing that the primary responsibility for the future of our railroads rested upon its shoulders and that of the state railroad commissions who have throughout the case and are still co-operating in a most helpful way. They will, in my opinion, measure up to this responsibility to make fully effective what the Interstate Commerce Commission has, with their co-operation, done in this case. After this the gravest responsibility rests with the employers and employees, for, after all, neither the Interstate Commerce Commission nor the state commissions can alone insure efficient railway service. The money derived from increased rates in and of itself will not solve the transportation problem. To enable the carriers to meet the present situation every man and group of men, whether employers or employees, must realize that they are in fact performing a public service. The spirit of duty and service must actuate all.

Had the decision in this case been left to my individual judgment, I would have arrived at the same general conclusion, but perhaps by a somewhat different route. However, I, in common with others, subordinate my individual views to the views of the majority as to the method to be adopted to raise the increased revenue regarding which there is no difference of opinion.

With respect to the criticism of aggregate value, I do not share the apprehension that what is said and done by the majority will result in misunderstanding, misinterpretation, or that it will have any influence upon the commission's valuation work now being conducted.

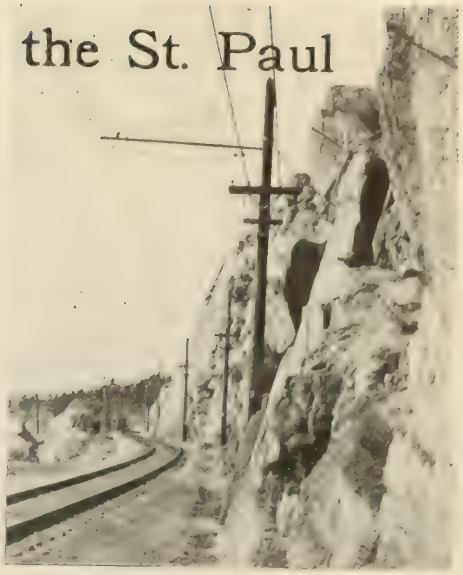
THE WAGE DECISION.—Naturally the railroads cannot pay this increase out of revenues which are not sufficient to pay present expenses. Naturally, also, there is but one way to secure sufficient revenue, and this is to increase rates—freight and passenger—especially freight rates.—*Charleston (W. Va.) Mail.*

Power and Maintenance Costs on the St. Paul

Operating Expenses on the Missoula and Rocky Mountain Electrified Divisions for 1919 Are Remarkably Low

By Reinier Beeuwkes

Electrical Engineer, Chicago, Milwaukee & St. Paul



A Bit of St. Paul Right-of-Way Showing Catenary Construction as Used on Curves.

POWER FOR THE ELECTRICAL OPERATION of the Chicago, Milwaukee & St. Paul, between Harlowton, Mont., and Avery, Idaho, is delivered to the transmission system of the railway in the form of 100,000-volt, 3-phase, 60-cycle current. It is supplied under two separate contracts, one for the Rocky Mountain division, extending from Harlowton to Deer Lodge, and the other for the Missoula division, extending from Deer Lodge to Avery.

The power company's 100,000-volt transmission system is shown on the map, as are also the points of power delivery to the railway company and the latter's 100,000-volt transmission system. The railway transmission line of the Rocky Mountain division extends from Two Dot substation to the Morel substation, a distance of 184 miles, the former point being 12 miles from Harlowton, the eastern terminus of the division, and the latter point 17 miles from Deer Lodge, the western terminus. Power is delivered by the power company at the Two Dot, Josephine, Piedmont, Janney and Morel substations. The railway transmission line of the Missoula division extends from Gold Creek substation, 18½ miles from Deer Lodge, a distance of 180 miles, to the substation at Avery, the western terminus of the division.

Seven substations on each division are used to convert the 100,000-volt alternating current of the transmission line to the 3,000-volt direct current used for traction purposes. Each motor-generator consists of two 1,500-volt direct-current generators connected in series and driven by a 2,300-volt synchronous motor supplied from the substation high tension busses through a 3-phase, 100,000/2,300-volt transmission former and is guaranteed for a maximum five-minute overload of 200 per cent. The rated capacities of these stations are shown in Table I.

TABLE I—SUBSTATIONS AND SUBSTATION EQUIPMENT

Substations	Transformers	Motor-generators
ROCKY MOUNTAIN DIVISION		
Two Dot	2—2500 kva.	2—2000 kw.
Loweth	2—2500 kva.	2—2000 kw.
Josephine	2—2500 kva.	2—2000 kw.
Eustis	2—2500 kva.	2—2000 kw.
Piedmont	3—1900 kva.	3—1500 kw.
Janney	3—1900 kva.	3—1500 kw.
Morel	2—2500 kva.	2—2000 kw.
MISSOULA DIVISION		
Gold Creek	2—2500 kva.	2—2000 kw.
Ravenna	2—2500 kva.	2—2000 kw.
Primrose	2—2500 kva.	2—2000 kw.
Tariko	2—2500 kva.	2—2000 kw.
Drexel	2—2500 kva.	2—2000 kw.
East Portal	3—2500 kva.	3—2000 kw.
Avery	3—1900 kva.	3—1500 kw.

Contact and Return Wires

The contact wires of the trolley system consist for the main line of two No. 4/0 B. & S. grooved trolley wires flexibly supported side by side from a ½-in. steel catenary and tapped at intervals of about every thousand feet to a feeder or feeders which connect to the adjacent substation busses through switches and automatic circuit breakers. Over passing, industrial and similar tracks only a single 4/0 copper trolley wire is used. There is an insulated air gap in the trolley in front of each substation separating the trolley system west of the substation from that east of the substation; that is, portions east and west of the substations are fed, respectively, through separate feeder breakers. There is also an insulated air gap at the beginning and end of every passing track, so that by means of a section switch installed in the feeder at the gap the district between any two gaps may be isolated in case of trouble so as to permit operation up to the location of the open switches.

The return circuit consists of the 90-lb. running rails and, in general, of a 4/0 B. & S. copper supplementary negative wire which is run along the trolley poles and connected to the track at intervals averaging about 8,000 ft. through each alternate signal system reactance bond. This supplementary negative, however, is intended more as a safety measure to bridge open rail bonds than to increase the return circuit conductivity. However, on various feeder cutoffs on the mountain grades, where the conductivity of the positive circuit closely approaches that of the return circuit, one of the two feeders of the cutoff is in parallel with the running rails and is provided for the purpose of increasing the return circuit conductivity.

Power Demand is Controlled

The terms of the power contracts are similar and each provides for a minimum payment on basis of a 60 per cent load factor. Where the load factor exceeds 60 per cent, payment is made on basis of the actual kilowatt hours consumed, the rate being 5.36 mills per kilowat hour. The demand is controlled for each division by means of a so-called power indicating and limiting system which, on the Rocky Mountain division, was put into operation early in the year 1918 and on the Missoula division a few months ago. Briefly, this system is so arranged as to indicate and record at the despatcher's office at Deer Lodge the total kilowatts or demand being supplied in any instant by the power company and to prevent the maximum demand from exceeding a certain amount as determined by the "demand setting made by the despatcher," this limiting action being secured by lowering of the substation d.c. voltage and therefore of the train speeds.

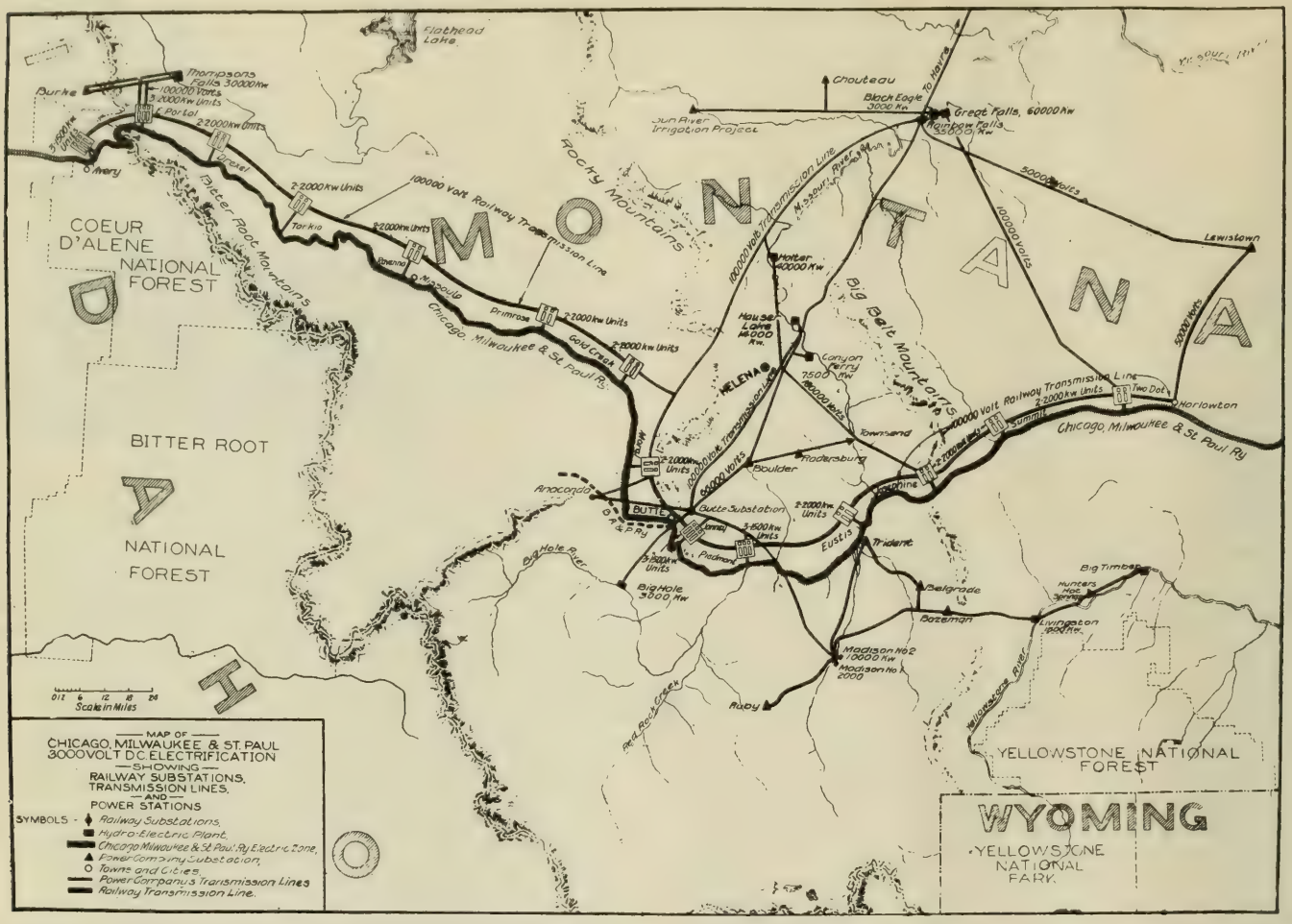
The effect of this limiting action is clearly indicated by the graphic timetable which shows train movements on the Rocky Mountain division for February 19, 1920, and corresponding load curve traced by tapalog meter of the power indicating and limiting system with the load limit set at 16,000 kw.

The percentage of time when the limiting action will take

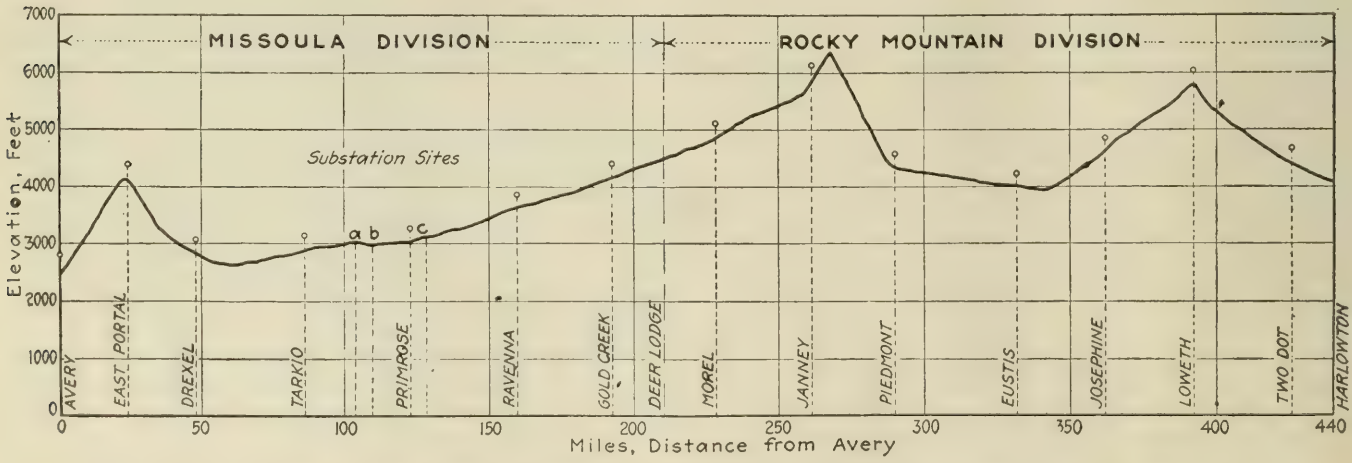
*Abstract of a paper presented before the Pacific Coast Section of the American Institute of Electrical Engineers, Portland, Ore., July 15, 1920.

place will, for a given amount of business, depend on the demand setting and on the possibilities of spacing the trains so that as few as possible will at one time be operating on the heavier grades, the latter matter, except as regards passenger trains and certain time freights, being to a considerable extent in the hands of the train despatchers. The slowing up of the train speeds of course results in increased train and enginemen's expense and increased time in getting freight over the road, and a proper balance must be struck between this increased expense and the saving in power cost, determining upon the power limit setting expense accordingly.

The figures shown in Table II will give an idea of the percentage of time the limiting action takes place with average kw. load and settings as indicated, this percentage being based on the number of hours the limiting system was actually in service.



Rocky Mountain and Missoula Electrified Divisions of the St. Paul Showing Sub-Stations, Transmission Lines and Power Stations



Profile of Missoula and Rocky Mountain Electrified Divisions Showing Location of Sub-Stations

In arriving at the amounts chargeable for power against the different respective classes of train service, the total kilowatt hours to be paid for, that is, the actual kilowatt hours, or same increased, if necessary, to correspond to a minimum

60 per cent load factor, is taken and from it is deducted the kilowatt hours metered against substation lighting, auxiliary power, signal system supply, etc., amounting to about one per cent. The remaining kilowatt hours are then split against the different classes of train service, freight, passenger and non-revenue, in proportion to the total net kilowatt hour readings obtained for these respective services from wattmeters installed in the locomotives. These readings are taken by the engine crew on entering and leaving the engine on a form provided for the purpose, and a record of the power consumption of each train is thus obtained.

TABLE II

Month	Limit setting	Avg. monthly kw., actual	Per cent time limiting action takes place
July, 1918	12,000	8,020	13.0
August, 1918	12,000	7,820	15.5
September, 1918	12,000	6,675	8.2
May, 1919	14,000	7,840	4.62
August, 1919	14,000	7,650	4.12
September, 1919	14,000	8,230	9.50
October, 1919	14,000	8,420	10.65
November, 1919	14,000	7,115	8.24
February, 1920	16,000	8,625	2.40
March, 1920	16,000	8,680	2.20
April, 1920	16,000	8,620	1.90

TABLE III—POWER INPUT TO SYSTEM CHARGEABLE TO LOCOMOTIVES

Month	Rocky Mountain Division: Actual kwh. system input for locomotives	Rocky Mountain Division: Net kwh. input at locomotives	Rocky Mountain Division: Ratio	Missoula Division: Actual kwh. system input for locomotives	Missoula Division: Net kwh. input at locomotives	Missoula Division: Ratio
January	6,381,233	4,838,480	75.9	5,540,581	3,753,430	67.6
February	4,610,607	2,921,840	63.3	4,107,960	2,702,710	65.8
March	5,795,859	4,351,126	75.2	5,412,048	3,469,120	64.2
April	5,949,840	3,962,650	66.6	5,429,932	3,574,080	65.8
May	5,803,455	4,146,517	71.4	5,745,397	3,795,770	66.2
June	5,662,650	4,100,810	72.3	5,697,785	3,853,590	67.6
July	5,744,738	3,794,940	66.2	5,318,692	3,505,630	65.8
August	5,648,815	3,755,280	66.5	5,133,008	3,255,820	63.4
September	5,892,430	3,799,830	64.5	5,102,562	3,434,010	67.2
October	6,222,486	3,971,149	63.8	5,389,883	3,654,955	67.8
November	5,095,937	3,425,458	67.2	4,879,130	3,181,456	65.2
December	5,809,976	3,830,870	65 8	4,971,601	3,382,700	67.9
	68,618,026	46,898,850	68.3	62,728,579	41,563,271	66.3

The readings are referred to as "net" readings, as they represent motored energy less regenerated energy.

TABLE IV—COMPARATIVE POWER INPUT AT SUBSTATIONS

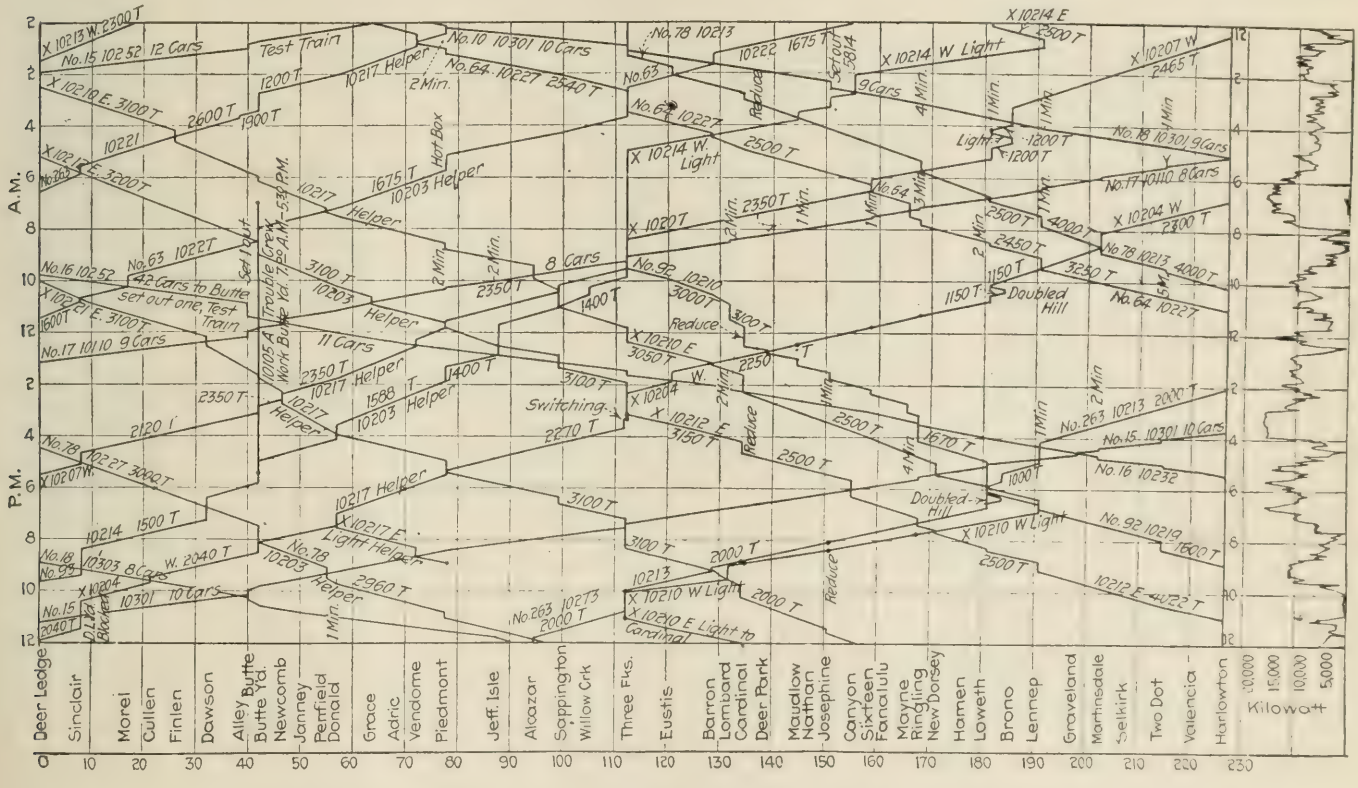
ROCKY MOUNTAIN DIVISION: Substation	Average annual kw. input net to motor-generators: *Total	**Per motor-gen.	MISSOULA DIVISION: Substation	Average annual kw. input net to motor-generators: *Total	**Per motor-gen.
Two Dot	895	813	Gold Creek	1,150	1,128
Loweth	962	783	Ravenna	915	1,115
Josephine	1,014	1,013	Primrose	[illegible]	925
Eustis	1,022	1,016	Tarkio	843	803
Piedmont	1,218	617	Drexel	790	778
Janney	1,390	559	East Portal	1,390	778
Morel	1,047	1,072	Avery	812	523
System total	7,548		System total	6,808	

*Total kwh.—Hours in year; 8,856 hours being taken, as four days in December are included.
**Total kwh.—Total running hours of motor-generators.

The ratio of the total net locomotive wattmeter readings, all services, to the total actual kilowatt hour input to system chargeable to locomotives for the various months of 1919 and for the whole year is given in Table III.

As there are no wattmeters installed in the direct current side of the substations, a ratio for net substation output to system input or to locomotive input is not obtainable. There are, however, wattmeters in the circuits of the individual motor-generator sets, and the figures shown in Table IV considered in connection with the profile, will be of interest in showing the manner in which the energy is distributed among the respective substations, average kw. being used for convenience instead of total kilowatt hours, and the whole of the year 1919 being taken.

The figures in Table V show for the year 1919 the net kilowatt hours per thousand gross ton miles for freight revenue service and passenger service, respectively, and the corresponding cost of these kilowatt hours at the high tension bus or point of delivery of the power to the railway system. The lesser consumption of energy during the summer months



Graphic Train Sheet and Load Curve for Rocky Mountain Division

as compared with the winter months will be noted. The figures for the passenger service are approximate, as the ton mile data are based on the assumption of an average weight per car, no record of the particular cars handled in all the separate trains being available:

TABLE V—POWER CONSUMPTION FOR FREIGHT AND PASSENGER SERVICE

ROCKY MOUNTAIN DIVISION

Freight Service

Month	Thousands gross ton miles trailing	Net kwh per thousand trailing: At high tension bus	Net kwh per thousand trailing: At locomotive	Gross ton mile train: At high tension bus	Gross ton mile train: At locomotive	Load factor	Cost kwh. per thousand trailing gross ton mile, cts.
January	98,478	47.8	36.3	41.2	31.3	63.7	25.7
February	79,859	43.1	27.3	37.3	23.6	57.7	24.0
March	118,297	39.0	29.3	33.9	25.5	65.5	20.9
April	121,646	38.5	25.6	33.1	22.0	61.1	20.7
May	124,395	36.5	26.1	31.7	22.6	56.0	20.9
June	122,264	36.7	26.2	31.7	22.9	56.4	20.9
July	120,723	36.7	24.3	31.6	20.9	55.4	21.3
August	111,092	40.9	27.2	34.9	23.2	54.6	22.4
September	115,787	39.7	25.6	34.1	22.0	58.8	21.7
October	108,920	45.8	29.2	39.4	25.1	60.0	23.6
November	86,267	44.0	29.6	37.7	25.3	50.9	27.8
January - November	Averages	40.5	27.7	34.8	23.8	57.3	22.5

MISSOULA DIVISION

Month	Thousands gross ton miles trailing	Net kwh. per thousand trailing: At high tension bus	Net kwh. per thousand trailing: At locomotive	Gross ton mile train: At high tension bus	Gross ton mile train: At locomotive	Load factor	Cost kwh. per thousand trailing gross ton mile, cts.
January	87,598	44.3	29.9	38.6	26.1	....	23.8
February	73,481	39.8	26.2	35.2	23.2	....	21.7
March	103,613	40.3	25.8	35.6	22.8	....	21.6
April	109,133	38.5	25.4	34.1	22.4	....	20.2
May	118,331	37.9	25.1	33.5	22.2	....	20.3
June	116,660	37.8	25.6	33.3	22.5	....	20.3
July	106,045	38.1	25.0	33.5	22.0	....	20.4
August	101,017	38.8	24.6	34.3	21.8	....	20.8
September	99,578	38.5	25.9	34.1	22.9	....	20.6
October	100,504	40.0	27.1	35.3	23.9	....	21.4
November	78,459	45.3	29.5	39.2	25.5	....	24.3
January - November	Averages	39.7	26.3	35.0	23.1	....	21.3

ROCKY MOUNTAIN AND MISSOULA DIVISIONS COMBINED

Month	Thousands gross ton miles trailing	Net kwh. per thousand trailing: At high tension bus	Net kwh. per thousand trailing: At locomotive	Gross ton mile train: At high tension bus	Gross ton mile train: At locomotive	Load factor	Cost kwh. per thousand trailing gross ton mile, cts.
January-November	2,302,507	40.1	27.1	34.9	23.5	....	21.9
January-December	2,476,085	....	....	....	....	....	22.3

Passenger Service

January - November	340,480	56.8	38.7	39.7	27.1	....	38.4
January - December	378,080	....	....	....	....	....	38.1

TABLE VI—OPERATING COSTS FOR 1919

The cost of maintaining and operating the transmission lines, substations, and trolley system, for the year 1919 is given below and a final figure thus arrived at showing the approximate total operating costs involved in the delivery of the electric energy to the locomotives.

	Account	Total all services	Per unit
255.	Power substation buildings	$8,487	$606.00 per building
257.	Power transmission system	1,773	4.87 per mile
259.	Power distribution system	78,461	179.00 per route mile
261.	Power line poles and fixtures	24,299	55.50 per mile
306.	Power substation apparatus	40,224	2,870.00 per station
383. } 395. }	Train and yard power produced	102,152	7,300.00 per station
	Total	$255,396	

1. Cost per thousands gross ton miles trailing freight as actually distributed in accounts 28.8c
2. Cost per thousands gross ton miles train freight as actually distributed in accounts 24.9c
3. Cost per thousands gross ton miles trailing freight on basis distribution in proportion to freight kwh 30.2c
4. Cost per thousands gross ton miles train freight on basis distribution in proportion to freight kwh 26.2c
5. Cost per actual kwh. delivered to locomotives 1.1c

The above unit figures include the cost of power.

Conclusions

The installation being comparatively new it might naturally be assumed without consideration of other facts that the figures for the maintenance are considerably lower than those which will eventually obtain, but it should be borne in mind that the maintenance and operating costs given will, except for power, remain more or less constant as far as any consideration of their being affected by the business handled is concerned, so that the cost per thousand ton miles would be correspondingly reduced as business is increased. It is also expected that considerable improvement will be effected in maintenance methods which would again tend to reduce costs. The figures are therefore given merely to show the results which are at present being obtained.

Rate Increase and Cost of Living

IN A STATEMENT regarding the effect of the increase in rates granted by the Interstate Commerce Commission upon prices and cost of living, W. Jett Lauck, consulting economist for the railroad labor organizations in their recent case before the Railroad Labor Board, says that while the public ought to know that there would have been no occasion for such a large advance in railroad rates "provided the railroads had been and were now efficiently and economically managed, provided the water were squeezed out of railroad securities, and provided the railroads were not themselves the victims of the profiteers in railway equipment, steel and iron products, lumber, coal, oil, etc., to the extent of four or five hundred million dollars per year," still, "there is no occasion for alarm in the prospect of an addition of a billion and a half dollars to the annual transportation bill, provided this item is not multiplied four or five times before it is presented to the people for payment. "For instance," he says, "by no possible computation can the increased freight rates be made to justify an increase of one cent per pound in the price of meat to the consumer, or an increase of five cents per pair in the price of shoes, or an increase of ten cents in the price of a suit of clothes; or an increase of one-fourth of one cent in the price of a loaf of bread.

"However, the survey of basic industries made preliminary to the presentation of the case before the Railroad Labor Board showed that manufacturers, middlemen and speculators invariably doubled, trebled or quadrupled increases in labor and other cost items and passed them on to the public, and it is not unreasonable to assume that they will attempt the same profitable process in dealing with the increase in transportation costs.

"An added annual charge of $15 per capita or $75 per family seems large, but as a matter of fact the increase in railroad rates will not mean that much as a direct charge to the individual or to the family. A substantial part of the revenues of the railroads comes from freight on exports, and in that case the increase will be paid entirely by purchasers of those exports in other countries. There is also the very considerable item of the freight on materials and products of all kinds bought by the federal, state and municipal governments which is paid through taxation.

"Coal is one commodity the price of which will be directly and appreciably increased by the advance in freight rates, the increase ranging from 75 cents to $1.35 per ton, but even that does not make a very great difference in the annual budget of the average family.

"The increase in freight rates should have no appreciable effect on the prices of the vast majority of things which the ordinary consumer purchases. This is so for the reason that, in the case of almost all ordinary commodities, the cost of transportation is now a negligible item in their selling price.

"However, there is a solution of the problem that would involve no additional burden to the general public. The increase in freight rates, it has been estimated, will amount to $1,200,000,000 a year. Even this large amount is insignificant as compared with the excess profits now being exacted by the basic industries, and could easily be absorbed by them out of these profits without any increase at all in prices."

I. C. C. Holds Hearing on Interest Rates

Theodore Prince Suggests Commission Cannot Function Regardless of Economic or Natural Laws

WASHINGTON, D. C.

LITTLE encouragement was held out to the Interstate Commerce Commission by bankers and railroad officers for success in its efforts to hold down to 6 or 7 per cent the rate of interest which railroads must pay on loans to supplement those made by the Interstate Commerce Commission from its revolving fund, at the hearing at Washington on July 29. The commission has certified to the Secretary of the Treasury loans to various carriers contingent on their raising additional amounts at not to exceed 6 or 7 per cent.

The hearing was held before W. A. Colston, director of the commission's Bureau of Finance, because, as he announced, the members of Division 4, before whom the hearing was to have been held, were engaged on the advanced rate case. Director Colston was told that money is a commodity, the price of which is fixed by the law of supply and demand, and that it would be futile for the commission to expect to fix the interest rate on the comparatively small amounts of capital involved in this case in the face of world-wide market conditions, although it was admitted that in special conditions loans at lower rates than the prevailing rate might be made for special reasons. Witnesses also testified that the dealers in railroad securities do not fix the rate of interest and, in fact, are not especially concerned with it except as it affects the volume of their business.

Shippers Cannot Help

E. G. Buckland, vice-president of the New York, New Haven & Hartford, the first witness, said that in response to the commission's suggestion that the railroads attempt to borrow some capital from the shippers, who will be the principal beneficiaries from its expenditure, his company had asked the principal New England shippers' associations to participate in equipment trusts at a rate lower than 7 per cent. The only response the company had received was that they were already borrowing money themselves at more than 7 per cent, often as much as 8 per cent, and that instead of being in a position to help the railroads they needed help for themselves in the way of better transportation service. He said that practically the only way he saw to get equipment money at less than 7 per cent. would be to borrow temporarily on short term notes and to hope for an opportunity to refinance latter at more favorable terms. He said the New Haven had ordered 40 locomotives when the price was $10,000 less than at present and delivery is promised very soon, so it needs money immediately.

Director Colston said that some roads have negotiated for money at 7 per cent through equipment corporations and he cited various instances where some capital had been raised at 6 per cent. For instance, the Boston & Maine had been loaned $5,000,000 on condition that it raised the balance of its requirements, $3,800,000 on a 6 per cent basis and it had been successful in an appeal to New England interests based on public policy. The Carolina, Clinchfield & Ohio had raised $5,000,000 at 6 per cent and the Great Northern had been given a loan of $17,000,000 on the condition that it financed an additional amount at 7 per cent.

Mr. Colston read a list of questions bringing out points which the commission particularly desired to have discussed, including the possibility of raising capital at low rates through an appeal on the basis of public policy, on the ground that the need for additional capital is not merely of concern to the railroads, but affects all business. The commission also desired to hear about the conditions which control the interest rate, the necessity for large fees and expenses in connection with the issuance of securities, whether the carriers have found that the market for railroad securities is limited to New York, etc. There had been suggestions, Mr. Colston said, that Chicago and the Twin Cities might be sources of capital for carriers tributary to those cities, but the commission had received intimations that this would be impossible because of the long-standing custom of dealing with New York. Mr. Colston also suggested a question as to the policy of loaning 100 per cent of its application to a weaker road rather than using the money to improve the security of a stronger road.

Short Lines Have Difficulties

Bird M. Robinson, president of the American Short Line Railroad Association, said his association had been investigating the possibility of an equipment trust corporation to assist the short lines in their financing and had found that it would be possible to supplement the funds advanced by the government by the sale of 15-year equipment trust certificates at 7½ per cent at par. The association had filed a formal application with the commission for its approval of such a plan, which would permit it to proceed. He thought it would be possible through this means to acquire 20,000 standard cars. It is a well-known fact, Mr. Robinson said, that the short lines cannot get capital in New York, but must depend largely on local banks where the rates of interest are always substantially higher than in New York. It is very rarely that they can get money for 7 per cent or less except on the personal credit of the owner of the short line.

Mr. Lisman on the Stand

Mr. Robinson introduced as a witness F. J. Lisman, of F. J. Lisman & Co., New York, investment bankers, who is also vice-president of the Short Line Railroad Association. Mr. Lisman began by saying he was not so certain now that it would be possible to carry out the short line equipment trust corporation plan as he was some time ago. His testimony consisted largely of tables of market quotations and bond circulars showing that equipment bonds of old issues are now selling on a basis of 7 per cent or better and that many seasoned railroad bonds are selling to yield from 7 to 11 per cent. His argument was that the interest rate is not so much affected by the security as it is by the going price for money. The world has used up its capital and the scarcity naturally results in higher rates.

When Mr. Colston asked whether the interest rate could be lowered by the government furnishing a larger initial payment, Mr. Lisman said that would not help materially because while people trust the government to the extent of buying Liberty bonds, they do not trust it in business matters because the government cannot be sued and may force people to do something they do not desire to do as a condition of settlement. He described the various conditions which have produced the scarcity of available capital and which have increased the expenses of bond dealers. Twenty years ago, Mr. Lisman said, the bond market was at its peak; 3½ per cent bonds were selling at a premium, but many people thought the interest rate would go even lower, and although it was the custom of roads then to issue 100-year bonds, the Baltimore & Ohio in issuing some 3½ per cent bonds, had

limited them to 25 years in order to protect the stockholders in case the interest rate should go down.

The fact that some roads have been able to get some money at 6 per cent, Mr. Lisman said, means only that some bank is trying to get an account away from another or that the transaction is influenced by some special condition, such as friendship. No one is going to sell under the market except for some special reason, but he pointed out that it is sometimes possible to renew a note at a lower rate of interest than could be obtained on a new issue because people have become accustomed to the security. In reply to an implied criticism of the amount of commission required by banks and syndicates in placing railroad securities, Mr. Lisman pointed out that the cost of distribution of bonds has greatly increased, like everything else, particularly because the market now consists largely of people who buy in small amounts and that the commission also covers the risk. Syndicates do not always make profits and he put into the record a long list of syndicate transactions in which losses were encountered.

Danger of Temporary Financing

A. H. Harris, vice-president of the New York Central, said that his company, without waiting for the loan fund, had contracted for $48,000,000 worth of equipment and had arranged to finance 75 per cent of the amount by 15-year 7 per cent equipment trust certificates which were sold at 96, or on a basis of 7.71 per cent. The company had expected to finance the other 25 per cent, possibly from the revolving fund and had filed an application for that purpose. There is no question now as to the rate of interest on the 75 per cent, but if the application is not granted it will probably be necessary for the company to raise the 25 per cent from short term notes at 7½ per cent.

Mr. Harris said the New York Central is also planning an issue of $25,000,000 of collateral trust notes for which it will soon file an application with the commission. If any 7 per cent money is in sight it would be glad to have it and it welcomes the effort the commission is making to hold down the interest rate. It feels that in some cases it may be possible by co-operation with the railroads to raise a certain amount of capital at less than the going rate, but it is necessary to face the fact that money is a commodity and, generally speaking, it will be necessary to pay the market price except for small amounts. Market rates are determined by competition of the different kinds of securities and experience has shown that certain other securities are more attractive to investors than railroad securities.

Mr. Harris said that this is not a good time to sell long term bonds, but too much temporary financing has already been done and he thought the best policy is to issue 15-year certificates secured by a pledge of long term securities with a call provision so that it will be possible to take advantage of a reduction in the interest rate. The New York Central has been fortunate in being able to put out the bulk of its securities on a long term basis at times when the interest rates have been low and during the last 30 years it has issued $600,000,000 of bonds at an average rate of 4-1/3 per cent. To a certain extent this will even up for the higher rate it is necessary to pay now. He could see no reason to expect any marked decrease in interest rates within 15 years.

As illustrating the danger of temporary financing, he said that the Railroad Administration had objected to the rate the New York Central was proposing to pay and it helped it to get a loan at 6 per cent but after it had been twice renewed the company had had to pay 8 per cent to the same people. For that reason it desired to get the question out of the way for 15 years so that the necessity for renewal would not be hanging over the company all the time. It is not the practice of the New York Central, he said, to pay counsel fees on securities, and in reply to the question as to the possibility of raising capital elsewhere than in New York, he said that securities are sold in many other markets but through New York, because those who sell the securities have their plants and organization in that city. For example, the New York Central equipment securities were sold through five or six banking houses of New York but were distributed through several hundred houses or branches all over the United States.

He also described the value of having an established banking connection which may be of great assistance during difficult times and said that there is not so much as is sometimes supposed in the theory of competitive bidding because the railroad knows pretty well what its securities are worth and what other roads are paying for money and the element of competition is always present. He said the company had made no effort to borrow money from industrial companies, but that some years ago it had given notes to equipment builders and found that they were immediately rediscounted and got back into the hands of the banks.

Theodore Prince Makes Frank Statement

Theodore Prince of New York said that there is a real market value on money, which the government cannot ignore and that in view of the fact that there are outstanding approximately twenty billions in railroad securities, twenty billions in government securities and twenty billions in industrials, it is hopeless to expect that the commission can immediately influence the rate of interest. During the war, he said, the people were willing to accept the edict of the government, but since the war was over no one could stop the recession of the price of Liberty bonds to the normal market basis. In his opinion, shippers cannot be expected to finance the railroads because in any event the transaction would not be completed until the securities get into the hands of the ultimate investor. Moreover, he said, the railroads ought not to depend on charity.

When Mr. Colston referred to the Pennsylvania's issue of $50,000,000 of 10-year 7 per cent bonds as having been sold at 96, whereas 15 days later they were quoted at over 101, Mr. Prince said the difference represented both the profit and the expenses of the distributors. Mr. Prince also filed with the commission a statement on the question, in part as follows:

"In this crisis of transportation industry, responsibility will attach to this commission for the operation of the new Transportation Act, and public opinion will await your conclusions with critical judgment. The commerce and future prosperity of this country now await the solution of the transportation problem. That problem will require time. If, in the interim, the personal forces and initiative on which such prosperity depends can feel that the problem will be handled wisely, the proper solution will come in time. If, on the contrary, such personal forces should reach the conclusion that this problem will be handled in a way that will bring about another breakdown of our transportation industry, we can all rest assured that disintegration of our national prosperity is at hand. Therefore, the question of the market rate for capital is not as important as is the point of view of this commission. We have reached the point where the constructive forces of the nation must feel that real and sympathetic co-operation on the part of this commission is here; where the workings of the new Transportation Act must be interpreted in a constructive sense, so that new stimulus may be given to the transportation industry as well as to all other industries attendant.

"The new act has given powers to your commission which have heretofore been wanting, and has, at the same time, taken from the railroads a certain proportion of their earnings which heretofore have been entirely under private control. These earnings are now under your control. You have been invested with responsibilities and powers that formerly

belonged to the railroads themselves. You need their co-operation in the same sense that the railroads need yours.

"It seems to me, therefore, that the first constructive step that is to be taken under the new status created by the Transportation Act, is to secure a unified and sympathetic method of co-operation among all those concerned in this vital undertaking. This appears to me to be far more important than the rate of interest at which the Atchison should borrow money from the bankers, the market value of capital, or the return which must make an issue attractive to the ultimate investor. That is to say, in my opinion we have here a typical instance which will indicate to all interested people and industries involved, exactly what the individual or reciprocal points of view are upon which it is hoped we shall build an efficient and co-ordinated transportation system.

What I consider of basic importance is whether this commission shall decide arbitrarily what any railroad shall pay for capital, or whether the commission will be guided by those elemental factors upon which such a decision must rest. Will this commission have a preordained view in matters upon which it could not be considered experts, as well as on matters which are presumed to be within its trained experience? In other words, will this commission function and deliver judgments regardless of economic or natural laws, or will it function and deliver judgments in obedience to such laws? The new Transportation Act does not give this commission power to regulate the supply of capital, or to decide what a fair rate for the use of such capital is. If it were appointed for such purpose, it would be folly. The world is remorselessly engulfed by a sea of financial and monetary consequences from which there is no escape. Why then, if this commission has no power and no authority over such issues, shall it now take upon itself the right of passing judgment upon them? It would be useless for me to argue that the supply of capital is regulated by the natural law of supply and demand. Even the United States government cannot regulate that law. They could under patriotic necessity float a huge and stupendous bond issue below the rate at which capital could be borrowed, but when the stimulus of war necessity has passed away we find ourselves grappling with this tremendous amount of securities unable to stem the glacial flow to normal levels.

"The only control that this commission has over the price of capital lies in the power the commission has to make the railroads efficient; efficient transportation means release of credit, money and capital. In that respect and in that respect only can it influence the law of supply and demand—of capital.

"If this commission now takes the stand that it is going to pass arbitrarily on the market rate for capital it will be prophetic of the position that this commission is likely to take on any other question that is involved in the Transportation Act. It will mean that the constructive efforts at railroad rehabilitation will terminate in bureaucratic domination. It will mean that the question of railroad co-operation will be confronted with judgments on matters entirely outside of railroad administration. The issue is clearly drawn. The railroads cannot hope to avoid paying the market rate for capital. But if this commission decides that all financial help extended to the railroads will be coupled with the impossible position that interest rates on additional capital be below market interest rates, then, the railroad situation is once more in chaos; for if the commission now decides that 7 per cent is the market rate for capital, although everyone knows that it is not, it can as well decide in two years from now that 4 per cent is a fair return on invested property, although everyone else may judge that 7 per cent is. If this commission will not be governed by the basic factors that make supply and demand, and market rates and prices, then the very law under which it is called upon to operate will be a useless protection to the railroads who have begun to hope that they can fill the need of a unified and efficient transportation system that the country's industries must have or perish."

Pumping Water Up Hill

Mr. Lisman returned to the stand to discuss the questions proposed by the commission and also the points which had been raised as to the Pennsylvania issue. He said he had talked with the railroad officers and bankers before it came out and there was considerable doubt as to the success of the issue. The bankers felt it was necessary to make the terms attractive and it was put out at the psychological time, but many good issues put out since that time were now selling at a discount. Mr. Lisman said that if it is desired to sell the railroad bonds in the way the Liberty bonds were sold, it might be possible through a campaign to get the right kind of public sentiment "to pump water up hill by force of enthusiasm." He thought in a short time the price would go down in the same way that the Liberty bonds dropped. The only way, he said, to restore railroad credit is to deal with it in a particular way and put the railroads on a self-sustaining basis. It would not help the situation to attempt to make them an object of charity. Mr. Warfield's new equipment trust, he said, will only provide a limited amount of capital. Certain insurance companies and other institutions have been willing to chip in a little money out of public spirit.

Regarding the possibility of issuing securities elsewhere than in New York, Mr. Lisman said that the bankers in other cities have not the organization to handle large amounts. New York is the center for this kind of business just as it happens to be the center for the theatrical business. He pointed out that a man trying to raise a theatrical stock company in Milwaukee would probably send to New York for members of the company even though some of them may have started from Milwaukee.

The National Railway Service Corporation

PAPERS WERE FILED in Baltimore on July 29 by S. Davies Warfield, president of National Association of Owners of Railroad Securities, incorporating the National Railway Service Corporation under the laws of Maryland. The charter gives wide powers, among others:

"To aid, assist, further and supplement the service of transportation by carriers by railroads subject to the 'Act to regulate commerce' approved February 4, 1887, as amended, or subject to the 'Transportation Act, 1920,' approved February 28, 1920.

"To carry on the enterprise and business of constructing, acquiring by purchase or lease or otherwise, selling, leasing and otherwise contracting with reference to, maintaining, managing, repairing, disposing of and dealing in locomotives, cars, rolling stock, equipment, appliances, materials and supplies required by carriers by railroad.

"To receive, administer, invest, lend or otherwise employ or deal with any fund or other assets which may be loaned or made available to the corporation by the Interstate Commerce Commission pursuant to the provisions of the Transportation Act, 1920, as now or hereafter amended or by any other act, or by the United States or by any other party or from any source.

"To act as an agency of the Interstate Commerce Commission in the matter of loans for the purchase of equipment and to assist or serve the said Commission in any other capacity or way now or hereafter authorized by law.

"The corporation shall have power to act as an agency of the president of the United States in the discharge of

any functions relating to federal control or the relinquishment or liquidation thereof which may be authorized by the president in conformity with law."

Mr. Warfield's Explanation of the Plan

In connection with the corporation, Mr. Warfield made the following statement:

The organization of the National Railway Service Corporation completes as far as now practicable the plan for the return and regulation of the railroads presented to the Interstate Commerce committees of Congress in January, 1919, by the National Association of Owners of Railroad Securities. Two of the three fundamental features initiated by the Association in that plan are now essential features of the present Transportation Act. One is the mandatory provision therein that rates are to be made to yield the fixed percentage return named in the act upon railroad property in the aggregate and essential to preserve the transportation system and continue it under private ownership and operation. The second is a division of earnings of a railroad where rates yield to it more than six per cent on its individual property, one half to be retained by such road, the other half establishes a public fund to be expended by the Interstate Commerce Commission for transportation needs.

The third fundamental of the plan provided for the organization of a national public corporation designed among other things to finance equipment to be leased or otherwise acquired by railroads. We thought we could foresee the necessity for providing the means to relieve the congestion bound to occur upon the return of the roads to their owners and now taking place.

To accomplish as far as now practicable what was then intended, we are organizing the public corporation referred to, authority for which was obtained under an amendment to the Transportation Act added to the Sundry Civil Appropriations Bill and suggested by our Association when that bill was in conference between the two houses of Congress. This amendment was adopted by the conferees and passed by Congress in the closing hours of the last session. The amendment is as follows:

The loans for equipment authorized by Section 210, Transportation Act, 1920, may be made to or through such organization, car trust or other agency, as may be determined upon or approved or organized for the purpose by the Commission as most appropriate in the public interest for the construction, and sale or lease of equipment to carriers, upon such general terms as to security and payment or lease as provided in this section or in sub-sections 11 and 13 of Section 422 of the Transportation Act, 1920.

Accordingly the Interstate Commerce Commission has recognized the National Railway Service Corporation as an agency to which it will make loans under this amendment and to enable that corporation to provide additional funds to finance much needed equipment for the railroads.

The corporation will issue its obligations in series under two plans: (a) Railroads may purchase equipment outright through the corporation under an equipment trust providing for thirty semi-annual payments, the trust maturing in fifteen years at which time the equipment becomes the property of the carrier making the purchase. The Interstate Commerce Commission will make fifteen-year loans to the corporation in amounts dependent upon the class of equipment purchased. The railroads under this plan are required to furnish an agreed amount of collateral to secure the equipment notes given the Government, which have a lien on the equipment subordinate to the lien of the equipment notes purchased from the corporation by investing institutions and investors. The other plan (b)—the corporation will lease equipment to the railroads under the plan of semi-annual payments running fifteen years, the carriers charging the rentals to operating expenses. By a nominal payment at the expiration of fifteen years the railroads that complete their payments will receive the equipment as their own property. In the case of lease little or no collateral will be required from the railroads.

In either case the title to the equipment remains either in the corporate trustee or in the corporation. Each series will have a separate trustee.

The issue of equipment notes to be presently made will be $30,000,000 maturing in fifteen years. Approximately 40 per cent thereof will be loaned the corporation by the government at six per cent either direct or through the carriers participating in the series, the balance (approximately 60 per cent) will be loaned by investing institutions at seven per cent. We believe this is the lowest interest rate that has yet been obtained by railroads in purchasing equipment since the war. The present series (a) will be a straight purchase, with thirty semi-annual payments, the notes maturing in fifteen years. The notes of the corporation will be secured by direct lien on the equipment of the carriers participating, title to the equipment to remain as stated in the trustee or the corporation until paid for. There will be three parties to the equipment trust agreement, the corporation, the trustee, and the carrier. Each carrier will give its individual equipment notes which, together with the agreement, will be deposited with the trustee as additional security for the payment of the equipment notes of the corporation.

The carriers are to keep the equipment in full repair during the life of each trust.

The carriers participating in the present issue are the Baltimore & Ohio Railroad, to the extent of $14,000,000; the Chicago, Rock Island & Pacific and the Minneapolis & St. Louis to the extent of $11,000,000; the Bangor & Aroostook to the extent of $150,000. Several other roads applied at the same time for equipment. Decisions have not been reached as to which will participate in the present series.

Under the plan proposed the government is amply secured and the investors are secured from the fact that the equipment notes held by the government are not paid until the notes of the corporation in the hands of investors are paid. This is a public corporation. It operates without profit. The stock issue is nominal. It is owned by the National Association of Owners of Railroad Securities and transferred in blank to the secretary of the Treasury of the United States. Congress will be asked to reincorporate this corporation by federal act.

The life insurance companies that have tentatively agreed to take the certificates of the corporation have looked upon the question as one of public concern and are acting in that spirit. They are co-operating with Division 4 of the Interstate Commerce Commission which is dealing with these subjects to relieve the congestion to the greatest extent possible.

This corporation presents an economical method to acquire equipment for the relief of the present congestion. If used as a public corporation to the fullest extent it will eventually tend to lower railroad rates. When in full operation it will guarantee shippers an ample car supply and will, if the full plans of the corporation are carried out, enable shippers to secure cars to relieve the present railroad difficulties. These conditions will not be relieved by passing resolutions and appointing committees. It is cars that are needed and methods adopted that will furnish them.

Fifty thousand open-top cars are necessary to relieve the congestion at the steel mills, coal mines and other industries requiring this class of cars. The corporation will suggest to large shippers who have surplus funds for investment that they cooperate with the corporation to the extent of purchasing part of a series of equipment notes of the corporation for the purchase of cars designed to meet the demands of their business. The government to loan the corporation such amount as the class of equipment justifies, the balance of the series to be raised, one-half from the shippers and one-half from the investors. Under such a plan the equipment thus purchased would be available to the shipper making the investment, who would receive a good investment unusually secured.

The board of trustees of the corporation when completed will number 20. The present trustees are S. Davies Warfield, president, Continental Trust Company, and president, National Association of Owners of Railroad Securities, Baltimore; Haley Fiske, president, Metropolitan Life Insurance Company of New York; John J. Pulleyn, president, Emigrants Industrial Savings Bank, and president, Savings Bank Association, State of New York, New York; Darwin P. Kingsley, president, New York Life Insurance Company, New York; Myron T. Herrick, president, Society for Savings, Cleveland, Ohio; George E. Brock, president, Home Savings Bank, and chairman, National Conference of Mutual Savings Banks, Boston, Mass. It is understood that Forrest F. Dryden, president, Prudential Life Insurance Company, Newark, N. J., has been asked to serve as trustee.

The incorporators are S. Davies Warfield, president, Continental Trust Company, Baltimore; Charles C. Homer, president, Savings Bank of Baltimore, and Mozart Hayden, president, Utah Savings Bank of Baltimore.

Legislatures of the various states will be asked to amend the law to permit savings banks to invest in equipment obligations of the corporation.

George W. Yates, heretofore private secretary to Sir Robert Borden, has been appointed assistant deputy minister of railways for the Dominion of Canada, in place of L. K. Jones. Mr. Yates was formerly in the railway department under Minister Cochrane.

Representatives of State Commissioners Association Approve Rate Advance

WASHINGTON, D. C.

APPROVAL of the Interstate Commerce Commission's decision authorizing rate increases is expressed by the three state railroad commissioners, W. D. B. Ainey, of Pennsylvania; R. C. Dunn of Florida, and J. A. Guiher, who participated with the federal commission in the hearing of the rate case at the invitation of the interstate commission as representatives of the National Association of Railway and Utilities Commissioners. The three commissioners have addressed a report on the case to W. A. Shaw, president of the National Association of Railway and Utilities Commissioners, in which they say that the reasons requiring an increase of interstate rates are very persuasive of the need for an increase in intrastate rates. The report follows:

"On May 11, 1920, the Interstate Commerce Commission extended an invitation to the state commissioners to co-operate with it in the consideration of the establishment of rates to carry out the requirements of Section 15a of the Interstate Commerce Act, expressing the desire that three state commissioners be selected as representatives of all state commissions. Afterwards, at a called meeting of your association, we were selected as such representatives. We wish to report as follows:

"On May 24, 1920, we presented ourselves to the members of the commission, who recognized us as state commissioners whom they desired to act with them in co-operation in the examination and consideration of said advanced rate hearing, being I. C. C. Ex Parte 74. The taking of the testimony began on May 24, and was completed on July 1. The arguments followed immediately, closing July 6. An adjournment was then taken until July 13 to enable the commission to perform other official duties requiring immediate attention. During the taking of the testimony and the argument we sat with the commission.

"Consideration of the case in conference began July 13 and ended July 29, when the conclusions were reached and the ruling completed. Between the dates just stated the entire commission devoted each day to the consideration of this case, except one and one-half days in the hearing of arguments in other cases. We participated in the conference in the same manner as members of the commission, being invited by them to take part in the discussions and express our views with full freedom.

"The members of the commission gave to the case intense and efficient application, examining and discussing it with the evident desire to reach correct conclusions and apply the increase in such manner as to deal justly with the whole country.

"The questions presented were very numerous, involving the commerce of the whole country, and the entire rail transportation system of the United States, many of these questions being of complex character. Any decision of the case looking to the observance of the statute affects in some way every rate now effective. Speaking generally, every controverted question concerning all classes and commodities, and all rates, rules and practices of rail carriers and all the theories of shippers and carriers, were presented and urged in the testimony and in argument before the commission and given careful consideration in conference.

"The commissioners were not of one mind on all questions and their conclusion in many cases was the result of recognizing that the views of the other man must be taken into account and that there must be some surrender by each before an agreement could be reached. In some instances the conclusion of the majority is the view expressed in the ruling. On some of the questions our views were not in full accord with the majority and in some instances we three state commissioners did not have unity of view. However, when all matters are considered, and remembering that where thirteen men are considering controverted questions and proposed policies, their differences of opinion must be composed or decided by the majority, we believe that the conclusion, considering all things, is just and fair and we give it our approval.

"The increased rates permitted under the ruling in Ex Parte 74 will probably go into effect September 1, 1920. The reasons requiring an increase of interstate rates are very persuasive of the need for increase in intrastate rates. The operating revenues of the railroads under present rates and conditions are recognized by all persons as insufficient. A part of the responsibility to meet the situation rests upon the state commissions. Such increase as will be made in intrastate rates should, if possible, be made effective September 1, 1920."

Commission Limits Reconsignment

WASHINGTON, D. C.

AS A STEP in the direction of promoting freight efficiency, the Interstate Commerce Commission, Division 2, acting in response to suggestions made by the railroads, on July 31 issued a special permission order authorizing the roads to file tariffs prohibiting more than one reconsignment of freight in open top cars, or of coal and coke in any kind of cars. It provides for charges ranging from $2 to $5 a car for reconsignments allowed under the order, and for a $10 per car per day emergency penalty charge for the detention beyond the free time of open top cars and all cars loaded with coal or coke or with lumber while being held for reconsignment. The order authorizes the changes to be made effective on five days' notice, as follows:

Reconsigning Rules Applicable on all Freight in Open Top Cars and Coal and Coke in All Cars

Exceptions:—Will not apply on coal originally consigned to lake or tidewater ports for transshipment to vessels and reconsigned to other ports or to other consignees at same port, nor to coal consigned to lake ports for transshipment to vessels and left over after the close of navigation.

Only one reconsignment will be permitted, namely:

1. If reconsignment order is received in time to permit instructions to be given to yard employees prior to arrival of shipment at billed destination or if such billed destination is served by a terminal yard then prior to arrival at the terminal yard a charge of $2 per car will be made for this service.
2. If reconsignment order is received in time to permit instructions to be given to yard employees within twenty-four (24) hours after arrival of car at destination or if destination is served by a terminal yard then within twenty-four (24) hours after arrival at such terminal yard a charge of $5 per car will be made for this service.
3. When not reconsigned as above any order for reconsignment, diversion or reshipment will subject the freight traffic to the sum of local rates to and from points of reconsignment plus $5 per car.

Application:—Rules No. 1 and 3 apply to reconsignments at all points in the United States; and in addition thereto rule 2 will apply to reconsignments at points within the territory east of the Illinois-Indiana state line (not including Gary and points within the Chicago switching district), and on and north of the Ohio river, also points on the lines of the Chesapeake & Ohio, Norfolk & Western and Virginian railroads east of Cincinnati.

Emergency Penalty Charges for Detention To All Open Top Cars, and Cars Loaded with Lumber, Coal or Coke

Exception:—Will not apply on cars held at ports for transshipment by vessel.

To prevent undue detention of equipment under present emergency the following additional penalties for detention of equipment will apply:

1. On cars loaded with lumber held for reconsignment a storage charge of $10 per car will be assessed for each day or fraction of a day that car is held after 48 hours after the hour at which free time begins to run under the demurrage rules.

   Note 1.—Applies on lumber, shingles, poles, piling, mine timber, box, barrel or crate material and other forest products on which the lumber rates apply.
2. On all open top cars and on all cars loaded with coal or coke not released within the free time as prescribed in the National Car Demurrage Rules, J. E. Fairbanks, I. C. C. No. 8, supplements thereto or reissues thereof,

a storage charge of $10 per car per day or fraction of a day will be made until car is released.

3. The charges provided above will be in addition to any existing demurrage and track storage charges and are subject to the provisions of the National Car Demurrage Rules with respect to notification, computing time and allowances provided for in Rule 8 thereof.

Expires with close of business January 1, 1921.

Daniel Willard on the Rate Advance Decision

DANIEL WILLARD, President of the Baltimore & Ohio, and chairman of the Advisory Committee of the Association of Railway Executives, on August 1 issued a statement in Chicago regarding the Interstate Commerce Commission's decision in the rate advance case. Mr. Willard said the mere fact that the Interstate Commerce Commission, after an exhaustive investigation of the whole subject, had unanimously reached a decision granting increases in railroad rates and charges which it was estimated would yield to the railroads in the United States as a whole, based upon the volume of business handled in 1919, additional revenue of $1,500,000,000, was the best evidence possible of the inadequacy of existing rates and charges.

"It has been a matter of common knowledge, because the official reports have been published monthly," he continued, "that the majority of the railroads in the United States have been unable, upon the present rate basis, to earn their interest charges. Very few, almost a negligible number, have earned anything in the shape of dividends, and many of the larger companies have failed to earn their operating expenses and taxes. Of course, under such conditions there was nothing to encourage investment in railway securities as a whole, and naturally the expansion of railway facilities halted while the growth of the country generally went on. The natural result has followed and in a time of unusual business activity there is an insufficiency of transportation facilities, and largely on that account prices of many articles highly important in the daily life of the people, have reached altitudes hitherto unknown in this country, at least for more than a generation.

"If the rate increase just granted by the commission produces the effect which I am firmly convinced it will produce; that is to say, if it will bring about renewed activity in the development of our railways, with renewed and vigorous energy and effort on the part of the railway officers and employees, which will be reflected in the movement of an enlarged volume of business, then the rate advances instead of tending to increase still further the cost of living, will have just the opposite effect and that is exactly what I expect to see happen.

"For more than ten years the tendency of net railway income has been downward because of the operation of forces over which the railroads could exercise no control, and if, as has been frequently stated, there has seemed to be less enterprise and less initiative on the part of the railway managers in recent years than was formerly the case, it should not be surprising.

"In my opinion, Congress by enacting the Transportation Act of 1920 made the continuation of private ownership and operation of the railroads in this country possible, and further in my opinion the agent of Congress—that is to say, the Interstate Commerce Commission—has fairly interpreted the desire and intent of Congress as reflected in the Transportation Act. Whether private ownership and operation of the railroads actually does continue to be the established policy in this country will now depend upon the railway managers themselves.

"If the railroads under private ownership and operation, and with a basis of rates sufficient to yield an adequate income, are able to satisfy the public—if, in short, they are able to definitely demonstrate that private ownership and operation of the railroads under such conditions not only provides the public with better transportation but in the long run with cheaper transportation than can be looked for under any other system—then I have no doubt that the people will be satisfied with the present system. In brief, as I view the matter, whether private ownership and operation of the railroads in this country continues or not, now depends wholly upon the railway managers themselves. The Congress has done its duty, the agent of Congress has done its duty, and I firmly believe the railway managers will do their duty also.

"Undoubtedly investors will want to see the actual results obtained from a few months' operation on the new basis of rates and charges before definitely fixing their views concerning railway securities as investments, but even so, I believe the effect of the rate increase will be seen in an immediate appreciation of railway securities, which of itself is the best evidence of renewed confidence.

"Fortunately also, and by virtue of the agencies provided in the Transportation Act, the wages of railway employees have been adjusted in conformity with the requirements of the Act. This also should be reflected in improved operations on the part of the carriers. Here again it may be said that the mere fact that the Labor Board has found that when measured by standards embodied in the new Transportation Act that the railway workers ought fairly to have their wages increased to the extent of approximately $600,000,000 a year, is in itself the best evidence that the existing wages are too low, and it cannot be expected that as long as human nature remains as it is, men will give their best when they feel they are not being fairly compensated.

"We have, therefore, two results from the Transportation Act:

"(1)—An adjustment of railway wages which ought to be, and I believe will be, generally accepted as fair by the railway workers; and

"(2)—An adjustment of railway rates and charges in harmony with the standards provided by the Act, which should, and I believe will, tend to ultimately bring about the restoration of railway credit.

"With these two things definitely accomplished, I feel very hopeful concerning the future of the railroads, although I appreciate fully the responsibilities resting upon the railway managers themselves. The day of miracles, if it ever existed, has certainly passed, and too much ought not to be expected at once from the railroads. It will not be possible, for instance, for the railroads to immediately enlarge their facilities, because time is an element as well as money in transactions of that kind, but renewed activities in that direction will undoubtedly be apparent. It is generally recognized that railway facilities at the present time are inadequate, and the only immediate result that can be expected from the recent decision is a renewed determination on the part of the railways as a whole to obtain, by more intensive methods, the maximum results from existing facilities. In anticipation of yesterday's decision, the railroads had already pledged themselves to such a course of action. Undoubtedly the award of the commission will add incentive to still greater efforts on their part."

IMPERFECTIONS AND DELAYS in service may be far more costly than the prompt and regular delivery of goods at rates sufficient to provide proper equipment and satisfying wages.—*Indianapolis News.*

Movement of Bituminous Coal is Speeded Up

The Priority Orders and the Co-operation of Coal Operators Promise to Bring Results

WASHINGTON, D. C.

ESTIMATES of the quantity of coal which should be moved under the Interstate Commerce Commission's recent priority orders for coal moving across the lakes to the Northwest and to tidewater for New England from the different coal fields and via the different railroads, upon which the priority orders were based, have been made public by the Interstate Commerce Commission in connection with letters addressed by Chairman Clark of the commission

ESTIMATE OF COAL (NET TONS) TO MOVE MONTHLY TO NEW ENGLAND UNDER SERVICE ORDER NO. 11

	New York	Philadelphia	Baltimore	Hampton Roads	Total
Baltimore & Ohio R. R.:					
Fairmont	52,000	35,000	130,000	.....	217,000
Somerset	22,000	5,000	25,000	.....	52,000
Cumberland & Penna.	10,000	.....	5,000	.....	15,000
Western Maryland	19,000	5,000	40,000	.....	64,000
Fairmont	.....	.....	.....	.....	.....
Somerset	.....	.....	.....	.....	.....
Upper Potomac	.....	.....	.....	.....	.....
Pennsylvania R. R.:					
Central Pa.	87,000	35,000	50,000	.....	172,000
Greensburg	15,000	.....	.....	.....	15,000
Westmoreland } Connellsville {	20,000	15,000	.....	.....	35,000
Monongahela R. R. via P. R. R.	5,000	.....	.....	.....	5,000
New York Central:					
Central Pa.	20,000	5,000	.....	.....	25,000
Chesapeake & Ohio:					
New River	.....	.....	.....	60,000	60,000
Kanawha, Logan, etc.	.....	.....	.....	25,000	25,000
Virginian Ry.	.....	.....	.....	185,000	185,000
Norfolk & Western:					
Pocahontas	.....	.....	.....	300,000	300,000
Tug River	.....	.....	.....	50,000	50,000
Clinch Valley	.....	.....	.....	10,000	10,000
Norton	.....	.....	.....	20,000	20,000
Totals	250,000	100,000	250,000	650,000	1,250,000

to the commissioners or managers of the lake and tidewater coal exchanges. The letters were written for the purpose of emphasizing the necessity that they as agents of the commission shall see to it in so far as practicable that the distribution of cars be made so as to accomplish the results contemplated by the order. The estimates are shown in the accompanying tables and provide for the movement of 1,250,000 net tons monthly to New England under Service Order No. 11 and 20,000,000 tons, or 4,000 cars a day, to Lake Erie ports for the Northwest during the balance of the season of navigation under Service Order No. 10.

Chairman Clark also addressed a letter to Daniel Willard, chairman of the advisory committee of the Association of Railway Executives, and D. B. Wentz, chairman of the bituminous coal shippers' committee, for the purpose of stating that Service Orders Nos. 10 and 11 do not require, authorize or contemplate any change in the rules governing the ratings of mines and the distribution of cars when the available supply of cars is less than 100 per cent. Chairman Clark says this phase of the matter was clearly understood in the conferences which were held between the New England and the Northwest interests and bituminous coal interests and the railroads preceding the issuance of the order. The letter is intended to remove any doubt that may arise with respect to the question of mine ratings and the distribution of cars.

Speculators Cause Trouble

The National Coal Association has issued a statement defending the coal operators against charges of profiteering in coal, asserting that the blame should be placed upon unscrupulous handlers and speculators in no way related to the operators, who have been exacting exorbitant prices in the open market for coal which they have obtained at low prices prevailing at the mines. The statement also asserts that the car shortage has paved the way for the play of speculative prices. A recent report of the Federal Trade Commission is quoted showing a range of prices for coal at the bulk of the mines from $3.25 to $4 and an average margin between the cost and the sales price at the mine of 50 cents a ton. One factor that has worked to the advantage of coal manipulators in this emergency, the statement says, has been the practice of the reconsignment of carloads of coal, for which it asserts the railroads are responsible.

"Under this practice," the statement continues, "carloads of coal obtained by speculators at a low price have

ESTIMATE OF COAL TO MOVE TO LAKE ERIE LOADING PORTS DURING BALANCE OF SEASON OF NAVIGATION FROM JULY 15, 1920, SHOWING ORIGINATING ROADS AND DISTRICTS

Originating	Ohio				Pennsylvania				West Virginia			Kentucky		
On	No. 8	Cambridge	Hocking	Middle	Freeport	Pittsburgh	Altoona, Cumberland	Connellsville	Fairmont	Kanawha, Thadker, Kenova	†Pocahontas, New River*		Total tons	Cars per day
B. & O.	1,750,000	150,000	60,000	20,000	.....	125,000	.....	36,000	650,000	.....	.....	.....	2,791,000	558.2
Penn.	900,000	750,000	.....	.....	60,000	2,500,000	.....	23,000	.....	.....	.....	.....	4,233,000	846.6
W. & L. E.	1,000,000	.....	.....	25,000	.....	.....	.....	.....	.....	.....	.....	.....	1,025,000	205.0
H. V.	.....	.....	1,240,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,240,000	248.0
T. & O. C.	.....	.....	1,000,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,000,000	200.0
N. Y. C.	150,000	.....	.....	205,000	.....	.....	.....	.....	.....	.....	.....	.....	255,000	71.0
P. & W. Va.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
W. S. B.	200,000	.....	.....	.....	.....	700,000	.....	.....	.....	.....	.....	.....	900,000	180.0
B. & L. E.	.....	.....	.....	.....	540,000	.....	.....	.....	.....	.....	.....	.....	540,000	108.0
P. & L. E.	.....	.....	.....	.....	.....	800,000	.....	.....	.....	.....	.....	.....	800,000	160.0
P. C. & Y.	.....	.....	.....	.....	.....	75,000	.....	.....	.....	.....	.....	.....	75,000	15.0
Montour	.....	.....	.....	.....	.....	800,000	.....	.....	.....	.....	.....	.....	800,000	160.0
Monongahela	.....	.....	.....	.....	.....	.....	.....	175,000	150,000	.....	.....	.....	325,000	65.0
K. & M.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
K. & W. Va.	.....	.....	200,000	.....	.....	.....	.....	.....	.....	660,000	.....	.....	860,000	172.0
C. & O.	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,750,000	*200,000	250,000	3,200,000	640.0
N. & W.	.....	.....	.....	.....	.....	Thacker and Kenova		.....	.....	300,000	†800,000	.....	1,100,000	220.0
S. V. & E.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	80,000	80,000	16.0
C. & C.	.....	.....	.....	.....	.....	.....	.....	.....	.....	40,000	.....	.....	40,000	8.0
L. & N.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	450,000	450,000	90.0
C. N. O. & T. P.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Long Fork	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	120,000	120,000	24.0
Union	.....	.....	.....	.....	.....	.....	.....	66,000	.....	.....	.....	.....	66,000	13.2
Total	4,000,000	900,000	2,500,000	250,000	600,000	5,000,000	.....	300,000	800,000	3,750,000	1,000,000	900,000	20,000,000	4,000 cars 100 days at 50 tons per car.

been started out to an original consignee, later on the speculator—in the meantime having obtained a better price elsewhere—causing the shipment to be reconsigned to another destination. In many instances carloads of coal in this way have been reconsigned two and three times, with a higher price tacked on at each point. The bituminous coal producers have time and again protested against this practice of reconsigning cars. The option of resorting to its use has been entirely with the railroads. On July 12, at a conference of bituminous operators in Washington, a protest against reconsignment of coal cars was voiced, the Interstate Commerce Commission being asked to limit it to the 'greatest possible extent, in order to eliminate existing abuses.' On the following day Chairman E. E. Clark, of the Interstate Commerce Commission, in a letter to Daniel Willard, of the Association of Railway Executives, urged that the railroads bring down the reconsignment of cars 'to the unavoidable minimum.'

"Under the reconsignment of cars, coal has been held at different points along railroad lines, as well as at terminals, for days at a time during the coal shortage emergency, depriving consumers of a supply that has been badly needed. Industrial concerns, public utilities, and other consumers have had to wait for coal while these reconsigned shipments were standing in cars upon the tracks.

"Although the speculators have been able to obtain only a relatively small proportion of the coal output, the effect of their activity has been to further disrupt a situation that for months has affected the nation's coal output. With an unprecedented demand for coal everywhere, many bidders have been willing to pay whatever price was necessary in the open market to get coal. More than 80 per cent of the bituminous coal of the country has been moved at low prices from the mines. Much of this coal has been handled by operators under contract with consumers. These operators have persistently refused to sell at excessive prices offered them by importunate bidders.

Coal Shortage Crisis Near an End

"With the priority orders of the Interstate Commerce Commission now stimulating the movement of coal to the Great Lakes and to New England, the bituminous coal operators believe that the coal shortage crisis soon will be straightened out. The effective working of this program will depend upon full co-operation by the railroads, which has been assured, and, at the same time, the faithful discharge by the mine workers of the obligation imposed upon them under the wage agreements made last Spring to stick at their work and dig the coal the country needs.

"Just as soon as the new program is in practical working operation, which will take some few days, abnormal market conditions will disappear, high speculative prices in the open market will vanish, and the public will have no fear of a 'fuelless' winter.

"The National Coal Association has embarked upon an effort to drive the speculators out. With this end in view the committee of six operators engaged in the export of coal, appointed by Col. D. B. Wentz, president of the National Coal Association, is now at work devising means to put an end to the reconsignment of coal cars in the shipment of coal to tidewater for export and for domestic trade. If the railroads co-operate with the operators in this effort the activity of speculators will be brought to an abrupt stop.

"Through the use of thousands of open top cars, placed at their disposal by the railroads under the reconsignment system, these manipulators in soft coal have contrived to get consignments of output with which to carry on their speculative activities. The operators have tried to break up the system of reconsignment of cars, with the consequent speculative opportunity, but, up to this time, without avail. In the meantime, speculators have run prices to consumers up to $10 and $12, or even more, a ton, as against prevailing average prices of $3.25 to $4 a ton at the mines. The operator cannot control the coal after it leaves the mine.

"Where exorbitant prices for coal are being exacted, the public ought to understand that it is not the responsible mine owner or operator who is to blame, but the speculator, who always springs up in such an emergency as has existed under the prevailing coal shortage. To stimulate car supply at the mines, the operators recently laid before the railroad executives plans for car distribution that, once in operation, would enable the operators to ship a flow of coal sufficient to meet the country's demands at this time, as well as for next Winter. These plans of the operators, which involve sacrifices by them in readjusting contracts to meet the emergency, were taken up by the railroads, and have just been put into effect in priority orders for the Northwest and New England by the Interstate Commerce Commission. Energetic co-operation by the operators and railroads will see this program through, and there is every expectation that it will prove effective."

Relief to Steel Companies

The Interstate Commerce Commission on July 29 at the request of a committee representing the steel companies, issued an amendment to its Service Order No. 9, the order giving general priority to bituminous coal in the use of open top cars suitable for coal loading east of the Mississippi river. The amendment changes the definition of coal cars so as not to include flat bottom gondola cars with sides less than 38 inches in height, inside measurement, instead of 36 inches. The effect of the change will be to release from the coal service for use in carrying iron and steel and other products approximately 15,000 open top cars. The representatives of the steel companies took the position that they were suffering a hardship by reason of the shortage of cars and that the low-side cars in question could be used only to a fraction of their capacity if devoted to coal transportation.

Bituminous Coal Production

The upward trend of bituminous coal production which has continued since mid-April was brought to an end during the week of July 24 by the outbreak of the strike in Southern Illinois, according to the weekly bulletin of the Geological Survey. The output is estimated at 10,601,000 net tons, a decrease, as compared with the preceding week, of 3 per cent. Daily loading reports show that the decrease occurred on Friday and Saturday of that week, when the strike began to be serious, and that it continued into Monday, Tuesday and Wednesday of the following week. Bituminous coal production during the first 175 working days of this year has been 293,550,000 net tons, nearly 17,000,000 tons behind 1917 and 33,000,000 tons behind 1918, but 45,333,000,000 tons ahead of 1919. During the week ending July 17 the average loss of time because of transportation disability amounted to 32.3 per cent. The coastwise movement of coal to New England during June was 772,000 net tons, almost exactly the same as the movement for May, but smaller than that of the first three months of the year.

Dumpings of bituminous coal at lower lake ports during the week ended July 24 were the largest of the season, but still 26 per cent below the corresponding week of 1919. The bulletin says that when Service Order No. 9 went into effect on July 26, the movement for the season was 5,000,000 tons behind 1918 and 6,500,000 tons behind 1919. Imports of bituminous coal into Canada during the first half of the year 1920 were 4,595,000 net tons, a decrease of 1,798,000 as compared with 1919 and 3,144,000 tons when compared with 1918. Dumpings of bituminous coal at tidewater during the week ended July 24, according to reports furnished by the American Railroad Association, totalled 25,690 cars.

This is 2,890 cars more than the weekly average for June, 1920, the record month. The rail movement of bituminous coal to New England during the week ended July 24 was the largest of the year and one of the largest on record.

Commercial stocks of bituminous coal in the United States on June 1 are estimated at 20,000,000 net tons. This was considerably less than stocks carried on October 1 of the years 1916 and 1917 and much less than the stocks accumulated on the close of 1918. In the three months from March 1 to June 1 stocks decreased 4,000,000 tons, or 17 per cent.

The Interstate Commerce Commission has issued an amendment to Service Order No. 10, to include and embrace the Zanesville & Western Railway Company, Campbell's Creek Railroad Company, and the Morgantown & Wheeling Railway Company.

Transportation Conditions Improving

WASHINGTON, D. C.

THE CAMPAIGN OF THE RAILROADS in co-operation with the Interstate Commerce Commission and the shippers to clear up the congestion resulting from the switchmen's strikes is showing results in the statistical reports concerning car movement and supply which are received regularly in Washington by the Commission on Car Service.

For the week ending July 16 the total accumulation of cars on hand in excess of current movement was reduced for the first time below the total for the week ending April 3 before the strikes began, to 92,700. On April 3 the total was 93,000 after it had been reduced during March from about 105,000, but in two weeks it increased to 290,000. Until the latter part of June this was steadily reduced until the recurrence of the strike in several eastern terminals after which the total again increased. On July 2 it was reported at 129,278.

The car shortage report also shows a gratifying decrease, which is attributed largely to the reduction in the accumulations. For the week ending July 1 the deferred car requisitions were reported as 130,670, but for the week ending July 15 the number had been reduced to 115,872, for the United States and Canada, or 108,847 for the United States alone, including 32,182 coal cars. During the period when the congestion was at its worst the car shortage increased each week, from about 80,000 to 130,000. The reports of revenue freight loaded and received from connections also continue to show good increases as compared with 1919, and in some parts of the country they are showing for July an increase as compared with 1918. For the three weeks ending July 17, the revenue freight loaded amounted to 2,521,968 cars, as compared with 2,455,364 for the corresponding period of 1919 and 2,722,562 for 1918. The figures for the three weeks are as follows:

	1920	1919	1918
July 3	839,629	743,226	793,621
July 10	757,666	809,845	975,621
July 17	923,968	902,293	953,320

The Commission on Car Service has issued the following summary of general conditions as of July 28:

Box Cars.—The heavy demand continues for box cars from all points. Orders are in effect for movement of box cars empty from eastern and southeastern roads to western lines in order to bring up their ownership and improve their supply for grain loading. The peak of the watermelon loading in the southeast is past, but it is necessary to continue loaded movement of ventilated cars into that territory in preparation for further perishable freight loading a little later.

Automobile Cars.—Prompt movement should be given automobile cars to auto-loading territory. Ownership must be respected in loading such cars, except that cars may be moved loaded or empty to lower Michigan or upper Indiana or Ohio, auto-loading points for loading with autos or trucks in accordance with Car Service Rules.

Stock Cars.—Heavy demand for stock cars in the southwest for perishable freight and stock loading. Movement of range cattle in northwest will start within the next two weeks. Necessary stock cars be handled with despatch and moved promptly to loading territory.

Refrigerator Cars.—The movement of empty refrigerators to the consuming territory is progressing satisfactorily and from all indications shippers' requirements are being very well protected. Demand, however, continues active, making it necessary that these cars be given expeditious movement.

Flat Cars.—The movement of agricultural implements has now reached its peak and flat cars should be handled as expeditiously as possible to insure reasonable car service for these shipments which must move within season. There is also a heavy demand for flats in the Southern territory to protect shipments of logs and timber, a large amount of which is stored and deteriorating through a lack of transportation.

Open Top Cars.—The production of bituminous coal in the last half of July will show considerable increase over the first period of the month as practically all coal loading railroads are reporting progressive improvement in placements at mines. The coal miners' strike in southern Illinois has made it necessary to divert a large number of cars to other coal fields, but it is not expected that any serious loss in production will occur as the result of these labor difficulties. In view of Service Orders 7 and 9 the outlook is very encouraging for continuation of the present favorable rate of coal production. The mill gondola situation is still serious, as the demand for this class of equipment greatly exceeds the available supply. Railroads are under instructions not to permit misuse of these cars and all concerned should be impressed with the urgent necessity of providing transportation for the large amount of steel stored in the mill districts. Under latest instructions commodities other than coal are receiving open cars with sides under 36" in height on a pro rata basis. Coal cars have been defined as those having sides of 36" and over, and these are being provided for other commodities when the movement is not materially out of line to the coal fields. Some special permits for road building necessities and important public improvements have been authorized by the Interstate Commerce Commission for shipments moving in the opposite direction from the coal fields.

Instances are being reported where difficulty is found in matter of car supply for the movement of necessary company material from foreign railroads, both for maintenance of equipment and for maintenance of way. Railroads are to a considerable extent working this out in a local way. If there are any emergency cases where assistance is found to be necessary the Commission on Car Service will undertake, upon request, to get cars placed for loading this material.

To relieve terminal congestion, eliminate switching and increase the car supply for road haul shipments, the Commission on Car Service has issued a circular suggesting that an embargo be placed against the use of all classes of equipment in intra-city movement, at each point where such action will result in improved car handling and increased car supply for general distribution.

The commission says a permit system should be inaugurated to protect the movement of such freight as cannot be handled by truck. The embargo should, so far as practicable, be absolute against the use of coal cars in cross-town movement. At common points where car service committees have been established the chairman of the committee should be named as permit agent.

CANADA has room and need for two great railways. The Canadian Pacific with its 20,000 miles of track, 250,000 tons of ocean shipping, and its chain of great hotels, is the example par excellence of a well-conducted company. I have set myself the task of making the Canadian National System the equal in service and efficiency of the great sister railway system. We are not rivals of the Canadian Pacific in anything but a friendly sense, but my view is that it is better for the people and for the development of Canada that there should be two competing systems.—*J. D. Reid, Minister of Railways.*

Additional Loans to Carriers

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION has announced its approval of the following loans to carriers out of the loan fund provided by the Transportation Act.

Atlanta, Birmingham & Atlantic

The commission on July 19 approved the making of a loan to the Atlanta, Birmingham & Atlantic, of $200,000 to aid the carrier in meeting a maturity of $475,000, due July 19, 1920. The loan was made with the condition that the carrier finance the remainder, $275,000, of the maturity for the term of not less than one year, at a cost to itself of not exceeding 7 per cent. This condition has been complied with by the carrier.

Central of Georgia

The Commission on July 21 approved a loan to the Central of Georgia of $815,000, to aid the carrier in purchasing 100 stock cars, 500 box cars, 200 gondola cars, and 7 Mountain type combination freight and passenger locomotives. The total estimated cost of this freight train equipment is $2,785,000, of which the carrier itself will finance $1,970,000, to meet the government's loan. The commission says the increase in transportation demands in the territory served by this carrier renders it necessary that its freight train equipment be augmented as rapidly as possible.

Great Northern

On July 28 the commission approved a loan to the Great Northern of $17,910,000, to aid the carrier in meeting maturing indebtedness of $20,000,000, and in purchasing 45 heavy standard Mikado locomotives, and 1,000 seventy-five-ton hopper-bottom steel ore cars, and also in making additions and betterments which will directly promote the movement of freight train cars. The total cost of the freight train equipment is $5,300,000, and of the additions and betterments which will directly promote the movement of freight cars, $1,800,000. The carrier itself will finance $3,290,000 of the purchase price of the freight train equipment, and $900,000 of the total amount required for additions and betterments.

Fifteen million dollars, the larger part of this loan, is for the purpose of enabling the carrier to meet in part its maturing collateral trust notes due September 1, 1920, aggregating $20,000,000. The outstanding feature of this part of the loan is that the loan is to be repaid in one year from the date thereof, and not later than September 1, 1921, when the amount of the repayment will be available by the government to meet the demands of other carriers for loans before the expiration of the period provided by law for the disbursement of the revolving fund. As a further condition precedent to the making of the loan, the carrier was required to pledge itself to apply to the commission for a loan to construct or purchase 500 refrigerator cars, one-fourth of the cost of which will be financed by a loan from the government, and three-fourths of the cost of which will be financed by the carrier itself.

The proposed expenditure of $1,800,000 for additions and betterments is divided as follows: For strengthening existing equipment, $200,000; for fencing right of way, $100,000; for cottages for housing employees at White Fish, Mont., $100,000; for car repair sheds in North Dakota, $400,000; for additional yard tracks at Allouez, Wis., Hillyard, Wash., and other miscellaneous passing and station tracks, $600,000; for additional or improved water supply at Devon, Mont., and miscellaneous use, $100,000; for shop buildings and tools at Whitefish, Mont., engine terminal, and elsewhere, $300,000.

Ask Approval of Express Contract

WASHINGTON, D. C.

THE Association of Railway Executives and the American Railway Express Company have filed with the Interstate Commerce Commission a petition requesting that an order be entered approving and authorizing the adoption of a proposed form of contract between rail carriers and the American Railway Express Company covering the express operations over the rail lines, which proposes a new method of compensating the railroads. By this contract it is proposed to divide the carriers into groups and to deal with and divide express transportation revenues and expenses by groups of carriers. The commission has announced a hearing on the petitions, to be held at Washington on August 6 before Examiner F. E. Brown. In its petition the Association of Railway Executives said that the negotiations between a committee of the association and of the express company have resulted in an agreement upon this form of contract provided the commission approves, and that 97 roads voted in favor of the contract, 6 against it and 14 reserved their vote. The petition explains that inasmuch as the proposed contract undertakes to deal with a substantial proportion of the revenues of the railroads as to which the transportation act imposed upon the commission a certain responsibility, and inasmuch as the proposal is to deal with the express transportation revenues and expenses, not by reference to individual roads and the express company, but by groups of roads, it was felt that the contract should be submitted to the commission for its approval before being accepted by the carriers. The association feels that the public has a just right to expect from the railway carriers due and timely provisions for the orderly and efficient conduct of the express business, and that the only practicable means of securing this in the time remaining is to avail of the organization and facilities of the American Railway Express Company. The division of earnings to the extent proposed will, the petition said, under the special circumstances, be in the interest of better service to the public, economy of operation, and will not unduly restrain competition.

Regarding the amount to be paid to the railway company by the express company for the express privileges, the contract provides that the railroads shall be divided into groups corresponding to those fixed by the Interstate Commerce Commission for rate-making purposes and after making deductions for expenses by groups the balance remaining is to be distributed as follows: 2½ per cent to the express company and the remainder among the railroads in the group executing this form of contract in the proportion that the gross express transportation revenue for the month earned on the line of each railroad bears to the gross express transportation revenue earned on the lines of all such railroads in that group for that month, with further provision as to the division between the parties in interest of so much of the above-mentioned 2½ per cent as exceeds 6 per cent of the value of the entire real property and equipment and other capital of the express company employed in express business, with certain exceptions.

It is further provided that one-half of the profit thus accruing to the express company shall be accumulated by it until a sum equal to 10 per cent on the value of the entire real property and equipment and other capital shall have been reached, after which any profit shall be divided in the ratio of one-fourth to the express company and three-fourths to the railroads. It is agreed that the value of the entire real property and equipment and other capital of the express company referred to was on July 1, 1918, $34,642,109, to which shall be added additions and betterments, and from which shall be deducted depreciation and retirements since that date.

PENNSYLVANIA RAILROAD STOCKHOLDERS on July 1 numbered 126,468, the largest number of any American railroad corporation.

General News Department

The Steam Railroad Section of the National Safety Council will hold its next annual meeting at Milwaukee, Wis., from September 27 to October 1.

The American Association of Engineers now reports that it has 20,000 members, an increase during the first seven months of 1920 of 9,550, while the number of local chapters and clubs aggregates 209.

Retired employees of the Missouri Pacific who are on the pension roll receive for the month of July an increase of 50 per cent. These pensioners have been drawing from $15 to $75 a month. Under the new provision they will get from $37.50 to $112.50 a month. The increase in cost of living prompted the Board of Directors to take this action.

Director of Traffic (in the War Department) is the title of the office named in the last circular of the United States Civil Service Commission, which announces an examination of applicants, to be closed on September 7. The vacancy for which a man is wanted is at the Curtis Bay General Ordnance Depot, Maryland, and the salary will be from $2,200 to $2,600. Applicants must be 25 years old and must have had a high school education and five years' experience. The duties of the place will consist of the organization and supervision of traffic details of outbound and inbound freight, movements by rail and water, and handling the railroad operating force in the depot. Applicants must have knowledge of rates, rules, regulations, tracing, billing, routing, expediting, diversion, train service, car service, demurrage, and handling explosives; and ability to handle efficiently a force of enginemen, trainmen and clerks.

The American Association of Engineers has created a national railroad council consisting of George W. Hand, assistant to the president, C. & N. W., Chicago, chairman; W. W. K. Sparrow, assistant to the president, C. M. & St. P., Chicago; W. Evans, C. & A., Chicago; J. B. Latimer, signal engineer, C. B. & Q., Chicago; W. C. Bolin, valuation department, B. & O., Chicago; F. C. Shepherd, principal assistant engineer, B. & M., Boston, Mass.; S. H. Brenaman, Pennsylvania, Pittsburgh; A. H. Utter, C. B. & Q., Lines West, Lincoln, Neb.; Harold Knight, regional engineer, Erie, Youngstown, Ohio; C. I. Long, N. Y. C., Lines West, Cleveland, Ohio; C. C. Berritt, Southern, Washington, D. C.; Lef Winship, assistant engineer, M. P., St. Louis, Mo.; J. E. Bebb, assistant bridge engineer, M. C., Detroit; J. T. W. Jennings, assistant engineer, E. J. & E., Joliet, Ill.; H. I. Benjamin, S. P., San Francisco, Cal., and E. C. Huffman, principal assistant engineer, C. & N. W., Chicago.

Correction

In the summary of the testimony of shippers before the Interstate Commerce Commission in the present rate advance deliberations in the *Railway Age* of July 2, page 22, James Bale, of the Grand Rapids Plaster Company, Grand Rapids, Mich., is quoted as favoring a flat advance in cents per hundred pounds on gypsum products. Mr. Bale's testimony was offered on behalf of the United States Gypsum Company and other gypsum companies and the attention of the *Railway Age* has been called to the fact that the United States Gypsum Company's attitude is favorable to a percentage increase and not a flat increase in cents per hundred pounds.

Coal Shortage in Chicago

While a majority of striking coal miners in Illinois and Indiana were returning to work, Chief Justice Robert E. Crowe, of the Criminal Court of Chicago, charged the August grand jury to investigate the threatened coal famine in Chicago to "determine whether or not any persons, firm or corporation are engaged in a conspiracy to bring about a coal shortage for the purpose of manipulating the price."

While coal dealers in Chicago have been encouraged by the return to work of the striking miners, the situation in that city still remains serious. It will be several days before coal will start coming into the distributor's bins, and even then the most optimistic statements indicate that it will be some time before the supply equals the demand.

Business Principles of U. S. Chamber of Commerce

Overwhelming approval of a platform setting up 12 principles of industrial relations has been given by the membership of the Chamber of Commerce of the United States in a referendum vote on the report of a special committee of the chamber's board of directors. This report went deeply into the subject of the employment relation and recommended among other things recognition of the right of open shop operation and the right of employers and employees to deal directly with each other without participation by outside interests. At the same time the chamber's membership in another referendum vote has approved a report of its Committee on Public Utilities, recommending that strikes by public utility employees should be explicitly prohibited and that tribunals should be created by law to adjudicate, in decisions binding on both parties, differences between public utilities corporations and their employees. The vote on the two referenda was the largest ever recorded by the chamber on any subject.

Increased Wages in Canada

The railway employees of Canada will no doubt receive increases of pay to bring their compensation up to the basis which now obtains in the United States in accordance with the award promulgated last week. The Minister of Railways, Mr. Reid, made an announcement to this effect, so far as the National Lines are concerned, on July 27, adding that the increases would mean an increase in operating expenses of from $47,000,000 to $70,000,000, which would have to be met by increasing freight and passenger rates. If the Canadian Pacific accepts the award, he said, it would mean paying no dividends to shareholders until conditions should be adjusted. Officers of the Grand Trunk said that the announcement in newspapers that that road had decided to put the new rates in effect within two weeks, was premature. The granting of the increases in the United States was contingent upon increases in freight rates being granted, and the same condition would prevail in Canada. The Board of Railway Commissioners of Canada has now before it an application from the Canadian railways similar to that made by the United States lines, but no decision regarding the same has yet been made.

R. B. A. and the N. I. T. League

The National Industrial Traffic League and its far-sighted advocacy of improved railroad service, even at the cost of some sacrifice on the part of shippers, are the subject of a pamphlet issued by the Railway Business Association for circulation among merchants and manufacturers. It quotes the strong statements of R. M. Field and others, made before the Interstate Commerce Commission, showing the mutuality of interest of carriers and shippers in the present crisis, and gives a list of 49 prominent business houses which are members of both the Railway Business Association and the National Industrial Traffic League. Alba B. Johnson, president of the association, in a letter to William H. Chandler, president of the league, says:

"Few if any organizations or groups were more influential than the National Industrial Traffic League in the decision of Congress to unify federal railway regulation in one body, the Interstate Commerce Commission. The Commission now has the responsibility for adoption and execution of a policy which shall

save our transportation facilities and build them up as speedily as possible. * * * This is an essentially new function of the Commission. To be successful the Commission must have the co-operation of those who use the facilities. The industrial and mercantile interests which confide to your League the work of serving them in the field of transportation are warranted in esteeming the response of the League to this new call of Congress and of the Commission as in the highest degree adequate.

"The National Industrial Traffic League is supported by a rapidly increasing constituency, and it is justified in expecting the support of many other industries and associations. * * *"

Western Executives Call for Increased Efficiency

Now that the wage award has been disposed of, western railway executives have issued urgent appeals to their employees to buckle down to work and earn the $600,000,000 increase by striking a blow at the congestion that has been tying up traffic. The workers are urged to "respond promptly and effectively to the situation and co-operate with the public and with each other to immediately secure and maintain the highest possible efficiency in operation."

In a letter to employees, President H. E. Bryam of the Chicago, Milwaukee & St. Paul, said:

"This board, being a government body including in its membership representatives of the public as well as of the railroads and employees, and having spent several months in thorough and impartial investigation of conditions, it is safe to assume that its conclusions are on a sound basis.

"They should, therefore, be accepted by the public, the railroads and the railroad employees. We believe the public has a right to, and will expect, the utmost efficiency in operation of the railroads, and that the officers and employees will respond promptly and effectively to the situation."

Henry Miller, president of the Terminal Railroad Association of St. Louis, addressed the following communication to employees of that road:

"The recent award has brought wages up to the highest point ever reached. If this wage standard is to endure, it must be equaled by relatively efficient service, cheerfully and courteously rendered. Patrons will not begrudge what they pay if furnished satisfactory transportation. This is no easy task, with the railroads overloaded, and we should do our utmost to improve both the quality and the quantity of the service; and to that end the management requests your hearty co-operation."

Bituminous Coal Strike Ends

The strike of coal miners in the bituminous fields of Illinois and Indiana has further complicated the transportation situation in the central west in that it has resulted in a decided decrease in production in those fields which supply a large part of the central west's coal stock. Acting under orders from both John L. Lewis, international president of the miners' union, and Frank Farrington, president of the Illinois branch of that organization, the miners in the Illinois and Indiana fields began returning to work on Monday, August 2. The end of the strike, after a two weeks' shutdown, came after every attempt at its peaceful settlement had failed. Governor Frank O. Lowden of Illinois and other state officers attempted to induce the miners to return to work and to bring the miners and operators together; however, all of these attempts were unsuccessful and the situation finally passed into the hands of the federal government. President Lewis, in issuing the order for the termination of the strike, stated that it was issued "in consideration of the request of President Wilson that the strike be ended."

In South Chicago, several of the large steel mills have been forced to close portions of their plants and at Gary, Ind., the large steel mills have been daily facing a serious situation with the prospect of shutting down a portion or all of their steel mills purely because of lack of coal. Many of the public utilities throughout the state are in a similar predicament. Chicago has on hand 35,000 tons of coal in comparison with 190,000 tons at the same time last year. Almost all big industries are working on a "hand to mouth" basis and if their coal cars should get caught in a freight jam so that their supply is shut off, they will have to "slow up" or shut down entirely. At St. Louis the supplies of bituminous coal are extremely low and at Kansas City a similar condition exists.

The proposal of the Chicago Car Service Commission of the American Railroad Association that the Interstate Commerce Commission issue an order, effective on August 4, abolishing "shippers' order bills of lading for notification," has aroused a storm of protest from produce men and importers of foodstuffs. Railroad officers maintain that the order is needed to clear the Chicago terminal of cars held awaiting the consignee's convenience. On the other hand the produce men claim that the issuance of the order means virtually an embargo against food shipments into Chicago. Delays in the shippers' offices or in the mail have resulted frequently in cars reaching Chicago before the bill of lading does, thereby resulting only in clogging the terminal trackage. Furthermore, if "shippers order bills of lading for notification" are abolished the railroads will be relieved of the responsibility of holding cars of food on terminal tracks, awaiting the orders of speculators who endeavor to sell their consignments before they are unloaded.

The food dealers, among them representatives of the meat packers, maintain the order will virtually shut off shipments to Chicago of produce from the Pacific coast and the South.

W. J. O'Brien, general manager of the Chicago Junction, in commenting on the proposed order, said that the shippers would be given an opportunity to prove that the proposed order would hinder Chicago business before it is actually placed in operation.

An order prohibiting the reconsignment of coal in cars after it has been delivered to its destination was issued by the Illinois Public Utilities Commission later Wednesday. The order is the result of the investigation which the State Commission has been making into both the car shortage and speculation in coal, and the order is designed to put an end to these conditions. Fines of $10 per day in addition to the regular demurrage rates are to be added when the car is held beyond the free time allowed by the roads.

Joint Meeting of Oil and Railroad Officers

A joint meeting of oil traffic and railroad operating and traffic officers was held at the Congress Hotel, Chicago, on July 30. Approximately 200 representatives of the railroads and oil interests attended.

Samuel O. Dunn, editor of the *Railway Age,* addressed the meeting on the general transportation situation. In the discussion following, several facts were developed, among which are the following:

1. That there had been a considerable improvement in the service during the past two months, and that this was more true in the West than in the Eastern territory.

2. The establishing of oil schedules, it was determined, was a step in the right direction, but must be followed up to see that the schedules, as published, are carried out.

3. It developed that the railroads had frequently split up solid trains of oil into two or three trains at terminals, nullifying the work of the refiners in consolidating their shipments into solid trains for single destinations and distributing centers, and adding to the terminal congestion and expense, causing an unnecessary delay in the movement of the traffic. This, apparently, is due to a lack of a proper understanding on the part of the terminal and division forces of the necessity for keeping these trains intact, not only for the benefit of the shipper, but for the economy in operation by the railroads.

It is important in handling the solid trains of oil that the carriers keep each other advised of the probable time of delivery of such trains to avoid delay.

4. The rerouting of oil has caused the delay to tank cars in a good many instances, and Service Order No. 1, of the Interstate Commerce Commission should not be resorted to except in cases of absolute necessity on account of the railroads' inability to accept their regular time freight traffic. It was also indicated that where oil was rerouted that there was a general failure to comply with that portion of the Interstate Commerce Commission's order that requires both the consignees and consignors be notified of the diversion.

5. There was a general complaint about the failure to mail junction reports promptly. Some concerns reported receipt of junction reports fifteen to twenty-five days after the cars had been delivered to connections. A great deal of the tracing could be eliminated if the railroads would see that the junction reports are furnished promptly.

6. It was shown that there was an apparent lack of any definite connection between the Car Tracing Department and the office of the Superintendent of Transportation, or other officer responsible for the moving of equipment. It is a common occur-

rence that an answer will be made to a car tracer indicating that a car is at a certain point on the railroad, but does not say anything about what steps have been taken to determine whether the car is still at that location, or what, if anything, will be done to see that it is forwarded to destination.

It is recommended to the railroads that they have a review made of the operations of their Tracing Department to determine whether it is operating as a real benefit to themselves, and the shippers. It is apparent that very little importance is attached to that department at the present time.

7. There was a general complaint of failure, or refusal on the part of railroad agents to receipt for the return billing instructions covering empty tank cars. There appears to be no good reason why this should not be done.

It is recommended that any instructions now in effect in tariff form, or otherwise, that prevents agents signing these return billing instructions, be canceled, and all agents be instructed to in the future, sign these return billing instructions.

8. It was indicated that there was a considerable delay to tank car equipment chargeable to the consignees. It is recommended to the oil shippers, generally:

(a). That they make greater efforts to unload all tank cars promptly on arrival.

(b). That they provide proper storage to permit of prompt unloading of cars on arrival.

It is recommended that the railroad agents notify shippers direct of any cars that are on hand not unloaded twenty-four hours after arrival, provided the delay is chargeable to the consignees, and that in such cases, shippers endeavor to have the cars unloaded promptly, or diverted to other consignees where the cars can be released without delay.

9. It was recommended that where there was sufficient traffic to justify it, that the railroads assign a man in the office of their Superintendent of Transportation, or such other officer as may seem proper, whose duty will be to look after all loaded and empty tank car movements, with view of:

(a). Keeping a close record on the movement to assure carrying out of the published schedules.

(b). That where cars are set out by reason of being in bad order, that report be made to this officer to insure prompt repairs and movement.

(c). That all communications in connection with the oil and tank car movement be sent to the particular officer assigned to this work.

(d). The duty of educating all the forces interested in transportation to the necessity of the prompt movement of the tank cars might well be delegated to this proposed officer.

(e). That separate tank car records be maintained and be under the jurisdiction of this proposed special officer.

It is believed that such an arrangement will add nothing to the expense of the railroads, will prove of very great benefit to themselves and the shippers in securing compliance with oil schedules and will insure rendering of prompt reports to the oil shippers, thereby largely eliminating car tracing and complaints about delays to cars.

Labor Board Closes Hearings on Expressmen's Demands

Public hearings on the demands of railway express employees before the United States Railroad Labor Board in session at Chicago were ended on July 27. The applications of the men for increased compensation are now under consideration by the Board, in executive session, and it is presumed that an award will be handed down in the near future.

The presentation on behalf of the employees started on July 22. E. H. Fitzgerald, grand president, and J. R. Abbott, vice-grand president of the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, and J. M. Gillespie, representing the International Brotherhood of Teamsters, Chauffeurs, Stablemen and Helpers, testified during the first day's session. These men asked for increases approximating 25 cents per hour for all employees, the award to be retroactive to March 1, 1920. In addition, time and a half overtime for Sunday and holiday work, with a guaranteed minimum of eight hours, two weeks' vacation and the elimination of all piece-work, tonnage and bonus systems were requested. Addison Bollinger and Edgar H. Wilson, both representing the order of Railway Expressmen, requested an advance of $35 per month for all employees, to be added to their wages as of July 1, 1920. B. F. Tansey, representing the Railway Expressmen, Drivers, Conductors, Chauffeurs, Helpers and Checkers of Chicago, also asked for an increase of $35 per month for the members of that organization and an agreement with the express companies.

On July 23, L. R. Gwyn, representing the American Railway Express Company, replied to the demands of the men, in general, opposing the increases requested and calling the Board's attention to the inability of the company to pay the requested increases which would add approximately $3,460,867 per month, or $42,163,746 per year, to the company's payroll. Rebuttals and sub-rebuttals were presented to the Board on July 26 and 27 by Messrs. Gwyn, Abbott, Tansey, Gillespie and Bollinger. Immediately thereafter the Board went into executive session to prepare its decision.

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—F. M. Nellis, Room 3014, 163 Broadway, New York City.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—S. W. Derr, Philadelphia & Reading, Philadelphia, Pa.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, Illinois Central, Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, C. & E. I. R. R., 332 South Michigan Ave., Chicago. Next meeting, November 16-18, 1920, St. Louis, Mo.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Next annual meeting, October 14-15, Chicago.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Union Station, St. Louis, Mo. Next meeting, October 13-15, 1920, Chicago, Ill.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 8 W. 40th St., New York.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOCIATION.—C. F. J. Dell, 50 E. 42nd St., New York.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—Otto E. Schlinck, 185 W. 5th St., Peru, Ind.

AMERICAN RAILROAD ASSOCIATION.—J. E. Fairbanks, 75 Church St., New York:

Section I, Operating (including former activities of Association of Railway Telegraph Superintendents).—W. J. Fripp (chairman), N. Y. C. R. R., New York, N. Y.

Telegraph and Telephone Division.—J. F. Caskey (chairman), Supt. of Telegraph, Lehigh Valley.

Section II, Engineering.—E. H. Fritch, 431 South Dearborn St., Chicago.

Signal Division.—H. S. Balliet, 75 Church St., New York.

Section III, Mechanical (including former activities of Master Car Builders' and Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago. Next convention, June 15-22, Atlantic City, N. J.

Section IV, Traffic.—Robert C. Wright (chairman), General Traffic manager, P. R. R., Philadelphia, Pa.

Section V, Transportation (including former activities of Association of Transportation and Car Accounting Official.—E. J. Pearson (chairman), President, N. Y., N. H. & H. R. R., New Haven, Conn.

Section VI, Purchases and Stores (including former activities of Railway Storekeepers' Association).—J. P. Murphy, N. Y. C. R. R., Collinwood, Ohio.

Section VII, Freight Claims (including former activities of the Freight Claim Association).—Lewis Pilcher, 431 South Dearborn St., Chicago. Next meeting, November 17, 1920.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Austin Station, Chicago. Next convention, October 26-28, 1920, Atlanta, Ga.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railroad Association, Section II.) E. H. Fritch, 431 South Dearborn St., Chicago.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railroad Association, Section III, Mechanical.)

AMERICAN RAILWAY PERISHABLE FREIGHT ASSOCIATION.—E. F. McPike, 135 E. 11th Place, Chicago. Regular meetings, 2nd Wednesday in March and September.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 1145 East Marquette Road, Chicago. Next convention, September 1-3, 1920, Hotel Sherman, Chicago.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Col. H. S. Crocker (acting secretary), Engineering Societies Building, 33 W. 39th St., New York. Annual convention, August 10-12, Multnomah Hotel, Portland, Oregon. Regular meetings, 1st and 3d Wednesday in month, except July and August, 33 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

AMERICAN STEEL TREATERS' SOCIETY.—W. H. Eisenman, 154 East Erie St., Chicago.

AMERICAN TRAIN DESPATCHERS' ASSOCIATION.—C. L. Darling, Northern Pacific Ry., Spokane, Wash. Next convention, June 20, 1921, Kansas City, Mo.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Mt. Royal Sta, Baltimore, Md. Next annual meeting, January 25-27, 1921, San Francisco.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—Willis H. Failing, C. R. R. of N. J., Jersey City, N. J.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago.

ASSOCIATION OF RAILWAY EXECUTIVES.—Thomas De Witt Cuyler (chairman), 61 Broadway, New York, N. Y.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railroad Association, Section I, Operating.)

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railroad Association, Section V. Transportation.)

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—G. R. McVay, Barrett Company, Chicago. Meeting with convention of American Railway Bridge and Building Association, October 26-28, 1920, Atlanta, Ga.

CANADIAN RAILWAY CLUB.—W. A. Booth, 131 Charron St., Montreal, Que.
CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August. New Morrison Hotel, Chicago.
CAR FOREMEN'S ASSOCIATION OF ST. LOUIS.—Thomas B. Koeneke, Federal Reserve Bank Bldg., St. Louis, Mo. Meetings first Tuesday in month at the American Hotel Annex, St. Louis.
CENTRAL RAILWAY CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 2d Thursday in November and 2d Friday in January, March, May and September, Hotel Statler, Buffalo, N. Y.
CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—J. C. Keene, General Car Inspector, Wabash R. R., Decatur, Ill. Annual convention, September 14-16, Windsor Hotel, Montreal, Que., Canada.
CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—D. B. Wright, Lehon Company, 45th and Oakley Sts., Chicago.
CINCINNATI RAILWAY CLUB.—H. Boutet, 101 Carew Bldg., Cincinnati, Ohio.
EASTERN RAILROAD ASSOCIATION.—D. G. Stuart, Washington, D. C.
FREIGHT CLAIM ASSOCIATION.—(See American Railroad Association, Section VIII, Freight Claims.)
GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Sta., Chicago. Regular meetings, Wednesday preceding 3d Friday in month, Room 856, Insurance Exchange Bldg., Chicago.
INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, B. & O., Lima, Ohio. Next annual convention, August 17-19, Hotel Statler, Detroit, Mich.
INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 702 E. 51st St., Chicago. Next annual meeting, May, 1921, Hotel Sherman, Chicago.
INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn. Next convention, September 7-10, Hotel Sherman, Chicago.
MAINTENANCE OF WAY MASTER PRINTERS' ASSOCIATION.—E. E. Martin, Union Pacific R. R., Room No. 19, Union Pacific Bldg., Kansas City, Mo. Next convention, October 5-7, 1920, Detroit, Mich.
MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York.
MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Next convention, September 14-16, New American House, Boston, Mass.
MASTER CAR BUILDERS' ASSOCIATION.—(See American Railroad Association, Section III, Mechanical.)
NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—J. J. Schafly, Potosi Tie & Lumber Company, St. Louis, Mo. Next annual convention, January 27-28, 1921, San Francisco.
NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Next convention, November 9, 1920, Washington, D. C.
NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York.
NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, Kelly-Derby Co., Peoples Gas Bldg., Chicago.
NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting months of June, July, August and September.
NEW YORK RAILROAD CLUB.—Harry D. Vought 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.
PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meeting 2d Thursday in month, alternately in San Francisco and Oakland.
RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Bldg., Washington, D. C.
RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 30 Church St., New York.
RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, Americus Club House, Pittsburgh, Pa.
RAILWAY DEVELOPMENT ASSOCIATION.—D. C. Welty, Missouri Pacific R. R., Little Rock, Ark.
RAILWAY ELECTRIC SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.
RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—D. L. Eubank, Galena Signal Oil Company, Richmond, Va.
RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.
RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, C. & O. Ry., Richmond, Va.
RAILWAY SIGNAL ASSOCIATION.—(See American Railroad Association, Section II, Signal Division.)
RAILWAY STOREKEEPERS' ASSOCIATION.—(See American Railroad Association, Section VI, Purchases and Stores.)
RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa.
RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Co., 30 Church St., New York.
ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Next annual convention, September 21-23, Hotel Statler, St. Louis, Mo.
ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.
SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, Schroeder Headlight & Generator Co., New York City.
SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.
SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.
SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.
SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—C. N. Thulin, Duff Manufacturing Company, 935 Peoples Gas Bldg., Chicago
TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meets with Roadmasters' Maintenance of Way Association.
TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. R. R., Cleveland, O. Next convention, September 14-17, Hotel Sherman, Chicago.
WESTERN ASSOCIATION OF SHORT LINE RAILROADS.—Clarence M. Oddie, Mills Bldg., San Francisco.
WESTERN RAILWAY CLUB.—J. M. Byrne, 916 W. 78th St., Chicago. Regular meetings, 3d Monday in month, except June, July and August.

Traffic News

The express companies operating in Canada have asked the Board of Railway Commissioners for authority to make a general increase of 40 per cent in their rates for the transportation of merchandise.

The freight traffic department of the International & Great Northern, which has been located at Palestine, Texas, since the general offices of the road were moved back to that city by court order, has been moved back to Houston, effective July 14.

Brigadier General Frank T. Hines has resigned as chief of transportation service of the United States Army, a position which he held during the war, to become vice-president and director of operations of the Baltic Steamship Corporation of America.

The Long Island Railroad reports that fourth-of-July traffic this year was heavier than ever before, the number of passengers carried in the five days of holiday traffic being 1,569,800. This is about 10 per cent higher than in 1919, and more than 50 per cent higher than in 1916. Of the 4,158 scheduled trains, 2,367 were on time; and the average loss of time by delayed trains was 10 minutes, 30 seconds.

The manager of the Ohio Region of the Erie Railroad reports that freight forwarded has increased heavily, and that "this has resulted from the splendid co-operation on the part of the industries. They are doing their own intra-plant work where possible, making up solid trains within their plants for definite points. They practice intensive loading, and keep constantly in touch with the railroads to determine where freight can be handled to the best advantage."

At Memphis, Tenn., lumber dealers report severe damage done to logs and lumber piled for shipping because of exposure to worms, bugs and all sorts of insects. Hundreds of thousands of feet of logs waiting for cars, are thus exposed. One firm is said to have about 5,000,000 ft. that cannot be moved because of the shortage of cars. Shippers of hardwood lumber cannot secure more than one quarter of the box cars they need. One firm in Memphis has 30 automobile trucks in use for hauling logs.

The Erie Railroad reports that in the four months ending with June, its ton-mileage 3,715,892,789 tons, was 14 per cent more than in the same period of 1919. This increase was accomplished with an increase of only one per cent in freight car mileage. The Lehigh Valley reports for the period from March 1 to July 22, an increase in the number of cars moved, of eight per cent, the total number this year being 1,246,743 cars. The New York Central reports for four months a movement of 3,011,076 cars, an increase over the corresponding period of last year of 100,467 cars.

Railroads Propose Higher Demurrage Rates

Announcement that the railroads expect to file tariffs with the Interstate Commerce Commission proposing a demurrage charge of five dollars a day and a change in the provisions of the average agreement so that a car may earn credits for only three instead of four days, was made by the general committee of the transportation section of the American Railway Association after a conference at Washington on July 29, with the demurrage committee of the National Industrial Traffic League. The conference was held to consider a proposal by the railroad committee that the demurrage rates put in effect by the Railroad Administration during the war be restored. These rates were $3 a day for the first four days after full time. So for the next three days and $10 for each succeeding day. The league committee protested against this proposal, on the ground that it would tend to penalize shippers for the effects of the irregular railroad service. When the league committee declined to agree to the proposal, the railroad committee announced that it proposed to ask the commission to authorize the $5 rate. The present demurrage rates, which were restored by Director General Hines last summer, at the request of shippers, are $2, $3 and $5 a day.

Commission and Court News

Interstate Commerce Commission

The Commission has issued an order approving the filing of the proposed new Illinois Freight Classification rates, rules, regulations and practices which were agreed on by representatives of the Illinois commission, the railroads and the shippers.

The Commission has suspended from July 30 to November 27 the operation of Missouri Pacific tariffs wherein it is proposed to amend the transit privileges on inbound forest products, by restricting the outbound weight on finished products such as ceiling, flooring, mouldings and pickets, to a basis of 40 per cent of the weight of inbound rough green lumber.

The Commission has suspended until November 29 a rule in a tariff filed by F. W. Gomph, agent, providing that rates to and from Canada published in the tariff are payable in United States currency or its equivalent. The commission has also announced a hearing at Minneapolis on August 3 on the question of the payment of charges into and out of Canada which are affected by the rate of exchange.

The Interstate Commerce Commission, in a case instituted by the Chicago Live Stock Exchange against the railroads, has reversed its former finding that loading and unloading of live stock in carloads at the Chicago stockyards is a duty of the shipper and holds that the collection of separate charges from the shipper for unloading and loading live stock in addition to the rates on live stock to and from the Chicago stockyards is an unlawful and unreasonable practice. The stockyards at Chicago are found to be terminals of the line haul carriers, the Chicago Junction Railway and the stockyard company.

The Commission on July 27 issued the following Conference Ruling: "Jurisdiction over intrastate rates, etc., of carriers which were under federal control when it terminated at 12:01 a. m., March 1, 1920, thereupon passed to the authorities of the respective states, subject to the provisions of section 206 of the Transportation Act, 1920, and with the limitations: (a) that such rates, etc., shall not be reduced prior to September 1, 1920, without the approval of the Interstate Commerce Commission, and (b) that they shall not contravene the provisions of section 13 of the Interstate Commerce Act" (which empowers the Commission to regulate car service).

The Commission, on the petition of the New York Central, has ordered an investigation and a hearing to be held at Washington on August 20 before Chief Examiner Wilbur LaRoe, Jr., to determine whether the two-cent passenger fare ordered by the New York Public Service Commission will cause any undue advantage or prejudice as between persons or localities in intrastate commerce on the one hand and interstate and foreign commerce on the other hand; or any undue discrimination against interstate or foreign commerce, also as to what fares or what maximum or minimum, if any, shall be prescribed to be charged by the New York Central in order to remove any preference or discrimination which may be found to exist. The petition filed by the New York Central stated that the New York Public Service Commission, Second District, on June 15, had ordered it to restore on September 1 the two-cent rate for way passengers between Albany and Buffalo, as provided by Section 57 of the railroad law of the State of New York.

Court News

Couplers Must Couple on Curve

The New York Appellate Division holds that in an action for injuries to a freight conductor while making a coupling on a curve, the direction of a verdict in his favor on the ground that the railroad company violated the federal Safety Appliance Act, §§ 2, 8, by failing to provide automatic couplers, was warranted, where there was evidence that other companies provided couplers which would couple automatically under similar circumstances without adjustment by trainmen. —Pless v. New York Central, 189 App. Div. 261, 179 N. Y. Supp. 578.

Ineffectual Excuses for Failure to Look and Listen

The Indiana Appellate Court holds that mental absorption or reverie, induced by business, grief, or other causes, will not excuse a traveler from his duty to look and listen before entering on a crossing. Nor will the failure of the railroad company to perform a statutory duty in the operation of a train as it approaches a crossing, although such failure is negligence per se. This is true though the traveler has a right, within reasonable limits, to assume that the railroad company will obey the law in approaching such crossing with a train.—Waking v. Cincinnati, I. & W. (Ind.) 125 N. E. 799.

Orders Fixing Rates Are Not Equivalent to Finding That Previous Rates Were Excessive

The federal district court of the Northern District of Illinois holds that an order of the Interstate Commerce Commission, fixing rates for the future, is not the equivalent of a finding that rates previously charged and collected were unreasonable and unjust, which will support a judgment awarding a shipper reparation. There must be a specific finding as to the reasonableness of the rates challenged, and proceedings for that purpose, and for fixing future rates, are, or may be, entirely separate and distinct.—Morgan Co. v. Great Northern, 263 Fed., 611.

Delay in Selling Timber on Right of Way

Where by parol contract a railroad sells the timber on its right of way soon to be occupied for railroad purposes, and the purchaser with this understanding removes the timber then marketable and vacates, and for more than ten years makes no further claim to the timber, and the railroad's property is sold to another company, and after loss of evidence and changes of circumstances respecting the timber the purchaser by contract undertakes to sell what remains on the land to a third person, equity on principles of laches and staleness of the demand will deny specific performance.—Wellman v. Virginian R. Co. (W. Va.), 101 S. E. 252.

Recent Decisions Under the Federal Employers' Liability Act

The Vermont Supreme Court holds that if, in placing a locomotive to be coaled a servant of the railroad negligently left the reverse lever off the centre, the throttle open, or the brake so loose that the locomotive could and did start, his wrongful acts were in the performance of the duties of his employment, and the railroad, under the federal Employers' Liability Act, is responsible for resulting injuries, such as injuries sustained by another employee due to its starting while he was reaching for the coal chute.—Moore v. Grand Trunk (Vt.) 108 Atl. 334.

Leaning Out of Cab Window to Watch Crossing

The New York Court of Appeals holds that an engineman is bound to exercise only reasonable care in the management of his train. He has the right in broad daylight, when his train is perfectly visible, and its approach must be heard and known, at least in the first instance, to assume that a person will leave the track to escape injury. (O'Brien v. Erie, 210 N. Y. 96, 103 N. E. 895). Therefore uncontradicted evidence showing that a man was killed while lying on the track at a street crossing, and that a curve in the track and the locomotive boiler prevented the engineman from seeing him without leaning out of the cab window, was held insufficient to sustain a recovery for his death.—Kretik v. N. Y. C. (N. Y.) 125 N. E. 680.

Equipment and Supplies

Locomotives

The Union Railroad is inquiring for 7, 0-6-0 type locomotives.

The Western Maryland is inquiring for 20 locomotives for freight service.

The International & Great Northern may be in the market soon for about 10 locomotives.

The Central Altamira (Cuba) will have 2 locomotives built at the Baldwin Locomotive Works.

The Central Bagnanos (Cuba) will have 1 locomotive built at the Baldwin Locomotive Works.

The Central Caracas (Cuba) will have 1 locomotive built at the Baldwin Locomotive Works.

The Central Lincoln (Cuba) will have 1 locomotive built at the Baldwin Locomotive Works.

The Central Ramona (Cuba) will have 1 locomotive built at the Baldwin Locomotive Works.

The Central Progreso (Cuba) will have 1 locomotive built at the Baldwin Locomotive Works.

The Gulf, Mobile & Northern has ordered 4, 2-8-2 type locomotives from the Baldwin Locomotive Works.

The Cuban American Sugar Company, New York, will have 1 locomotive built at the Baldwin Locomotive Works.

Freight Cars

The Central Georgia is inquiring for 100 underframes for freight cars.

The New York, Ontario & Western is inquiring for 40 caboose cars.

The Peabody Coal Company, Chicago, is making inquiries for 500 freight cars.

Central Romelie (Cuba) has ordered ten (10) cane cars from the Magor Car Company.

The Missouri, Kansas & Texas is inquiring for 2,000 automobile cars and 1,500 gondola cars.

New England Fuel & Transportation Company, Boston, Mass., is asking prices on 500, 70-ton hopper cars.

The Bertha Coal Company, Pittsburgh, Pa., has ordered 10 freight cars from the Ralston Steel Car Company.

The A. M. Buyers Company, Pittsburgh, Pa., has ordered 115 70-ton cars from the Standard Steel Car Company.

Middleton & Company, 68 Broad street, New York, has ordered 10 cane cars, of 10-ton capacity, from the Magor Car Company.

The Buckeye Steel Castings Company, Columbus, Ohio, has ordered 6, 55-ton hopper cars from the Pressed Steel Car Company.

The Whitaker-Glessner Company, Portsmouth, Ohio, has ordered 10, 50-ton gondola cars from the Pressed Steel Car Company.

The Chicago, Milwaukee & St. Paul is having repairs made to 500, 50-ton gondola cars in the shops of the Pressed Steel Car Company.

The Allegheny Plate Glass Company, Pittsburgh, Pa., has ordered 10, 50-ton gondola cars from the Pressed Steel Car Company.

Hahman & Richards, Altoona, Pa., have ordered 30, 55-ton hopper cars from the Pressed Steel Car Company.

The La Belle Iron Works, Steubenville, Ohio, has ordered 40, 50-ton gondola cars from the Pressed Steel Car Company.

The Standard Oil Company has placed an order with the General American Tank Car Corporation for 500 gondola cars.

The Chicago & North Western has placed an order with the General American Tank Car Corporation for 500 live stock cars.

The Conly Tank Car Company, Pittsburgh, Pa., has ordered 258,050 gal. capacity tank cars from the Pennsylvania Tank Car Company.

The Coopers Creek Chemical Company, West Conshohocken, Pa., has ordered 5, 10,100 gal. capacity tank cars from the Pennsylvania Tank Car Company.

The Pennsylvania Railroad reported in the *Railway Age* of July 23, as inquiring for from 500 to 750, 70-ton hopper cars, has withdrawn its inquiry for these cars.

The Atlantic Coast Line reported in the *Railway Age* of July 2, as being in the market for 400, 50-ton coal cars, has ordered this equipment from the Standard Steel Car Company.

The United Fruit Company is inquiring for 100 banana cars, for use on the Trujilla Railway, and for 25 ballast cars to be used on the Tela Railway. Orders have been given to the Pressed Steel Car Company for 150 cane cars and to the Magor Car Company for 200 cane cars.

Railway Construction

Central of Georgia.—A contract has been given to the George B. Swift Company, Chicago, to build a 20-stall roundhouse 120 ft. long, of reinforced concrete and brick construction, also a machine shop at Columbus, Ga. The cost of the improvements will be about $500,000. The company has already bought the new tools and equipment.

Nashville, Chattanooga & St. Louis improvements are now being carried out by this road at Hollow Rock Junction, Tenn., at a cost of about $600,000. The principal expense will be for grading and truck work in the yard. There will be a roundhouse, consisting of eight stalls of brick, and mill construction, with steel doors and sash; a turntable, with a 90-ft. deck, and there will also be a transfer platform. The present frame station will be moved and remodeled. A new mechanical coal chute will be built of creosoted timber, and some minor frame buildings will be built, but no office building will be put up. The work will be carried out by the railway forces, with the exception of the machinery for the metal chute, which has been let to the Roberts & Schaefer Company, and the turntable, which has been let to the American Bridge Company.

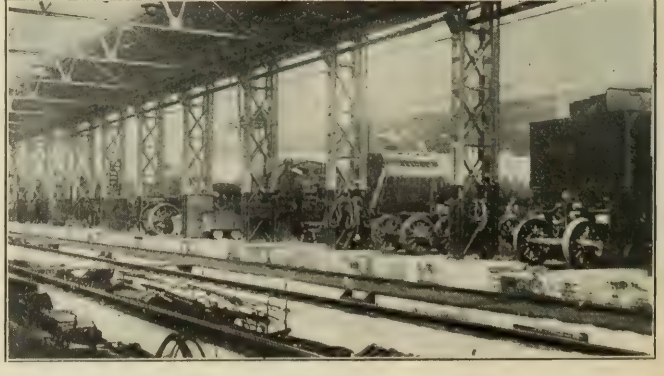


Photo from Keystone View Co., N. Y.

In a German Locomotive Plant

Supply Trade News

The **Chicago Pneumatic Tool Company's** office in New York is now located in the Chicago Pneumatic building, 6 East Forty-fourth street.

W. E. Currlin, office manager of the International Railway Supply Company of Cuba and the Havana offices of the American Locomotive Company, has been appointed assistant manager of the Caracas Sugar Company, Cruces, Cuba, with jurisdiction over the railroads operated by that company.

The general offices of the **Wilson Welder & Metals Company,** formerly at 2 Rector street, New York, have been moved to 253 36th street, Bush Terminal, Brooklyn, N. Y. The offices of the **Wilson Welding Repair Company,** formerly of the same address, are now at 263 First street, Jersey City, N. J.

The extensive improvements contemplated by the **Pollak Steel Company,** Cincinnati, Ohio, for its rolling mill at Marion, Ohio, some time ago, are now in the course of actual construction. The improvements consist of several new buildings, equipment, etc. The products of this plant consist of rolled steel bars and shapes, concrete reinforcing bars, etc.

The Oxweld Acetylene Company, New York, has established Pacific Coast sales and distributing headquarters at San Francisco, with offices at 1077 Mission street. Additional sales representatives' offices are maintained at the following points: Los Angeles, Salt Lake City, Portland, Seattle. **Leo Romney** is Pacific sales manager, with headquarters at San Francisco. The territory embraces Washington, Oregon, Idaho, Utah, Arizona, California, Nevada and a portion of Wyoming.

The Western Electric Company has arranged with Columbia University, New York City, for post graduate courses for the technical men in its employ. The courses are limited to the members of the engineering department, where more than 3,000 technical men are eligible to take advantage of the offer. The hours of work in the engineering department have been especially arranged to provide those who attend the classes full opportunity for study. After the candidates are nominated by the officers of their department they must meet the academic qualifications of the University. A special course of training in technical work has also been started by the company to instruct graduates of non-engineering colleges. The entire course takes nine months. Outside reading and lectures are required during that period.

American Locomotive Company Six Months' Earnings

Gross earnings of the American Locomotive Company for the six months' period ending June 30, totaled $21,770,000, as compared with $20,630,084 for the latter six months of 1919. The profit available for dividends in the first six months of 1920 totaled $2,777,000, an increase of $200,000 over the profit for the preceding six months. This figures out at a profit earned on common stock, after the deduction of preferred dividends, amounting to $7.61. For the latter six months of 1919 it was $6.81. Although these earnings show an increase over the preceding six months, they are by no means up to the earnings of the first six months of 1919, when the company had gross earnings of $49,443,000 and an available profit of $5,417,000.

However, Andrew Fletcher, president of the company, in his remarks in connection with the figures presented, shows that the business has picked up rapidly since the lull that followed immediately after the armistice. The unfilled orders for new locomotives, reconditioning of old locomotives and miscellaneous work on June 30, 1920, amounted to $44,074,000, as compared with a total of $9,000,000 as of December 31, 1919, an increase of $35,000,000. The total of unfilled orders on June 30, 1920, of $44,074,000, included $38,348,000, or 86.8 per cent, for domestic business, and $5,726,000, or 13.2 per cent, for foreign business, mostly for Cuba, South America and Far East countries.

"There have been no very large orders for new locomotives placed in the United States since January 1, 1920, by the European countries undergoing reconstruction," says Mr. Fletcher. "Negotiations for substantial orders have been carried on for a number of months and are still in progress, but several financial and internal conditions of some of the countries desiring locomotives, and the necessity of deferred credit payments, present problems which require cautious and conservative consideration, especially in view of the large demands on our working capital which are being made by the railroads of the United States and which will no doubt be increased in the near future."

The improvements over the six months' period was further shown by the fact that the tonnage production of the company's plants increased from 23 per cent of capacity in January to 58 per cent in June. The average for the half-year was only 35 per cent, but it is probable that this will show a substantial increase during the next six months.

The condensed income account of the company and its subsidiaries as reported to the stockholders, follows:

	Six months to June 30, 1920	Six months to Dec. 31, 1919	Increase
Gross earnings	$21,769,679	$20,630,084	$1,139,595
Manufacturing maintenance and administrative expenses and depreciation	18,633,768	17,532,188	1,101,580
Manufacturing profit	$3,135,911	$3,097,896	$38,015
Interest on bonds of constituent companies, etc.	49,265	59,326	10,061*
	$3,086,646	$3,038,570	$48,076
Deduct for United States and Canadian income and excess profits taxes	309,447	461,399	151,952*
Available profit	$2,777,199	$2,577,171	$200,028
Dividends on preferred stock	875,000	875,000	.....
Dividends on common stock	750,000	750,000	.....
Surplus profit	$1,152,199	$952,171	$200,028
Profit earned on common stock after deducting preferred dividend.... Amount	$1,902,199	$1,702,171	$200,028
Per share	$7.61	$6.81	$0.80

*Decrease.

Trade Publications

Oak Floors.—Two publications issued by the Oak Flooring Manufacturers' Association, Chicago, present interesting and useful information on this material. The larger of the two booklets, 24 pages, is devoted to the various applications of oak flooring to business offices, dwellings, public buildings, etc., while the smaller booklet, of 15 pages, contains specifications for the flooring and instructions for laying, finishing and maintenance.

Brake Cylinder Leakage.—The causes of brake cylinder leakage and methods of reducing it are discussed in a booklet published by the H. W. Johns-Manville Company, New York. The results of tests of individual cars and trains are summarized and methods of correcting the conditions are discussed. Some of the tests show comparisons of leakage with packing leathers and with the J-M packing cup and expander ring. Two styles of racks for testing brake cylinder packing leathers are illustrated. The last section is devoted to a discussion of the air consumption of locomotive auxiliaries and shows an arrangement of the J-M packing cup applied to the piston of power reverse gears.

Seven Centuries of Brass Making.—The history of brass making from the earliest known records to the electric furnace process is presented in attractive form in a book published by the Bridgeport Brass Company, Bridgeport, Conn. One of the interesting features is a series of illustrations taken from early works on the subject, showing the primitive equipment of foundries in the seventeenth and eighteenth centuries. This is followed by a brief description of modern methods, with particular reference to the electric furnace process. The manufacture of tubes, sheets, rods, wire and other brass products is described and illustrated, and the character of brass, the effect of impurities and the structure preferred of the metal are briefly treated.

Locomotive Boiler Tubes.—The series of advertisements of the Parkesburg Iron Company which has been appearing in the *Railway Age,* in which "Tubal Bloom," iron worker, has pre-

sented in a unique way the strong points of the locomotive boiler tube of charcoal iron, has been reprinted in a booklet of 40 pages, 9 in. by 12 in., and issued by the Parkesburg Iron Company, of Parkesburg, Pa., under the title of "Walks and Talks With Tubal Bloom." This book, which contains 40 illustrations, describes in dialogue form a trip through the Parkesburg plant, during which "Tubal" presents in an interesting and novel manner the advantages and ultimate economy of the locomotive boiler tube of charcoal iron. The final chapter points out "why charcoal iron is eminently suited for boiler tubes."

Pressed Steel Cars.—A well arranged and beautifully bound catalogue has been issued by the Pressed Steel Car Company, New York. It is comprehensive and well written, containing 290 pages, 9½ in. by 11 in. Clear cut illustrations of the company's products are shown on a scale large enough to indicate details. The first two-page spread shows the company's main offices and works both in Pennsylvania and Illinois, and other interesting illustrations show the welfare and educational work carried on for the employees. Beginning on page 14, the various pressed steel cars including box, caboose, coke, flat, gondola, tank cars, etc., are illustrated in detail with general dimensions of the cars and a brief description of their construction. The latter part of the catalog shows the method of handling foreign shipments and includes an interesting picture of a group of 3,000 car operators working under the direction of the Pressed Steel Car Company's erecting engineers in Vladivostok, Siberia. Descriptions and illustrations of the company's specialties such as truck and body bolsters, pressed steel and arch bar trucks, brake beams, carlines, steel storage and agitator tanks, etc., are given. The method of manufacturing chilled iron car wheels is explained and tables of decimal equivalents and conversion tables are shown in the back of the catalog.

Remote Control of Outlying Switches.—This is the title of Bulletin 94, issued by the Union Switch & Signal Company, Swissvale, Pa., describing its low-voltage switch machines and auxiliary apparatus for regulating the admission of freight trains to sidetracks without requiring them to stop and send a brakeman ahead to turn the switch. With this arrangement the term "blind siding" becomes a misnomer as, with suitable track-circuit control, trains can be run into sidings at as high a speed as the curve will allow of; and, both the movement and the locking of the switch being done by electric power, the control may be put in the hands of a signalman or operator located at any desired distance from the switch. As the movement of trains into outlying sidings is usually carried out in circumstances allowing ample time for the setting of the switch, the cost of operation is reduced, by the use of a current of low voltage, to the lowest point; and the argument of the Bulletin opens with the statement that the operation of switches costs less than one-quarter cent per movement. The reader is asked to compare this with the cost of bringing a heavy train to a full stop—say, 50 cents for a passenger train and three or four times that sum for a long freight. The pamphlet is illustrated with photographic views of typical installations on the Reading, the Santa Fe and elsewhere.

Instruction Book for Grinding Machine.—The Heald Machine Company, Worcester, Mass., has issued a new instruction book explaining the operation and adjustment of the Heald No. 60 cylinder grinding machine, which contains a number of new features. It includes diagrams of floor plans, fan layouts, etc., making it unnecessary to use blueprints, and the instructions include not only those for adjusting the machine, but also for setting up. There is also a section on the selection of the proper grinding wheels. Wet and dry grinding is also taken up, as well as speeds and feeds and the various size arms which the company is in a position to furnish. At the back of the book is a section devoted to repair parts. In it, instead of the usual long list of names and numbers of the various parts and photographs of them, there are a number of line drawings, the first one being of the entire machine, which is termed the master chart. When a part is broken the operator, who has the machine in front of him and knows the location from which the part came, can turn to the chart designated on the master chart, which will show that particular section or unit of the machine and the part number he desires. This number, together with the serial number of the machine, will make it possible to furnish the exact piece required and guarantee interchangeability. The booklet contains 80 pages, 6 in. by 9 in., and is known as bulletin 501A.

Railway Financial News

Galesburg, Rockford & Northern.—This company has applied to the Interstate Commerce Commission for authority to issue $200,000 of first mortgage 6 per cent bonds against its present operated mileage of 12.7 miles and a proposed 10-mile extension westerly from Hooppole, Ill., which is proposed to be extended later to Geneseo, Ill., to a connection with the Chicago, Rock Island & Pacific.

Delaware & Hudson.—The regular quarterly dividend of 2¼ per cent will be paid to stockholders on September 20.

Detroit & Ironton.—This company has been incorporated in Delaware to lease and take over the operation of the Detroit, Toledo & Ironton, which was recently purchased by Henry Ford, and it has filed an application with the Interstate Commerce Commission for authority under Section 20a of the transportation act to issue its capital stock in the amount of $1,000,000, and to lease the D. T. & I. and assume its obligations and liabilities. The application also states that it is proposed to rehabilitate the property and expend sufficient sums better to serve the public. None of the securities are to be sold to the public. The officers of the new company are: President, J. A. Gordon; vice-president, Fred Osborn; secretary-treasurer, E. C. Davis, and attorney, Alfred Lucking, all of Detroit. The new company has also filed application for a certificate of public convenience and necessity to build a short connection to the line of the Detroit Terminal in Springwells, Mich., to serve industries at that point and in Detroit.

Pittsburgh & Shawmut.—The board of referees appointed by the Interstate Commerce Commission has reported that $563,622 per annum is just compensation for the use of this property by the government during the period of federal control. The company had claimed compensation at the rate of $773,072, based upon its income for the 10 months ended June 30, 1917, plus a return of 6 per cent on the cost of additions and betterments to its property. The government claimed that the compensation should not be in excess of $452,307.

Pittsburgh & West Virginia.—The Interstate Commerce Commission has ordered a hearing at Washington on July 30 on this company's application for an order authorizing the acquisition of the controlling right, title and interest in the stock of the West Side Belt Railroad Company.

St. Paul Union Depot.—This company has sold to a banking syndicate an issue of $1,500,000, three and one-half year, 7 per cent notes, guaranteed by the nine railroads which jointly own and use the Union station in St. Paul, Minn.

Western Maryland.—The Interstate Commerce Commission has authorized the issue by the company of $5,800,000 three-year secured gold notes, to be dated August 1, 1920, and maturing on August 1, 1923, bearing interest at the rate of 8 per cent and the issue of $8,700,000 of its first and refunding mortgage 5 per cent bonds, to bear date July 1, 1917, maturing July 1, 1967, and the deposit and pledge of the bonds under a trust indenture to be dated August 1, 1920, and to be executed by the Western Maryland to the Bankers Trust Company of New York as collateral security for the three year notes. Eight hundred thousand dollars of three-year notes, or the proceeds thereof, are to be used for the purpose of retiring a like amount of a total of $1,000,000 of the first mortgage 5 per cent bonds of the Coal & Iron Railway Company dated August 1, 1900, maturing August 1, 1920; $5,000,000 of the notes, or the proceeds thereof, are to be used for the purpose of retiring a like amount of three year 7 per cent notes of the Western Maryland, dated November 1, 1917, maturing November 1, 1920. *It is ordered*, That as a condition precedent to the issuance of the three year notes, the applicant carrier shall pay in cash $200,000 of the principal of the first mortgage 5 per cent bonds of the Coal & Iron Railway Company, maturing on August 1, 1920, together with all the interest accrued and payable on said bonds at the time of their retirement, and that it shall also pay in cash on or before November 1, 1920, the interest accrued at the time of retirement of the $5,000,000 of the three-year 7 per cent notes maturing on November 1, 1920.

ANNUAL REPORT

Illinois Central Railroad Company—Report of the Board of Directors

To the Stockholders of the Illinois Central Railroad Company:

The Board of Directors submit herewith the following report of the affairs of your Company for the year ended December 31, 1919.

Your Railroad was operated during the entire year by the United States Government, under the administration of the Director General of Railroads.

The number of miles of road as of December 31, 1918, was....	4,782.15
Additions for year:	
January 1, 1919—Reclassification of mileage of Benton Southern R. R. as first main track.....	5.32
July 15, 1919—Golconda Northern Railway put in operation...	12.81
	4,800.28
Decrease, July 28, 1919, due to construction of cut-off at Dawson Springs, Ky.	.51
The number of miles operated on December 31, 1919, was.....	4,799.77
The average number of miles of road operated during the year was	4,793.22

INCOME

A summary of the Income Account for the year ended December 31, 1919, as compared with the previous year, is stated below.

	1919	1918	Increase+ Decrease—
Railway Income:			
Accrued standard return...	$16,282,373.55	$16,282,373.55	.....
Additional compensation ...	*1,614,093.93	.....	+$1,614,093.93
Revenues prior to January 1, 1918	†212,455.70	†764,952.93	— 552,497.23
Total	18,108,923.18	17,047,326.48	+ 1,061,596.70
Expenses:			
Corporate operating expenses current year	351,632.62	67,624.08	+ 284,008.54
Expenses prior to January 1, 1918	†142,128.19	†1,523,839.76	— 1,381,711.57
Total	493,760.81	1,591,463.84	— 1,097,703.03
Net railway income..	17,615,162.37	15,455,862.64	+ 2,159,299.73
Federal income tax accruals...	853,200.00	928,723.00	— 75,523.00
Net railway income, after deducting taxes	16,761,962.37	14,527,139.64	+ 2,234,822.73
Nonoperating income	7,421,548.87	7,508,053.43	— 86,504.56
Gross income	24,183,511.24	22,035,193.07	+ 2,148,318.17
Deductions from gross income.	12,014,591.77	11,078,491.07	+ 936,100.70
Net income	12,168,919.47	10,956,702.00	+ 1,212,217.47
Disposition of net income:			
Income applied to sinking and other reserve funds..	118,200.00	118,200.00	.....
Income appropriated for investment in physical property	170,100.07	55,679.24	+ 114,420.83
Total appropriations of income	288,300.07	173,879.24	+ 114,420.83
Income balance transferred to credit of profit and loss	11,880,619.40	10,782,822.76	+ 1,097,796.64

*Estimated amount due under Section 7 (d) of Government Contract on cost of completed Additions and Betterments placed in service during two years ended December 31, 1919. As contract with Government was not executed until June 9, 1919, no estimate was included in report for 1918 of rental on Additions and Betterments placed in service during that year.

†These items are included in income under instructions of the Interstate Commerce Commission.

ASSETS AND LIABILITIES

The financial condition of the Company on December 31, 1919, as compared with the previous year, is set forth in the General Balance Sheet, Table 4.

The following is an explanation of the important changes in "Investments" and "Funded Debt" during the year:

INVESTMENTS:

The expenditures for additions and betterments aggregated $9,444,414.45, as shown in detail below. Of this amount $5,867,594.11 was for improvements to lines of railroad owned by your Company and to its equipment and is included in General Balance Sheet Account "Road and Equipment since June 30th, 1907." The balance of $3,576,820.34 covered improvements to the railroads of subsidiary companies and is included in the General Balance Sheet Account "Investment in Affiliated Companies—Advances."

The decrease of $4,585,000.00 in "Investments in Affiliated Companies Bonds" is explained below:

Iowa Falls & Sioux City Railroad Company First Mortgage Seven Per Cent Bonds cancelled, par value.....	$2,797,500.00
Dubuque & Sioux City Railroad Company Four Per Cent Debenture Bonds cancelled, par value.....	1,775,000.00
Peoria & Pekin Union Railway Company Five Per Cent Debenture Bonds, matured August 1, 1919, redeemed, par value..	12,500.00
Total decrease	$4,585,000.00

There was an increase of $8,183,045.50 in "Investments in Affiliated Companies—Advances," as shown in Table 6, representing advances to subsidiary companies as follows:

Advances for additions and betterments to the lines of railroad and equipment of subsidiary companies.....	$3,576,820.34
Advances to non-transportation subsidiary companies.....	31,225.16
Advances to the Dubuque & Sioux City Railroad Company for retirement and cancellation of the following bonds:	
Iowa Falls and Sioux City Railroad Company First Mortgage Seven Per Cent Bonds.....	2,800,000.00
Dubuque & Sioux City Railroad Company Four Per Cent Debenture Bonds	1,775,000.00
Total	$8,183,045.50

FUNDED DEBT:

There was an increase in "Funded Debt" of $22,595,975.00 as follows:

Illinois Central Railroad Company Fifteen Year Five and One-half Per Cent Secured Gold Bonds issued.....		$16,000,000.00
Illinois Central Railroad Company and Chicago, St. Louis & New Orleans Railroad Company Joint First Refunding Mortgage Five Per Cent Bonds, Series "A," issued:		
For improvements	$5,932,500.00	
For conversion of sterling bonds into dollar bonds	2,475.00	5,934,975.00
Illinois Central Railroad Company Western Lines First Mortgage Four Per Cent Gold Bonds, issued.....		4,575,000.00
Total		$26,509,975.00
Less:		
Equipment trust obligations retired and cancelled:		
Illinois Central Railroad Company First Lien Equipment Mortgage	$1,241,000.00	
Illinois Central Railroad Company Equipment Trusts:		
Series "A"	800,000.00	
Series "B"	350,000.00	
Series "C"	198,000.00	
Series "D"	190,000.00	
Series "E"	550,000.00	
Chicago, St. Louis & New Orleans Railroad Company Equipment Trust, Series "A".....	570,000.00	
	$3,899,000.00	
Real Estate Mortgage matured and paid.....	15,000.00	3,914,000.00
Net Increase		$22,595,975.00

"Funded Debt Held in Treasury" increased $9,196,500.00 as follows:

Illinois Central Railroad Company Western Lines First Mortgage Four Per Cent Gold Bonds...	$4,575,000.00	
Illinois Central Railroad Company and Chicago, St. Louis & New Orleans Railroad Company Joint First Refunding Mortgage Five Per Cent Bonds, Series "A"	5,932,500.00	$10,507,500.00
Less:		
Chicago, St. Louis & New Orleans Railroad Company Equipment Trust, Series "A," matured...	$ 70,000.00	
Illinois Central Railroad Company First Lien Equipment Mortgage matured	1,241,000.00	1,311,000.00
Net Increase		$9,196,500.00

ADDITIONS AND BETTERMENTS—EXPENDITURES:

There was expended during the year for Additions and Betterments (including improvements on subsidiary properties), as reported by the

Federal Administration, $9,444,414.45. The following is a classified statement of these expenditures:

	Additions and betterments on owned lines	Advances for additions and betterments to lines of subsidiary companies	Total expended
ROAD:			
Engineering	$117,306.89	$88,069.18	$205,376.07
Land for transportation purposes	Cr. 17,757.61	53,433.29	34,675.68
Grading	830,585.59	1,002,026.98	1,832,612.57
Tunnels and subways	187.17	Cr. 13.67	173.50
Bridges, trestles and culverts	990,984.01	686,536.58	1,677,520.59
Ties	117,919.29	73,505.57	191,424.86
Rails	258,890.18	181,738.26	440,628.44
Other track material	420,964.28	271,177.45	692,141.73
Ballast	206,757.81	147,724.70	354,482.51
Track laying and surfacing	214,891.63	103,518.75	318,410.38
Right of way fences	Cr. 1,700.40	33,986.96	32,286.56
Snow and sand fences and snowsheds	Cr. 4,145.94	2,039.12	Cr. 2,106.82
Crossings and signs	172,466.57	94,328.09	266,794.66
Station and office buildings	375,858.34	89,417.59	465,275.93
Roadway buildings	90,474.27	7,067.54	97,541.81
Water stations	184,867.59	189,899.70	374,767.29
Fuel stations	1,140.54	5,595.55	6,736.09
Shops and enginehouses	253,497.18	185,800.00	439,297.18
Grain elevators	6.00	3,896.15	3,902.15
Wharves and docks	.....	Cr. 69.00	Cr. 69.00
Telegraph and telephone lines	32,271.38	38,417.78	70,689.16
Signals and interlockers	256,840.78	47,901.50	304,742.28
Power plant buildings	56,552.20	Cr. 8,571.00	47,981.20
Power substation buildings	1,951.19	2,042.20	3,993.39
Power transmission systems	9,446.47	Cr. 464.89	8,981.58
Power distribution systems	51,760.31	39,117.10	90,877.41
Power line poles and fixtures	3,297.79	13,143.29	16,441.08
Underground conduits	50.46	281.44	331.90
Miscellaneous structures	Cr. 5,600.46	Cr. 392.48	Cr. 5,992.94
Paving	41,733.09	Cr. 10,905.47	30,827.62
Roadway machines	Cr. 1,289.20	4,732.41	3,443.21
Roadway small tools	113.13	16.33	129.46
Assessments for public improvements	29,039.23	1,580.94	30,620.17
Other expenditures—General	Cr. 3,216.10	.....	Cr. 3,216.10
Shop machinery	50,549.04	174,381.20	224,930.24
Power plant machinery	223,526.29	43,310.47	266,836.76
Power substation apparatus	.....	862.10	862.10
TOTAL	$4,916,269.10	$3,541,973.05	$8,458,242.15
EQUIPMENT:			
Steam locomotives	$876,492.43	.....	$876,492.43
Freight train cars	39,702.81	.....	39,702.81
Passenger train cars	Cr. 117,101.25	.....	Cr. 117,101.25
Work equipment	13,993.98	.....	13,993.98
Miscellaneous equipment	891.71	.....	891.71
TOTAL	$813,979.68	.....	$813,979.68
GENERAL:			
Law	.....	Cr. $301.00	Cr. $301.00
Taxes	.....	Cr. 118.27	Cr. 118.27
Interest during construction	$140,561.43	35,266.56	175,827.99
Other expenditures—General	Cr. 3,216.10	.....	Cr. 3,216.10
TOTAL	$137,345.33	$34,847.29	$172,192.62
GRAND TOTAL	$5,867,594.11	$3,576,820.34	*$9,444,414.45

The following shows the amount advanced during the year to each of the subsidiary companies, these amounts being included in total advances shown in Table No. 6 of this report:

Benton Southern R. R. Co.	$21,733.04
Blue Island R. R. Co.	44.50
Canton, Aberdeen & Nashville R. R. Co.	11,090.95
Chicago, St. Louis & New Orleans R. R. Co.	2,467,678.64
Dubuque & Sioux City R. R. Co.	445,346.03
Golconda Northern Ry.	441,547.51
Kensington & Eastern R. R. Co.	191,642.31
South Chicago R. R. Co.	Cr. 2,262.64
TOTAL	$3,576,820.34

*Subject to acceptance by the Company, and subject to adjustment of interest during construction.

ROAD AND EQUIPMENT

The following is a summary of the more important improvements during the year, the cost of which was chargeable wholly or in part to Road and Equipment.

ADDITIONS AND BETTERMENTS—ROAD:

98 new industrial sidings were built.

360 new Company sidings were built or extended, a net addition of 61.04 miles. Included therein were additions to yard facilities of 13.10 miles at Champaign, Ill.; 10.35 miles at Centralia, Ill.; 4.46 miles at Du Quoin, Ill.; 4.28 miles at Carbondale, Ill.; 1.54 miles at Mounds, Ill.; 3.23 miles at East St. Louis, Ill.; 4.90 miles at Clinton, Ill.; 7.89 miles at Amboy, Ill.; 3.60 miles at Camp Knox, Ky.; 1.89 miles at Paducah, Ky.; 5.35 miles at Fulton, Ky.; 4.63 miles at Nonconnah, Tenn.; and 1.86 miles at Memphis, Tenn.

The grading for the Markham Yard, located between Harvey, Ill., and Homewood, Ill., referred to in the report of the previous year, was continued and approximately seven miles of track were laid. The construction of new subways under the main line and this yard at 159th St. and at Homewood, Ill., was commenced.

The extension of the Golconda Northern Railway to Stewart Mine, Ill., was completed during the year. There was also an extension built of 3.8 miles from a point on this road to Rosiview, Ill. The second main track between Belleville, Ill., and Wilderman, Ill., was completed.

Work was continued on the line change and grade reduction between Dawson Springs, Ky., and Scottsburg, Ky. That portion known as the Dawson Springs Cut-Off was completed and placed in operation during the year, and the part known as the Scottsburg Grade Reduction was practically completed. The grade separation at East Junction, Memphis, Tenn., was completed. The grade elimination work between 79th Street and 116th Street, Chicago, Ill., was continued, the principal construction work consisting of the grade separation at 95th Street.

The renewal of bridges over street crossings from 51st Street to 67th Street, Chicago, Ill., was practically completed with the exception of the 56th Street subway. The 4-track reinforced concrete bridge over the Kankakee River at Kankakee, Ill., was completed. The construction of the new St. Charles Air Line Bridge over the south branch of the Chicago River, was continued.

The construction of an interlocking plant at Bemis, Tenn., was commenced.

The construction of a new suburban passenger station at street level, and platforms and waiting rooms at track level, at 63d Street, Chicago, Ill., and the new depot and office building at 53d Street, Chicago, Ill., were completed. Work was commenced on suburban platforms, with waiting rooms at track level, at Chicago, Ill., between 51st and 53d Streets, 56th and 57th Streets, 59th and 60th Streets, and on suburban stations at street level at 51st, 53d, 56th, 57th, 59th and 60th Streets, Chicago, Ill.; also on interchange facilities, necessitating a rearrangement of the suburban station for the Chicago, Lake Shore and South Bend Railway at Kensington, Chicago, Ill. A new passenger station and track facilities were constructed at Camp Knox, Ky. Stations were constructed at Red Oak, Ill.; Deland, Ill.; Rosiview, Ill.; Calumet, Ia.; and Dawson Springs, Ky. Freight stations were completed at Herrin, Ill., La Salle, Ill., and Benton, Ill.

New water stations, consisting of 100,000 gallon capacity creosoted frame water tanks and pumping facilities, were erected at Du Quoin, Ill.; Pesotum, Ill.; Bois, Ill.; Dawson Springs, Ky., and Indianapolis, Ind., and enlargement of the reservoir at Du Quoin, Ill., undertaken the previous year, was completed. The installation of water-treating plants was completed at Freeport, Ill.; Dubuque, Ia.; Independence, Ia.; Mona, Ia.; Osage, Ia.; Charles City, Ia.; Nashua, Ia.; Merrill, Ia.; Marcus, Ia., and Cherokee, a. New pumping stations were constructed at Logan, Ia., and Millington, Tenn.

New coaling stations at Fulton, Ky., and Memphis, Tenn., were completed.

The additions to mechanical facilities at Jackson, Tenn., and the construction of new mechanical facilities at Du Quoin, Ill., and Benton, Ill., referred to in the previous year's report, were completed.

Block signals were installed and placed in operation between Gilman, Ill., and Guthrie, Ill., 24.7 miles; Springfield, Ill., and Marine, Ill., 70.6 miles; Vaughan, Miss., and Canton, Miss., 12.4 miles; Canton, Miss., and Asylum, Miss., 22.3 miles; a total of 130 miles. There were 2,408 track miles of block signals in operation at the close of the year.

3,497 lineal feet of permanent bridges and trestles were constructed, replacing pile and timber bridges and trestles; 142 lineal feet of permanent bridges and trestles were filled, and 16,715 lineal feet of pile and timber bridges and trestles were rebuilt or replaced by embankments.

11.78 miles of track were ballasted or reballasted and brought up to the present standard.

ADDITIONS AND BETTERMENTS—EQUIPMENT:

Seventeen Mikado type freight locomotives were added, and seventeen locomotives of various types were converted into superheated locomotives. The increase in tractive power locomotives for the year was 895,901 pounds.

Three refrigerator cars were equipped with passenger trucks and transferred from freight to passenger equipment classification, three passenger cars were retired and four transferred to work service, resulting in a net decrease of four passenger train cars for the year.

Two thousand three hundred and thirty-one freight train cars were added and seven hundred and twelve were sold, destroyed or transferred to other service, resulting in a net increase for the year of one thousand six hundred and nineteen cars.

GENERAL REMARKS

The standard form of contract covering the Federal control of your property was executed June 9, 1919. The compensation as tentatively fixed therein, subject to final revision by the Interstate Commerce Commission, was $16,282,373.55.

In order to provide funds to liquidate the Company's debt growing out of payments made for new equipment contracted for prior to Federal control but delivered subsequent thereto, and to take care of other corporate requirements, there were issued and sold during the year $16,000,000 Illinois Central Railroad Company Fifteen Year Five and One-Half Per Cent Secured Gold Bonds. These bonds are secured by deposit with The Farmers' Loan & Trust Company of New York, Trustee, of $17,350,000 Illinois Central Railroad Company and Chicago, St. Louis & New Orleans Railroad Company Joint First Refunding Mortgage Five Per Cent Bonds and $4,550,000 Illinois Central Railroad Company Western Lines First Mortgage Four Per Cent Gold Bonds.

Under the provisions of the mortgage securing the Illinois Central Railroad Company Western Lines First Mortgage Four Per Cent Gold Bonds, there were reserved $4,575,000 bonds of which $2,800,000 were to be used for refunding a like amount of Iowa Falls & Sioux City Railroad Company First Mortgage Seven Per Cent Bonds and bringing under the lien of the mortgage the railroad extending from Iowa Falls, Iowa, to Sioux City, Iowa, and the balance were for paying for improvements to the mortgaged properties. The Iowa Falls & Sioux City Railroad Company bonds matured October 1, 1917. On January 1, 1919, a supplemental mortgage was made under which the bonds reserved were issued and the lien of the original mortgage extended over the railroad before mentioned. Your Company deposited with the mortgage trustee $2,797,500 Iowa Falls & Sioux City Railroad Company First Mortgage Seven Per Cent Bonds and $2,500 in cash to retire upon presentation the balance outstanding of past due bonds and surrendered for cancellation $1,775,000 Dubuque & Sioux City Railroad Company Four Per Cent Debenture Bonds originally given for advances for improvements to the properties mortgaged and received in exchange therefor $4,575,000 Illinois Central Railroad Company Western Lines First Mortgage Four Per Cent Gold Bonds.

There were on the books of the Company at the close of the year 11,966 stockholders, as compared with 11,170 last year.

By order of the Board of Directors.

C. H. MARKHAM,
President.

[ADV.]

Railway Officers

Executive

J. F. Gavin, assistant to the vice-president of the American Short Line Railroad Association, has resigned to accept the position of traffic manager of the Alabama, Tennessee & Northern, with headquarters at Mobile, Ala., and he has been succeeded by **I. T. Hanson** as assistant to the vice-president of the American Short Line Railroad Association, effective August 1.

Financial, Legal and Accounting

Paul Stark, auditor of the Eastern Wisconsin Electric, with headquarters at Sheboygan, Wis., has been promoted to general auditor, with headquarters at Eau Claire, Wis., effective July 24. **Otis Gerke,** assistant auditor, has been appointed auditor, succeeding Mr. Stark.

J. M. Coddington, assistant auditor freight and ticket accounts of the Delaware, Lackawanna & Western, with headquarters at Scranton, Pa., has been appointed auditor of freight and passenger revenues, effective August 1, succeeding Bertram Young, deceased.

Operating

Edward H. Friberg has been appointed trainmaster of the Seattle division of the Northern Pacific, with headquarters at Auburn, Wash., effective June 2.

J. A. Macgregor, superintendent of the Canadian Pacific, with headquarters at Edmonton, Alta., has been appointed general manager of the Edmonton, Dunvegan & British Columbia, effective July 21.

W. S. Hall, trainmaster of the Canadian Pacific at Red Deer, Alberta, has been promoted to superintendent, with headquarters at Cranbrook, B. C., succeeding **C. S. Maharg,** who has been transferred to Vancouver, B. C.

F. H. Livingston, trainmaster of the Great Northern at Willmar, Minn., has been appointed superintendent of the Sioux City division, with headquarters at Sioux City, Iowa, succeeding **J. A. McKinnon,** assigned to other duties, effective August 1.

H. H. Brown, general superintendent of the St. Louis-San Francisco, with headquarters at Springfield, Mo., has been appointed assistant general manager of the Northern district, effective August 1, and the position of general superintendent has been abolished.

Henry Coulam, chief of the traffic bureau of the Union Pacific, with headquarters at Salt Lake City, Utah, has been appointed general agent of the freight and passenger department, with headquarters at Butte, Mont., succeeding **A. V. Kipp,** who has been appointed general freight and passenger agent of the Orem Electric Lines, with headquarters at Salt Lake City, Utah.

D. D. Spayde, conductor on the Chicago, Milwaukee & St. Paul, has been promoted to trainmaster of the Trans-Missouri division, with headquarters at Mobridge, S. D., effective July 1. He succeeds **N. H. Fuller,** whose promotion to superintendent of the Trans-Missouri division was announced in the *Railway Age* of July 9 (page 85).

J. J. Pelley, general superintendent of the Northern lines of the Illinois Central, with headquarters at Chicago, has been appointed chairman of the Chicago Terminal Car Service Commission, effective July 28. **G. E. Patterson,** superintendent of the Illinois division, with headquarters at Champaign, Ill., has been appointed acting general superintendent, succeeding Mr. Pelley. **J. W. Hevron,** superintendent of the Tennessee division, with headquarters at Fulton, Ky., will succeed Mr. Patterson and **C. R. Young,** trainmaster at Fulton, will succeed Mr. Hevron.

J. J. Sullivan, district supervisor of transportation of the Northern district of the Southern Pacific with headquarters at San Francisco, Cal., has been appointed trainmaster of the Tucson division, with headquarters at Yuma, Ariz., effective July 23. Mr. Sullivan succeeds **W. T. Small,** who has been transferred to the Stockton division, with headquarters at Tracy, Cal. **R. E. Hallawell** succeeds Mr. Sullivan.

E. R. Gorman, assistant superintendent of the Eastern division of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at Eau Claire, Wis., has been appointed acting superintendent of motive power and machinery, with headquarters at St. Paul, Minn., effective July 26. Mr. Gorman succeeds **J. O. Enochson,** who has been relieved on account of ill health, and **A. J. Strouts** succeeds Mr. Gorman.

W. W. Abbott, superintendent of the Seneca division of the Lehigh Valley with headquarters at Sayre, Pa., has been transferred to the New York division with headquarters at Jersey City, N. J., succeeding **A. Ross,** resigned; **R. L. Gebhardt,** superintendent of the Auburn division, with headquarters at Auburn, N. Y., has been transferred to the Seneca division, succeeding Mr. Abbott, and **J. H. Curry,** trainmaster at Jersey City, has been appointed superintendent of the Auburn division, succeeding Mr. Gebhardt.

Traffic

L. H. Constans has been appointed general agent of the Chicago, Milwaukee & Gary, with headquarters at Pittsburgh, Pa., effective August 1.

John M. Melton has been appointed commercial agent of the Central of Georgia, with headquarters at Chattanooga, Tenn., effective August 1.

H. C. McGregor, manager of the consolidated ticket office at El Paso, Tex., has been appointed division passenger agent of the El Paso & Southwestern, with headquarters at El Paso, Tex., effective July 24.

H. E. Everheart, division freight agent on the Atchison, Topeka & Sante Fe, with headquarters at Houston, Tex., has been appointed assistant general freight agent of the Gulf, Colorado & Santa Fe, with headquarters at Galveston, Tex., effective July 15.

J. F. Hennessey, Jr., division freight agent on the Missouri, Kansas & Texas, with headquarters at Austin, Tex., has been transferred to Houston, Tex., effective August 1, succeeding **L. T. Fowler,** who has resigned and is now connected with the Stone Forwarding Corporation, of Galveston, Tex., ocean freight brokers.

Charles C. Dana, whose appointment as general freight agent on the Atchison, Topeka & Santa Fe, with headquarters at Chicago, was announced in the *Railway Age* of July 23 (page 170), was born on August 7, 1868, at Morrisville, N. Y. He prepared for college at Phillips Exeter Academy, and graduated from Princeton University in 1891. He entered railway service as a clerk in the local freight office of the Atchison, Topeka & Santa Fe at Topeka, Kan., in September, 1891. After serving in various clerical capacities and as local agent at Pekin, Ill., he was promoted to traveling freight agent, with headquarters at Streator, Ill., in January, 1898. He was promoted to division freight agent in charge of the lines east of the Missouri River and foreign line territory in central Illinois, southeastern Iowa and northern Missouri, on February 3, 1904. From July 1, 1913, to July 1, 1916, he served as industrial commissioner of buildings of the Santa Fe system. Upon the latter date he was appointed general freight and passenger agent of the Pan Handle & Santa Fe, with headquarters at Amarillo, Tex., the position he held at the time of his recent appointment. During the war Mr. Dana served in Washington as personal assistant to the director of the division of traffic of the United States Railway Administration.

Mechanical

J. W. Chandler, district foreman on the Poteau Valley line of the Kansas City Southern, with headquarters at Heavener, Okla., has been promoted to master mechanic, with headquarters at Shreveport, La., effective July 20, succeeding **A. B. Williams,** who has been assigned to other duties.

C. H. Hogan, district superintendent of motive power, first district of the New York Central, with headquarters at Albany, N. Y., has been promoted to manager, department of shop labor, with headquarters at Buffalo, N. Y.; **H. Wanamaker,** superintendent of shops at West Albany, N. Y., has been appointed to succeed Mr. Hogan; **J. G. Parsons,** superintendent of shops at Depew, N. Y., has been transferred to West Albany, succeeding Mr. Wanamaker; **B. F. Shone,** general foreman locomotive department at Depew, has been appointed superintendent of shops, succeeding Mr. Parsons; **C. F. Parsons,** master mechanic at West Albany, has been appointed general master mechanic, first district, with headquarters at Albany; **M. W. Hassett,** master mechanic at East Buffalo, N. Y., has been appointed general master mechanic, second district, with the same headquarters; **L. F. Burns,** district supervisor fuel economy at Rochester, N. Y., has been appointed master mechanic of the Syracuse division, with headquarters at East Buffalo, succeeding Mr. Hassett; **W. P. Davis,** master mechanic of the Harlem division at Brewster, N. Y., has been transferred to the Mohawk division, with headquarters at West Albany, succeeding Mr. Parsons, and **A. T. Heintz,** assistant master mechanic of the Mohawk division at West Albany, has been appointed master mechanic of the Harlem division, succeeding Mr. Davis. The title of **A. J. Fries,** assistant superintendent motive power, second district, has been changed to district superintendent of motive power; the titles of **S. Watson** and **F. A. Linderman,** district superintendents of motive power at Avis, Pa., and Oswego, N. Y., respectively, changed to division superintendents of motive power. These changes took effect July 1.

Engineering, Maintenance of Way and Signaling

A. W. Galbreath has been appointed valuation engineer of the Missouri, Kansas & Texas, with headquarters at Parsons, Kan., effective August 1. The position of chairman of the valuation committee has been abolished.

Thomas E. Bond, whose promotion to assistant chief engineer of the International & Great Northern, with headquarters at Palestine, Tex., was announced in the *Railway Age* of July 9 (page 86), was born on August 9, 1891, at Windsor, N. C. Mr. Bond was educated at the North Carolina State College of Agriculture and Engineering. He entered railway service as an instrument man with the National Railways of Mexico in June, 1910. He was promoted to assistant resident engineer on the construction of lines from Durango, Mex., to Canitas, in August, 1911, and not long thereafter became resident engineer on construction from Durango, Mex., to Llano Grande. In December, 1913, he was appointed resident engineer of the Texas-Mexican on valuation work and in September, 1915, became assistant engineer on the International & Great Northern, the position he held at the time of his recent promotion.

Obituary

Gabriel W. Harrison, ballast engineer on the Seaboard Air Line, died at Rex Hospital, Raleigh, N. C., on July 18.

Ira M. Butler, assistant general livestock agent of the St. Louis-San Francisco, died of apoplexy at his home in Springfield, Mo., on July 25.

Charles Alexander Clark, treasurer of the Northern Pacific, died in St. Paul, Minn., on August 1. Mr. Clark was born on October 10, 1954, at Freeport, Ill. He graduated from the University of Michigan in 1874, and entered railway service in the same year as receiving cashier on the Denver & Rio Grande. In 1877, he became a clerk in the auditor's office of the Kansas City, Fort Scott & Gulf. Three years later he was appointed paymaster on the Denver & Rio Grande, which position he held until 1883, when he became a clerk in the auditor's office of the Northern Pacific. Thereafter he consecutively served this road as a clerk in the treasurer's office, cashier, paymaster and assistant treasurer, the last named being the position he held at the time of his promotion to treasurer.

George W. Dailey, assistant general superintendent of the Chicago & North Western, with headquarters at Huron, S. D., died at State Line, Wis., on July 21. Mr. Dailey was born at South Milwaukee, Wis., on June 31, 1870. He entered railway service as a telegraph operator with the Chicago & North Western in 1888. Three years later, after a brief service as telegraph operator with the Wisconsin Central and the Gulf Colorado & Santa Fe, he returned to the Chicago & North Western. He served this road successfully as telegraph operator, trainman, train despatcher, chief train despatcher and train master, and was promoted to superintendent of the Iowa division in June, 1902. One year later he was appointed superintendent of the telegraph department, with headquarters at Chicago. He was appointed superintendent of the Wisconsin division in 1908, which position he held at the time of his promotion to assistant general superintendent in June, 1918.

DR. KARL GOELSDORF

Because of the interruption of communication due to the war no notice appeared in American periodicals at the time of the death of Dr. Karl Goelsdorf, the Austrian railroad engineer, in 1916. Dr. Goelsdorf originated numerous novel constructions of Austrian locomotives which extended his reputation far beyond the boundaries of his own country. The development of locomotive construction during the 10 years preceding his death was intimately associated with his name. His suggestions, particularly the starting arrangement for compound locomotives proposed by him and the arrangement of laterally movable axles for multiple-coupled locomotives, have been adopted in all countries of the globe and have made possible the designing of locomotives with several driving axles capable of going around sharp curves and adequate for modern demands.

Dr. Goelsdorf was born on June 8, 1861, at Vienna, Austria, the oldest son of L. A. Goelsdorf, who later became superintendent of motive power of the Südbahn. After serving an apprenticeship in the machine shops of the Austro-Hungarian State Railway Company, Goelsdorf spent several years in the construction and operating departments. In 1891 he accepted a position as assistant engineer to the general director of the Austrian State Railway and was advanced rapidly until he became section chief in the State Railway service, in which position he was in charge of the construction of locomotives, cars and mechanical equipment for the entire Austrian State Railways.

The low weight per axle permitted throughout Austria and the structural difficulties resulting from the mountainous territory forced Goelsdorf to seek new means for designing locomotives of sufficient capacity to meet the new requirements. Thus there originated under his influence the efficient 4-4-0 express locomotive for hilly country; the powerful 2-6-2 tank locomotive for the Vienna City Railway; the 2-8-0 tank locomotive of the Arlberg Railway, whose very appropriate construction was rapidly and widely adopted in Austria and abroad; and the characteristic Goelsdorf forms of the five and six coupled locomotives, whose construction was made possible only by giving the coupled axles some lateral motion. The 2-10-0 and 2-12-0 passenger locomotives for mountain grades, with special truck axles particularly, resulted in making Goelsdorf's name familiar in the railroad world. In these types the four-wheel truck has been abandoned, and the Helmholtz truck adopted, in which the front truck axle and the first driving axle are connected as a single forward truck. Goelsdorf was also active in later years in the field of railway car construction. He presented numerous important papers before the technical organizations of the Austrian and German railroads.

Goelsdorf's activities gained unqualified recognition in the widest circles. The conferring of the title of doctor of engineering by the Hannover Technical High School illustrates the fact that his merits were also recognized in Germany. Goelsdorf combined with his technical abilities a singularly modest and amiable personality. His death means a serious loss to locomotive development.

EDITORIAL

Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Local Initiative Is Necessary

While the present shortage of transportation facilities calls for the maximum united effort on the part of the roads as a whole, as well as the most intensive concentration on the part of the individual roads, it also demands the greatest individual initiative and interest on the part of each local officer. The division superintendent who complies faithfully with the orders of his management and of the Commission on Car Service, but who goes no further, is not rising to the present emergency. There is much more that he can do to meet those conditions which are more or less local to his territory. Thus on one road a number of the superintendents check over the cars awaiting unloading on their industry and team tracks late each week and then write personal letters to those industries asking them to work Saturday afternoon and Sunday, if necessary, to release these cars promptly. It is only by each local officer seeing that delays in his territory are reduced to the minimum, that the performances of the entire system, and of the railways as a whole can be brought to the highest possible point. While the concentration of the attention of the managements is vital to success, it is even more important that the local officers rise to their maximum opportunities.

Just To Be "King" For a Day

No business or enterprise can be successful unless it has a substantial foundation, and similarly maintenance of way forces can never attain their highest development until they are strengthened and built up step by step from the bottom. One of the steps in this work has been the so-called inspection trips participated in by superintendents, engineers maintenance of way, division engineers, supervisors, etc., and to some extent by the section foremen. While these trips are both necessary and valuable, they are looked forward to with dislike and participated in with reluctance on the part of the foreman. At best he is given little opportunity to see what other foremen are doing and in passing over the two or three sections (the maximum he usually gets to go over and with which he is already more or less familiar) he has little opportunity of learning anything new or of value. The effect of the presence of the higher officers is a further hindrance in his acquiring much besides criticism. In the end, he steps off the car with a feeling that if he could only go over more of the line and have a real chance to see and talk with others more intimately connected with his work he could "beat some of these brass collars to it." A man in this position cannot be expected to see his work from the viewpoint of a higher officer when he has never been given an opportunity to acquire that viewpoint. Regular inspection trips composed of a large number of foremen and a few understanding supervisors or division engineers can work wonders. The results of the first trip might be negligible but on the second and succeeding trips a keen interest would be developed in this crowd of "acting" supervisors and engineers. No man is so old that he is not more or less swayed by a sense of acting and where that craving is satisfied once in a while with the proper goal in view, better men are developed. Let each foreman be a "King" for a day and a road will have bigger, broader men and real *esprit de corps*.

Frenzied Fuel

From New England, whence came the tales of frenzied finance, now comes the story of locomotive fuel purchased at $27 a ton. From an important western road with a big coal field on its own rails comes the report that scarcely enough coal for present needs is being received at a time of the year when it has been customary to store fuel for the coming winter. Clearly, a crisis is at hand; and even if averted by an unlooked-for increase in the available fuel supply, the necessity for conserving every possible pound of coal will still be with us. Will your railroad find a way to get more work out of every pound of coal that is placed in locomotive and stationary fireboxes? If every decrepit locomotive could be replaced with a new one or, better still, if every antiquated locomotive in the service could be modernized over-night, the fuel problem would of course be postponed; but what the railroads are up against today is the problem of making the most of the means immediately at hand. There is not a railroad in the country that is doing *all* that can be done with the facilities at hand to get the greatest good out of every dollar paid for fuel. The *Railway Age* has ten constructive suggestions to offer in succeeding issues, none of which can well be ignored if you would make the most of the means at hand to reduce the fuel bill and conserve coal for the coming winter. They will be referred to as the ten fuel commandments.

Money as a Stimulant of Efficiency

The appeal of the railway executives to move freight cars 30 miles a day must, if it is to have fruitful results, be worked into the consciousness of enginemen, freight conductors, yardmen and other employees who have duties in connection with car movement; the action of the Erie in using posters for this purpose was noticed in our issue of July 30, page 173. In this connection a Boston correspondent writes—

> You said in a recent editorial note that "No officer can afford to overlook any means of increasing the efficiency of his freight-car movement." That note suggests one obvious means which substantially all officers do overlook, namely, the appropriation of money to give men premiums for making extra effort. For years the roadway department has paid prizes for excellence, and has found satisfaction in so doing; how is it that we so rarely hear of anything of this kind in other departments? Roadway prizes were started by a managing officer possessed of courage. He was followed by a few others who had initiativeness *and* courage. In the operating department there are numbers of officers who have initiativeness *or* courage; but the world is waiting to see a larger number who have both. The difference between asking every man to do his share (by means of a poster "conspicuously placed on a bulletin board") and actually getting him to do his share, is the difference between preaching and teaching, is it not? The futility of preaching (except when Billy Sunday or some other modern prophet gets up steam) is proverbial; but teaching brings results; results for which men freely pay large money every day.

A prize will not take the place of a teacher, but there is no doubt whatever that it has induced innumerable track foremen to teach themselves. And this where there was only a chance of winning. Why not offer to yardmasters, freight conductors, and others a reward for suggestions in writing

on quick car movement? A reward, that is, of such character that every individual can receive some return—if he complies with the conditions. Suggestions in writing are not the same as moving a car, but they may be true and profitable exercise, nevertheless. To induce men to think is an excellent thing; but it is better still to get ocular evidence of their mental activity.

Orders for Equipment

It seems to be universally agreed that the increase in freight rates and passenger fares is going to have a favorable effect on the car and locomotive markets. Many of the business and financial writers profess to have observed signs that the expected after-the-war decline in business is already in our midst. But, one and all, in speaking in this wise, express the opinion that the equipment market will probably be excepted from any decline that may manifest itself in industry in general. The fact that the Interstate Commerce Commission has set the rate increase at a figure which will permit the carriers to earn 6 per cent rather than 5½ per cent on their value and has asked the roads to make reports as to the manner in which they use the additional one-half of one per cent for improvements which may be charged to capital account lends standing to this belief. The new status makes it particularly interesting to see just what has been done in the way of purchases of cars and locomotives so far this year, as reported in the *Railway Age*.

	Locomotives		Freight cars		Passenger cars	
	Dom.	For.	Dom.	For.	Dom.	For.
January	32	213	2,220	1,080	7	...
February	378	86	6,392	516	35	...
March	260	71	10,136	625	240	...
April	469	108	23,528	350	373	...
May	202	9	7,402	207	107	22
June	69	50	3,757	375	...	...
July	97	77	5,732	52	60	10
	1,507	614	59,167	3,205	822	32

The totals are by no means record breakers, but they are larger, we imagine, than most of our readers may have expected. With the improvement in the railroads' earnings resulting from the rate increase, the business for the remainder of the year should be even more satisfactory.

The Canadian Situation

Were it not for certain political considerations which apply in Canada but have no parallel here, it would seem that a Canadian railway rate advance would be granted on a scale to correspond with the advance just authorized by the Interstate Commerce Commission. The present danger, however, lies in the fact that it is questionable whether even a rate increase as large as that granted by the Interstate Commerce Commission would be sufficient to permit the newly acquired government railways to earn their expenses and fixed charges. On the other hand, a rate increase such as that in the United States would permit the Canadian Pacific to return to a sound profitable basis of operation. Of course the Canadian taxpayers will have to make up the deficit on the government railways in any case. It would be only a short-sighted and most unstatesmanlike politician who would hesitate to put all Canadian railroad rates on a sound basis because there might be the immediate appearance of an advantage gained by the Canadian National Railways over the privately owned Canadian Pacific if rates were not raised. The stockholders would have to face the loss on the Canadian Pacific which the taxpayers generally would absorb for the National Railways. In the long run, such a policy might prove disastrous in the extreme to the entire Dominion. The Canadian Pacific is the greatest asset which the Canadian people have, despite the fact that it is operated for private stockholders. To destroy the credit of this corporation and thus prevent continued development of a property which is so essential to Canadian welfare is to court disaster on a huge scale. The Canadian people have entered on a dangerous enough experiment as it is with their nationalized system of as yet largely unprofitable railways. Their best chance would certainly appear to be to base their hopes of future profitable development of the National Railways on strict adherence to sound economic principles and to prescribe rates which will as nearly as possible permit of operating the National Railways without further recourse to the taxpayer.

Markets in South America

Readers of the *Railway Age* are already familiar with the work that has been done by John P. Risque, who was recently sent by this paper to South America to investigate the markets for railway supplies on that continent. The *Railway Age* has published five articles by Mr. Risque—three on the sugar-cane railways of Cuba in the issues of October 17, 24, and 31, 1919, respectively, and two on the main line railways of Cuba in the issues of January 16 and 23, 1920, respectively. These articles were prepared before, or at the early part of, his trip, and were published before he had started on the main part of the trip through South America. Mr. Risque has now completed his South American journey, and the first article of a series dealing with the railways that he investigated will be found on another page of this issue. Mr. Risque in the first article outlines the trip he made and sketches briefly some of the outstanding features of the railways of the several countries visited. He went first down the west coast, visiting on his way south Ecuador, Peru, Bolivia and Chile. He then crossed to Buenos Aires on the Trans-Andine Railway, spent some time in Argentina, in Uruguay and Brazil. The first article contains also his conclusions as to the markets for American railway supplies in South America. His attention was struck by the well-known predominance of the British interests throughout most of the Southern continent—except in Chile where the railroads are government owned. He shows himself very optimistic concerning the possibilities in Chile, but expresses the opinion very plainly that it will be a long uphill proposition to sell American goods to the British controlled railways, which prefer to make their purchases in England and to English designs.

Plain Facts About Plain Engines

Locomotive development can have but one big objective, that is plainly an increase in efficiency and capacity. Ten or fifteen years ago designers had reached the size limit and were building great clumsy, bulky engines, compared with modern power. Since that day every increase in size or efficiency has only been made possible through refinement. To renounce these refinements would set an absolute limit on both efficiency and capacity. A Mallet locomotive would be helpless without a mechanical stoker, it would be useless without a power reverse gear, it would be powerless without an arch, it would be hopeless without superheat, and the day will surely come when it will be a joke without a feedwater heater, improved boiler circulation and many other refinements. What would the cylinders of a modern Mikado amount to without superheat and a boiler of modern dimensions? What would this modern boiler evaporate without a brick arch and a

stoker? Let anyone who thinks that plain engines will answer, consider the interdependence of these parts, bearing in mind that no chain is stronger than its weakest link. The development of the locomotive has, in fact, become so wholly dependent upon these refinements, and its future development hinges so largely upon their further application that to revert to plain engines would so limit capacity and increase fuel consumption as to literally take the heart out of railroading.

Prevent Traffic Congestion Near Yards

Delays to traffic are likely to occur on stretches of track approaching yards. With the heavy business of the past year or two, such tendencies have been increased. In order to shorten the blocks, and where manual block signals are in service, to facilitate the movement of traffic, it has been necessary in some cases to open additional block offices. This, however, means an added expense because of the employment of three operators for each 24-hour block station. At such locations, the installation of a few miles of automatic block signals will reduce materially the delays experienced (which are an expense) as well as decrease the cost of operation in addition to providing greater flexibility of train operation. On one road it was found that with the present track layout and before the installation of 22 miles of automatic signals extending from the end of a yard it would have been necessary to install three offices with continuous service in order to establish blocks, and that even with this additional expense a delay of approximately twenty-five minutes per train would result, but that after the installation of the automatic signals the road was able to eliminate the expense of operators at three former continuous offices and two trick operators at another place. This saving was accomplished in addition to the elimination of delays and the improvement of train movement. In order to place the railroads on as efficient an operating basis as possible, the use of automatic signals approaching certain yard locations should now receive the careful consideration of railway officers.

Move the Material for Car Repairs

The possibility of adding 75,000 to 80,000 serviceable cars to the present inadequate supply by catching up on car repairs has already been pointed out in these columns. This cannot be done safely by any short cut depending on the patching up of cars now badly in need of heavy repairs. It is true that there are many difficulties in the way of giving all of these cars a thorough overhauling, including the application of the betterments which many of them require before they will be fit for service under modern operating conditions. But the removal of at least one of the obstacles seriously delaying this work is within the control of the roads themselves. Material required for the extensive rebuilding and betterment programs in most cases has been on order for months and the supply industry is ready to deliver it. Once loaded for shipment, however, the responsibility for delivery falls on the roads themselves. Unfortunately these materials are generally regarded as dead freight which may be buried and forgotten in the face of the urgent demands of commercial traffic. In one instance several hundred coal cars stood on a track adjoining a contract repair shop for a month awaiting material for general repairs which was somewhere on the road but could not be delivered. Unless the railroads give special attention to the movement of material required for car repairs, there is little hope of preventing the percentage of bad order cars from increasing and no hope whatever of effecting the permanent reduction so essential if the railroads are to wage a winning fight to catch up with the demands of the country.

Six or Seven Per Cent

Announcement of approvals of loans from the loan fund, which the Interstate Commerce Commission has available for equipment and other improvements and for maturities, have not been forthcoming as rapidly as it was perhaps generally expected that they would be. The recommendations of the Association of Railway Executives covered loans sufficient to finance the purchase of a total of 838 locomotives and 45,021 cars. Estimates of the *Railway Age* (July 9, page 57) showed that some 200 of these locomotives and 20,000 of the cars are still to be ordered. One of the reasons for the delay in the announcements is the fact that Director W. A. Colston of the Commission's Bureau of Finance has been trying, in so far as possible, to induce the carriers to borrow the money additional to the amount of the proceeds that may be received in loans from the fund at 6 or 7 per cent. In some cases where the carrier is able to rely on special conditions, such as the personal credit of one of its important backers, the money may be obtained at 7 or even 6 per cent. Other roads, however, find that they have to meet the market rate, which at present is 7½ per cent, or higher. While Mr. Colston is to be commended for his desire to hold down the rate at which the railroads must borrow money, it is to be sincerely hoped that he will not carry his idea so far that it may postpone the purchase of the cars and locomotives that are so urgently needed. The loan fund is primarily intended to put the physical plant of the railroads back in proper condition. There will be delays enough in securing material and no time should be lost through delays in financing purchases.

"Bleeding the Public"

Under the headline "Large Shipping Interests Give Warning to Railroads," the Daily Iron Trade and Metal Market Report of July 14, contains an article in which it is stated that "more than one high railway executive has been told recently by certain large shipping interests that unless the railroads cease catering to labor and unless they 'stop bleeding the public' at the instance of organized labor the railroads will be fought tooth and nail in the future by shipping interests." The article continues, "The feeling among certain interests—and it is said to be growing—is that many railway executives have found it the path of least resistance to accede to labor's demands and promptly pass the bill along to the public." In the past, it is true, labor has wrung concessions from railroad managements, but from the time of the passage of the Adamson law until the termination of the two years of federal control, the influence of governmental regulation has been as largely responsible for the brotherhood's success as has the attitude of the carriers' executives. A review of railway history from the time of the passage of the Adamson law until 1920 will show that in a large majority of cases the railroads have had to make whatever concessions they have made. Under the terms of the Transportation Act any wage increase granted to employees, such as the $620,000,000 increase awarded them by the Labor Board, must be paid out of the shippers' and consumers' pockets. The question which naturally arises, then, is, What was the attitude of the representatives of the railroads in this controversy? Throughout the testimony of the Conference Committee of Managers, which presented the car-

riers' case before the Board, opposed to unreasonable demands of the railway employees was expressed, masses of statistics and tables were presented to show that in many cases railway employees have been and are adequately paid, and in addition, the committee advocated strongly the establishment of different bases of pay, the use of which would scale employees' compensation according to the cost of living in the community in which he resided, and to the comparative value of his services. With the existing machinery for adjusting controversies between railroads and their employees, more than this could not have been done. The whole matter was aptly summed up by a shipper, who, after attending several of the hearings at which the Conference Committee presented testimony, said, "It seems to me as though the railroads are pulling the public's chestnuts out of the fire." With this brief analysis in mind it should also be remembered that although the public was a party to the dispute, almost no testimony specifically on its behalf was presented during the deliberations. Rather than condemnation, therefore, the railway executives should be given commendation for their stand upon this whole question of wages and working conditions. They did not oppose all advances in wages, but they did all they could to prevent unreasonable advances from being granted.

Don't Forget the Blacksmith Shop

With every effort bent on increasing repair shop output in the next few months, it is important to bolster up individual departments, not forgetting the blacksmith shop. In some ways, the blacksmith shop has decreased in importance during the recent years because of the more general use of autogenous welding processes for repair work, and automatic turning machines for the manufacture from bar stock of many parts which were formerly forged. On the other hand, the increased use of drop hammers and forging machines with special formers and dies brings the blacksmith shop to the front as a production department. It is no longer merely an indirect aid to other departments and every effort should be made to secure necessary new equipment, at the same time using what is now available to the best possible advantage. Very often minor changes will effect a considerable increase in output. For example, poor ventilation and light cut down output and many shops are both poorly ventilated and poorly lighted. Early attention should be given to these matters and prompt action taken. The installation of swinging jib cranes at certain points previously overlooked may so facilitate the handling of heavy locomotive parts that two men can do six men's work. The question of proper arrangements for trucking, particularly, calls for attention and offers opportunities for speeding up the work. Owing to the need for light and air, blacksmith shops are usually isolated, and smooth, level runways should be provided to all departments for motor trucks. Many other details besides those mentioned should be attended to. With prompt action, the result will be more cars and locomotives repaired and available for service.

The Man of the Hour

"Any one can get results with all the men and money wanted at his disposal, but what the railroads need are men who can get results with the means at hand," wrote a general manager to a division superintendent who had requested certain expenditures and additions to the pay roll. This is in fact the problem of the hour and the man who can make the utmost use of facilities at hand is the man of the hour. It applies to general managers as well as division superintendents, to motive power and engineering executives as well as roundhouse and section foremen. If your locomotives are in active service an average of only six hours out of 24, the problem of strengthening your terminal organization and equipment to a point where locomotives can be maintained in service eight and ten hours of every day is manifestly of greater importance than the problem of financing the purchase of additional locomotives. If these locomotives are pulling 1,000-ton trains when the same engine modernized would pull 1,100 tons with less coal, the advisability of modernizing these engines in advance of buying new locomotives is obvious. The need for new cars is apparent, but if the available car supply can be augmented by accelerating repairs to existing bad orders, this is unquestionably the thing to do. Finally, an increase in car mileage to an average of 30 miles per day will accomplish more than all the new equipment that can possibly be built within the year. In short, the problem of the hour is to get the best effort out of every individual, the maximum work out of every serviceable locomotive and the maximum mileage and loading out of every existing car.

At the End of the Run

A quick, accurate inspection should await every locomotive at the end of the run. A correct diagnosis of the condition of the engine is the only satisfactory basis upon which subsequent operations at the terminal can proceed. During the war it was usual to station some of the most skilled surgeons in the field, rather than in the base hospitals, for the purpose of examining the wounded immediately following an engagement. These surgeons performed no operation nor even dressed a wound, but hurried about the field making a quick, accurate inspection of each casualty and indicating on a tag with each man the character of the injury and the proper hospital to which the patient should be sent. Inspection of locomotives arriving at a terminal should be assigned to men who know and these inspectors should be accorded every facility. No new terminal project should be considered without suitable inspection pits and means should be afforded for the prompt transmittal of work reports to the office where the work on each locomotive can be scheduled. In larger terminals the task of inspecting locomotives and reporting defects not only calls for capable men, but for a capable organization, one that can go over the locomotives as rapidly as they arrive without neglecting a single detail. Consider how much unnecessary work may be occasioned in the roundhouse by a slip-shod preliminary inspection or how many engine failures may result from negligent inspection. How much longer can locomotives be maintained in service by detecting all the defects that do not appear on engineers' work reports in these days of pooled power? Engineers should be encouraged to submit a conscientious work report but the day has passed when these can be relied upon as a guide to terminal operations.

Some Pertinent Facts on Immigration

To the layman the latest figures on immigration are encouraging and tend to create an impression that the present shortage in unskilled labor is soon to be alleviated, but a study of the latest available figures on racial classification, which are more or less indicative of the present status of immigration and emigration as regards railway labor, brings out the need of some form of internal publicity to reduce the losses by emigration. For the last six months of 1919 the figures show that of the eight main races which are generally depended upon to furnish the unskilled track labor a total of

33,352 persons were admitted and 108,547 departed; the Italians forming the majority, with 29,927 admitted and 67,437 departing. A significant feature of this is that practically all who are leaving are able bodied men of the wage-earner class while about half of those admitted are women and children. This means that even though the number of immigrants and emigrants is equal the country is still losing twice as many men as are coming in. Reducing this to railway labor, it means that at the present time the roads are losing from three to four times as many men by emigration as they are gaining by immigration. This loss can be reduced by proper publicity, showing by word of mouth and by printed matter the hardships and disheartening troubles that the returning alien will encounter in his home country. The foreign born worker should be shown in a convincing manner that the "fabled" opportunities in his native land are truly fables and that in general the way of the home-visiting alien is hard, his countrymen usually regarding him in the light of a "profiteering slacker." In many instances such men of military age have been detained abroad by the military authorities while food and clothing have been difficult to secure, even at exceptionally high prices. These factors backed by a study of alien papers published both here and abroad and presented to the men in an understandable and authoritative manner will do much toward holding our present forces at their work.

The Improvement in Transportation Conditions

THE LARGE AMOUNT of news that has developed during the past few weeks regarding the efforts of the railroads, the Interstate Commerce Commission and the shippers to improve transportation conditions has tended to obscure, to a very considerable extent, the very material progress that has been made during that time. The complaints regarding unsatisfactory conditions and the news of the various plans adopted or discussed for the purpose of dealing with those conditions have naturally received more publicity than the results obtained, particularly since it takes a little time for the results to follow and even more for them to show up in the reports.

Reports received from the railroads by the Commission on Car Service regarding freight movement and car performance during July indicate that the railroads, with the co-operative assistance of the Interstate Commerce Commission and of many of the shippers have not only overcome to a large extent the effects of the strikes which occurred in April and which were renewed in many cities as late as June but that they have turned the corner and are beginning to show a commendable improvement.

The first effect of the strikes in April was shown in the accumulations of cars at terminals in excess of current movement which produced the congestion that has slowed up traffic ever since and has accentuated the car shortage. On March 1 when the railroads were returned they inherited a congestion resulting from the accumulations during the winter months amounting to about 100,000 cars but during March this was reduced to 93,000. After two weeks of the strikes which began in April the accumulations had reached the unprecedented total of 288,000. During the succeeding weeks this was gradually reduced to 105,000 but during the latter part of June the recurrence of the strike in several eastern terminals resulted in a further increase to 129,000 on July 2. By July 16 this had been again reduced to 92,700, or below the total before the strikes and during the week ending July 23 there was a further reduction to 85,839. There was a slight increase during the following week, attributed mainly to violations of embargoes and inability of consignees to accept freight, but for the week ending July 30 the total was 90,571.

The large amount of congestion during the spring months naturally had the effect of reducing the available car supply and the deferred car requisitions, which represent the cars ordered by shippers for loading which they were unable to get promptly, increased from a daily average of about 80,000 during March to 130,000 for the last week in June, but by July 23 this had been reduced to 118,643 for the United States and Canada, or 112,093 for the United States alone, of which 34,045 were coal cars.

The clearing up of the congestion and the improvement in the car supply naturally go together. They have been accomplished in part by an improvement in the labor situation and also by the extraordinary efforts put forth under the direction of the local committees created by the Commission on Car Service and the Interstate Commerce Commission for dealing with the situation at the various important terminals.

The results in which every one is interested, however, are shown in the reports of the volume of freight handled by the railroads. These have regularly shown an improvement over the figures for 1919 except for about two weeks during which a large number of the yard employees were on strike, and for the four weeks ending July 24 there were loaded on the railroads of the United States, 3,437,235 cars of commercial freight as compared with 3,365,046 in the corrresponding period of 1919 and 3,699,116 during the same weeks of 1918. In the four weeks ending June 26 the total was 3,405,500. For the eight weeks ending July 24 the totals have been 6,842,735 for 1920; 6,602,452 for 1919 and 7,529,634 for 1918.

During the week ending July 17 the number of commercial loads handled amounted to 923,968, only slightly below the maximum figures for 1918 and for two weeks the roads in the Southern region have handled more freight even than in 1918 when the South was experiencing the rush of traffic incident to the war.

At a meeting in New York on July 16 the Association of Railway Executives adopted resolutions covering a program to speed up car movement and increase car efficiency. This program calls for an average minimum car movement of 30 miles per day, a figure never yet attained in the history of American railroading. Reports showing the accomplishment since that meeting are, of course, not yet available but those received from most of the roads for the month of June show a very marked improvement over previous months and a large number of roads have already exceeded the 30-mile average. The character of the traffic and conditions of operation vary so on different roads that a wide variation in the figures between individual roads is to be expected and the results are best shown by comparisons with previous performance. During March the average miles per car per day for all roads was 23.4 as compared with 19 during March, 1919. For April the average was brought down by the effect of the strikes to 19.7, as compared with 19.9 in April, 1919. For May the average was 24.1 as compared with 20.1 last year. For June the reports received by the Commission on Car Service are not yet sufficiently complete to compile the average but many of the roads showed gains as compared with the previous year ranging from 1 to 16 miles.

The heaviest part of the year's traffic is still to come during the fall months and the great benefits expected to be derived from the rate decision can not be reflected in the addition of new equipment and facilities for this year, but the marked improvement being shown during the summer makes it possible to look forward to the fall season of heavy traffic with much less anxiety than was felt a few weeks ago.

Letters to the Editor

Information Wanted About Uniflow Engine

PHILADELPHIA, Pa.

TO THE EDITOR:

About the year 1900 I was informed that a locomotive had been built for the Lake Shore & Michigan Southern, now a part of the New York Central System, with a system of central exhaust ports like those now used on the type of engine known as the Uniflow Engine.

Within a year I have heard this engine referred to again, but have been unable so far to ascertain anything about it.

I should be very glad indeed if you would publish this letter and see whether it would bring out any information concerning the locomotive in question.

F. W. DEAN.

The C. P. R.-C. N. Controversy Over the Turtleford-Shellbrook Line

TORONTO, ONT.

TO THE EDITOR:

In the *Railway Age* of June 4, 1920, page 1566, there appeared an article entitled "Government versus Private Ownership" to which reference was made in an editorial. This article referred to the denial by the Railway Committee of the Dominion House of Commons of the application of the Canadian Pacific to build a railway from Saskatoon to Birch Lake. In both of these references the impression is created that there was discrimination in favour of the government-owned line, which is absolutely at variance with the facts.

Therefore, I should like to state the true situation:

Before the war, the Canadian Northern (prior to acquisition by the government) projected the line in question from Turtleford to Shellbrook, made the surveys, and obtained a charter to build. The war necessarily postponed actual construction. In 1919, the first season after the war, the Canadian National Railways, acting for the Canadian Northern, secured from Parliament the renewal, among others, of its charter for this line. Re-surveying having shown that the most feasible route was somewhat further south at the eastern end of the line, the government, early in 1920, was asked to amend the charter accordingly. In the 1920 estimates, provision for grading 22 miles east from Turtleford was made, the intention being to follow this in the coming season with track and further grading. In the meantime, in recognition of the principle that railway construction should be conserved, the railways came to an understanding that duplication of lines and existing facilities should be avoided.

The Canadian Pacific applied to Parliament for authority to construct six lines. Five of these applications were granted. The sixth application was for a line into the same territory as was to be served by the Canadian Northern's Turtleford-Shellbrook line. The C. P. R. admitted before the railway committee that no survey had been made by it on the ground, also that the topography of the country did not leave room for more than one line. At the hearing before the railway committee, it was shown that the C. P. R. would eventually have to build 100 miles north from the vicinity of Saskatoon to reach the territory requiring railway facilities, which would be tapped by about 35 miles of construction by the Canadian National from Turtleford. The C. P. R.'s line would also involve, after 20 miles of construction, a costly and of necessity a slowly-constructed bridge across the North Saskatchewan river.

With these views before them, the railway committee of the House of Commons decided, and we think rightly, that the best interests of the community would be served, and served more quickly, by confirming the construction by the Canadian National and by rejecting the application of the Canadian Pacific. It was simply a question of expediency—of deciding what was best to be done under the circumstances, and the question of the change in ownership of the Canadian Northern, by which company the line had originally been laid out, did not affect the decision. The case was decided on its merits, and the question of government versus private management was not involved.

D. B. HANNA,
President, Canadian National Railways.

Compound Locomotives in France

HEATH, MASS.

TO THE EDITOR:

It has been stated that compounds will no longer be built in France because the fuel economy is offset by increased maintenance. From a close association with compounds on two French railways, I do not believe that the simple will supersede the compound, at any rate in passenger service. A good many simples no doubt will be built now in order to obtain locomotives at a lesser cost and in the minimum time. In 1911 when superheaters began to be extensively applied in France, a good many four-cylinder simples appeared, and it was said that no more compounds would be built. Tests showed, however, that superheating compounds was as advantageous as super-heating simples.

There are many reasons why the compound will probably continue to be successful in France. The enginemen receive coal premiums and experience has shown that they get relatively higher premiums with compounds than with simples. Therefore, compounds are popular with the crews. Every engineman has served two years as a machinist's helper. This is undoubtedly advantageous, especially where compounds are concerned. The four-cylinder balanced compound has been in use in France over 25 years so that every engineer is thoroughly familiar with the most economical points of cut-off for the high pressure and low pressure cylinders.

The maintenance question does not give much trouble for two reasons:

First, French engines are much more carefully finished in such matters as motion work, packing rings, brasses, etc.

Secondly, the oil allowance is very liberal, consequently long wear on cylinder packing and piston rod packing results.

Other reasons for the success of the compound are: (1) The limited axle load—17 tons is allowed with four-cylinder balanced engines but is reduced with two-cylinder engines to allow for dynamic increase. So if four cylinders are to be used, compounding may as well be employed as not. (2) The softer draft on the fire reduces spark losses especially with fine coal which is largely used. (3) The variable exhaust in extensive use permits the compound to be operated to its best advantage. (4) The compound can be operated at high capacity with long cut-offs with less drain on the boiler and less tearing of the fire.

In conclusion, compounding does not preclude feed water heating though the latter shows to better advantage on a simple engine.

W. G. LANDON.



Yards South of Valparaiso, Chilean State Railways

American Railway Supplies in South America

First Article of a Series by Railway Age's Correspondent Outlines First Part of Trip Down West Coast

By John P. Risque

AN AMERICAN RAILROADER who has visited most of South America and has now returned to set down his observations for those who are intently studying the map of South America from the standpoint of constructing needed lines, or of selling materials to those under operation, admits of impressions as mixed as the variations in the scenery. In reflecting upon gages of from 2 ft. to 5½ ft., infinite varieties of rolling stock and as many different opinions on



Lake Titicaca and the Peruvian Andes, a Part of the Main Route of the Southern Railway of Peru

operation, he feels like defining the systems as a whole as "scrambled." Yet he has returned an admirer of those in control and is willing to admit that their years of battles against opposition, jealousy, vacillating governments and the innumerable other handicaps that beset the transportation developer there, have brought forth systems that are successfully contending with uphill conditions that seem to exceed the temporary troubles of the railroaders in his own country.

Colombia

Owing to the comparatively difficult penetration to the interior of Colombia via the unreliable Magdalena river, a capricious controller of traffic, that country's dozen short lines were not visited. A lack of time mitigated against the ascent of the river from the Port of Barranquilla to Bogota, the capital and chief city of that republic.

Ecuador

The descent from Panama, instead, counted its first stop at historic Guayaquil, where torn up streets and American steam rollers proclaimed the activities of the Rockefeller Commission in its effort to clean up the town. The work that is being done will eventually facilitate the visit of intending railroaders and others from America; and although the countries to the south still maintain a rigid quarantine against Ecuador, the hope for healthier times is amply expressed in the activities of the modernizers referred to. Thus, the first line visited was the 3-ft. 6-in. gage Guayaquil & Quinto Railway, an American enterprise, 287 miles long, traversing the mountainous territory between the two points.

This line is the first "marvel of engineering" encountered and is well worth the ride from tropical Guayaquil, on the banks of the Guayas river, to Quito, the capital, high up in the mountains in a land of eternal spring. As the whole lay-out on the Guayaquil & Quito is American, including the administration, descriptions of the equipment employed would bring forth nothing new. One should mention, however, that the locomotives, in order to clear the narrow cuts along the line, are limited in cylinder "overhang" and masquerade as once familiar Vauclain compounds. They are simple engines, however, whose cylinders are mounted one on top of the other. Modern accessories are finding their ways to the shops at Duran, five miles above Guayaquil on the opposite bank of the river. Worn

locomotive flanges are being welded. Wood is the fuel used and whisperings of oil in those regions predict a possible change to that railroad life-saver, dependent upon the luck of the prospectors.

Peru

It is a long jump from Guayaquil to the railroads of Peru. The visitor should take passage to Callao, 725 miles south, the landing port for Lima, the political, commercial and geographical center of the Peruvians, and extend his observations from there north and south. The unrelated short lines in the north, between Lima and Eten, offer little attraction to the seller of railway goods.. To the prospector or builder, however, there is possible interest. This group of lines for convenience can be referred to as the first group of Peruvian railways, most of which, like the roads described herein as the second and third groups, respectively, are operated by an English company, under a lease from the Peruvian government, under the name of the Peruvian corporation, whose holdings are all of standard gage.

The second group is formed by a line known as the Central of Peru, running from Callao to Lima, nine miles distant, thence 15,665 ft. straight-up, to the roof of the world, over a line known in its infancy as the Oroya Railway. This was the second "engineering marvel" encountered on the trip. Space does not permit a description of this ride, even if there were adequate words in the language with which to try to describe this remarkable ascent of 3½



Henschel (Germany) 2-6-0 Engine and Train, Southbound at Puguio's Station, Arica-La Paz Railway

miles in a distance of 247 miles, over 21 switchbacks, 61 bridges and through 65 tunnels, all in 9½ hours. The enthusiastic railroader from the north will less likely hesitate at the nominal price charged for the ride than he would at the tale of the friend who made the ascent in spite of the doctor's advice. Weak hearts are barred; even strong ones make their presence known by intense fluttering at the 12,000-ft. line, which, when safely passed, brings on no discomfiture aside from a temporary attack of "soroche" or mountain sickness, known far and wide in the Andes.

Witnessing the four-car train's climb to the top is a study in confidence and an all-day ordeal seldom forgotten. The railroader will observe that the length of the trains, therefore the tonnage, is limited by the lengths of the switchbacks, seemingly precluding possibilities of substituting big Mallets for the American-built Mikados and Consolidations used on the line. He sees here, as on the first and third divisions, American equipment throughout, with the exception of a few side tank suburban locomotives from Britain, used in the local run from Lima to Callao.

At Oroya, near the end of the line and but slightly below the summit, the American-owned, standard gage Cerro de Pasco line joins the Central of Peru. It was stated in a previous paragraph that the railroads under discussion (with this exception) are controlled and operated by English capital. As the characteristics of the equipment and appearance of the right of way do not manifest such ownership, but on the contrary, due to a one-time preference for American rolling stock, lead one to believe that he is on an American railroad, it is pertinent to emphasize at this point that in a railroad sense the observer is as truly on



Llai-Llai Station on the Main Line of the Chilean State Railways Between Valparaiso and Santiago

British soil as if he were in Britain. And although the genial gentleman who holds the office of general manager of the Central at the Desamparados station in Lima is an American, it is understood that his successor will be a Briton, as are all the rest of the officials, including the chief mechanical engineer, who corresponds to our own superintendent of motive power.

The third group or system, so designated in this article for convenience, is the most entertaining 535 miles of them all. To reach the Pacific coast terminal of the Southern of Peru, namely Mollendo, 480 miles south, it is again necessary to patronize the steamer. Briefly, this standard gage line, so full of interest to an American and reserved for a thorough description in a later article is, in every sense of the word,



Typical Meter Gage Sleeping Car on the International Train, La Paz to Antofagasta

a real railroad; it is perhaps more than would ordinarily be expected of a railroad which has a line from sea level to 14,000 ft. above sea level, which is confronted with a transshipment of freight and passengers to steamers on Lake Titicaca, and which uses from there on a narrow gage line whose last division is an electrified six-mile line, descending into its terminal at La Paz, the capital and chief city of Bolivia.

The indulgence of the reader is asked if he is again re-

minded that he is, in the sense of this article, still on British soil, despite the American locomotives and cars which traverse it. The manager at Arequipa happens to be an American; but his staff is British throughout. A representative of the London directorate in checking up the 1920 status of the road inquired about "this predominance of American locomotives." He wanted to know why his freight



Armco Iron Culvert Material at La Paz, Ready for Mountain Culverts

is not being hauled by British-built engines. Whereupon his adviser, a sub-official at Arequipa, is said to have diplomatically ventured as an excuse that "like Fords, they stand the racket."

Bolivia

Leaving La Paz, the traveler will presumably use the Antofagasta & Bolivia Railway. This line, despite its narrow gage, provides comfortable trains with dormitory sleeping cars and wonderful scenery, including live volcanoes, as well as a diner that he can afterwards remember with no displeasure. Details of this likewise interesting line are also reserved for treatment in a subsequent article, with a brief mention here that the road's line from La Paz to Uyuni —about half-way to Antofagasta—is meter gage and the balance 2 ft. 6 in.

The traveler will observe American-style cars and a mixture of British and German locomotives, as well as a sprinkling of old and once popular American moguls, still on the job. He will also find automatic couplers and Westinghouse air brakes, both rarities on a British road and evidence of a one-time interest in American materials. The principal money earner for the Antofagasta & Bolivia, aside from its well deserved passenger traffic, which is steady and large, is the haul of nitrate to the coast from the prolific fields along the lower end of the line.

Chile

If the traveler is anxious to try the Chilean railroads, preferring not to wait for a ride on the Longitudinal from



North British Locomotive Works 4-6-0 Passenger Locomotive at Alameda Station, Santiago

Antofagasta south, he can descend to the Port of Arica on the meter gage Arica-La Paz Railway. This is the shortest link from La Paz to the coast and on its line is what is claimed to be the longest stretch of rack rail section in the world—28 miles. An investigation as to how the Southern of Peru, with 200 miles more haul and two extra trans-



Cucharas Viaduct on the Main Line of the Chilean State Railways Between Santiago and Valparaiso

shipments of freight and passengers, can compete with this short line is interesting reading and is in preparation.

Once on Chilean soil, the investigator begins to realize that he is studying a market that, unlike its neighbors, is not predominatingly British. The Chilean railways are mostly government-owned. This results in the field being open for supply companies of all countries. The Chilean depends upon the markets of the world to supply him with the best and cheapest for his needs.

The Storage of Records

By F. H. Harvey
General Auditor, Pittsburgh & West Virginia

THE SYSTEM of preservation and destruction of railroad records in use on most lines is one which is conducted without regard to efficient business principles or scientific methods, and results in a vast amount of lost energy and innumerable difficulties which could be overcome by the application of such thought, intelligence and serious consideration as is applied to other branches of a carrier's business.

Generally, there is no central storage place, each office being allowed to handle the situation as best it can, or more properly speaking, as it chooses. This, usually, has been the plan for years and results in valuable records being destroyed, or lost by subordinate employees, and at the same time costly space is used in many instances for the storage of minor records. Any plan for the storage of records that does not provide for a general authority and a general storagehouse is not wholly efficient.

To correct this situation, I would suggest the establishment of a record storagehouse and the appointment of an officer known as the custodian of records.

It is proposed that this establishment should be the general storage place for the records of all departments and branches of the service, other than current ones. It would appear that the subject of the preservation and destruction of records is largely a legal matter, so that it would be logical to have the officer charged with the duty of preserving and destroying these records placed under the jurisdiction of the law department. Upon such an officer, where feasible, should rest the responsibility of preserving or destroying any records of the company.

The location of the record storagehouse is a problem requiring deep consideration. It should be convenient to the general offices of a corporation, preferably in a district where land values are reasonable, as in suburbs, and where it would be readily accessible to those desiring the more frequent reference to records stored therein.

The bulky records for storage should be sent by freight trains; but as some of the stored records may at times be wanted quickly, passenger train service would allow for prompt forwarding. It is presumed that records that are often referred to will not be sent to the record storagehouse. In these days of special statements, old records are frequently needed and the passenger train service would therefore prove useful.

The construction of the storagehouse should be fireproof and at the same time economical. Concrete and metal are the usual fireproof materials. Galvanized iron in some instances could be used to a great extent, with an iron framework. Electricity is the safest artificial lighting agency.

The office of the custodian should be large enough for his records and indexes and in addition should be sufficiently roomy to provide space for statistical compilation from or reference to the filed records by departmental employees. It may sometimes be considered advisable to send an employee for information instead of having the records returned to the original office.

The ledgers and more important records should be filed in the most secure part of the building.

The records should be filed by departments and offices. All station records should be kept in one part of the building, all shop records in another, etc.

In order to secure uniformity in holding records at various offices and in sending them to the storeroom, and also to release valuable space in the offices, a schedule should be made showing the periods the various records are to be retained at the offices before being sent to the storeroom. In preparing this schedule consideration should be given to the use made of the record in the offices, only records that are live or often referred to being held locally for any considerable period. This schedule would enable the custodian of records to ascertain if any offices were holding records that should be in his custody.

The custodian of records should have a register of all records by offices, showing date and quantity received, period covered, location in storagehouse; and when destroyed or otherwise disposed of, a record thereof. He should have authority to inspect or search all file rooms and vaults in all offices. This is particularly important when he first gets his storehouse in working shape, as many old and valuable records are often found laying around at obscure points, sometimes retained as curiosities, and at other times lost sight of entirely. He should not only know what records he has in his storehouse but also the location of all other records on the railroads.

It is not intended to give particular forms of records or detailed construction of the record storehouse, as a plan that would suit a large system might be impractical for a small road.

The Interstate Commerce Commission has issued an order which reads, "That all accounts, records, and memoranda to be retained permanently or for specified periods of time, shall be filed in such manner as to render them easily accessible and convenient for examination." How many railroad officers know what records of their road, dated prior to July 1, 1907, are preserved and in what state of preservation they are?

It is possible, by the general storage system suggested, that better prices could be secured from the sale of old records it is decided to dispose of in that manner than by allowing various offices to sell this paper. In fact the sale of old paper should offset to a great extent the cost of operating the record storagehouse.



From the Altoona Times Tribune

The Public Pays the Bills

Labor Board Awards Express Employees $30,000,000

Decision Grants Increases in Wages of 16 Cents Per Hour to Approximately 75,000 Workers

AMERICAN RAILWAY EXPRESS COMPANY employees, numbering approximately 75,000 members of the Brotherhood of Railway & Steamship Clerks, Freight Handlers, Express and Station Employees, the International Brotherhood of Teamsters, Chauffeurs, Stablemen and Helpers of America, the Railway Express Drivers, Chauffeurs and Conductors of Chicago and the Order of Railway Express Men were granted flat increases in wages of 16 cents per hour retroactive to May 1, 1920, by the United States Railroad Labor Board on August 10. It is estimated that the increases in wages provided for in the award will amount to approximately $30,000,000 per year.

As in the case of the recent award affecting members of the railway brotherhoods, this decision does not dispose of the many questions involving rules and working conditions, some of which are interwoven with and materially affect the employee's earnings and wages. The general plan of the award follows that of the railway employee's decision throughout.

In announcing the decision, the board said in part:

"Immediately prior to July 1, 1918, practically all interstate express business in the United States was conducted by seven companies—the Adams Express Company, American Express Company, Wells-Fargo Express Company, Southern Express Company, Great Northern Express Company, Northern Express Company and Western Express Company. On July 1, 1918, an agreement was made between the United States Railroad Administration and the express companies named above providing for the consolidation and operation under government control during the war of the physical properties used in the express business of these companies. This consolidation still continued by mutual arrangement between the companies affected. The non-transportation activities, such as money orders, travelers' checks, etc., did not come and are not now under the consolidation.

"The new company, known as the American Railway Express Company, was employed as the sole agent of the government to conduct the express transportation business for the full period of federal control. Between July 1 and November 18, 1918, the company while acting as agent was not operated by or under the direction of the Railroad Administration. On November 18, 1918, the President by proclamation under his war powers took possession of the company and directed that the control and operation be exercised by and through the Director General of Railroads, one of the effects of which was to transfer all the general wage problems to the Railroad Administration acting through and under the advice and on the recommendation of the Board of Railroad Wages and Working Conditions.

"Various hearings were held and a study of the situation made as a result of which the Director General, on April 14, 1919, approved and promulgated an award known as Supplement No. 19 to General Order No. 27. This award provided, among other things, for an increase of $25.00 per month to the rate of pay of each position, as of January 1, 1918. The wage provision applied to persons receiving less than $250.00 per month and became effective January 1, 1919. Certain positions were not included, but were handled in other specific adjustments.

"Among these was the mechanical section of the express employees and it is to be noted, in this connection, that Decision No. 2 of this Board included certain express employees members of the shop crafts, who are therefore excluded from this decision.

"During the early part of the year 1919, the express employees parties to this dispute, through their organizations, submitted to the director general requests for further increases in rates of pay and changes in working conditions. In September, 1919, these requests were considered by the Board of Railroad Wages and Working Conditions, resulting in the issuance of an award known as Amendment No. 1 to Supplement No. 19. This award pertained to hours of service, overtime rules and relief period, but not to rates of pay.

"On February 25, 1920, at the suggestion of the director general, the company negotiated and executed a national agrement covering hours of service and working conditions of employment with the following organizations: Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, and the International Brotherhood of Teamsters, Chauffeurs, Stablemen & Helpers of America. Later the provisions of this agreement were extended to and an identical agreement executed with the Order of Railway Expressmen.

"While Supplement No. 19 served somewhat to equalize salaries for persons performing the same work, there remained many inequalities which required attention, some of which were adjusted from time to time by the company with the approval of the Railroad Administration. The Board is informed that other adjustments for the purpose of equalizing inequalities have also been made by the Company since termination of federal control. Such adjustments are recognized in this decision.

"At the suggestion of the President, requests for increases in wages and for changes in working conditions submitted to the Director General in February were the subject of conference between representatives of the carrier and of the organizations concerned. This conference extended from March 10 to April 1, 1920, but resulted in complete failure to agree.

"As in the case of the railroad employees, this long delay and succession of disappointments, coupled with the pressure of a further rise in living costs, produced deep and not unreasonable dissatisfaction on the part of express employees, even to a greater degree than upon many of the railroad employees, as the wages paid to the express employees were generally less than those paid for analogous service by the railroads and in any other industries. The express employees thus felt themselves called upon to make sacrifices, as they believed far beyond those of any other class. For these reasons, and as a measure of justice, it was decided that this decision when made, would be effective as of May 1, 1920, and that the increases herein specified should be slightly in excess of those decided upon for railroad employees performing similar service.

"There are in the dispute as presented questions involving rules and working conditions, some of which are interwoven with and materially affect earnings and wages. Adequate investigation and consideration of these questions would demand time. Existing conditions required that the board should make as early decision of the wage question as practicable. For that reason, it has been necessary—and both parties to the controversy have indicated it to be their judgment and wish—that the board should separate the questions involving rules and working conditions from the wage

questions. Accordingly, the board has not undertaken herein to consider or change the rules and agreements now existing or in force by the authority of the United States Railroad Administration or otherwise and this decision will be so understood and applied.

"The board assumes as the basis of this decision the continuance in full force and effect of the existing rules, working conditions and agreements, and pending the further consideration and determination of the questions pertaining to the continuation or modification of such rules, conditions and agreements no changes therein shall be made except by agreement between the carrier and employees concerned. As to all questions with reference to the continuation or modification of such rules, working conditions and agreements, further hearings, if desired, will be had at the earliest practicable date and decision thereon will be rendered as soon as adequate consideration can be given.

"Having heard and carefully considered the evidence presented, the board hereby decides that the rate increases set out below constitute for the positions specified, a just and reasonable wage.

The articles of the award follow:

Article I.—Carriers Affected

American Railway Express Company.

Article II.—Increase in Wages

For each of the hereinafter named classes, add the following amounts per hour to the rates of pay in effect 12:01 a. m. March 1, 1920; provided, that increases in rates of pay made since March 1, 1920, where such increases were made for the purpose of adjusting inequalities, will be preserved and the increases herein established added thereto:

Sec. 1. Agents, storekeepers, assistant storekeepers, chief clerks, foremen, sub-foremen, and other supervisory forces .....16 cents
Sec. 2. Clerks .....16 cents
Sec. 3. Wagon, automobile, stable, garage, and platform service employees .....16 cents
Sec. 4. Messengers and helpers, messengers handling baggage and helpers, guards and other train service employees .....16 cents
Sec. 5. All other employees, except those coming under the provisions of the agreement between the United States Railroad Administration and the Federated Shop Crafts, dated September 20, 1919.....16 cents

Article III.—General Application

Sec. 1. The increases in wages hereby established shall be effective as of May 1, 1920, and are to be paid according to the time served to all who were then in the carrier's service and remained therein, or who have since come into such service and remained therein.

Sec. 2. Increases in wages specified in this decision are to be added to the daily, weekly or monthly rates, as the case may be, in the following manner:

(a) For employees paid by the day, add eight (8) times the hourly increase established to the daily rate.
(b) For employees paid by the week, add forty-eight (48) times the hourly increase established to the weekly rate.
(c) For employees paid by the month (except train service employees), add two hundred and four (204) times the hourly increase established to the monthly rate.
(d) For train service employees paid by the month, add two hundred and forty (240) times the hourly increase established to the monthly rate.

Sec. 3. Payment made to employees on and after September 1, 1920, shall include therein the increases in wages hereby established.

Sec. 4. The amounts due in back pay from May 1, 1920, to August 31, 1920, inclusive, in accordance with the provisions of this decision, will be computed and payment made to the employees separately from the regular monthly, semi-monthly or weekly payments, so that employees will know the exact amount of their back payments.

Recognizing the clerical work necessary to make these computations for back pay and the probable delay before the entire period can be covered, each month, beginning with May, 1920, shall be computed as soon as practicable and, as soon as completed, payment shall be made.

Sec. 5. The increases in wages hereby established shall be incorporated in and become a part of existing agreements or schedules.

Sec. 6. Except as specifically modified herein, the rules regulating payment of overtime or working conditions in all branches of service, and the established and accepted methods of computing time and compensation thereunder, shall remain in effect until or unless changed in the manner provided by the Transportation Act.

Sec. 7. It is not intended in this decision to include or fix rates for any officials of the carrier except that class designated in the Transportation Act as "Subordinate Officials," and who are included in the Act as within the jurisdiction of this Board. The Act provides that the term "Subordinate Officials" includes officials of carriers of such class or rank as the Interstate Commerce Commission shall designate by regulation duly formulated and issued. Hence, whenever in this decision words are used, such as "Agents," "Foremen," etc., which may apply to officials, such words are intended to apply to only such classes of subordinate officials as are now or may hereafter be defined and classified by the Interstate Commerce Commission as such subordinate officials.

Article IV.—Interpretation of This Decision

Sec. 1. Should a dispute arise between the management and the employees of the carrier as to the meaning or intent of this decision, which cannot be decided in conference between the parties directly interested, such dispute shall be referred to the United States Railroad Labor Board in the manner provided by the Transportation Act.

Sec. 2. All such disputes shall be presented in a concrete, joint signed statement setting forth: (1) the article of this decision involved, (2) the facts of the case, (3) the position of the employees, and (4) the position of the management thereon. Where supporting documentary evidence is used it shall be attached in the form of exhibits.

Sec. 3. Such presentations shall be transmitted to the secretary of the United States Railroad Labor Board, who shall place same before the Board for final disposition.

Although the award is considerably below the demands made by the various unions affected—calling for increases ranging from $35 to $51 monthly—it is believed that the men will except it. The leaders of the four unions involved met in Chicago immediately after the award was announced. Their decision will be submitted to the membership in the form of a recommendation for acceptance or rejection. A referendum will then be taken on the question by the rank and file.

The leaders of the expressmen's organization voted on August 10 to accept the award of the Railway Labor Board. The acceptance was in the form of two resolutions adopted at a meeting held by representatives of all the organizations affected. While there was some dissatisfaction expressed by the rank and file of workers, their leaders stated that the award in general is satisfactory and that a referendum on its acceptance is not necessary.

The Supreme Court of New York, Justice H. J. Hinman, has denied the petition of the Public Service Commission, second district, for an order requiring the New York Central to file, before August 10, a new tariff showing fares between Albany and Buffalo reduced to two cents a mile. Judge Hinman holds that the two-cent rate statute will not be revived automatically on September 1, when the control of the Federal law ceases. This decision is contrary to that recently handed down by the United States Court, in which the restoration of fares to the low rates prevailing before Government control was favored.

The Relation of the Railroads to the Coal Problem*

Present and Future Fuel Shortage Is Due Primarily to Conditions Within the Mining Industry

THERE HAVE BEEN for a long time complaints that the railways have been failing to handle satisfactorily the traffic which the industries of the country have been offering to them, and indeed failing to handle some of it at all. Complaints regarding their failure to handle all the coal traffic offered have been especially loud and insistent. For some years coal mine operators, and others interested in the coal industry, have been attacking the managements of the railways upon the ground that their failure to handle the coal offered to them has been due to inefficient operation. The National Coal Association, the principal organization of the bituminous operators, constantly assailed the managements of the railroads in 1917 because of the inadequate car supply furnished to the mines, and by the propaganda carried on by them in that year the coal operators did more to force government operation of the railroads on the country than any other class of business men. After government control was adopted they continued to attack the operation of the railroads under the Railroad Administration upon similar grounds. Since the railways were returned to private operation on March 1 they have renewed their attacks upon the private managements.

When it can be shown that the concerns in an industry have increased by 45 per cent the amount of service rendered by them during a time when there has been an increase in their facilities of less than 5 per cent, I do not believe it is fair to conclude that their failure to handle satisfactorily all the business offered is due mainly to inefficiency of operation. I think it would be more just to concede that they had been efficiently operated, and that their inability to handle satisfactorily all the business offered had been due mainly to the fact that their business had increased out of all proportion to the increase in their facilities.

Have the Railways "Broken Down"?

There seems to be a general impression that the railways within recent months, and especially since they were returned to private operation on March 1, have been seriously "falling down" and that the amount of traffic handled has been substantially less than in past years. What are the facts about this? Statistics of the Interstate Commerce Commission show that in March, the first month after the railways were returned to private operation, they moved 30 per cent more freight than in March, 1919, and more than ever was transported in any March in history. At the end of March there began a series of "outlaw" railroad strikes which for some months seriously interfered with the normal operation of the railways. The private managements of the railroads were not responsible for these "outlaw" strikes. They were a result of the delay and final failure of the government's Railroad Administration to settle controversies which arose between it and the railway employees long before the railways were returned to private operation. Nevertheless, in spite of the strikes the railways in the first five months of 1920 handled 20 per cent more freight than in the same months of 1919, and about the same as in the same months of 1918.

But it may be said at least the railways recently have been very inefficient in the handling of coal and, as a result, the country is today confronted with a serious coal shortage. I may surprise you by saying that I challenge as unfounded the statements which have emanated from many sources to the effect that failure of the railways to move coal is mainly responsible for the present and prospective coal shortage. I am going to present to you some facts which I believe demonstrate that the coal shortage is mainly attributable to other things than the railroad situation.

Railroads Not Mainly Responsible for Coal Shortage

The causes of the present coal crisis date back to the early part of the year 1919. During the first four months of that year there was a large surplus of coal cars. The railways carried on vigorous agitation to secure a larger production and transportation of coal, but consumers and dealers would not buy it in normal amounts. Consequently, the operators would not or could not produce it, and the country's available supplies were not increased as they should have been. After the middle of the year 1919 the demand for and production of coal increased, and the railways handled the business so well that there was no coal shortage in 1919. In the four weeks ending on October 25, 1919, the average amount of coal produced and transported weekly had risen, according to the reports of the United States Geological Survey, to 12,089,000 tons.

In November, 1919, however, there came the strike of miners which shut down most of the bituminous mines. Owing to the small production in the spring of 1919 the country's stored supplies were below normal. The railroads were in no measure responsible for this. And what was the effect of the coal strike? This is a point of the utmost importance in relation to the present situation. The facts are clearly set forth in the reports of the Geological Survey. The normal production of coal at the time the coal strike came, as estimated by the Geological Survey on the basis of the amount actually produced and transported during the four weeks just before it began, was 12,089,000 tons a week. The effects produced by the coal strike, as shown by the Geological Survey's figures, were as follows:

Week ending	Normal production	Percentage of actual to normal production	Actual production
November 8.....	12,089,000 tons	29.6	3,582,000 tons
November 15.....	12,089,000 tons	33.3	4,024,000 tons
November 22.....	12,089,000 tons	44.3	5,344,000 tons
November 29.....	12,089,000 tons	44.0	5,334,000 tons
December 6.....	12,089,000 tons	43.5	5,245,000 tons
December 13.....	12,089,000 tons	48.0	5,800,000 tons
December 20.....	12,089,000 tons	86.9	10,501,000 tons
	84,623,000 tons	47.8	39,830,000 tons

It follows that the direct result of the coal strike was that at the beginning of the year 1920 there were immediately available in the country almost 45,000,000 tons less coal than there would have been if it had not occurred. In the entire year 1919, the reduction in the production of coal as compared with 1918, due almost entirely to causes for which the railways were not responsible, was 121,000,000 tons. In consequence, the country entered the year 1920 with a serious coal shortage.

Other Conditions Created by Miners' Strike

There was another important condition the coal mine strike created. Bituminous production during the strike was continued in only a comparatively few mines located chiefly in West Virginia. It was necessary to concentrate on trans-

*Abstract of an address delivered by Samuel O. Dunn, editor of the Railway Age, before the Illinois and Wisconsin Retail Coal Dealers Association at Milwaukee, Wis., on August 5, 1920.

portation from these mines and to send cars all over the country regardless of their ownership. The coal cars of the railways were thus scattered everywhere, which, on the resumption of the general operation of the mines, was certain to make it impossible for months for the railways to move coal in a normal manner. With a coal shortage and the demoralized transportation conditions due to the coal strike confronting them at the beginning of this year, the railways began a strenuous effort which has been continued up to the present time to replenish the country's coal supply. In spite of all the difficulties under which they were working, the railways between January 1 and April 10 moved 140,600,000 tons of bituminous coal. This was 29,400,000 more tons than had been produced and transported in the corresponding period of 1919, it was 900,000 tons more than in 1918 and only 1,850,000 tons less than the highest record ever made up to that date, which was in 1917. Up to this time it looked as if the railways were going to be able to haul enough coal entirely to offset the shortage which existed on January 1, owing to causes for which they were in no degree responsible.

At this time, however, the railways began to have labor troubles of their own. The "outlaw" railway strikes began in April. In consequence, in the week ending April 17 there was a sharp increase in the shortage of cars at the mines and a sharp decrease of coal production. The railway strikes have continued sporadically and intermittently almost ever since. In spite of them, however, the railways up to July 24 had moved 283,000,000 tons of bituminous coal. This was 45,000,000 tons more than was produced and transported in the corresponding period of the year 1919. It was only about 31,000,000 tons less than had been transported in 1918 during the same period, and the record of 1918 up to July 17 was the highest record ever established.

Coal Shortage Is Due to Reduction of Production

The foregoing facts demonstrate that the present coal situation is not mainly due to the failure of the railways to move the coal. It is due to the reduction of production in 1919, and especially to the loss of 45,000,000 tons of production in November and December because of the coal strike. If the coal which was lost to production by the strike in the mines in November and December were now available the country would not have had any coal shortage or be confronted with the prospect of one.

Since the railways have moved an enormously greater tonnage of coal than they did in the same period of last year, and since nevertheless certain sections of the country, especially the Northwest, are confronted with real danger of a fuel famine, the question naturally arises as to whether there has not been something in the distribution of the coal actually transported which has contributed to the present situation. Why, especially, is there an acute shortage of coal in the Northwest? The following statistics partially answer the question:

	First five months of 1919	First five months of 1920	Decrease
Coal shipped to head of lakes	5,000,000 tons	1,650,000 tons	3,350,000 tons
Coal exported, including Canada	1,706,000 tons	5,796,000 tons	Increase 4,090,000 tons

It will be seen that in the first five months of this year when the total coal transported was almost 37,000,000 tons more than last year, there was a decline of 3,350,000 tons in the coal moved to the head of the lakes, compared with last year, while there was an increase of 4,090,000 tons in the number of tons exported.

True Relation of Railroads to Coal Industry

Do I mean to give the impression that the railways have handled and are able to handle all the coal that the welfare of the country demands? By no means. While the present acute coal situation is not chiefly due to inadequacy of railway facilities, it is partly due to it. The railways with existing facilities can transport substantially 12,000,000 tons a week, or about 625,000,000 tons a year, provided the transportation of coal can be kept uniformly at its practicable maximum throughout the year. But the country needs this much or more coal. In consequence, anything such as a strike in the mines, or the recent "outlaw" railroad strikes, that interferes with the railways moving in every week of the year practically the maximum amount of coal experience shows they are capable of moving causes the country to fail to get as much coal as it needs.

The total capacity of the bituminous mines, as rated by the Geological Survey, is about 18,000,000 tons a week. I do not know whether a market, both domestic and export, for this amount of coal could be found at prices which would justify the operators in producing it. Of one thing, however, I am sure, and that is, that the railways with their existing facilities, even when working to capacity, cannot transport more than about two-thirds this much coal and handle equally well the country's other traffic. If they should move more than this much coal it would be done by devoting a disproportionately large part of the railways' tracks, locomotives, cars and terminals to the transportation of coal. It follows that unless the railways are to discriminate unfairly in favor of shippers of coal they cannot handle anywhere near all the coal the mines can now produce without a very great enlargement of their facilities.



"And Gosh, How They Dread It!"

No Immediate Necessity for Substitute Crossties

Committee Report to American Railroad Association Contains Pertinent Conclusions

WHAT IS PROBABLY the most authoritative and conclusive statement ever prepared on the merits of and the present necessity for the substitute tie is found in a report of the Tie committee of the American Railroad Association which has just been made public by its appearance in Bulletin No. 227 of the American Railway Engineering Association. The most important fact brought out in this report is that there is no immediate need for a substitute cross tie although the committee urges the roads to undertake serious study of this subject. A large amount of information is presented on the present progress of the substitute tie which will be found of direct interest to railway officers and which will also serve as a valuable guide to any one who believes that he can solve the crosstie problem by the introduction of some substitute.

While the committee was instructed to report on "metal versus wooden ties," it assumed that a comprehensive report on the subject of substitute ties was desired. It did not, therefore, limit its studies to metal ties but included concrete, composite and other substitutes. The committee summarizes its conclusions as follows:

For many years efforts have been made to introduce substitute ties, the first ties being made of metal, then of concrete, and finally of combinations of steel, wood and concrete. In Europe steel ties were introduced very early and a few types were rather extensively tried. However, relatively, the substitute tie has only had a limited use and where it has been used to more than a limited extent it has been under special conditions. For instance, the more extensive use in Germany was due to a desire to provide a market for the surplus product of the steel mills. The wheel loads and traffic conditions on European roads are such that results obtained are no criterion as to what would be secured under American traffic, and it is safe to conclude that, while much may be learned from European experience, no substitute tie has been developed there which would promise success in this country.

The first trial of substitute ties in the United States, of which the committee has knowledge, was made in 1878. Since that time a large number of types have been tried, the majority of which have been tested only in small quantities. Many of these, especially in recent years, seem to have been designed by persons having slight knowledge of the fundamental requirements and were evidently put in track at the solicitation of the inventor rather than because of any serious purpose on the part of the railroad to develop a practical substitute.

The only substitute that has been manufactured on a commercial scale, and used extensively, is the I-beam section steel tie of the Carnegie Steel Company. Approximately 1,250,000 of these have been put in steam railway track, of which approximately 1,200,000 have been used on roads affiliated with the United States Steel Corporation, notably on the Bessemer & Lake Erie which has purchased 1,142,000 steel ties of this kind.

There are several designs, especially of the composite type, that is, of steel and concrete, and steel and wood, which promise to develop into successful substitutes, but their use has been so limited that definite conclusions cannot be drawn at this time.

The results obtained with the steel I-beam tie up to the present are covered in the following statements:

(a) The steel I-beam tie has proved to be a practical substitute for the wood tie on non-insulated track under heavy and dense traffic.

(b) Line, surface, and gage have been maintained on such track at reasonable expense.

(c) No satisfactory method of insulating the I-beam tie has been developed.

(d) Corrosion is a serious factor in limiting the life of the tie, and means of protection should be provided.

(e) Because of the lack of definite information as to the average life of steel ties, sufficient data are not available to make satisfactory comparisons of annual cost as between steel ties and wooden ties.

This committee is of the opinion that a substitute tie should be developed for the following reasons:

(a) The probability is that the cost of wooden ties will continue to increase. Sufficient timber for ties is available at the present time and it is possible that, with the more extended use of preservatives, better means of protecting the tie from mechanical wear, and by reforestation, the railroads can obtain their requirements indefinitely. It is believed that it will simply be a question of price as to whether the timber available is converted into ties or whether substitute ties are used instead. As it is probable that a satisfactory substitute tie will be the result of progressive development, rather than instantaneous design, and that such development will require a considerable period of years, during which time the supply of timber will probably decrease, the railroads should take a more active part in the design and development of substitute ties.

(b) Efforts to lower the cost of maintaining track by reducing the amount of labor required.

Conclusions

1. No substitute tie has as yet been developed which can be recommended for general use on high speed insulated track.

2. The development of substitute ties should be taken up by the railroads with a view of conserving the available timber supply—of producing a track structure of longer life—which may be maintained with less labor.

3. Any statements made to urge the introduction of a substitute tie on the claim that safe track cannot be maintained with wooden ties, such as will be available for some time to come, are without foundation and are contrary to the facts.

History of Substitute Ties

A history of the substitute tie containing an extensive bibliography and a summarized table showing the service which such ties have had in railway tracks in this country and elsewhere since 1849 is contained in Appendix A of the committee's report. The committee's statement includes the following:

The fact that no substitute tie has yet been developed which can compete, under ordinary conditions, on the total annual cost basis, with wooden ties has tended to make the whole subject of little more than academic interest to railroad managers. This attitude is no doubt partly due to the fact that a number of substitute ties have been handled by promoters in such a way as to at least give good reason for the idea that the companies backing them are more interested in selling stock than ties. It has been the experience that

a number of substitute ties while under trial for the first 6 or 8 years have given great promise of meeting the requirements, and have been very highly spoken of by those interested in them, only to fail and require complete removal from the track in less than 10 or 12 years, or in less than the average life of properly treated wooden ties.

Timber Resources

A concise summary of the present timber resources of the United States with particular reference to the bearing on the use of wooden crossties by the railroads is contained in Appendix C to the report.

The standing timber in the United States totals 3,000 billion board feet. It is being cut at the rate of 100 billion board feet per year. It is growing at the rate of 35 billion board feet per year. It is being destroyed by fire, insects, decay and waste at the rate of 35 billion board feet per year. Thus the growth and the destruction counterbalance each other. Therefore, 30 years is the extent of the supply, if the assumption is maintained that consumption will continue at the rate of 100 billion and destruction at the rate of 35 billion. The decline in the consumption of sawed lumber from 45 to 35 billion during the past 15 years is a permanent tendency marking the usual industrial development from free, wasteful use of a plentiful, cheap commodity to a conservative utilization as that commodity increases in value through being less available. Consequently, less than 100 billion board feet will be used in the future. The unaided natural growth of 35 billion board feet will be increased because forest products will become worth the cost of growing them. The destruction by fire will be reduced from the present 10 billion board feet because the consequent financial loss will not be tolerated. These factors will make the present supply and the new growth last at least 50 years.

Crossties constitute less than 5 billion board feet per year of the United States forest consumption. They can be made from every kind of tree represented in the estimates of standing timber. Consequently, wood for crossties will be available as long as it can be purchased. Since woods of certain kinds and sizes will not be available in satisfactory quantities and qualities for certain other purposes before they cease to be unavailable for crossties, it is a safe assumption that wooden crossties can be had for well over 50 years.

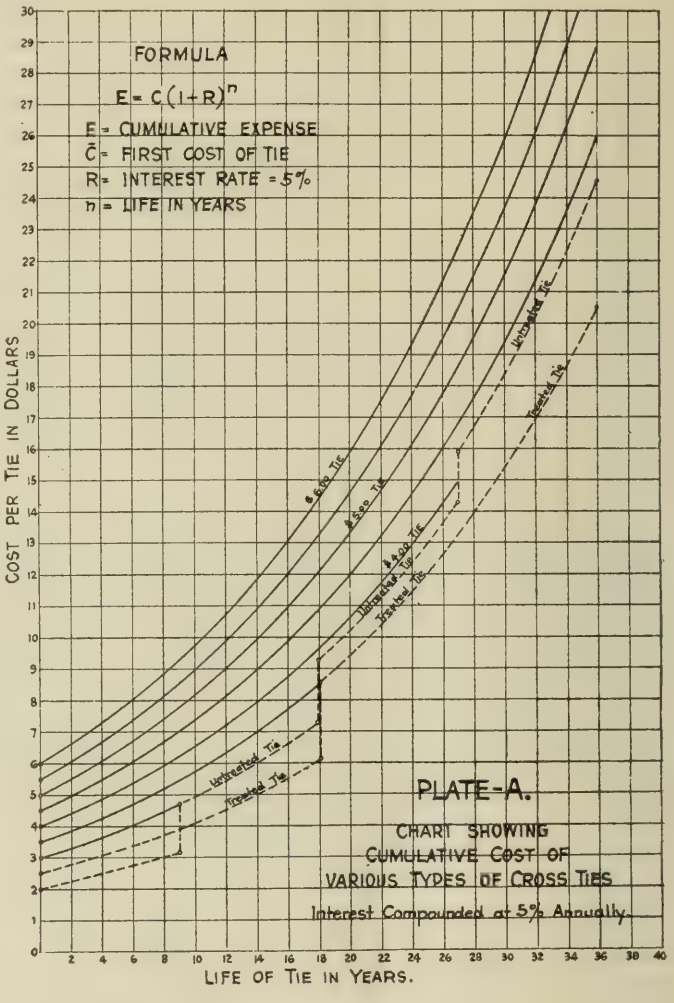
Fortunately, wood has been chemically treated so as to enable it to last longer than it has been possible to protect it from mechanical destruction, which is now the limiting feature of treated tie life. The protection against mechanical wear has contributed considerably to the average life of untreated ties. The further development of this protection will add additional life to treated ties. This makes of every piece of woodland in the country a potential source of tie supply, which fact means a practically universal distribution of this essential part of railroad track structure.

The untreated ties put in the tracks of United States railroads average about 7 or 8 years in service. Under methods of treatment and protection now in use, these ties will give about 15 years' service. If the 100 million untreated ties used per year were thus conserved, the lessened consumption of 2 billion board feet of timber annually would contribute appreciably to reducing the drain on the forest resources of this country. It is evident that instead of concerning themselves over the supply of ties, the railroads through wise handling should conserve those they use.

Some Fundamentals Regarding Substitute Tie Design

The Tie Committee, in its investigation of various substitute ties, has been impressed with the fact that many of them violate fundamental principles of track construction or maintenance, and it is with a view of pointing out some of those features that this appendix is added to the report.

The experience with substitute ties, so far recorded, indicates the following as being productive of failure: (1) Lack of efficient protection against corrosion; (2) Failure of rail fastenings; (3) Failure of insulation; (4) Loss of beam strength due to weakening tie in vicinity of rail to accommodate rail fastening features; (5) Use of sharp interior angles or square holes, from which cracks are developed; (6) Lack of protection against derailed wheels; (7) Design of base of tie such as to render tamping difficult or impos-



sible and such as to make maintenance of proper surface of track impracticable; (8) Design of tie such that track will not hold line, or such as to make lining of track impracticable; (9) Lack of beam strength causing breakage on yielding roadbed; (10) Lack of protection from abrasion from ballast in concrete ties.

It is believed that any track supported on ties will not remain permanently to *gage, surface* and *line* and that the labor operations necessary to restore it to gage, surface and line will have to be performed with more or less frequency. Therefore, any substitute tie should be designed as far as practicable to: (a) Resist the forces tending to disturb gage, surface and line, and (b) Lend itself readily to the labor operations necessary to restore the track to its original position.

It is recognized that no tie can completely meet these requirements and that the most that can be expected is a compromise.

Gage—The fastenings, in addition to being of sufficient strength to resist the stresses produced by traffic, should be of such design that without taking the tie from the track

and without change to the holes or fixed bolts or projections in the tie, a reasonable change of width of base of rail or variation of gage may be made. The fastenings should provide a freeway between the base of rail and lip of the fastening.

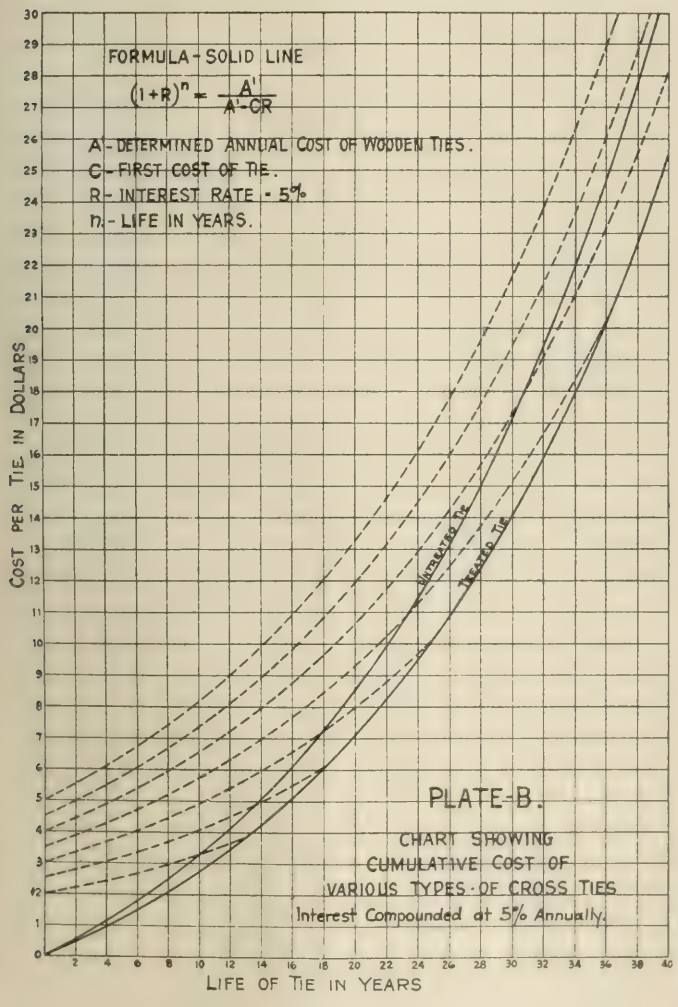
If the tie is so designed that it has essentially one support under each rail united by a transverse member to hold gage, this transverse piece must be of sufficient strength to maintain gage under all conditions.

Surface—The tie should have sufficient strength as a beam to support the loads imposed without undue deflection, so that the load may be distributed properly over the tamped bed.

The shape of the base of the tie must be such that it will not cut into or destroy the tamped bed. And further, it must be possible readily to tamp the ballast under the tie.

Line.—The tie should be of such shape that it will not only resist the tendency of track to get out of line, but also permit the track to be thrown back to line.

Ties clamped in pairs or which enclose considerable amounts of ballast between their several parts to such extent that the ballast must be removed before the track is



lined, would add a material burden to the labor necessary to line track.

Projections on the base of the tie that project into the ballast would make necessary throwing the track out of surface before it can be lined. Such a design would so interfere with lining the track as to make it impossible.

The end of the tie should be of such shape that the ballast beyond the end would offer resistance to the lateral movement of the track.

In addition to the above the following features should be provided for:

(c) Insulation or the possibility of insulation without a material change in the tie proper should be provided.

(d) The fastenings should be such as to offer as little obstruction to derailed wheels as possible. They should permit the changing of a defective rail or the renewal of rails with ease, and should be of such character that they can be replaced if broken or defective without disturbing the tie.

(e) The tie should be of such design as to be able to stand a reasonable amount of punishment from the derailment of cars.

Relative Costs

A preliminary survey of available data at once indicates that there is very little information as to the present day cost of substitute ties.

Therefore, it has been found necessary, in preparing the diagrams, first to establish cost curves of wood ties over a period of years, assuming a certain average life for untreated ties and another for treated ties. The various items of cost entering into these curves are merely assumed for the purpose of illustration.

Inasmuch as known costs of substitute ties are unavailable, a comparison has been made by using a unit cost in place as compared to wood ties in place. No effort has been made to show the comparative effect of the cost of maintaining track where substitute ties are used as against wood ties under similar conditions.

Plate "A" shows the actual expenditures for any given period, the untreated tie, with life of 9 years; the treated tie, with life of 18 years; and substitute ties, ranging in first cost from $3 to $6, by 50 cent intervals with indefinite life; the curves being carried out to 36 years. The chart is made up on a basis of 5 per cent interest, compounded annually.

In Plate "B" the curves for substitute ties are the same as Plate "A," and are shown in dotted lines. Curves for treated and untreated wood ties (solid lines) show annuity value rather than actual expenditure at any given period. These curves are calculated from expenditures at renewal periods as determined on Plate "A." Plate "B" will thus show that a substitute tie, having a certain unit cost in place, must last a certain number of years to become as economical as a good tie, for example—a substitute tie costing $3.50 in place must last at least 23 years and 4 months to be as economical as an untreated wood tie costing $2 in place with 9 years' life, and must last 35 years to compare with a treated tie costing $2.50 in place and having 18 years' life.



Photo from Keystone View Company

Repair Work in a Locomotive Shop in Berlin

The Financing and Final Allocation of the Standard Equipment

THE TABLE BELOW, issued recently by the Association of Railway Executives, shows the equipment purchased from the Railroad Administration under the terms of the equipment trust certificates dated January 15, 1920. This equipment totals 93,450 cars and 1,911 locomotives. It does not represent exactly the standard equipment purchased and allocated by the Railroad Administration. There are a number of cars and locomotives included which were not standard equipment and several roads which were allocated standard cars or locomotives did not finance them through the agreement to which the table relates. The total orders placed by the Railroad Administration were for 100,000 cars and 1,950 locomotives.

The table shows the equipment trust agreements made by the roads concerned, arranged in order of the number of the respective agreements made between the Director General of Railroads, the Guaranty Trust Company as trustee and the carriers. It shows the type of equipment financed by each road under the agreement, the minimum and maximum values of this equipment and the amount of the temporary notes issued on January 15. Inasmuch as the actual value of the equipment was not determined at the time the notes were issued, these minimum and maximum values were worked out as limits to surround the actual price which would be developed later. The temporary notes were for even amounts, and were supplemented by payments of cash to cover any difference between the value of the notes and the minimum price. In some cases in which the roads had not as yet received all the equipment assigned to them, that fact was also taken into consideration.

An examination of the table and a comparison with the original allocations will show, as noted above, the inclusion of certain equipment not included in the original list of standard equipment and also the omission of certain standard equipment financed in other ways.

Freight Cars

The freight cars included which were not standard equipment are as follows:

Louisville & Nashville—300, 50-ton composite gondola cars. The 50 cabooses, 100 refrigerator and 12 passenger cars shown in the footnote as included by this road also were not standard equipment.

The standard cars which were allocated but which were not included in the totals for the reason that they were financed in some other way than through these equipment trust certificates were as follows:

	70-Ton Single Sheathed Box	70-Ton Double Sheathed Box	50-Ton Composite Gondola	55-Ton Hopper	70-Ton Low Side Gondola	Light Mikado	Heavy Mikado	Light Mountain	Heavy Mountain	Light Pacific	Heavy Pacific	Light Santa Fe	Heavy Santa Fe	Light Mallet	Heavy Mallet	6-Wheel Switch	8-Wheel Switch	Minimum Price	Maximum Price	Temporary Notes Issued January 15 for
1 Ann Arbor R R	200											4						$786,900	$862,502	$786,000
2 Atchison, Topeka & Santa Fe Ry		2,700																7,357,500	7,917,480	6,675,000
3 Atlanta, Birmingham & Atlantic Ry	200		150															959,750	1,026,241	958,500
4 Atlantic Coast Line R R		950	300							45						10		6,379,910	6,723,898	6,379,500
5 Charleston & Western Carolina Ry		300																817,500	879,720	817,500
6 Baltimore & Ohio R R	500			1,900	500	160				30					26	40		17,579,650	19,135,498	17,578,500
7 Morgantown & Kingwood R R				1,000														2,505,000	2,829,320	2,505,000
9 Boston & Maine R R		500	1,500										20					6,695,000	6,948,715	5,329,500
10 Buffalo, Rochester & Pittsburgh Ry				800														2,001,000	2,263,456	2,004,000
11 Carolina, Clinchfield & Ohio Ry	300			1,750											10			6,041,000	6,792,625	6,043,500
12 Central R R of New Jersey	500			1,000			21									10		5,715,000	6,215,484	3,495,250
13 Chesapeake & Ohio Ry	1,000			2,000					5					35			10	11,206,000	12,384,920	11,205,000
14 Chicago & Alton R R			500			10												1,816,500	1,908,065	1,816,500
15 Chicago & Eastern Illinois R R						15												741,000	803,340	741,000
16 Chicago Northwestern Ry	1,000	1,250	1,000													35		9,974,875	10,714,675	9,973,500
17 Chicago & Western Indiana R R												5						279,875	310,015	279,000
18 Chicago, Burlington & Quincy R R		500	1,000				15						10			10	10	6,084,000	6,561,925	6,060,000
19 Colorado & Southern Ry				300									5					1,053,750	1,185,381	1,050,000
20 Fort Worth & Denver City Ry							5				5							510,740	544,135	258,000
21 Chicago Junction Ry																14		443,150	504,686	442,500
22 Chicago, Indianapolis & Louisville Ry			100			5												1,040,500	1,091,283	1,039,500
23 Chicago Great Western R R						10										10		652,375	715,805	651,000
24 Chicago, Milwaukee & St. Paul Ry	4,000						100											16,445,000	18,142,700	16,441,500
25 Chicago, Rock Island & Pacific Ry		2,500				20										10		8,117,250	8,762,810	8,117,250
26 Chicago, St. Paul, Minneapolis & Omaha Ry		500	200				4									8		2,352,300	2,537,710	2,352,000
27 Delaware & Hudson Co	200			1,000														3,912,500	4,365,545	3,912,000
28 Detroit, Toledo & Ironton R R		300																817,500	879,720	817,500
29 Erie R R	500						15				20		25				16	4,502,000	4,958,442	4,501,500
30 Georgia R R	300		100														2	1,184,500	1,284,060	1,183,500
31 Great Northern Ry.		1,500					4											4,294,900	4,632,716	4,294,500
32 Hocking Valley Ry			500			30												2,812,500	2,989,625	2,811,000
33 Illinois Central R R			2,650	1,000*														9,514,250	10,103,596	9,117,000
34 Kansas City Southern Ry		100	200							3								954,500	995,242	954,000
35 Kansas City Terminal Ry																	5	188,750	219,560	187,500
37 Louisville & Nashville R R ‡			1,300	1,000		14	50			6							10	10,469,959	11,149,399	10,466,500
38 Maine Central R R	300					6										2		1,204,250	1,315,169	1,203,000
39 Minneapolis & St. Louis R R		300	250															1,478,750	1,565,972	817,500
40 Missouri, Kansas & Texas Ry							25											1,262,500	1,429,456	1,261,500
41 Missouri Pacific R R		250	3,000			25		7										10,236,250	10,705,993	8,847,000
42 Nashville, Chattanooga & St. Louis Ry			200			10		5										1,298,000	1,369,537	1,297,500
43 New York Central R R	1,000	1,000	1,000	1,000	500	84						10					34	18,232,850	19,797,347	13,674,000§
44 Cleveland, Cincinnati, Chicago & St. Louis R		1,000		1,000		25											6	6,842,500	7,539,740	5,017,500§
45 Indiana Harbor Belt R R																	20	755,000	878,240	565,500§
46 Kanawha & Michigan Ry.				500													3	1,365,750	1,546,396	1,023,000§
47 Lake Erie & Western R R						15											3	854,250	935,076	640,500§
48 Michigan Central R R	1,000		1,000			20											10	6,825,500	7,327,700	5,118,000§
49 Pittsburgh & Lake Erie R R							15											777,750	877,935	582,000§
50 Pittsburgh, McKeesport & Youghiogheny R R	300				500		15											3,735,250	4,020,585	2,800,500§
51 Rutland R R						6											2	371,900	409,160	370,500
52 Toledo & Ohio Central Ry		350		500		15											5	2,863,500	3,170,660	2,146,500§
53 New York, New Haven & Hartford R R				1,500				10										4,307,500	4,813,930	4,306,500
54 Norfolk & Western Ry	800								10						50			6,887,750	7,673,680	6,885,000
55 Norfolk Southern R R			50															132,250	137,250	132,000
56 Northwestern Pacific R R		100																272,500	293,240	271,500
59 Pennsylvania R R	9,900		750	3,300†	2,500	5							130			30		57,873,500	61,921,393	52,012,000
60 Monongahela Ry						10												494,000	535,560	493,500
63 Pere Marquette Ry		2,000		1,000		30											10	9,814,500	10,739,920	9,127,500
65 Richmond, Fredericksburg & Potomac R R	350																	985,250	1,075,357	984,000
66 Seaboard Air Line Ry						10						15				10		1,650,375	1,826,095	1,650,000
67 Southern Ry			2,000			15		17				50					14	10,293,250	10,977,193	10,293,000
68 Mobile & Ohio R R			100													10		580,250	634,991	579,000
69 Southern Pacific Ry	1,000																	2,815,000	3,072,490	2,814,000
70 Spokane, Portland & Seattle Ry		300																817,500	879,720	817,500
71 St. Louis-San Francisco Ry		3,500	1,000			33										7		14,034,425	15,028,101	14,029,500
72 Terminal R R Assn. of St. Louis																10		315,750	360,490	315,000
73 Texas & Pacific Ry						11				7		18				14		2,393,337	2,525,289	2,392,500
74 Toledo, St. Louis & Western R R				450														1,127,250	1,273,194	1,166,500
75 Detroit, Toledo Shore Line R R				200														501,000	565,864	501,000
76 Virginian Ry															20			1,631,500	1,839,160	1,630,500
77 Wabash Ry		2,800		1,000		20												11,123,000	12,111,160	11,122,500
78 Washington Southern Ry	150																	422,250	460,867	421,500
79 Washington Terminal																3		95,025	108,147	94,500
80 Western Maryland Ry	300																	844,500	921,735	844,500
82 Wheeling & Lake Erie Ry			1,000			20								10		5		4,587,250	4,918,370	4,587,000
83 Grand Trunk Western Ry		600				25										8		3,028,375	3,278,585	3,027,000
84 Grand Trunk Ry. Co. of Canada						15										5		899,375	983,585	898,500
85 Alabama Great Southern R R								3										165,000	170,985	165,000
86 Cincinnati, New Orleans, Texas & Pacific Ry						10		5									5	957,750	1,040,095	957,000
	24,000	23,200	20,050‖	22,200	4,000	588	289	47	15	96	20	102	190	45	106	243	170	353,367,196	382,425,376	329,091,250

* 420 of these 50-Ton Hopper
† 300 of these 50-Ton Hopper

‡ In addition 50 Composite Cabooses, 1 Steel Postal, 4 Middle Room Smoking Cars, 4 End Room Smoking Cars, 1 Steel Baggage, 100 Composite Refrigerator Cars

§ Temporary Notes issued for 75% only of Minimum Purchase Price
‖ 3000 of these 70-Ton Hopper and 850 50-Ton Hopper

Total number of cars 93,450

Total number of locomotives 1,911

Table issued by the Association of Railway Executives showing equipment purchased from the United States Government under the terms of the equipment trust agreements, dated January 15, 1920, by and between Walker D. Hines, Director General, the Guaranty Trust Company, Trustee, and the carriers named.

Bessemer & Lake Erie—500, 55-ton hopper cars, valued at $1,408,500.

Delaware, Lackawanna & Western—800, 40-ton double sheath box cars and 800, 55-ton hopper cars, a total of 1,600, valued at $4,588,800.

Elgin, Joliet & Eastern—500, 40-ton double sheath box cars, valued at $1,459,500.

El Paso & Southwestern—250, 50-ton composite gondola cars valued at $674,250.

Florida East Coast—500, 40-ton double sheath box cars valued at $1,459,500.

Philadelphia & Reading—1,000, 50-ton single sheath box cars; 2,000, 55-ton hopper cars; and 500, 70-ton low side gondola cars, a total of 3,500 cars valued at $10,271,000.

These cars, not financed through this issue of equipment trust certificates, total 6,850. Adding these to the 93,450 shown in the table and deducting the 300 non-standard financed by the Louisville & Nashville gives the total of standard orders of 100,000. For convenience these are shown also in the following table:

TABLE A

	50 ton single sheath box	40-ton double sheath box	50 ton composite gondola	50-ton hopper	70-ton low side gondola
Bessemer & Lake Erie	.....	.....	.....	500	.....
Delaware, Lackawanna & Western	.....	800	.....	800	.....
Elgin, Joliet & Eastern	.....	500	.....	.....	.....
El Paso & Southwestern	.....	.....	250	.....	.....
Florida East Coast	.....	500	.....	.....	.....
Philadelphia & Reading	1,000	.....	.....	2,000	500
Shown in table	24,000	23,200	20,050	22,200	4,000
Total	25,000	25,000	20,300	25,500	4,500
Deduct Louisville & Nashville	.....	.....	300	.....	.....
Standard equipment orders	25,000	25,000	20,000	25,500	4,500

Total, 100,000.

Locomotives

A similar examination in the case of locomotives shows that there are included in the table the following locomotives which were not included in the original allocations:

Chesapeake & Ohio—The table shows 50 locomotives of which 15 light Mallet and 10 Eight-wheel switching locomotives were not standard equipment.

Hocking Valley—20 light Mikado locomotives.

Louisville & Nashville—The table shows 84 locomotives of which 34 were not standard equipment, namely 30 heavy Mikado and 4 Eight-wheel switching locomotives.

Missouri, Kansas & Texas—25 heavy Mikado locomotives.

Atlantic Coast Line—This company included 10 unallocated Mikado locomotives which are not shown in the table.

The following railroads were allocated standard equipment but did not finance it in this issue of equipment trust certificates:

Atlanta & West Point—2 Eight-wheel switching, valued at $88,000.

Bessemer & Lake Erie—5 heavy Sante Fe, valued at $337,500.

Duluth, Missabe & Northern—10 light Sante Fe, valued at $623,000.

Elgin, Joliet & Eastern—8 Eight-wheel switching, valued at $352,000.

El Paso & Southwestern—5 heavy Mikado, valued at $294,000.

Lehigh & Hudson River—4 light Mikado, valued at $214,400.

New York, Chicago & St. Louis—10 light Mikado, valued at $536,000.

Northern Pacific—4 Eight-wheel switching, valued at $184,300.

Oregon Short Line—20 light Mikado and 5 Six-wheel switching, valued at $1,252,000.

Philadelphia & Reading—30 P. & R. Consolidations, valued at $1,608,000.

Pittsburgh & West Virginia—3 heavy Mikado and 2 Six-wheel switching, valued at $232,800.

Union Pacific—20 light Mikado and 10 Six-wheel switching, valued at $1,432,000.

Western Pacific—5 heavy Mikado, valued at $317,160.

The table shows a total of 1,911 locomotives. Deducting the 104 locomotives shown as not being of standard design leaves 1,807. Adding the 143 locomotives noted as having been allocated but not financed through this issue of equipment trust certificates gives 1,950, which was the total number of locomotives ordered by the Railroad Administration on its standard equipment orders.

For convenience these facts are shown in table B.

TABLE B

	Light Mikado	Heavy Mikado	Light Mountain	Heavy Mountain	Light Pacific	Heavy Pacific	Light Santa Fe	Heavy Santa Fe	Light Mallet	Heavy Mallet	6-Wheel Switch	8-Wheel Switch	P.&R. Consol.
Shown in table	588	280	47	15	96	20	102	190	45	106	243	170	..
Deduct—Not standard equipment	...	...	..	...	...	...	...	...	...	...	...	...	...
Chesapeake & Ohio	...	...	...	...	...	...	...	...	15	...	...	10	..
Hocking Valley	20	...	..	...	...	...	...	...	...	...	...	...	...
Louisville & Nashville	...	30	...	..	...	...	..	...	..	..	...	4	..
Missouri, Kansas & Texas	...	25	...	...	...	...	...	...	..	..	...	...	..
Add standard equipment not shown in table	568	234	47	15	96	20	102	190	30	106	243	156	.
Atlanta & West Point	..	...	...	..	...	...	...	...	...	...	...	..	..
Bessemer & Lake Erie	...	...	...	..	...	...	...	5	...	...	...	..	.
Duluth, Missabe & Northern	...	...	...	...	...	...	10	...	...	...	...	..	...
Elgin, Joliet & Eastern	...	...	...	...	...	...	...	...	..	..	..	8	..
El Paso & Southwestern	...	5	..	...	...	...	..	...	..	..	..	..	..
Lehigh & Hudson River	4	...	...	...	...	...	..	..	..	..	..	...	..
N. Y. C. & St. L.	10	.	...	...	...	...	...	...	..	..	..	...	..
Northern Pacific	...	...	...	...	...	...	...	..	..	..	..	4	..
Oregon Short Line	20	...	...	...	...	...	..	..	..	..	5	...	..
Philadelphia & Reading	...	...	...	...	...	...	...	...	...	...	..	...	30
Pittsburgh & W. Va.	3	...	...	...	...	...	...	...	...	...	2	...	...
Union Pacific	20	...	...	...	...	...	..	...	..	..	10	..	...
Western Pacific	...	5	...	...	...	...	...	...	..	..	..	...	...
Total standard equipment	625	244	47	15	96	20	112	195	30	106	260	170	30

Total, 1,950.

Cox on the Railroad Problem

GOVERNOR COX of Ohio, Democratic nominee for president, in his address accepting the nomination, expressed his views upon the railroad problem in the following words:

"Any discussion of the question of food supply leads very quickly to the closely related matter of transportation. There is no one thing which brings us so intermittently to critical conditions than the insufficiency of our transportation facilities.

"Any attempt to discredit the federal operation of railroads during the years of grave emergency is unfair.

"The government and the public should render every co-

operation in the utmost good faith, to give thorough test to private ownership. The railroads have had their lesson. Government regulation is accepted now as not only a safeguard to the public, but as a conserving process to the utility. Financial credit is necessary to physical rehabilitation and it should be sufficient for the periods of maximum demand. We should not lose sight, however, of the vast possibilities of supplementary service by water. The Great Lakes and St. Lawrence navigation project, particularly, should claim the interest of the government.

"In the crop-moving period the call on the railroads is staggering. Grain piles up in the elevators. With stagnation more or less general, the farmer sells his product under the most unfavorable conditions.

"The solution would be simplified by utilizing the waterways. Aside from this, the accruing gain from every crop would be a consideration for the reason that the price of grain in this country is made by the Chicago market and it is determined by the London quotations."

Forest Products Laboratory Proposes New Attack on Marine Borer Problem

IN SPITE OF THE PROGRESS made in pile protection in the past, there is not yet available a uniformly reliable and satisfactory method for preventing damage by marine borers. Creosoting is the most widely used protective method and has proved its great value, but it has not been uniformly successful. Mechanical protections in the form of lock joint pipe, concrete coatings, treated battens, and a great variety of other coatings or pile armors have been tried, but the service being obtained from them is not well known and their use does not seem to have become general.

The Forest Products Laboratory, during the 10 years of its existence, has been studying various phases of the subject and has collected a considerable amount of valuable data. It has never been able, however, to give the subject the time and attention it deserves. Realizing its increasing importance, and the great value of the information which would be obtained by an intensive study, a new plan for intensive investigation is now proposed. This includes a survey of the whole Atlantic, Pacific and Gulf coasts of the United States, covering all the harbors of any importance, to obtain information on: The type or types of borers present, the seriousness of their depredations, the kinds of piling used, the durability of the piling in the various harbors and the methods and effectiveness of the protection used.

This work will require several years for its completion although much valuable information will be obtained fairly promptly. It is estimated that the work will cost about $50,000 for the first three years. As it is not anticipated that the Forest Service will be able to secure a sufficient appropriation for this work from the government in the near future, it can be carried on only through aggressive cooperation from other interested agencies, such as the railways, the timber producers and the commercial timber treating companies, who will benefit from the results obtained. Plans are now under way to bring this subject to the attention of those interested in the hope that finances may be arranged so that the work can be undertaken promptly.

Frank Trumbull

ON the 12th day of July, 1920, Frank Trumbull departed this life in the sixty-second year of his age. With a brief intermission, he devoted his entire business career to the service of transportation.

Beginning work at the early age of 12, and entering the lowest ranks of his adopted profession, he gradually made his way up through every step of advancement until he reached the responsible offices of president and chairman of the board of several important railroad corporations—positions which he held and administered with distinguished success until his fatal illness and death.

His intellectual interests were, however, far wider than any individual corporation. He became a philosopher of transportation and a broad-minded student of its relationship to Government and to the interests of all the people. He was one of the small number who originated and he became the first chairman of what now has become the Association of Railway Executives. He devoted himself without reservation or limit to the purpose of bringing about an understanding by the public of the problems of transportation in their relationship to the welfare and prosperity of society and an appreciation of their essentially national character and importance.

He was chairman of the committee of executives which called on the President in September, 1914—shortly after the outbreak of the world war—and drew from him a public declaration of sympathy and helpfulness for the railroads and an appeal to the public to aid in building them up to the proper standard of capacity and service.

He was instrumental in bringing about the comprehensive study of the railroad problem which was made by the joint committee of Congress headed by Senator Newlands and in which the constructive policies now crystallized into statute law had their birth.

But his interests were wider still. In the midst of his engrossing business employments, he found time to devote to the service of humanity in many of its vital needs and aspects. He associated himself actively and helpfully in many educational and charitable undertakings and spent largely of his efforts and his means in promoting the welfare of his fellowmen, showing especial interest in the industrial development and education of the colored race.

His effort and ambition was to make life easier for those with whom he came in contact and if good and kindly deeds blossom into happiness beyond the grave he is now receiving that reward of his generous and well spent life. We, his friends and associates of many years, deeply deplore his death and pay to his memory this tribute of affection and regard.

Minutes adopted by Association of Railway Executives in memory of Frank Trumbull, former chairman of the Railway Executives Advisory Committee, July 16, 1920.

Transportation Conditions Show Improvement

Reports of Local Committees on Car Service and Statistics of Freight Car Performance

WASHINGTON, D. C.

THE COMMISSION on Car Service has compiled a report of the activities of its 35 local car service committees for the month of July. The work of the committees at all points has progressed during the month with very satisfactory results. The six additional committees referred to in the report of July 1 have their work at their respective terminals well under way.

In all cases there has been a most thorough co-operation on the part of the traffic committees, their efforts being directed principally toward disposition of embargoed cars, the re-routing of freight under I. C. C. Order No. 1, and following up with shippers and consignees for more prompt loading and unloading of equipment. Good results have been obtained in connection with each of these items. At several terminals arrangements have been made for the assignment of freight solicitors to inspection service with very excellent results.

The committees continue to hold meetings at frequent intervals with the chambers of commerce and other local trade bodies, and it is very gratifying, indeed, the report says, to note the thorough co-operation that is being given the committees.

One of the principal difficulties that has been encountered by the committees is in connection with embargoed cars. It is very evident, the report says, that the question of enforcement of embargo restrictions at points of origin on many roads is not receiving the attention it should have, and as a consequence cars are being continually loaded in violation of existing restrictions and allowed to go forward, resulting in cars being tied up at intermediate terminals and outlying sidings. It is also apparent that in many cases embargo files are not being properly cleared in respect to modifications and cancellation of embargoes, since many cars have been found which prove to be unrestricted and should have gone forward. It is also clearly evident that the permit system is being abused and not properly handled since it is found that permits are being issued, and cars forwarded thereon without due regard to intermediate conditions. These matters should be given prompt and careful attention and such measures adopted as will make existing embargoes effective and furnish a proper check against cars moving on valid permits.

Some difficulty has been experienced at certain points in connection with the accumulation of shipments for re-consignment and, where necessary, this condition is being met by suitable embargo. Another difficulty that has confronted the committees at large centers such as New York, Philadelphia, Chicago, etc., is the receipt of shipments billed with no specific siding or station delivery given, and it is recommended that all roads take this matter in hand and see that billing covering shipments to large centers give specific siding and station delivery, in order to prevent unnecessary switching and delay to equipment at destination. The forwarding of straight consignments and "order notify" shipments to notify parties at other than destination of freight is also causing difficulty and delay to equipment. Attention is directed to the fact that the accepting of traffic for one point with provisions to notify consignees at another point is in conflict with the spirit of Consolidated Official Classification Rule 7, and should be discontinued. It is suggested that the railroads take such action as may be necessary to correct this difficulty.

At one or two points difficulty has been experienced due to the fact that certain roads are not using inter-line billing, making it necessary to re-bill freight at junction points, which not only causes delay to equipment but involves unnecessary clerical expense. It is suggested that proper action toward uniform practice be taken in this connection, by the roads concerned.

The bad order situation continues acute at some points and is deserving of close and careful attention on the part of the roads concerned. It is particularly noted that at some of the larger industrial centers, especially the steel centers, there are large numbers of bad order cars standing idle, while some plants have had to shut down and others are on the verge of having to suspend operations, due to conditions of car supply. This situation is particularly acute since the issuance of Interstate Commerce Commission Service Order No. 7. It is suggested that wherever possible arrangements should be made with these plants for repairing bad order cars.

Such an arrangement would serve the double purpose of furnishing work for the plant that might otherwise have to shut down, and at the same time produce equipment in which to forward their shipments. It is realized that in many cases these plants would not be in position to produce the necessary plates and forms for repairing the cars, but in such cases the required material could be furnished and the plant do the assembling and repair work.

By concentrated efforts on the part of the committees the use of cars in crosstown movement has been either eliminated or reduced to a minimum at all committee points. In many cases embargoes have been placed under which cars for crosstown movement are furnished only on permit, issued by the committee chairman or other authorized agent, such permits being issued only in cases where it is not possible to handle by truck. In other cases the committees have been able to control the matter by close co-operation and with the consignee, and furnishing cars only in exceptional cases.

Some of the principal things mentioned in the report as accomplished by the committees at the more important terminals since the report of July 1, are as follows:

Atlanta—45 cars on hand under load automobiles held account inability consignees to lift bills of lading released by unloading to public storage at owners' expense. Endeavoring to arrange storage space for 50 cars hay and feed to release equipment. Large handlers of freight, such as contractors and fertilizer plants receiving large quantities of material, have employed additional trucks and labor resulting in release of 150 to 200 additional cars per week above normal. The Manufacturers' Associaton of the Southeast has placed at the disposal of the Car Service Committee, a committee of their membership which is doing excellent work among their members in connection with heavier loading and more prompt loading and unloading of cars. Committee continues to divert freight to the Central of Georgia at Chattanooga to relieve accumulation on Southern Railway and prevent delay. Arrangements made for special switching service for consignees who increase facilities and manifest desire to speed up on unloading. All lines refusing to place cars for crosstown movement except in emergency cases. It is estimated this practice is saving approximately 200 cars per week in the Atlanta terminals. No embargo has been necessary in this connection. Accumulation of watermelon shipments for reconsignment prevented by arranging with lines to place embargo with permit system. 131 cars held at Atlanta and

175 held at Augusta under embargoes disposed of by trading and re-routing to lines in position to handle.

Baltimore—Situation practically normal. Efforts of committee have been directed toward prevention of accumulations and other abnormal conditions. Arrangements made with traffic committee for use of freight soliciting force as inspectors, who are following up with consignees prompt release of equipment, with good results.

Boston—Situation normal—no special activities.

Buffalo—To relieve interchange situation between Pennsylvania Railroad and D. L. & W. arrangements made for movement of approximately 40 carloads coal daily to D. L. & W. at Mt. Morris, formerly interchanged in the Buffalo Terminal. To relieve temporary congestion on the Nickel Plate arrangements made for diversion of 120 loaded westbound cars to the New York Central and 200 empty box cars moving west on commission orders to the Michigan Central.

To relieve Pittsburgh gateway Pennsylvania Railroad has arranged for diversion of eastern freight destined to Chicago to the Buffalo gateway for movement beyond via Grand Trunk, Wabash & Nickel Plate at rate of one train per day via each road. Large number of embargoed loads disposed of by trading between lines and re-routing via lines in position to handle. This matter being vigorously handled with roads at fault in effort to break practice of accepting cars in violation of embargoes. Inspectors making special drive on violations Interstate Commerce Commission Service Order No. 7, resulting in material decrease in number of violations. Each case discovered is handled with the road at fault. Due to arrangements made in connection with handling an increased car supply the loading of ore and grain out of Buffalo continues to show gratifying increase. Embargo against use of cars in cross-town movement placed by Erie, D. L. & W. and New York Central Railroads, resulting in a saving of approximately 142 cars and 24 engine hours per day.

Chicago—Cars held out on lines for movement to and through Chicago reduced from 3,765 on July 24 to 1,752 on July 28. Traffic forces on various lines conducting vigorous campaign with consignees for release of cars. Various commercial clubs and associations are co-operating in this connection. Embargo, with permit system, placed on cross-town movement which so far has resulted in saving of approximately 50 per cent of cars formerly used in this service.

Cincinnati—Account heavy run of business from the south via Big Four at Cincinnati, approximating 50 per cent increase over last year, Big Four unable to take promptly all business offered from L. & N. To relieve the situation arrangements were made to switch out solid trains of this freight for Toledo and divert to B. & O. for movement via its Toledo division. Cars held out on lines for movement to and through Cincinnati reduced from 1,411 on July 21 to 162 on July 28. To overcome delay to cars of lumber held in Cincinnati district for reconsignment, committee has arranged embargo with permit system on shipments of lumber for Cincinnati, under which permit is issued only when final destination can be given. Special attention being given to loading of cars to full capacity. Embargo, with permit system, placed on cross-town movement with good results in saving of equipment, approximately 50 per cent. To relieve bad order situation, L. & N. and C. & O. railroads are sending cars to shops, outside of Cincinnati territory, in position to make repairs.

Cleveland—Daily check is being made of excessive delays to cars at industries and team tracks—each case being handled for improvement. Embargo is used where necessary. Shipments placed in public storage where it is found consignee cannot unload promptly. To relieve Pennsylvania Railroad some of the freight normally routing via that line west of Cleveland has been diverted to the Nickel Plate. Considerable difficulty experienced account of cars arriving in violation of embargoes. These cars are being disposed of by trading and re-routing wherever possible. Pennsylvania has been making up solid Big Four trains and interchanging with the Big Four on main tracks, also to avoid yard movement New York Central has been making up solid trains for Big Four and delivering to that line at point outside of Cleveland terminals. Cars held out on Big Four reduced from 1,000 on June 26 to 174 on July 17. Committee has developed that some industries are holding cars under load within their plants and calling for empties for outbound loadings. All lines have been requested to investigate thoroughly, with a view to curtailing supply of empties where necessary to correct this situation. Embargo, with permit system, placed on cross-town movement with good results.

Denver—Committee continues to unload automobiles to public storage to release equipment. The use of cars in cross-town movement being restricted to emergency cases, cars not suitable for outside traffic being used in practically all cases. Representatives of committee make daily canvass of situation with respect to prompt release of cars. Each load on hand 72 hours or more is handled with consignee, with good results. Denver Transportation Bureau co-operating with committee and handling with consignees to secure more prompt release of equipment. Situation practically normal.

Detroit—Special campaign being carried on by Detroit Board of Commerce with shippers in connection with prompt handling of refrigerator cars. Daily canvass of situation being made at warehouse, team tracks and private sidings, resulting in materially speeding up loading and unloading of equipment. Wherever possible arrangements are being made with consignees to take team track delivery in cases where there is more freight on hand than can be delivered to consignee's siding.

Kansas City—414 cars held under embargoes and inability of roads to handle disposed of by re-routing, July 1 to 24. Arrangement for solid train movement to Chicago, Kanapolis, Huntington and eastern points continued with good results. Committee reports 43 solid trains so handled during the past three weeks. Bad order cars being forwarded to other shops in position to repair. Five cars of automobiles placed in public storage to release equipment, account consignees' inability to lift bills of lading.

New York—Diversion of a portion of the freight for New England points around New York gateway has been continued, resulting in release and advancing the movement of large numbers of cars. To relieve accumulation of C. R. R. of N. J. for Pier 18, arrangement made for diversion of solid trains of bituminous coal to Arlington on B. & O., resulting in release of a large number of cars. Two solid trains run from St. George to Philadelphia, under arrangement with B. & O., to allow their crews to run to Philadelphia instead of being cut out at Cranford Junction. Arrangements made for acceptance of freight for New York territory at stations and yards where it can be most conveniently handled, resulting in more prompt release of a large number of cars. By co-operation with Washington committee, arrangements made for release and forwarding of a large number of restricted cars held on lines south of Potomac Yard. Arrangements made to work repair forces on Sundays wherever possible to aid in releasing bad order cars. Pennsylvania continues to interchange through tubes. Vigorous campaign for prompt loading and unloading of cars continued with good results. Committee giving consideration to the use of Jersey Shore rail and interior stations for use in unloading automobiles from which points they can be roaded to New York City, thus releasing New York

terminals, generally used for this purpose, for the handling of other traffic.

Norfolk—Since July 1 committee has disposed of approximately 1,600 cars held under restrictions and embargoes, by trading and re-routing to lines in position to handle. Bad order cars reduced from 1,507 on July 1, to 841 July 24.

Philadelphia—Labor situation improving. Stevedore strike which began May 27 ended July 8, since which time there has been a decided improvement in unloading of export freight. 2,618 cars of Tidewater coal unloaded week ending July 15. 3,235 cars unloaded week ending July 22. Through increased activities and co-operation of traffic and operating departments 14,710 cars were unloaded in the terminal for the week ending July 15; 15,058 cars unloaded week ending July 22. Representatives of traffic departments have been detailed to assist in checking up and securing necessary information in connection with campaign for more prompt handling and release of cars.

Pittsburgh—Further violations of I. C. C. Service Order No. 7 developed and handled with offending lines for correction. Considerable difficulty being experienced in this territory in connection with car supply for industries as a result of Service Order No. 7. Bad order situation extremely serious. It has been suggested that arrangements be made with car builders and steel industries for making necessary repairs, thus giving employment to plants whose operation would otherwise be curtailed account of car supply, and at the same time producing cars with which to protect outbound shipments. Close attention being given to cars held for billing, reducing number on hand to minimum.

St. Louis—Arrangements made for assignment of representatives of traffic departments to act as inspectors who are making close check in connection with open top cars in cross-town movement; delays in loading and unloading of equipment; following up cars held for connecting lines, and arranging open routes and permits on embargoed cars with good results, also checking freight houses daily and releasing L. C. L. freight in large quantities. Embargoed cars released and disposed of since May 25—5,277. Cars disposed of by re-routing under L. C. L. Service Order No. 1 since May 25, 6,855. Arrangements made for meeting with automobile manufacturers and dealers' association to discuss plans for controlling automobile shipments with view to conserving cars.

Twin Cities—Cars held on account of embargoes, restrictions and other causes reduced to 211. These being followed closely with good prospects of early release. Some difficulty experienced in furnishing cars for agricultural machinery. Lines interested called together and vigorous efforts being made to protect. Jurisdiction of this committee extended to cover head of the lakes and situation at these points being handled with excellent results.

Washington—Considerable difficulty experienced in connection with cars held on lines south of Potomac Yards, due to embargoes and restrictions against New York and New England territory. Chairman of the Washington committee secured list of these cars and visited New York, and by working closely with the committee at that point and the railroads interested, succeeded in disposing of a large number of the cars. To date the accumulation of cars has been reduced to 355, with additional releases daily. Eighteen cars held for Cuba disposed of by handling with Florida East Coast R. R. Arrangements made for placing in public storage shipments of household goods, and automobiles which consignees are unable to release. Current business moving freely through Potomac Yards.

Des Moines—To speed up and prevent delay to cars handled through the Iowa Transfer Railway Yard where joint interchange and joint inspection between all roads are made a penalty of 50 cents per car for each 12 hours that cars are permitted to remain in the transfer is assessed against the offending road. The transfer company has also placed a switch engine in the transfer yard to do all assembling of cars in road order. These arrangements have resulted in prompt removal of cars and have accomplished all that has been expected in preventing delays.

Indianapolis—800 embargoed cars disposed of in past two weeks by diversion to open routes and advancement towards destination. Accumulation of cars for the Central Public warehouse on Big Four reduced to normal by arranging with consignee to accept team track delivery on other lines. To assist in disposition of merchandise cars ordinarily handled at Columbus, a large number of such cars have been forwarded to Indianapolis for handling.

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

WEEK ENDED SATURDAY, JULY 24, 1920

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year 1920	Corresponding year 1919	Corresponding year 1918	Received from connections: This year 1920	Corresponding year 1919	Corresponding year 1918
Eastern	1920	5,464	2,419	54,341	4,665	8,681	9,483	32,940	103,020	221,103	.....	.....	252,479	.....	.....
	1919	9,802	2,313	49,604	2,791	7,387	7,977	17,860	117,384	.....	230,406	231,120	.....	228,291	247,587
Allegheny	1920	2,138	3,058	61,674	5,791	3,617	10,609	34,619	69,209	190,715	.....	.....	129,856	.....	.....
	1919	3,955	2,988	55,604	3,123	3,734	13,379	37,486	68,876	.....	189,139	223,344	.....	138,274	195,065
Pocahontas	1920	164	125	22,579	712	1,863	203	3,009	6,776	35,431	.....	.....	20,022	.....	.....
	1919	310	186	24,022	431	2,078	216	119	9,231	.....	36,593	43,484	.....	18,307	23,611
Southern	1920	3,260	2,204	24,901	1,295	16,541	2,835	26,542	46,812	124,390	.....	.....	79,681	.....	.....
	1919	4,449	2,100	21,425	270	16,854	1,899	9,081	57,177	.....	113,255	123,039	.....	69,995	73,229
Northwestern	1920	8,542	7,190	11,335	1,514	15,742	46,649	29,251	38,668	158,891	.....	.....	61,973	.....	.....
	1919	9,594	9,606	9,091	1,290	15,507	44,127	21,364	46,818	.....	157,397	165,479	.....	60,917	69,199
Central Western	1920	10,615	8,549	21,875	470	6,159	3,158	24,433	49,131	124,390	.....	.....	67,025	.....	.....
	1919	14,618	9,240	18,724	319	5,082	3,603	23,510	45,142	.....	120,238	127,884	.....	63,452	62,768
Southwestern	1920	4,671	2,994	5,472	195	8,200	327	16,247	22,856	60,962	.....	.....	52,176	.....	.....
	1919	8,817	2,965	5,313	147	8,165	323	12,901	24,023	.....	62,654	62,204	.....	49,072	43,515
Total all roads	1920	34,854	26,539	202,177	14,642	60,803	73,264	167,041	336,472	915,792	.....	.....	663,212	.....	.....
	1919	51,545	29,392	183,783	8,371	58,807	71,524	122,321	368,651	.....	909,682	.....	.....	628,308	.....
	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	976,554	.....	.....	713,974
Increase compared	1919	.....	.....	18,394	6,271	1,996	1,740	44,720	.....	6,100	.....	.....	34,894	.....	.....
Decrease compared	1919	16,691	2,583	.....	.....	.....	.....	.....	32,179	.....	.....	.....	.....	.....	.....
Increase compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Decrease compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	60,762	.....	.....	50,762	.....	.....

More Freight Handled

As noted in last week's issue, the various reports received by the Commission on Car Service are showing a fairly steady improvement in transportation conditions, as reflected by increases in the volume of freight handled, in the reduction of congestion as shown by the accumulation reports and in the coincident decrease in the car shortage figures.

For the week ending July 24 there were loaded on the railroads of the United States 915,972 cars of commercial

freight, as compared with 909,682 in the corresponding week of 1919 and 976,554 in 1918. For four weeks ending July 24 the totals have been 3,437,235 for 1920, 3,365,046 for 1919 and 3,699,116 for 1918. For the eight weeks for which complete reports have been available, as some of the larger roads did not begin reporting before June 1, the totals have been for the three years, respectively: 6,842,735; 6,602,452, and 7,529,634. The Southern district for two weeks has shown a gain even over 1918. The latest report follows:

The accumulations of cars in excess of current movement, which on July 16 had been reduced for the first time below the figure reported preceding the switchmen's strikes, were further reduced during the week ending July 25 to 85,839, but by July 30 there was an increase to 90,571. This represents a small increase in the number of cars held on account of inability of consignees to accept, but principally an increase of 3,000 cars held for embargoes, which represents violations of embargoes by railroads in sending cars to points where they cannot be handled.

The deferred car requisitions for the week ending July 23 averaged 118,643, for the United States and Canada, or 112,093 for the United States alone, of which 34,045 were for coal cars.

The percentage of bad order cars to total cars on line, however, shows an increase from 6.5 on July 1 to 6.9 on July 15, in the case of box cars; from 7.8 to 8.2 in the case of gondola cars, and from 7.2 to 7.6 for all freight cars. Of the total of 176,672 bad order cars on July 15, 109,892 were held for heavy repairs and 66,780 for light repairs.

The Bureau of Public Health Service, in conjunction with the public health departments of different states, advises that there exists a widespread scarcity of chemicals necessary for water purification purposes throughout the country, together with more or less scarcity of raw materials in the hands of manufacturers of such chemicals.

To meet this situation carriers are requested, in a circular issued by the Commission on Car Service, to take such action as will afford prompt movement of materials to be used for the purification of public water supply, and for that purpose consigned to municipal authorities, or when for movement to plants for the manufacture of chemicals to be used for such purposes.

Bituminous operators in the National Coal Association have urged the Interstate Commerce Commission to take drastic steps to regulate the distribution of open-top car equipment to small country "wagon" mines, hundreds of which have sprung into activity during the coal shortage emergency. It is roughly estimated that there are upwards of 3,000 mines of this character throughout the bituminous coal fields. These so-called "wagon" mines, which are a considerable factor at this time in the speculative field, are located from one-half mile to 5 miles away from a railway switch, and have to haul their output by wagon or motor truck to the tracks. The mines, having only a small tonnage, draw upon the railroads daily for equipment, tying up cars at the switches because of their necessarily slow method of loading the coal. Hundreds of cars which are needed to overcome the shortage in equipment where facilities exist for quick loading and expeditious handling of the output, are in this way tied up.

Advices from bituminous coal fields throughout the country are said to show that in nearly every field "snow bird" or "mushroom" mines, ordinarily not in operation, have sprung into existence within the past few months, and that these mines are selling coal through speculators at exorbitant prices beyond those prevailing at the larger mines.

Northwest Wants More Cars

The Interstate Commerce Commision on Monday, August 9, gave a hearing to representatives of grain shippers and state officials from the Northwest, who complained of the shortage of cars for the movement of grain and demanded that cars be returned to the western roads to the extent of 100 per cent of their ownership. It was stated that the western lines now have only about 85 per cent of the number of cars they own, although the latest report of the Commission on Car Service for July 15 shows that the Northwest district had 81.6 per cent of its ownership of box cars and 95.2 per cent of its ownership of all cars. They also complained to some extent of the condition of the grain cars.

Commissioner Aitchison pointed out that under orders from the Interstate Commerce Commission and the Commission on Car Service large numbers of grain cars are being relocated from eastern to western railroads, but most of the witnesses insisted that the number is insufficient. They declared that the Northwest will have a very large crop this year and O. P. B. Jacobsen, of the Minnesota Railroad & Warehouse Commission, asserted that 500,000 box cars were needed to move the grain.

Commissioner Potter inquired about the possibilities of increased storage facilities, but was told that the farmers cannot get either the money or the materials with which to provide storage. C. M. Reed of the Kansas Court of Industrial Relations, said that at the present rate it would take 28 months to move the hold-over from last year's crop in Kansas, which amounts to 12,000,000 bushels, and the new crop, estimated at 158,000,000 bushels.

Governor W. L. Harding of Iowa asked that the commission establish a rate on grain from Buffalo to New York which will equalize the difference between the all rail and the water and rail rates from Chicago so as to promote the lake shipment of grain and that every effort be made to see that grain is shipped by water up to the capacity of the boats. He said there is enough tonnage on the Great Lakes to carry 122,000,000 bushels of grain from Lake Michigan to Lake Superior ports to Buffalo on a single trip and that the utilization of lake boats to the fullest extent would release railroad equipment. Chairman Clark said that the commission has already given attention to that situation and that plans are being considered for insuring the largest possible grain movement by lake boats.

L. M. Betts, a member of the Commission on Car Service, showed that under orders issued by the Commission on Car Service and by the Interstate Commerce Commission 104,050 box cars have been ordered moved from eastern to western lines and that reports up to August 5 show that 65,284 had been delivered by the originating roads and 49,263 had been received by the destination roads, leaving a balance to be delivered of 54,787. Of these cars 53,300 had been ordered to the Northwestern district, 43,850 to the Central Western and 6,900 to the Southwestern. The cars are to be delivered to individual roads as follows: Green Bay & Western, 300; Chicago & North Western, 2,250; Chicago Great Western, 1,500; Chicago, St. Paul, Minneapolis & Omaha, 2,700; Great Northern, 17,000; Minneapolis & St. Louis, 3,300; Soo Line, 8,050; Northern Pacific, 18,200; Illinois Central, 3,750; Atchison, Topeka & Santa Fe, 8,450; Chicago & Alton, 950; Chicago & Eastern Illinois, 1,600; Chicago, Burlington & Quincy, 2,250; Chicago, Peoria & St. Louis, 3,000; Chicago, Rock Island & Pacific, 8,400; Toledo, Peoria & Western, 1,350; Union Pacific, 16,800; Missouri Pacific, 2,700; St. Louis-San Francisco, 2,100, and St. Louis Southwestern, 2,100.

The Interstate Commerce Commission on August 10 issued an order further extending for 30 days its Service Order No. 7, the order which gave general priority to bituminous coal in the use of open top cars east of the Mississippi river as amended by Service Order No. 9 entered July 13 and as further amended by order entered July 29. The new order therefore continues the priority in effect for a period of 90 consecutive days from June 21.

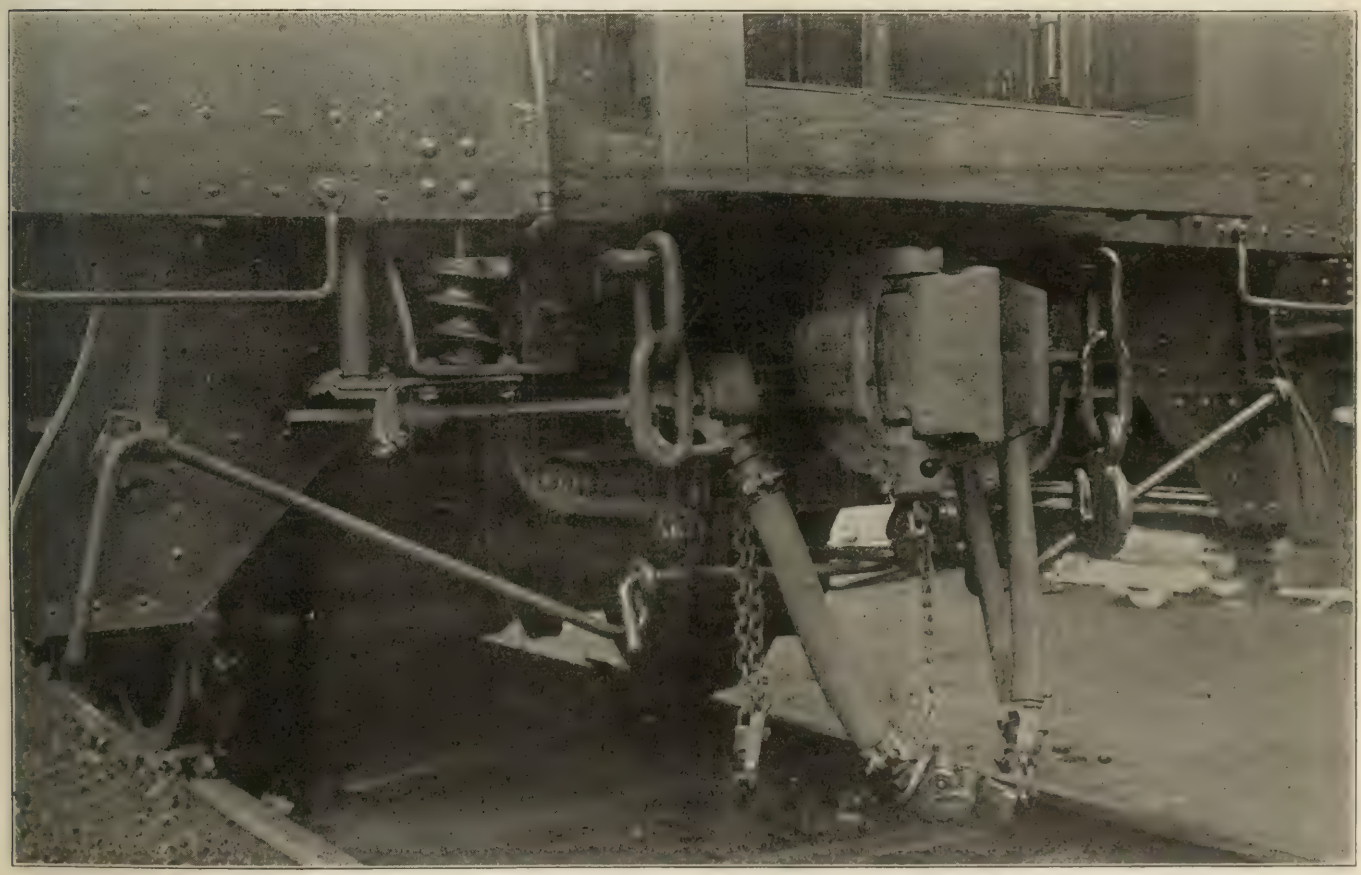
The Type "D" Coupler in Passenger Service

Difficulties Involved in Its Application—How the Problem Was Solved on New Pullman Cars

THE FIRST APPLICATION of the standard Type "D" coupler to passenger equipment has been made by the Pullman Company on the new sleeping cars which are now being built at a rate to approximate an output of about 600 cars a year. Adaptation of the Type "D" coupler to passenger cars, without alteration from its standard form as designed for freight service, involves considerable difficulty, its large overall dimensions causing it to interfere with the standard location of the train pipe connection. The trouble occurs on the knuckle or operating side of the coupler, which at its widest point extends out about 7¾ in. from the center line of the stem.

The standard location of train pipe connections requires a distance of 20 in. between the center of the connection for the signal hose and that for the steam hose, with the steam hose connection 9½ in. from the center line of the car. With the steam heat connection but 12 in. back of the inside face of the coupler knuckle, it will be seen that with the draft gear compressed there is very little clearance between the steam end valve and the side of the coupler when the coupler stem is on the center line of the car. This clearance is entirely inadequate to take care of the lateral swing of the coupler in curving. To increase the distance of the steam hose connection from the center line of the coupler would require a corresponding decrease in the distance from the center line of the coupler to the brake and signal hose connections as the total distance between the two sets of connections is fixed and cannot be varied without requiring an entire readjustment of hose lengths. To move these connections over, however, in order to increase the clearance between the coupler and the steam end valve would tend to shorten the distance between the brake and signal hose connections and increase the distance between the steam hose connections on the adjoining ends of coupled cars. This condition, combined with certain conditions encountered in curving, would tend to cause the coupled steam hose to raise and separate the air hose couplings.

The solution finally arrived at by the Pullman Company and worked out for application on the sleeping cars now being built, is shown in the illustrations. Essentially this scheme involves the maintenance of a fixed relation between the center line of the coupler shank and the pipe connections, the latter being carried with the coupler in its lateral motion. This was accomplished by the design of a special coupler carrier casting with a long bearing face on which was placed a sliding saddle carrying the coupler and the ends of the train pipes. The bearing surface of the coupler carrier casting has a width of 4¼ in. and a total length of 38½ in. The coupler saddle casting is 29 in. long.



End View of a Pullman Car with Type "D" Coupler Application

Between the top and bottom flanges of the I-section of the carrier casting the web member is omitted for a distance of 20 in. at the center to accommodate a centering spring and followers. With the spring and followers inserted, the saddle casting is placed over the carrier casting, pockets

in the sides of the saddle being provided for the ends of the followers. The single coil spring is assembled with an initial load of 200 lb. and has a full load of about 600 lb. under the maximum travel of the saddle of 5½ in. either way from the center. The coupler stem has a clearance of ¾ in. on either side from the vertical retaining faces of the saddle casting to take care of the angularity of the stem with relation to the saddle under maximum lateral movement.

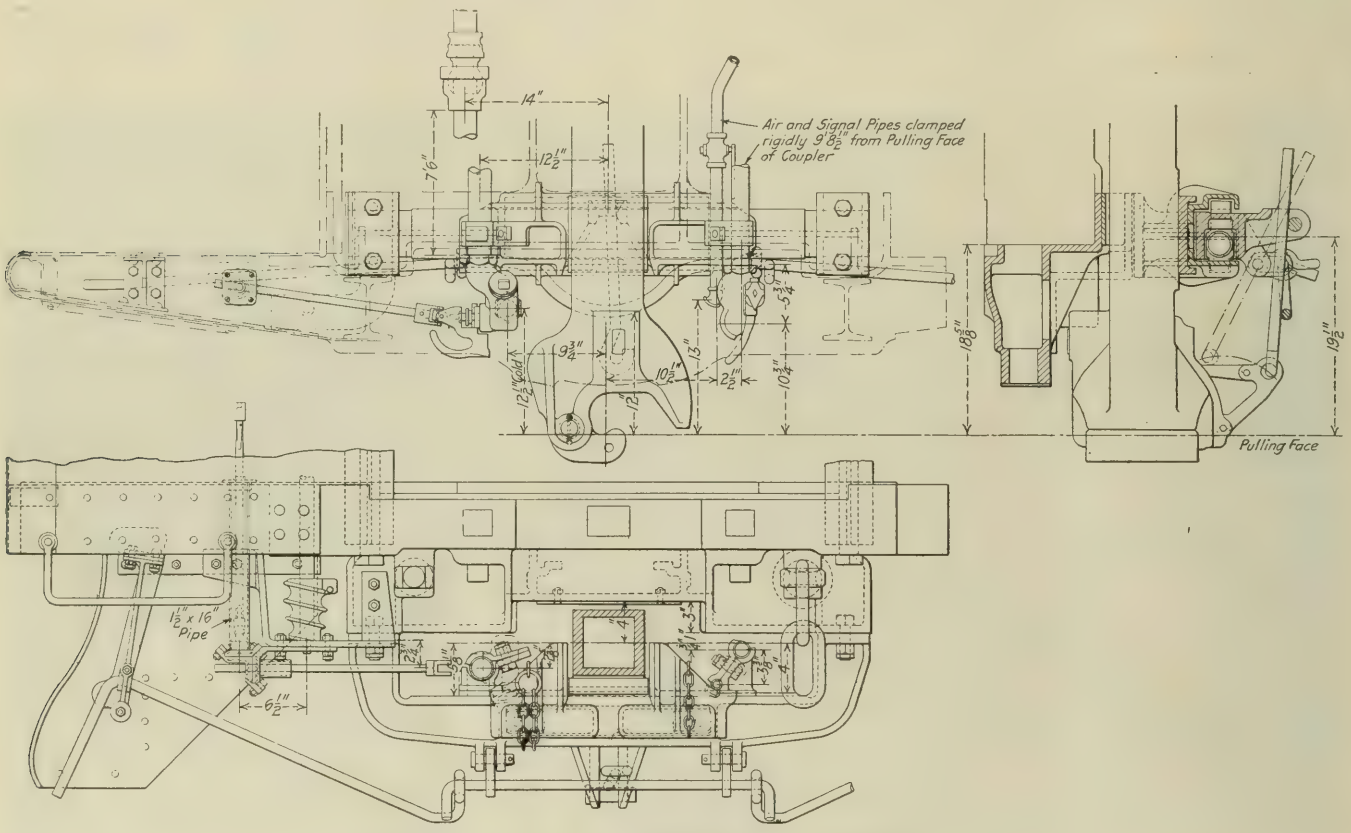
Both the carrier and saddle casting are relieved of lateral strains by the design of the platform end casting, which extends out at either side of the coupler shank to provide lateral stops. The coupler carrier is a steel casting while the saddle is of malleable iron with a movable shoe to take the wear of the coupler stem.

Brackets for support of the brake, signal and steam heat pipes are cast integral with the saddle casting. The brake and signal pipes are fastened with a single clamp which holds them rigidly in place. The steam pipe clamp is designed to close without tightly gripping the pipe, in order to provide for longitudinal expansion.

One of the problems which had to be solved in developing this arrangement was the provision of the necessary flexibility in the pipes to permit the required amount of lateral motion. The air pipes offered no particular difficulty as it was found that by locating the first clamp a distance of 9 ft. 8½ in. from the end of the car sufficient flexibility was provided in the pipe itself to take up the lateral motion without undue stress. Inasmuch as there are two rigid clamps between the end of the car and the first pipe joint no trouble is anticipated in maintaining tight train lines.

It was found, however, that the 2-in. steam heat pipe was too large to take up the lateral motion without unduly stressing the joints and making it impossible to keep them tight. A Barco universal joint was therefore inserted in the pipe at a distance of about 7 ft. 6 in. back of the end valve. One of the interesting problems encountered in this connection was the difficulty of maintaining a tight joint between the end of the pipe and the bronze ball joint member. This was overcome by threading the end of the ball joint member on the outside and inserting it inside the steel pipe connection, the difference in expansion of the two metals thus tightening instead of loosening the joint.

Probably the most difficult problem encountered in working out the details of the flexible pipe arrangement was that of providing a satisfactory mechanism for operating from inside the vestibule the movable steam heat end valve. The device by which this is accomplished is simple, self-contained, and requires little special care in locating it on the car to insure freedom of operation. The motion of the vertical operating shaft is transmitted to the valve through bevel gears to a horizontal sliding shaft of square section. The cored hole through the hub of the lower gear is tapered from its smallest section in the middle toward each end, thus providing for considerable angular movement as well as the longitudinal movement of the horizontal shaft, to take care of the effect of expansion and contraction of the steam pipe, the lateral movement of the end and slight variations in the relationship of parts in assembling.



Application of the Type "D" Coupler to Pullman Cars

The lower end of the vertical shaft is also square in section and is tapered where it is inserted in the upper gear. To eliminate the necessity for precision in locating the gear casing with relation to the opening in the vestibule floor, this shaft is provided with a universal joint so that slight inaccuracies of alignment do not cause parts to bind.

With the exception of the shafts, the parts of the device are all malleable castings and only such finish is provided for as is necessary to secure proper working alignment of the gears. The casing is made in three pieces, one of which is cast integral with the bracket by which the device is at-

tached to the brake step. The gears are provided with finished hubs which have their bearings in reamed or drilled holes in the casing. The device is thus self contained and the alignment of the gears independent of the shafts. The vertical shaft is enclosed in a 1½-in. pipe sleeve which is threaded over the hub of the upper casing casting and extends through the vestibule floor. This protects the opening for the gear hub in the top of the casing from exposure to the weather and possibility of freezing.

The bottom operated standard Type "D" coupler head is cast integral with the Pullman standard 6½-in. by 7-in. stem, 4 ft. 1⅝ in. long from the striking horn to the center of the yoke connecting pin. The back end of the stem is attached to the cast steel coupler yoke by 2¼-in. pins in quadruple shear. The draft gear is the Westinghouse N. C. type. The coupler unlocking mechanism is of the National type and is suspended from the carrier casting, which is provided with integral lugs for that purpose. All tendency toward binding in the operation of the device has been eliminated by employing link suspension members instead of fixed bearings, and no difficulty is encountered in moving the knuckle to its full opening.

Blanket Supplement Authorized for Rate Advance

Interstate Commerce Commission Makes It Possible to Put New Rates Into Effect Without Delay

WASHINGTON, D. C.

The Interstate Commerce Commission has issued a special permission order making modifications of its tariff rules to permit the general increases in freight rates authorized in Ex Parte No. 74 to be put into effect by the filing of special blanket supplements to the existing freight tariffs in abbreviated form, thereby enabling the carriers in the present emergency to secure in an economical and expeditious manner increased revenue to be derived from such increases in freight rates. The order includes a form of supplement to be used for this purpose, which may be applied to more than one tariff by referring to the specific numbers of the tariffs to which it applies, and in which the changes in rates will be shown by a table of rates stating the new figures to which the various sums of money will be increased by the application of the percentages and the rules for the disposition of fractions, etc.

The commission's rules and regulations in Tariff Circular 18-A, require tariff publications to show the forms and numbers of powers of attorney and concurrences under authority of which participating carriers are named; an explicit statement of rates, in cents or in dollars and cents, per 100 pounds, per barrel, or other packages, per ton or per car, together with the name or designation of the places from and to which they apply; limit the number of, and the volume of effective supplements to any tariff and forbid supplements to tariffs issued in loose-leaf form, and tariffs of less than five pages; prohibit a change in any rate sought to be increased by a rate which is under suspension by or order of the commission; and provide that rates filed must be allowed to go into effect, and cannot be changed for at least 30 days after the date when the rates have become effective:

The special permission order, No. 50,340, provides that the provisions of Tariff Circular 18-A in Rules 4 (b), 4 (i), 9 (e), 9 (k) and 54 (a), be temporarily waived in the particulars *hereinafter* set forth, but not otherwise, as to, and confined to, special supplements filed under authority thereof; Provided, That there shall not be in effect at any one time more than one such special supplement to the same tariff other than the special supplement providing minimum weights on grain and the products of grain and commodities listed therewith.

Carriers are permitted to file special supplements to freight tariffs to provide for the changes in rates and charges approved by the commission in Ex Parte No. 74; provided, that such special supplement shall be issued substantially in the manner and form shown in exhibit "A," which form may be, when necessary, modified to the extent necessary to clearly indicate the increases authorized in the report in Ex Parte No. 74, provided, that such modifications shall in all particulars conform to all other provisions of the order; and that such special supplement may be issued and filed amending schedules containing rates to become effective upon a later date and those which have not been in effect for 30 days.

Carriers are permitted to file regular supplements to freight tariffs which shall explicitly publish the increased freight rates in manner and form required by section (i) of Rule 4 of Tariff Circular 18-A, without regard to the number of, or volume of, the effective supplements to the tariffs thus supplemented.

Such special supplement may be designated as supplement to one or more tariffs, including loose-leaf tariffs and tariffs of less than five pages when desirable, may be filed without regard to the number of, or the volume of, the effective supplements to the tariff thus supplemented, and need not specifically name carriers participating therein or show power of attorney or concurrence forms and numbers.

Each special supplement shall be posted with each tariff to which it is supplemented, and may not contain any matter other than the provisions for increasing freight rates and charges referred to; and no special supplement, issued in the form authorized, shall at any time be reissued in like form unless authorized by special permission of the commission;

Unless otherwise authorized by the commission, no subsequently filed supplement to a tariff may be made subject to the rules or rates contained in the special supplement, and each subsequent supplement shall bear at top of its title page the following notation in bold type, viz: "Rates and charges named in this supplement are not subject to increases shown in Special Supplement No. ————————."

Except as otherwise provided supplements to tariffs issued and filed subsequent to the filing of the special supplement shall conform in all particulars with the commission's rules and regulations, provided, that a rate or rates reissued from a previous supplement shall be revised so as not to change such rates as applicable under the special supplement and shall be shown as reissued items in the customary manner, the effective date of such reissued item or items to be the date upon which the change was effected by the special supplement.

Carriers or agents whose tariffs are supplemented hereunder, are required to reissue not less than 16 2/3 per cent of the number of pages contained in all tariffs supplemented under authority of this special permission within three months from September 1, 1920, and to reissue not less than the same number of pages of said tariffs each three months thereafter until all tariffs so supplemented shall

have been reissued, and each carrier and agent, on or before October 1, 1920, shall report the total number of pages in tariffs supplemented under authority of this special permission, and shall report each three months thereafter, the number of pages of said tariffs as to which the special supplement has been cancelled in full.

The form of special supplement as authorized is as follows:

EXHIBIT "A" (Title Page)

SPECIAL SUPPLEMENT TO TARIFFS

Issued by
(Name of carrier, carriers or agents.)

APPLYING IN CONNECTION WITH

PARTICIPATING CARRIERS SHOWN IN TARIFFS AND SUPPLEMENTS THERETO ENUMERATED HEREIN

Increase in Rates

Rates named in tariffs and supplements thereto, listed on pages .... to ...., inclusive, are hereby increased to the rates shown in Column B of rate tables on pages .... to ...., inclusive.

(See Application of Rates, Page 2)

This schedule contains rates that are departures from the terms of the amended Fourth Section of the Interstate Commerce Act, under authority of Interstate Commerce Commission, Fourth Section Order No. 7700 of August 4, 1920.

Rates shown in tariffs supplemented hereby published under authority of outstanding orders of the Interstate Commerce Commission are included herein under authority of order of the Interstate Commerce Commission in Docket No. 74 (Ex Parte), dated July 29, 1920.

Rates shown in tariffs supplemented hereby, published under authority of released rate orders heretofore approved by the Interstate Commerce Commission, increased as herein provided, are approved under authority of Released Rates Order No. 149 of July 28, 1920. This order must not be construed as approving under the 20th Section of the Interstate Commerce Act, rates based on value of the commodity shipped, which have not been approved by the Commission.

The form of this supplement is permitted by authority of Interstate Commerce Commission, Special Permission No. 50340 of August 5, 1920.

The increased rates and charges shown herein are established on five days' notice under authority of the opinion of the Interstate Commerce Commission in Ex Parte No. 74.

Issued: .....

Effective .....

.....
Issuing Officers or Agents.

(Page 2)

APPLICATION OF RATES

Effective ....., 1920.

Class and Commodity rates.

Charges for switching, transit (including stopping cars to partially load and unload), weighing, diversion, reconsignment, lighterage, floatage, storage (not including track storage), and transfer, then in effect, named in tariffs enumerated herein and in prior supplements thereto, as indicated, to each of which tariffs this is a special supplement, are increased to the rates shown in Column B in Table of Rates on Pages .... to ...., inclusive, hereof, except as otherwise provided below.

If a tariff or a prior supplement to a tariff enumerated herein contains rates to become effective upon a later date as indicated thereon, such rates will, on such later effective date, be increased to the rates shown in Column B in the Table of Rates, except as otherwise provided below.

If a tariff or a prior supplement to a tariff enumerated herein contains arbitraries, differentials or local rates to be used in connection with base rates, the table of increased rates shall be applied to each of such factors in determining the increased total rates.

EXCEPTIONS

Where a tariff, or a prior supplement to a tariff enumerated herein, provides for the absorption, in whole or in part, of another carrier's charges for the special services enumerated above, the amount of the absorption will be increased by the amount that the charge for the service is increased.

This supplement does not increase:

Rates on iron ore from Minnesota or Michigan ranges to Lake Superior or upper Lake Michigan ports;

The minimum charge of 50 cents per shipment for less-than-carload traffic;

The minimum charge of $15.00 per car, on carload traffic;

The minimum scale for class rates;

The charges for special services not enumerated above.

RULES.

(Rules 1 to 7 inclusive are subject to Rule 8.)

RULE 1—RATES IN CENTS (EXCEPT CENTS PER CAR)

Where rate is stated in cents per hundred pounds, per package, per ton, per shipment or other unit (except rates in cents per car—see Rule 6) find such rate in Column A and apply the rate shown opposite thereto in Column B.

RULE 2—RATES IN DOLLARS PER HUNDRED POUNDS

Where rate is stated in dollars or fractions of a dollar, or dollars and cents, per hundred pounds, use the equivalent in cents per hundred pounds, find such equivalent in Column A and apply the rate shown opposite thereto in Column B.

RULE 3—RATES IN DOLLARS (EXCEPT PER HUNDRED POUNDS, PER TON OR PER CAR)

Where rate is stated in dollars or fractions of a dollar, or dollars and cents, per unit (other than per hundred pounds, per ton or per car—see Rules 2, 4 and 5, respectively), use the equivalent in cents per unit, find such equivalent in Column A and apply the rate shown opposite thereto in Column B.

RULE 4—RATES IN DOLLARS PER TON

Where rate is stated in dollars or fractions of a dollar, or dollars and cents, per net or gross ton, use the equivalent in cents per net or gross ton; find such equivalent in Column A and apply the rate shown opposite thereto in Column B.

Example: (May be shown in accordance with increases as authorized by the Commission.)

RULE 5—RATES IN DOLLARS PER CAR

(a) Where rate is stated in dollars or fractions of a dollar, or dollars and cents, per car, regardless of weight, use the figures in Column A as expressing dollars and fractions thereof, or dollars and cents and apply the rate shown opposite thereto in Column B.

Example: (May be shown in accordance with increases as authorized by the Commission.)

(b) Where rate is stated in dollars or fractions of a dollar or dollars and cents per car of a specified weight and it is provided that excess weight will be charged for in proportion first determine the increased per car charge by the method shown in Rule 5 (a) and then determine the charge on the actual weight by the following method:

If an increased rate of $38.00 applies per car of 20,000 pounds the charge for a car of 26,000 pounds will be 26,000/20,000 of the rate for 20,000 pounds, thus $38.00 x 26/20 equals $49.40, and under Rule 8 (b) the charge for a car of 26,000 pounds is $49.50.

RULE 6—RATES IN CENTS PER CAR

(a) Where rate is stated in cents per car regardless of weight, find the equivalent in dollars, or dollars and cents in Column A, as expressing dollars or fractions of a dollar, or dollars and cents, and apply the rate shown opposite thereto in Column B.

Example: (May be shown in accordance with increases authorized by the Commission.)

(b) Where rate is stated in cents per car of a specified weight and it is provided that excess weight will be charged for in proportion, first determine the increase per car charge by the method shown in Rule 6 (a), and then determine the charge on the actual weight by the following method:

If an increased rate of $64.50 applies per car of 20,000 pounds, the charge for a car of 26,000 pounds will be 26,000/20,000 of the rate for 20,000 pounds, thus $64.50 x 26/20 equals $83.85, and under Rule 8 (b) the charge for a car of 26,000 pounds is $84.00.

RULE 7—RULE FOR ARRIVING AT RATES HIGHER THAN SHOWN IN RATE TABLE

Where rates are higher than found in Column A, such rates will be increased the per cent shown in connection with the rate table applicable, observing Rules 1 to 6, inclusive, and Rule 8 in obtaining the increased rates.

RULE 8—RULES FOR DISPOSITION OF FRACTIONS

In computing or applying all increased rates as provided for herein, fractions will be disposed of as follows:

(a) Where rates are stated in amounts per 100 pounds or any other unit, except as provided in the succeeding paragraph, fractions of less than ¼ of a cent will be omitted. Fractions of ¼ of a cent or greater, but less than ¾ of a cent will be stated as ½ cent. Fractions of ¾ of a cent or greater will be increased to the next whole cent.

(b) Where rates are stated in dollars per carload, including articles moving on their own wheels, when not stated in amounts per 100 pounds or per ton, amounts of less than 25 cents will be dropped; thus, $25.24 will be stated as $25. Amounts of 25 cents or more, but less than 75 cents will be stated as 50 cents; thus, $25.65 will be stated as $25.50. Amounts of 75 cents or more, but less than $1 will be raised to the next even dollar.

(Page 4 and subsequent pages)

TABLE OF RATES

Subject to application of rates and to rules, pages .... and ....

A		B
Over	But not over	
.....	.....	.....
.....	.....	.....
.....	.....	.....

When rates are higher than found in Column A, such rates will be increased as per Rule 7.

(Add lists of tariffs by I. C. C. numbers to which this is a special supplement, followed by the special supplement numbers, and the numbers of supplements subject to the special supplement. Other Commissions' and and carriers' serial numbers may be shown.)

The Interstate Commerce Commission has ordered the railroads to put their tariffs in shape for applying the new percentage increases without too much confusion. General Order No. 28 of the director general of railroads, directed carriers under federal control to increase fares and rates on passenger and freight traffic, effective June 10 and June 25, 1918, respectively, and responsive to requests, therefore, the commission on May 27, 1918, issued special permissions authorizing carriers to file special supplements establishing the increases without observing the requirements of cer-

tain of its published rules. There are at present a considerable number of tariffs of various carriers that have not been reissued, and it is difficult, if not in some instances impossible, to make changes in the tariffs so long as such special supplements are continued in force.

Therefore, all carriers throughout the United States having in effect tariffs amended by such special supplements, were directed to forthwith reissue said tariffs, filing copies of the new tariffs cancelling them effective not later than September 1, 1920, without change in rates, rules or regulations.

Because the general increases in freight and passenger rates cannot be published and made effective in the manner authorized without producing in some instances rates, fares or charges that yield greater compensation in the aggregate for a shorter than for a longer distance, in contravention of the fourth section, the Interstate Commerce Commission has issued an order authorizing the carriers to increase the rates by the percentages stated in its order in Ex Parte 74 without observing the provisions of the fourth section, until November 1, 1920.

Passenger Service Tickets

Proposals for the disposition of passenger service tickets in connection with the increases in fares which are to go into effect on August 26, when purchased before the effective date of the advance, have been submitted to the Interstate Commerce Commission by the Association of Railway Executives as follows:

One-way tickets sold prior to August 26, 1920, held by passengers en route August 26, 1920, will be honored to destination without additional charge.

Partially used round trip or tourist tickets sold prior to August 26, 1920, will be honored to destination in accordance with tariff under which sold.

Passengers actually en route at midnight August 25, 1920, will be carried to destination of sleeping or parlor car ticket without additional charge. Surcharge will apply in connection with all one-way and round trip tickets of every kind where sleeping or parlor car space is purchased for use on or after August 26, 1920.

Outstanding sleeping or parlor car tickets covering space to be used on or after August 26, 1920, will be honored only upon payment of the surcharge.

Commutation or other multiple forms of tickets sold prior to August 1, 1920, will be honored within their limits.

Commutation and other multiple forms of tickets bearing calendar month limit or limit not exceeding 35 days from date of sale, sold on or after August 1, 1920, and prior to August 26, 1920, will be honored within their limits.

Commutation or other multiple forms of tickets bearing longer limits than the calendar month or exceeding 35 days from date of sale, sold on or after August 1, 1920, and prior to August 26, 1920, will not be honored on or after August 26, 1920, but such tickets, if wholly unused, will be redeemed at fare paid, and if partially used will be redeemed at proportionate fare.

Tickets of any class sold prior to August 1, 1920, must not be dated ahead for use on or after August 26, 1920, unless the increased fares are collected; surcharge must also be collected where sleeping or parlor car space is used.

Milk and cream tickets purchased prior to August 26, 1920, will not be honored on or after that date, but will be redeemed at face value on presentation to general passenger department.

The commission on August 9 also issued another special permission order authorizing the carriers to file master tariffs and special supplements to passenger tariffs to provide for the changes in fares, and charges, excess baggage rates and milk and cream rates approved by the commission in the general rate case. The master tariff and special supplements are to be issued substantially in the manner and form prescribed by the commission in an exhibit attached to the order, which provides for a table of rates similar to that to be used for freight tariffs. The master tariff will refer by number to all existing tariffs to which the increases are to be applied and is to be posted at each station at which a tariff referred to is posted. The commission also issued a special permission order applying the percentages of increases which are to be applied on freight traffic in the different territories to the reconsignment charges authorized in its order issued on July 3 authorizing new reconsignment rules.

Additional Loans Recommended for Equipment and Facilities

WASHINGTON, D. C.

THE ASSOCIATION of Railway Executives, which on June 26 submitted to the Interstate Commerce Commission the preliminary report of its special committee making recommendations requested by the commission as to the applications of various carriers for loans from the $300,000,000 loan fund provided by the transportation act, has now submitted a revised report including recommendations for loans to additional carriers and in some instances for increased loans to the same roads. The total amount of recommended loans for additions and betterments to existing equipment is increased from $7,062,053 to $8,317,943, by the addition of the following: Chicago & Eastern Illinois, $385,940; additional amount for Chicago Great Western, $270,000; Gulf, Mobile & Northern, $256,050; Maine Central, $65,900; Norfolk Southern, $78,000; Wabash, $200,000.

It is stated that the expenditure of the total of these recommended loans, namely, $8,317,943, will restore to efficient service 14,768 cars and locomotives.

Under the head of additions and betterments which will definitely and specifically promote the movement of cars, the following new recommendations have been made, which increased the total from $35,050,289 to $78,349,289:

Ann Arbor Terminal facilities, extensions to existing side tracks, turn table.	$275,400
Baltimore & Ohio Additional main tracks, yard tracks, sidings, interlockers, telephone train despatching, shop machinery, bridges, trestles, culverts, heavier rail.	5,000,000
Boston & Maine Retaining walls and rip rapping, renewal of bridges, automatic signals, extension to sidings, interlockers, improved water supply, engine house and yard facilities.	2,188,564
Chicago & Eastern Illinois Shop machinery, improvements to trestles.	502,060
Chicago Junction Ry. Yards and car shop.	1,100,000
Chicago, Milwaukee & St. Paul Ballast, rail, bridges, yard tracks, and sidings, fuel stations, water stations, shop buildings, shop machinery and tools, track elevation.	4,940,000
Chicago, Rock Island & Pacific Additional yard tracks and sidings, shop machinery and tools, ballast, bank widening rails, bridges.	5,000,000
Evansville, Indianapolis & Terre Haute Bridges, rails, ties, ballast.	200,000
Gulf, Mobile & Northern Ballasting.	72,000
International & Great Northern For 90-lb. rail.	40,000
Louisiana & Arkansas Tools, shop extension, tie plates, yard and passing tracks, heavier rail.	165,660
Louisville & Jefferson Bridge Additional yard tracks, coaling station, water station, ash pit, heavier rail and bin.	162,574
Maine Central Heavier rails, ballast, shops, shop machinery and renewal of bridges.	533,132
Missouri Pacific Rails, bridges, trestles, additional yard tracks, signals and interlockers, telegraph and telephone lines, fuel and water stations, shop buildings, engine houses, shop machinery, tools, wharves, and docks.	2,843,179

New York Central Lines		12,101,928
allocated as follows:		
New York Central (including Boston & Albany) Railroad	$5,500,000	
Engine terminals and facilities, freight yards and yard facilities, sidings and extensions, interlockers, shop machinery, and miscellaneous betterments.		
Michigan Central	613,221	
Passing tracks, repair tracks, storage tracks, yard tracks, and engine terminals.		
Rutland RR	61,198	
Bridges, rebuilding swinging bridge at Fort Ticonderoga.		
Indiana Harbor Belt RR	526,400	
Round house, tools, yard tracks and passing tracks		
Cleveland, Cincinnati, Chicago & St. Louis	4,560,101	
Double tracking, passing and storage tracks, shop tools, machinery and signals.		
Zanesville & Western RR	60,100	
Engine terminal and yard tracks.		
Kanawha & Michigan Ry	231,204	
Passing sidings and cutoff.		
Lake Erie & Western	242,700	
Passing tracks, interlockers, shop machinery and tools, engine house stalls.		
Toledo & Ohio Central RR	214,454	
Yard tracks, passing tracks, yard facilities, shop tools and machinery.		
Cincinnati Northern	92,550	
Passing tracks, interlockers, tools.		
Pennsylvania		6,780,125
Grain elevator, engine house facilities, yard tracks, shops.		
Seaboard Air Line		750,000
Ballasting, trestles, rail renewals, dredging, shop machinery facilities, water facilities, passing and yard tracks.		
Tampa Northern		57,000
Heavier rails and additional tracks.		
Wabash		191,225
Strengthening of Bridges for heavier power.		

Under the head of freight and switching locomotives, additional recommendations have been made, which increase the total from $26,868,629 to $29,054,323, as follows:

Fort Smith & Western	$75,000	
International & Great Northern	312,500	
Maine Central	209,200	
Missouri, Kansas & Texas	1,050,000	(estimated)
Missouri Pacific	97,250	
Wabash	162,500	

The total of the proposed loans as revised will enable the carriers to add 636 freight locomotives and 277 switching locomotives having a total value of $58,108,646.

The total for the purchase of refrigerator and other needed freight train cars was increased from $52,260,537 to $52,839,493 by additional recommendations as follows: International & Great Northern, $750,000; Maine Central $58,030. The recommendation for the Southern Pacific was reduced from $6,331,774 to $6,102,500. The total of these proposed loans as revised will enable the carriers to add 46,027 freight train cars at an approximate value of $146,646,510.

As recommended by the committee in previous reports, the Interstate Commerce Commission has set aside temporarily a reserve of $50,000,000 for the purpose of assisting carriers in meeting maturities, when necessary to protect the solvency of companies. The committee reaffirms its previous position on this subject, but if any carrier is unable to meet its maturities, and has made without success every proper effort to secure an extension or refunding without assistance, the committee is prepared to recommend to the commission a loan not exceeding one-fourth of the total of the amount of the maturing obligation.

Provided the remainder of the maturing obligations of the following companies are effectively financed, it recommends the following loans to enable the following companies to meet their maturing obligations:

Atlanta, Birmingham & Atlantic	$200,000
Buffalo, Rochester & Pittsburgh	496,750
Carolina, Clinchfield & Ohio	2,000,000
Erie	5,879,125
Great Northern	5,000,000
Great Northern	10,000,000
Missouri, Pacific	1,454,000
Seaboard Air Line	2,921,000
Tampa Northern	100,000
Trans-Mississippi Terminal	750,000
	$28,800,875

The committee also submitted a recapitulation as follows:

1.	Sum allocated by commission for loans to aid in acquisition of freight and switching locomotives	$50,000,000	
2.	Less loans recommended for above purpose by committee's report, dated July 28, 1920	29,054,323	
3.	Balance unappropriated July 28, 1920, should commission act favorably on above recommendations		$20,945,677
4.	Sum allocated by commission for loans to aid in acquisition of refrigerator and other freight train cars	$75,000,000	
5.	Less loans recommended for above purpose by committee's report dated July 28, 1920	52,839,493	
6.	Balance unappropriated July 28, 1920, should commission act favorably on above recommendations		22,160,507
7.	Sum allocated by commission for loans for additions and betterments to promote movement of cars	$73,000,000	
8.	Less loans recommended for above purpose by committee's report dated July 28, 1920	78,349,389	
9.	Debit balance July 28, 1920, should commission act favorably on above recommendations		5,349,389
10.	Sum allocated by commission for loans to aid carriers in meeting maturing obligations	$50,000,000	
11.	Less loans made and recommended for above purpose (including Boston & Maine $5,000,000)	33,800,875	
12.	Balance unappropriated July 28, 1920, should commission act favorably on above recommendations		16,199,125

The original recommendations of the committee were published in the *Railway Age* of July 2 on page 31. The commission has already acted on a number of the applications. On August 11 it announced that it approved a loan to the Delaware & Hudson of $1,125,600. This item was included in the previous recommendation of the committee and is for the elimination of a tunnel and the development of two yards.

The Treasury Department has issued detailed regulations to be observed by carriers applying to the Secretary of the Treasury for loans approved by the Interstate Commerce Commission under authority of Section 210 of the transportation act and also for advances on account of their guaranty under authority of Section 209.

Extra Large Condulets

TO MEET THE DEMAND for a condulet having an unusually long cover opening and large wiring chamber, the Crouse-Hinds Company, Syracuse, N. Y., has designed a new series known as the Mogul condulets. These are designed to avoid kinking heavy wires or cables when pulling in or feeding through a conduit system, and to afford ample space for making splices or taps. Though liberal in their proportions they do not materially affect the general outline of the conduit system. Their hubs have integral bushings and tapered threads. Fastening screw holes are located at the ends of the cover openings.

Mogul condulets are made in eight types, each type in eight conduit sizes ranging from one to four inches. There are four sizes of composition and cast iron covers, each size being common to two sizes of condulet bodies. The composition covers are made with from one to nine wire holes, or blank covers are furnished which can be drilled by the user as required. The cast iron covers are made in two types; with gasket, or without gasket. The gasket is made of round rubber, cemented into a groove in the cover. The cover fastening screws are furnished with and secured to the cover.

With a view to the electrification of the Chemin de Fer du Midi, preliminary work is being done, says Commerce Reports, on the harnessing of the waterfalls in the Valley of Ossau. In order to obtain the maximum water power, a system of three falls is planned. The cost of the work is estimated at 100,000,000 francs, and the project will be completed within five years.

General News Department

The International Railway General Foremen's Association will hold its seventeenth annual convention at the Hotel Sherman, Chicago, September 7-8-9-10, 1920.

C. D. Young, general supervisor of stores of the Pennsylvania, has been appointed representative for the American Society of Testing Materials on Engineering Council, succeeding Albert Ladd Colby.

Sugar to the amount of about 300 tons—value about $120,000—was sunk in the East River, New York City, on August 10, when a float belonging to the Eastern District Terminal Company, carrying 13 cars, went down near the pier of the National Sugar Refining Company.

The Interstate Commerce Commission has ordered Class I railroads to file with it quarterly reports giving particulars of the number of employees of various classes in the service at specified times, of the service rendered by such classes of employees and of the compensation paid for that service.

Aero Limited, proprietor of the "First Aerial Passenger Route in America," reports that for the month of July it carried 700 passengers. Rates for passage are: New York to Boston, $150; New York to Albany, $100; New York to Newport, $85 (for commuters, $45), and to other places in proportion. A ride of half an hour over Manhattan and New York Bay costs $25.

A national conference on engineering employment sponsored by the American Association of Engineers will be held in Chicago on November 12, for the discussion of industrial relations problems affecting employes and engineers. Employment managers of large industries, employers of technical men and the free employment bureaus will be invited to send representatives to this conference.

The Canadian Pacific ocean service to China and Japan, Manila and Singapore is to be enlarged by the addition of the S.S. *Mattawa,* formerly in the Atlantic trade. This makes a total of six steamships in oriental service, aggregating 60,000 tons gross, with approximately three sailings a month. A feature of this service is the issuance of through bills of lading from shipping points to ultimate destination, thereby eliminating the usual trouble of arranging these at the seaport.

Alba B. Johnson, president of the Railway Business Association, has sent to Chairman Clark of the Interstate Commerce Commission a telegram heartily congratulating the commissioners on their promptness and vigor in deciding the rate advance case. The commission is congratulated on faithfully carrying out the purpose of Congress to rehabilitate railroad credit and on its wisdom in fixing the basis of income at six per cent rather than five and one-half.

Near Englewood (Chicago) on the evening of August 9, a lone negro bandit attempted to hold up the dining car steward on Pennsylvania train No. 19, west bound. It was shortly after the train pulled out of the station. The negro boarded the diner as the train left Englewood and confronted the steward as he was transferring money to a cash box. The steward was seriously wounded in struggling with the negro, who escaped without securing any money.

Road building projects to the number of 2,985 involving a total of 29,319 miles of road had been approved by the Secretary of Agriculture up to June 30, according to a statement issued by the Bureau of Public Roads. The preliminary estimate of the cost of these projects is approximately $384,900,000, of which approximately $163,841,000 will be provided by the Federal government. On the same date, 2,116 projects, representing approximately 15,944 miles, had either been completed or were under construction. The estimated cost of these roads is $200,000,000. In all, Federal funds to the amount of $266,750,000 have been apportioned among 48 states to assist in good roads construction on an approximately 50-50 basis.

John Grunau, president of the Chicago Yardmen's Association, who, with H. E. Reading, chairman of the United Enginemen's Association, and 39 others, leaders of the so-called "outlaw" strikers, were indicted by the Federal Grand Jury last week at Chicago, have been in Washington trying to get support from the government in their efforts to secure reinstatement without loss of seniority rights. They called at the White House, but were unable to see the President's secretary, who was out of the city. They were referred to the Department of Labor and then to the United States Board of Mediation and Conciliation. Members of this board were not present and the delegation was informed by the secretary that it would be necessary to file a formal application asking for consideration of their claims. W. L. McMenimen, assistant president of the Brotherhood of Railroad Trainmen, notified the board that the trainmen's organization was in no way a party to the appeal.

Illinois Central Seeks Constructive Criticism

Sixty-five thousand shippers who use the Illinois Central are being asked by President Charles H. Markham to make constructive criticisms of the road's service and facilities. After frankly admitting that, owing to the war, its service has not been perfect, President Markham, in his circular, says:

"We believe that the obstacles in the way of the expansion from this time on have sufficiently cleared to justify the statement that the Illinois Central system, in the course of a comparatively short time, will have its facilities restored and enlarged to such an extent that it will be able to render you service 100 per cent efficient."

The letter urges patrons to attempt to solve their difficulties by making complaints direct to the president, instead of to the Interstate Commerce Commission, asking the commission for a remedy only as a last resort.

Rate Clerks Wanted at Washington

The United States Civil Service Commission announces that the recently authorized general increase in freight and passenger rates will require the Interstate Commerce Commission to add scores of freight and passenger rate clerks to its present force; and examinations will be held throughout the country on September 22 and October 20 for tariff examiners. The usual entrance salary is $1,620 a year, besides which appointees whose services are satisfactory will be allowed the increase of $20 a month granted by Congress.

The Civil Service Commission also says that, while the civilian force of the Government is steadily diminishing, there is a constant shortage in various departments of eligibles who are trained in both stenography and typewriting. About 300 stenographers are needed at once. The entrance salary offered is $1,200 a year, besides which appointees whose services prove satisfactory are promptly given the increase of $20 a month granted by Congress.

New York Commission Proposes Automatic Stops

The New York State Public Service Commission, Second District, announces that, being impressed with the immediate necessity for additional protection for trains, it has requested the New York Central to make an experimental installation of some automatic device, the purpose of which shall be to

safeguard the trains when they are not so controlled as to prevent collisions and certains classes of derailments.

In order that the best available device may be promptly selected for trial and the installation thereof on a section of the railroad made as speedily as possible, a joint committee has been appointed to make recommendations to the Commission. This committee will be composed of George R. Van Namee, commissioner; Charles R. Vanneman, chief, and James J. Gill, inspector of equipment, Division of Steam Railroads; and the following from the railroad; W. H. Elliott, signal engineer exterior zone; H. S. Balliet, signal engineer electric zone, and T. L. Burton, consulting expert on air brakes.

Fairfax Harrison on the Rate Increase

Fairfax Harrison, president of the Southern Railway, in commenting on the rate advance, made the following statement:

"The tremendous increase of railroad rates authorized by the Interstate Commerce Commission seems to complete the circle of Government management of the railroad industry. It was necessary to carry the scale of expenses set up by the railroad administration but it must cause grave concern as to its economic consequences. It now remains for private management to resume the practice of competitive efficiency and self-reliant initiative which distinguished the American railroads during so many years and to justify the preference of the American people for that form of administration by making possible not only the success of individual companies and the prosperity of their loyal employees but a constant and progressive reduction of rates accomplished by an enlargement of service to the public such as may be traced through the old fashion railroad statistics. No one can expect this to be accomplished over night, considering the practical conditions, but a start can be made at once. . . ."

Telegraph & Telephone Division—A. R. A.

J. E. Fairbanks, general secretary, announces the annual meeting of the Telegraph & Telephone Division of the American Railroad Association to be held at the Fort Garry Hotel, Winnipeg, Manitoba, on Wednesday, Thursday and Friday, September 22, 23 and 24. The first business will be the consideration of the report of a special committee on future activities, of which G. A. Cellar (Pennsylvania), is chairman. Other reports are those of the committees on: Construction & Maintenance—outside plant; Construction & Maintenance of Pole Lines; Wire Crossings; Underground Construction; Transpositions; Construction & Maintenance—inside plant; Protection Against Electrolysis; Protection Against Lightning and Foreign Currents; Telegraph and Telephone Developments; Message Traffic; Inductive Interference.

The committee on nominations submits the following names: for chairman, H. Hulatt (G. T. R.); for first vice-chairman, W. H. Hall (M. K. & T.); for second vice-chairman, E. L. King (S. P.).

The notice is accompanied by copies of the reports which are to be presented, and J. F. Caskey, chairman of the division, requests members to send their comments and criticisms, in writing, to the chairmen of the proper committees at least three weeks before the meeting.

Prizes to Station Agents

The correspondent, referred to in the editorial columns, who proposes premiums for efficiency in moving freight cars, is not a representative of the Southern Pacific, and he does not live in the South, but the point that he makes is reinforced, in concrete form, by an item in the Southern Pacific Bulletin (Houston, Texas), for August, just received, which gives the names of eleven agents of that road in Texas and Louisiana to whom the company has just sent gratuities of $25 each. These agents are: J. O. Jones, Bremond; N. Hicks, Goliad; O. R. Estes, Humble; O. C. Martin, Kaufman; C. McGarr, Lacoste; L. A. Veazey, Lake Charles; A. J. McIntire, Midland; C. O. Barnes, New Iberia; O. L. Erwin, Paige; W. W. Read, San Antonio; A. Boone, Fabens. The prizes were awarded by a committee composed of F. M. Lucore, superintendent of transportation, chairman; M. H. Bonner, chief special agent; H. M. Moors, freight claim agent; C. G. Webb, freight claim agent; F. H. Bednark, assistant superintendent; H. J. Micksch, superintendent.

From the letter sent with the prizes it appears that the award is based on records in carloading efficiency. The committee "aims to bring to the forefront the work of those in station service who perform their daily duties with earnestness, enthusiasm and good judgment."

Continuing, the letter says: "Each member of the committee hopes you will derive as much pleasure in accepting this money as the committee derives in sending it. * * * The management always appreciates good work on the part of employees and entertains a most cordial regard for those who perform their duty in a high-grade way, no matter what particular position they chance to occupy. * * * The award system bids fair to expand in a way which will bring agency work into new prominence and afford employees new incentive for exhibiting the skill they unquestionably possess. You are to be complimented on the good showing you have made at the inception of the plan.

"It is planned, also, to make an award to the agent who operates his station in the most approved way, taking the system as a whole."

Hearing on Express Contract

Testimony was heard on August 6 by Examiner Barclay of the Interstate Commerce Commission on the proposed form of contract between the railroads and the American Railway Express Company, which provides for a new method of dividing the expenses and earnings, and which was submitted to the commission for its approval, inasmuch as it deals with the railroads by groups and also because there is some thought that this plan of contract would come within the pooling provision of the transportation act. Representatives of the Association of Railway Executives urged approval of the proposed form of contract on the ground that it offers the only practicable solution at the present time and that it would be very dangerous to complicate the present serious transportation situation by allowing any possibility that there should not be an organized agency for handling the express business after September 1, when the present contracts expire. C. R. Gray, president of the Union Pacific, was the principal witness for the Association of Railway Executives, of whose members 94 have approved the contract, 14 have disapproved it and six have reserved their vote. Alfred P. Thom, counsel for the association, said that many roads did not consider the contract the best business arrangement that could be made, but believe that it should be tried for a time.

Representatives of the Chicago & Alton, the Central of New Jersey, the Erie and the Wabash appeared to object to certain forms of the contract. S. G. Lutz, vice-president of the Alton, said that the contract is so inequitable that it cannot be satisfactory in the long run either to the railroads, the express company or to the public, and that the former percentage form of contract was a much better arrangement. Mr. Thom asked what the Alton would do for express service after September 1, to which Mr. Lutz replied that he had received no notice from the express company that it would quit doing business on that date and he thought there would be no difficulty in arranging a temporary contract. W. H. Williams, chairman of the Wabash, also pointed out objections to the contract which he thought were serious. He would be satisfied if assured that the control of the express company were to remain where it now is, but in other hands the contract might be made to work out most unfairly.

Mr. Williams had filed a petition with the commission contending that the commission has jurisidiction to examine the contract as one of the terms and conditions of any order approving the consolidation of the express company and to require inclusion of things which will insure ample protection to the parties. The objection of the Wabash to the contract is that in effect the railroads were required to guarantee the express company against loss, while yet they would have no control or voice in the management. He also made the point that the contract would permit the express company to earn more than the amounts assured to railroads by the law.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JUNE, 1920

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	141	$163,394	$67,086	$254,739	$42,093	$47,363	$5,688	$90,080	$10,334	$198,546	77.94	$56,194	$14,251	$41,942	$45,952
Ann Arbor	301	323,891	57,026	409,519	69,945	92,912	7,428	190,807	22,750	383,902	93.74	25,617	17,500	8,115	—16,241
Arizona Eastern	381	271,506	52,059	359,241	70,617	49,834	2,520	64,596	21,378	213,585	59.45	145,656	51,940	93,716	4,871
Atchison, Topeka & Santa Fe	8,723	10,203,707	4,780,516	16,321,964	2,700,185	4,042,490	208,495	5,954,059	329,094	13,237,239	81.10	3,084,726	909,947	2,174,038	—159,094
Atlanta & W. Point	93	116,817	96,102	240,851	35,449	50,181	9,477	105,764	15,983	221,531	91.98	19,320	8,928	10,392	—1,931
Atlanta, Birm. & Atlantic	639	345,831	83,687	467,558	113,001	136,201	20,965	266,348	21,666	558,258	119.39	—90,699	17,320	—108,063	33,639
Atlantic City	177	88,470	296,938	409,392	58,214	52,363	3,070	213,012	3,916	330,728	80.79	78,665	14,520	64,143	—31,557
Atlantic Coast Line	4,889	3,740,855	1,280,715	5,502,056	1,021,333	1,353,540	65,460	3,010,800	140,773	5,619,524	102.13	—117,468	300,000	—417,654	—867,929
Baltimore & Ohio Chicago Terminal	90	.....	.....	146,700	71,285	64,146	1,180	140,954	9,886	292,533	199.41	—145,833	31,169	—177,002	—123,649
Baltimore & Ohio	5,153	13,708,819	2,543,846	17,584,907	2,745,011	5,263,506	197,899	7,972,263	481,241	16,801,505	95.54	783,402	1,066,692	—288,835	—2,128,508
Baltimore, Chesapeake & Atlantic	87	74,035	40,013	122,034	16,200	54,944	1,485	83,520	3,746	159,895	131.02	—37,861	3,700	—41,561	23,928
Bangor & Aroostook	658	392,454	78,829	497,759	141,541	151,266	5,057	203,299	23,054	533,613	107.20	—35,854	26,430	—62,284	—59,271
Beaumont, Sour Lake & Western	118	117,406	31,272	155,554	29,417	20,583	3,408	57,415	5,967	116,680	75.00	38,875	2,850	36,022	66,576
Belt Ry. Co. of Chicago	31	.....	.....	321,870	42,237	38,584	741	193,088	8,852	283,502	88.07	38,367	24,767	13,600	—30,768
Bessemer & Lake Erie	225	1,412,040	35,412	1,474,848	179,454	346,965	14,230	427,713	31,137	1,006,011	68.14	469,838	15,800	454,037	—42,334
Bingham & Garfield	56	154,150	1,669	157,486	34,587	34,377	2,263	35,123	6,301	112,819	71.63	44,668	7,425	37,242	96,904
Birmingham Southern	31	40,608	.....	55,536	3,795	8,665	697	33,319	4,006	50,482	90.89	5,054	1,754	3,299	—439
Boston & Maine	2,304	4,936,158	1,932,253	7,600,946	1,017,155	1,356,372	49,267	3,979,813	238,583	6,681,402	87.90	919,544	237,185	672,911	—90,020
Brooklyn Eastern District Terminal	9	96,417	.....	104,131	11,405	13,545	417	58,351	4,267	87,985	84.49	16,146	6,033	10,113	39,275
Buffalo & Susquehanna R. R. Corp.	296	202,063	6,391	212,136	65,641	103,715	2,217	72,344	11,565	255,482	120.43	—43,346	3,200	—46,546	—5,408
Buffalo, Rochester & Pittsburgh	589	1,456,511	140,302	1,672,629	393,541	609,957	16,580	886,249	54,808	1,963,481	117.38	—290,853	35,000	—325,853	—37,380
Canadian Pac. (Lines in Maine)	233	148,295	35,397	197,337	78,501	52,106	2,838	96,904	2,888	233,237	118.19	—35,899	12,200	—48,099	26,542
Central New England	301	608,748	23,588	658,843	172,423	115,863	3,358	340,417	13,218	652,690	99.06	6,152	18,225	—12,072	8,517
Central of Georgia	1,924	1,279,845	540,430	2,028,650	328,429	558,165	62,208	1,048,935	85,636	2,151,387	106.05	—122,737	80,251	—203,044	—345,182
Central of New Jersey	686	3,191,855	766,539	4,271,777	469,038	883,098	33,640	2,067,033	101,950	3,585,413	83.93	686,364	264,856	421,508	—159,489
Central Vermont	413	301,258	97,973	453,457	109,106	147,922	7,307	338,054	18,831	622,889	137.36	—169,433	17,400	—186,832	—100,085
Charleston & Western Carolina	342	194,251	52,425	261,164	62,752	56,741	15,521	155,405	4,837	285,256	109.22	—24,093	11,625	—35,718	18,515
Chesapeake & Ohio	2,520	5,629,023	973,201	7,089,678	1,112,639	2,466,069	88,839	3,002,643	154,209	6,861,616	96.78	228,062	229,810	—1,702	—1,215,442
Chicago & Alton	1,050	1,722,563	611,492	2,504,936	404,977	560,863	40,892	1,007,676	61,011	2,091,343	83.48	413,593	60,047	353,224	231,504
Chicago & Eastern Ill.	1,130	1,810,725	427,182	2,455,465	319,326	742,638	22,027	984,494	65,249	2,148,720	87.50	306,745	100,000	206,442	194,662
Chicago & Erie	269	906,472	84,907	1,090,733	121,062	156,636	17,302	484,257	32,817	814,569	74.68	276,164	40,909	235,195	157,920
Chicago & North Western	8,405	8,624,397	3,192,991	13,161,817	2,947,743	3,012,401	118,714	5,910,726	316,927	12,447,178	94.57	714,639	725,000	—10,444	—2,247,287
Chicago, Burlington & Quincy	9,370	10,334,259	3,070,117	14,767,614	3,147,893	3,174,296	127,842	6,979,137	369,088	13,981,609	94.68	786,005	724,944	59,980	—1,385,919
Chicago Great Western	1,496	1,833,728	474,725	1,882,801	538,377	501,587	32,583	861,966	50,559	1,993,629	105.86	—110,828	81,836	—192,865	—406,460
Chicago, Indiana & Louisville	654	937,214	269,701	1,327,997	175,892	379,381	29,987	561,922	32,499	1,195,527	90.02	132,471	47,375	84,902	—89,653
Chicago, Detroit & Canada Grand T. Jct.	62	84,086	8,230	106,002	30,453	27,544	2,255	102,068	5,059	167,390	157.91	—61,388	4,596	—65,984	—133,841
Chicago Junction	12	.....	.....	255,840	67,850	65,770	57	378,129	10,843	522,648	204.29	—266,809	2,994	—269,802	—225,131
Chicago, Milwaukee & St. Paul	10,629	9,544,359	2,706,574	13,846,253	2,846,602	2,963,001	133,970	5,853,923	383,251	12,298,228	88.81	1,548,026	677,263	863,720	239,560
Chicago, Rock Island & Gulf	461	413,961	111,948	554,582	87,714	77,583	9,269	224,928	13,294	414,296	74.70	140,286	17,833	122,452	122,210
Chicago, Rock Island & Pacific	7,662	7,229,747	5,002,883	10,999,229	2,364,695	3,016,021	115,308	4,754,571	263,840	10,568,820	96.09	430,407	466,181	—36,581	—1,606,548
Chicago, St. Paul, Minn. & Omaha	1,749	1,649,289	702,736	2,540,920	504,583	436,524	31,169	1,093,544	76,496	2,158,812	84.96	382,108	139,215	244,320	165,746
Chicago, Terre Haute & S. E.	374	515,106	22,064	547,433	71,226	145,281	4,884	261,249	10,710	434,726	79.41	112,707	19,300	93,207	168,397
Cincinnati, Ind. & Western	321	280,270	59,220	361,855	58,574	133,673	8,447	157,929	17,922	377,939	104.44	—16,083	13,539	—29,622	26,502
Cincinnati Northern	245	758,165	18,333	289,767	103,965	88,264	3,428	120,769	5,884	322,310	111.23	—32,544	10,465	—43,009	—95,744
Cleveland, Cincinnati, Chicago & St. L.	2,408	4,635,604	1,718,840	6,944,254	1,413,908	2,028,978	92,270	3,501,454	168,506	7,268,210	104.67	—323,956	234,510	—558,596	—1,860,532
Colorado & Southern	1,099	853,015	229,057	1,166,321	262,256	308,913	11,653	409,753	48,426	1,052,388	90.23	113,933	59,792	53,569	5,291
Colorado & Wyoming	43	25,827	976	91,807	16,262	22,496	108	42,289	4,138	85,292	92.90	6,514	5,000	1,514	—15,388
Delaware & Hudson	858	3,650,921	268,151	4,118,568	594,822	1,126,069	36,614	2,188,839	203,612	4,177,079	101.42	—58,512	81,500	—140,012	565,524
Delaware, Lackawanna & Western	956	4,713,875	1,120,470	6,622,859	862,058	1,471,555	77,796	2,934,404	152,234	5,602,502	84.59	1,020,357	389,584	630,696	568,569
Denver & Rio Grande	2,585	1,482,841	631,654	2,339,873	591,987	767,682	34,366	1,246,230	77,818	2,797,056	119.54	—457,184	136,000	—593,213	—931,886
Denver & Salt Lake	255	207,650	48,258	267,060	65,550	49,146	929	108,788	8,173	232,586	87.09	34,474	9,000	25,471	57,065
Detroit & Mackinac	376	121,619	33,105	163,583	29,940	41,889	2,201	78,960	6,775	159,683	97.62	3,899	11,654	—7,755	—7,635
Detroit, Toledo & Ironton	454	367,276	16,960	408,574	129,658	82,228	7,112	200,736	59,625	478,926	117.21	—70,352	8,669	—79,016	—30,154
Duluth & Iron Range	298	1,499,052	21,803	1,630,994	174,496	127,213	1,272	307,789	19,008	630,466	38.65	1,000,528	83,380	917,066	186,725
Duluth, Missabe & Northern	462	2,783,311	52,496	3,109,224	304,857	140,269	2,585	492,246	23,849	965,700	31.06	2,143,524	158,474	1,985,050	—391,643
Duluth, Winnipeg & Pacific	178	177,544	24,446	206,633	48,043	33,901	4,663	90,740	7,780	185,127	89.59	21,506	12,034	9,472	20,183
Duluth, South Shore & Atlantic	614	344,888	111,656	500,117	148,109	83,041	4,884	195,973	10,866	449,949	89.96	50,168	25,000	25,168	—5,034
East St. Louis Connecting	3	.....	.....	110,631	13,854	25,114	354	83,322	3,931	126,576	114.41	—15,945	2,800	—18,745	—11,694
Elgin, Joliet & Eastern	834	1,903,921	7	2,135,895	218,610	430,795	7,820	704,575	41,070	1,403,160	65.69	732,735	38,734	693,916	601,544
Erie	1,989	6,882,431	1,122,792	8,896,433	1,486,989	2,794,525	112,705	4,521,645	241,359	9,229,929	103.74	—333,496	252,297	—586,380	—883,145
Detroit, Grand Haven & Milwaukee	195	256,631	37,722	331,779	95,033	80,407	7,791	268,524	16,297	468,355	141.16	—136,577	3,088	—139,685	—198,704
Florida East Coast	764	644,604	226,935	1,031,725	143,511	161,522	7,668	374,440	32,311	728,862	70.64	302,863	39,872	263,040	171,256
Fonda, Johnstown & Gloversville	57	44,251	69,170	119,309	11,179	10,142	502	39,176	11,832	72,83	61.04	46,478	5,070	41,403	1,096
Ft. Smith & Western	253	83,563	31,118	125,342	28,753	34,559	4,439	50,859	11,103	130,890	104.42	—5,547	5,000	10,547	—6,427
Ft. Worth & Denver City	454	617,952	337,988	999,963	150,526	238,288	7,938	428,570	29,750	859,618	85.96	140,345	23,100	117,237	111,759
Galveston, Harrisburg & San Antonio	1,384	1,305,621	593,728	1,993,586	739,585	485,000	32,326	701,226	82,783	2,081,529	104.41	—87,943	174,063	—264,182	—569,345
Galveston Wharf Co.	13	.....	.....	132,595	29,848	4,881	514	28,487	2,921	91,921	69.32	40,674	16,000	24,674	16,575
Georgia	328	342,906	138,591	521,151	90,244	127,567	21,049	334,217	22,385	595,899	114.34	—70,547	5,950	—76,541	—84,536
Georgia & Florida	105	74,219	21,809	108,607	68,776	25,723	7,112	75,259	10,224	187,094	172.26	—78,488	6,281	—84,784	—44,443
Grand Trunk Western	350	872,389	239,010	1,200,721	206,855	373,049	28,181	716,914	57,937	1,391,229	115.87	—190,508	51,084	—241,592	—615,331

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JUNE, 1920—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Maintenance of: Way and structures.	Equipment.	Operating expenses: Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Great Northern	8,175	$7,492,289	$1,818,545	$10,472,912	$2,726,121	$1,756,799	$130,381	$3,713,427	$221,615	$8,684,134	82.91	$1,788,778	$876,154	$912,353	$124,599
Green Bay & Western	252	70,953	18,396	95,721	30,689	27,068	1,187	47,628	2,829	109,369	114.26	—13,647	6,824	—20,471	—23,289
Gulf & Ship Island	307	140,802	47,265	204,768	71,199	48,851	6,140	86,800	13,055	226,566	110.64	—21,798	36,873	—58,671	—43,095
Gulf, Colorado & Santa Fe	1,907	1,071,099	509,120	1,714,113	541,254	391,123	27,487	898,723	51,624	1,910,002	111.43	—195,889	87,016	—282,999	—237,068
Gulf, Mobile & Northern	470	231,763	53,537	301,459	134,393	80,158	9,343	138,091	13,968	375,953	124.71	—74,495	13,746	—88,241	—76,218
Hocking Valley	350	1,156,818	106,037	1,355,281	181,167	558,372	5,895	497,502	41,509	1,284,428	94.76	70,853	69,797	1,056	—284,910
Houston & Texas Central	923	521,989	264,080	859,085	266,038	183,333	17,723	408,652	25,031	900,649	104.84	—41,564	50,965	—93,166	—230,693
Houston East & West Texas	190	1,183,680	58,449	258,137	137,606	31,666	3,193	102,506	6,017	280,988	108.85	—22,852	15,909	—39,004	—53,898
Illinois Central	4,799	218,532	2,107,056	11,179,189	2,353,572	3,382,322	87,701	4,891,944	259,192	11,056,371	98.90	122,817	632,485	—516,729	—1,339,933
Indiana Harbor Belt	120	.....	.....	708,219	143,062	121,608	2,680	687,258	26,206	980,814	138.45	—272,595	12,535	—285,131	—316,733
International & Great Northern	1,159	984,247	296,210	1,416,117	246,058	332,114	21,657	714,621	52,163	1,375,601	97.13	40,516	32,500	7,953	—72,418
Kanawha & Michigan	176	352,743	53,394	428,021	98,229	206,926	3,482	214,810	18,273	541,719	126.56	—113,698	25,000	—138,698	—187,399
Kansas City, Mexico & Orient	272	101,015	21,482	128,702	35,197	42,098	4,696	70,424	9,302	161,717	125.65	—33,014	7,700	—40,714	52,350
Kansas City, Mexico & Orient of Texas	465	125,833	22,546	155,370	69,099	43,313	3,909	84,784	7,699	208,805	134.39	—53,434	6,925	—60,359	10,418
Kansas City Southern	779	1,131,495	246,872	1,473,340	247,659	288,596	31,138	565,582	63,562	1,194,866	81.09	278,474	71,969	206,456	221,954
Kansas, Oklahoma & Gulf	329	140,412	23,417	173,507	47,605	46,566	2,476	92,683	8,779	198,261	114.26	—24,754	10,500	—35,253	31,018
Lake Erie & Western	741	879,446	66,901	999,511	213,793	611,699	15,656	473,814	31,250	1,345,608	134 62	—346,098	35,249	—381,363	269,742
Lake Terminal	12	.....	160	115,868	20,512	27,240	.....	74,024	100	121,877	105.18	—6,008	5,893	—11,902	14,072
Illinois Terminal	24	89,980	.....	94,042	4,354	9,728	845	21,184	5,478	41,589	44.22	52,452	1,117	51,335	21,655
Lehigh & Hudson River	96	241,337	3,650	252,871	35,350	43,301	1,917	106,021	8,247	194,834	77.04	58,037	8,600	49,437	26,640
Lehigh & New England	229	334,378	1,705	351,845	59,355	76,908	2,681	138,131	14,466	291,541	82.86	60,304	14,803	45,501	—33,113
Lehigh Valley	1,435	4,789,463	658,497	5,910,835	1,001,774	1,662,089	82,968	3,982,084	123,533	6,881,245	116.41	—970,410	206,000	—1,176,419	—1,521,143
Long Island	398	642,882	1,574,417	2,434,762	277,398	406,333	22,014	1,094,910	61,330	1,878,351	77.14	556,411	104,410	451,851	— 767,760
Los Angeles & Salt Lake	1,168	1,032,954	606,551	1,852,181	218,687	285,459	33,125	638,550	33,013	1,269,206	68.52	582,974	77,534	505,413	263,889
Louisiana & Arkansas	302	238,883	47,311	298,982	74,776	46,073	4,141	105,046	1,374	237,410	79.41	61,573	18,596	42,976	90,574
Louisiana Ry. & Navigation	343	259,839	46,117	332,644	90,256	63,214	8,901	166,404	10,504	339,278	101.99	—6,634	14,000	—20,634	—31,657
Louisiana Western	207	305,301	110,983	446,735	100,911	76,666	6,749	99,380	14,946	301,288	67.44	145,448	20,320	124,931	—11,370
Louisville & Nashville	5,040	7,420,690	2,060,601	10,124,211	2,280,129	3,266,373	169,017	5,416,396	320,894	11,511,055	113.69	—1,386,844	302,607	—1,689,745	1,330,185
Louisville, Henderson & St. Louis	199	167,834	58,004	242,384	66,932	40,571	5,500	91,634	8,407	213,043	87.89	29,340	7,214	22,115	—28,473
Maine Central	1,216	1,267,677	456,520	1,851,802	308,553	367,861	15,982	876,351	44,408	1,616,483	87.29	235,319	95,742	139,569	224,200
Maryland, Delaware & Virginia	82	64,050	36,268	105,232	14,285	33,713	789	79,290	3,147	131,224	124.69	—25,992	2,000	—27,992	26,324
Michigan Central	1,862	4,072,794	2,231,365	7,006,793	1,435,171	2,007,887	85,825	3,640,979	191,894	7,504,470	107.10	—497,677	246,500	—744,362	—2,215,996
Mineral Range	101	43,235	288	46,108	17,246	20,703	297	27,788	1,218	67,251	145.85	—21,144	4,100	—25,244	323
Minneapolis & St. Louis	1,646	1,080,556	222,098	1,375,524	353,726	356,146	18,849	749,664	40,340	1,519,077	110.44	—143,552	62,135	—205,786	—288,366
Minneapolis, St. Paul & Sault Ste. Marie	4,243	2,930,569	789,519	4,071,942	870,868	644,420	45,911	1,561,958	110,141	3,273,267	80.38	798,675	275,212	522,356	12,946
Minnesota & International	194	60,757	29,666	96,498	44,078	17,801	568	39,930	3,508	105,886	109.72	—9,387	2,745	—12,132	2,946
Mississippi Central	164	49,466	19,717	74,854	34,401	65,195	2,078	32,786	8,302	142,763	190.72	—67,909	5,000	—72,909	—60,836
Missouri & North Arkansas	364	95,996	41,845	148,715	62,578	42,166	3,326	65,597	9,914	193,580	123.44	—34,865	5,893	—40,757	43,174
Missouri, Kansas & Texas	1,715	2,271,530	720,952	3,234,369	791,293	1,038,122	43,084	1,382,245	127,190	3,400,043	105.12	—165,673	112,202	—278,336	—731,753
Missouri, Kansas & Texas of Texas	1,739	1,167,604	773,667	2,099,310	734,088	584,432	34,537	1,299,683	117,059	2,788,807	132.84	—689,497	59,583	—749,770	—1,180,651
Missouri Pacific	7,299	6,896,731	1,801,041	9,407,646	1,684,349	2,093,276	159,294	3,625,063	244,607	7,864,848	83.60	1,542,798	333,397	1,208,735	623,677
Mobile & Ohio	1,165	1,091,148	186,362	1,370,528	423,108	560,050	32,292	837,655	56,061	1,910,059	139.40	—539,531	59,652	—599,183	—382,453
Monongahela Connecting Ry	7	.....	.....	249,250	41,180	32,453	561	111,971	6,701	192,868	77.37	56,382	92,474	—36,092	—23,145
Monongahela Railway	108	253,960	26,336	288,852	117,748	98,359	1,621	90,137	12,172	320,637	111.00	—31,785	6,293	—38,078	—113,350
Montour	56	142,714	1,098	150,066	34,139	48,721	1,067	41,712	7,060	136,643	91.05	13,424	2,431	10,993	36,019
Morgan's La. & Texas R. R. & S. S. Co.	400	761,530	180,617	1,014,862	255,031	158,333	10,313	284,975	29,838	741,167	73,03	273,695	42,938	230.645	92,299
Nashville, Chattanooga & St. Louis	1,247	1,449,810	436,385	2,004,493	333,700	449,200	53,916	851,645	50,873	1,741,729	87.04	259,765	42,500	216,915	182,410
Nevada Northern	165	153,742	10,746	171,134	25,169	25,288	745	41,092	5,316	97,663	57.06	73,471	8,267	65,204	29,455
New Jersey & New York	47	14,278	81,498	104,461	13,303	16,804	1,065	65,523	2,365	99,061	94.83	5,400	1,927	3,472	—7,495
New Orleans Great Northern	284	138,894	54,720	205,514	49,107	37,612	5,861	86,771	9,789	189,570	92.24	15,944	12,244	3,676	43,745
New Orleans, Texas & Mexico	191	182,692	42,095	231,541	62,922	35,344	4,889	61,837	8,556	173,363	74.87	58,179	12,167	46,011	61,113
New York Central	6,069	17,867,424	8,391,037	30,216,937	7,482,508	9,478,554	325,415	15,797,739	957,233	34,579,977	114.43	—4,363,040	861,929	—5,231,199	—11,511,902
New York, Chicago & St. Louis	574	1,998,269	108,050	2,180,442	269,803	348,231	47,144	806,213	83,125	1,562,749	71.67	617,693	135,000	482,680	146,201
New York, New Haven & Hartford	1,965	5,034,134	4,121,074	10,485,899	1,633,938	2,077,091	53,690	4,885,042	318,327	9,173,080	87.48	1,312,819	339,000	973,603	4,636
New York, Ont. & Western	569	677,585	295,427	1,160,835	199,403	238,624	11,618	467,153	27,749	944,546	81.37	216,790	29,100	187,190	25,197
New York, Susquehanna & Western	135	269,605	58,975	375,810	49,370	75,968	3,022	255,464	11,833	395,657	105.28	—19,847	18,674	—38,529	—27,812
Newburgh & South Shore	7	.....	.....	139,665	15,052	36,476	.....	83,639	4,460	139,628	99.97	37	8,387	—8,350	— 7,597
Norfolk & Western	2,199	5,270,929	829,110	6,396,563	1,268,784	2,893,555	67,391	3,724,764	212,399	8,184,140	127.94	—1,787,578	425,000	—2,212,726	—2,926,183
Norfolk Southern	944	427,827	156,263	622,606	156,566	118,678	11,678	305,254	27,760	620,116	99.60	2,490	16,666	—14,288	14,393
Northwestern Pacific	538	349,707	257,349	681,764	110,887	79,317	6,165	264,899	16,089	480,046	70.41	201,719	25,536	176,183	61,065
Northern Pacific	6,655	5,008,205	2,114,431	7,868,444	1,850,602	1,356,104	60,803	2,527,420	199,456	6,192,211	78.69	1,676,233	623,666	1,051,772	413,025
Oregon Short Line	2,358	2,320,291	729,073	3,345,840	643,604	500,058	37,321	1,170,204	140,258	2,580,068	77.11	765,772	296,899	468,873	—6,523
Oregon-Wash. R. R. & Nav. Co.	2,223	1,690,204	782,878	2,704,259	346,670	556,911	47,447	1,190,508	139,677	2,329,611	86.15	374,649	182,333	192,240	—94,410
Panhandle & Santa Fe	773	549,120	141,683	725,611	178,819	244,922	4,672	277,928	16,223	722,564	99.58	3,047	19,936	—16,889	13,717
Peoria & Pekin Union	19	22,662	3,789	107,677	20,567	27,712	466	83,142	4,425	136,312	126.59	—28,635	9,500	—38,135	60,866
Pere Marquette	2,230	2,475,015	595,015	3,368,063	503,253	675,430	44,284	1,389,250	110,060	2,732,324	81.12	635,739	61,697	574,006	—135,943
Perkiomen	41	65,930	9,701	81,948	9,153	3,851	17	36,903	340	50,296	61.37	31,651	3,276	28,375	—19,794
Philadelphia, Bethlehem & New England	10	.....	.....	128,074	19,109	20,338	475	74,842	1,595	116,359	90.85	11,715	1,030	10,684	12,577
Philadelphia & Reading	1,126	5,664,313	929,434	7,093,293	887,842	1,752,157	58,635	3,195,476	142,124	6,056,745	85.38	1,036,548	207,672	828,258	—1,360,751
Pittsburgh & Lake Erie	224	1,504,096	256,121	1,909,848	536,697	1,036,017	18,257	1,045,380	71,292	2,708,816	141.83	—798,968	151,571	—950,539	—993,057

Traffic News

Brigadier General W. D. Conner has been appointed chief of the inland and coastwise waterways service and chief of transportation of the War Department, succeeding Brigadier General F. T. Hines, resigned.

The American Railway Express Company, which has an application pending before the Interstate Commerce Commission for increases in express rates amounting to about $72,000,000 a year, is expected to file shortly a supplemental application to cover the $30,000,000 wage award of the Railroad Labor Board.

Illinois Roads Apply for Higher Passenger Rates

Railroads operating in Illinois, represented by R. B. Scott, general counsel of the Chicago, Burlington & Quincy, and R. B. Fletcher, general counsel of the Illinois Central, appeared before the Illinois Public Utilities Commission on August 9, in an effort to nullify the two cents a mile legal passenger rates in that state and substitute therefor the three cents per mile rate in effect by the roads while under federal control. The contention of the roads is that the rates were raised while the roads were under federal control and that the Illinois state law fixing the legal intrastate rate at two cents a mile was thereby nullified and that the three cent rate should now be the basis upon which the commission should grant further increases.

The commission has held that the recent passing of the roads from federal to private control returns the state two cent law into power and that the commission lacks authority to nullify the state statute which specifically fixes the legal rate per mile. Should the commission now rule that the two cent rate is still in effect the roads operating in Illinois will be forced to appeal to the Interstate Commerce Commission on the grounds that the state rate is discriminatory.

Effect of Rates on Prices

Just what the increased freight rates which will soon go into effect mean to the average consumer in the way of contributing to the cost of necessary articles of clothing and standard food products is shown in some interesting illustrations made by the freight traffic department of the Southern Railway System.

The rate on shoes from Boston to Atlanta is now $1.64 per 100 pounds, making the transportation charge on a pair of shoes, which with its share of the packing weighs three pounds, approximately five cents. The new rate will be $2.18½ per 100 pounds, making the transportation charge for the same pair of shoes approximately 6⅔ cents.

Shirts are shipped from New York to New Orleans by freight for $1.54 per 100 pounds, making the transportation charge on a five-ounce shirt about half a cent. The new rate will be $2.05½ per hundred pounds, making the charge on the same five-ounce shirt about two-thirds of one cent. The old $1.50 shirt is selling for $3 and up.

Clothing manufactured in Chicago can now be shipped to Jacksonville for $1.83 per hundred pounds, or less than 11 cents for a suit which with its share of the packing weighs six pounds. The new rate will be $2.38½ per hundred pounds, or about 14 cents on the six-pound ready-made which formerly was offered for $30 but now cannot be taken home for less than $60.

Coming to articles of food, the rate on fresh beef from Chicago to Birmingham is now 82 cents per hundred pounds, less than one cent per pound. The new rate will be 1.06½ per hundred pounds, or slightly more than a cent per pound. Beef that formerly sold for 20 cents per pound has been bringing 35 cents.

Sugar can now be shipped from New Orleans to Greensboro, N. C., for 55 cents per 100 pounds, or just about half a cent per pound. The new rate will be 69 cents per hundred pounds, still less than three-fourths of a cent per pound.

These illustrations, which are of articles and commodities taken at random, may be considered as fairly representative of the addition to the transportation cost of articles used in the South which will result from the increase in rates. Similar illustrations could be made on almost every article used in the household, except coal, which, being shipped and sold by the ton, will show a relatively higher transportation cost in proportion to its value.

Railroads Asked to Aid in Re-Establishing Lake Traffic

Following assurances of Chairman Clark, of the Interstate Commerce Commission, at a hearing in Washington, August 9, that the proposal to readjust rail rates between the seaboard and upper lake ports so as to make lake transportation of grain again profitable, was receiving consideration by the commission, Governor W. L. Harding, of Iowa, and J. R. Howard, president of the American Farm Bureau Federation, requested Daniel Willard, of the Association of Railway Executives, to ask the lines affected to voluntarily agree to the proposed rate readjustment.

"Boats capable of carrying the equivalent of 75,000 carloads of grain per trip would be immediately available if these rates were properly adjusted," said Governor Harding. "There is no justification for a rate of 10 cents per bushel between Buffalo and New York when the rate for the entire haul from Chicago to New York is only 13.8 cents. The rate for the western end of the trip should be raised and that for the eastern end lowered. The rail service between Chicago and Buffalo represents 60 per cent of the rail service between Chicago and New York. If this 60 rail service between Chicago and Buffalo represents 60 per cent ment could be saved by utilization of the lakes and diverted to other districts and commodities it would soon bring about a very notable improvement in the entire transportation situation. Cars should shuttle back and forth between the grain fields and the lake elevators at the western end of the line and in the same way between Buffalo and the seaboard, thus avoiding the long hauls and empty return trips now necessitated."

Coal Production

The strike in the Middle West caused the production of soft coal during the last week of July to drop below the 1919 level for the first time this year, according to the weekly bulletin of the Geological Survey. The total output, including lignite and coal coked at the mine, is estimated at 9,357,000 net tons, a decrease when compared with the latest prestrike week, of 1,523,000 net tons. Telegraphic reports of coal loaded by the principal carriers indicate that production recovered but little on August 2, but that since then there has been steady improvement. Practically all mines in Indiana, for example, were back at work on Thursday, August 6. Production during the first 181 working days of the last four years has been as follows (in net tons):

1917	320,834,000	1919	258,144,000
1918	339,019,000	1920	302,727,000

Unlike the production of soft coal, that of anthracite increased during the week ended July 31. Shipments originated by the principal carriers (in part estimated) amounted to 36,487 cars, the largest since mid-June. The total output, including mine fuel and local sales, is estimated at 1,874,000 net tons. This was 104,000 tons greater than that of the preceding week, and 62,000 greater than during the corresponding week of 1919. The closing of mines because of labor disturbances reduced the demand for cars and was the primary cause for a decrease in the percentage of time lost on account of transportation disability. Over the country as a whole the transportation loss during the week of July 24 was 29.6 per cent, as compared with 32.3 per cent during the preceding week. Examination of the reports from fields not affected by the strike, however, indicates no widespread improvement in car supply. In some districts a change for the better was indeed reported, but in others the losses grew even more acute than before. Improvement in the car supply was reported from the Pittsburgh district, from sections A and C of central Pennsylvania, from the Cumberland-Piedmont field, the high volatile fields of southern West Virginia, northeastern Kentucky and western Kentucky. In Indiana, Ohio, West Virginia Panhandle and Southeastern Kentucky, little change occurred. Among the districts to report a less

adequate car supply were Westmoreland, Section B of central Pennsylvania, Somerset, Fairmont, New River, Hazard and southwestern Virginia.

The first week of operation of the amended lake order (Service Order No. 10) saw 775,318 tons of soft coal dumped at Lake Erie ports. This was 112,712 tons more than the dumpings of the preceding week, which had been the largest of the present season, but was still below those of the corresponding period of 1918 and 1919.

The cumulative shipments from the beginning of the year now stand at 6,814,074 net tons, as against 12,163,000 in 1918 and 13,188,000 in 1919. The year 1920 is thus in round numbers five and a third million tons behind 1918 and six and a third million behind 1919.

Tidewater shipments during the week ended July 31 established what is believed to be a new record for coal handled over tidewater piers in a single week. The total dumpings at the four North Atlantic ports and Charleston, according to reports furnished the Geological Survey by courtesy of the American Railroad Association, were 27,641 cars. This exceeded the preceding week by 1,771 cars, and was 4,661 cars greater than the weekly average for June, 1920, hitherto the maximum month. Statistics on the destination of coal dumped at tidewater during the week ended July 31 are at present available only for the port of Hampton Roads. A total of 604,000 net tons were handled by the three exchanges there, an increase of 51,000 tons over the preceding week. The increase was almost entirely in exports; there was a slight decrease in the quantity shipped to New England. The average movement to New England through Hampton Roads was 137,000 net tons per week during the five weeks ended July 31. Throughout this period Service Order No. 6 was in effect. Order No. 11, directing further measures of priority and preference for the New England movement, did not become effective until August 2.

The rail movement of bituminous coal to New England continued to be very heavy during the last week of July. According to reports furnished the Geological Survey by the American Railroad Association, 6,368 cars were forwarded to New England destinations through the five Hudson River gateways of Harlem River, Maybrook, Albany, Rotterdam and Mechanicsville. With the exception of the preceding week, this was the largest movement of the year and one of the largest of record. It was 1,489 cars, or 30 per cent, greater than that of the corresponding week of 1919.

An optimistic view of the soft coal situation is presented by J. D. A. Morrow, vice-president of the National Coal Association. Following a 10 days' trip through the East, he said that the railroads, for the most part, have diligently taken hold of the intricate problem, and, as a result of increased car supply, operators of mines supplying the Northwest and New England were able last week to ship a much greater tonnage of coal to those points than before, and that there is every expectation that the wants of the country will be fully met.

"The Baltimore & Ohio, the Chesapeake & Ohio, the Norfolk & Western, the Virginian and other large coal loading roads, are performing creditably," said Mr. Morrow. "The Pennsylvania is still a little disappointing, but the executives of the road are making vigorous efforts to improve loading and shipment.

"Movement to the lakes is not yet up to schedule, being on the 7th of August 10,745 cars behind the scheduled 4,000 cars daily. Practically all of that shortage is due to the insufficient car supply on the Pennsylvania. The Wheeling & Lake Erie was also about 1,000 cars behind, due largely to congestion on the road. This is now being rapidly remedied.

"The situation as to New England is distinctly encouraging. The wholesale coal men have organized a committee to work in conjunction with the operators and the railroads and coal is moving to tidewater ports fully up to the 1,250,000 tons called for under the New England priority schedule. The New England railways were endeavoring to move their fuel supply all-rail, making it difficult for other New England consumers to obtain their tonnage through the New England gateways, but the railroads now have arranged for the movement of 382,000 tons of locomotive fuel by water. This one fact alone insures the success of the New England program."

Commission and Court News

Interstate Commerce Commission

The commission, which is required by section 25 of the interstate commerce act to prescribe a form of through export bill of lading for issuance by railroads in connection with water carriers whose vessels are registered under United States laws, has issued a notice to carriers and shippers saying that in response to its requests separate form of through export bills of lading have been submitted by lines in Official and Western classification territories and that Lincoln Green, as chairman of the executive committee of the Southern Freight Association, has submitted two forms in use by the Southern railway which are similar to that proposed by the lines in Official territory. The commission will adopt the form submitted by the western lines as the basis for further proceedings in its investigation. This is a modification of the form approved by the commission in its former report. A hearing will be held before Commissioner Woolley at Washington on September 20.

Mississippi Valley Notes

The commission has made public a tentative report of its special examiner, R. V. Pitt, in the matter of the readjustment of rates in Mississippi Valley territory as required by the fourth section order entered by the commission in the Memphis-Southwestern investigation. The report is based on the final proposals of interested carriers and shippers made at a conference authorized by the commission held on June 28. The report was accompanied by a statement by Commissioner Daniels that the commission had authorized him to say that the rates in Mississippi Valley territory are required by the order to be readjusted on or before October 1 and it is of the utmost importance that the revision be accomplished by that date if possible. It is, therefore, imperative that the roads file rates which will not require suspension, and although the proposed adjustment has not yet been approved by the commission, there would be a strong presumption of its reasonableness. The parties interested are requested to give careful consideration to the report and furnish the commission by August 20 with their views on the matter, including a statement by the carriers as to whether they will establish the rates proposed. The report involves class rates between Ohio river crossings, St. Louis, Chicago and related roads, on one hand, and points in Mississippi Valley on the other hand, revised to conform to the provisions of the fourth section. The examiner's report says that the rates should be readjusted to preserve as nearly as possible the present general level of those rates and the revenues derivable therefrom. For the purpose of this revision the present plan of making rates between points on and north of the Ohio river and Mississippi Valley territory with relation to the rates to and from Cairo should be continued and after the revision is effected all rates are to be increased by the percentages allowed by the commission in the general rate case, Ex Parte 74.

State Commissions

The New York State Public Service Commission, second district, will hold a hearing at Albany on August 17 to consider the application of the railroads for authority to make general advances in freight and passenger rates.

The Publicity Utility Commissioners of New Jersey will give a hearing on August 17 on the question of advancing passenger and freight rates in New Jersey to correspond with the advances which are to be made in interstate tariffs. The Board assumes that tariffs are being prepared showing increases corresponding to those which are to be made in interstate rates.

Equipment and Supplies

Locomotives

THE GREEN BAY & WESTERN has ordered from the American Locomotive Company 1 six-wheel switching locomotive. This locomotive will have 19 by 26 in. cylinders and a total weight in working order of 128,000 lb.

Freight Cars

THE COMMONWEALTH EDISON COMPANY, Chicago, is inquiring for 1,000 gondola cars of 70 tons capacity.

THE TENNESSEE COAL & IRON RAILROAD COMPANY is asking figures on 300 ore cars of 50 tons capacity.

THE WEST VIRGINIA PULP & PAPER COMPANY, New York, is inquiring for 20 coal cars of 70 tons capacity.

THE PIEDMONT & NORTHERN has ordered 50 flat cars of 40 tons capacity from the Pressed Steel Car Company.

THE CLINCHFIELD PORTLAND CEMENT COMPANY, Nazareth, Pa., is inquiring for 45 hopper cars of 55 tons capacity.

THE ARGENTINE STATE RAILWAYS have ordered 500 box cars of 30 tons' capacity from the Standard Steel Car Company.

THE AMERICAN TRADING COMPANY, 25 Broad street, New York, is in the market for 30 second-hand box cars of 80,000 lb. capacity.

THE DONNER STEEL COMPANY, Buffalo, N. Y., has ordered 250 hopper cars of 70 tons' capacity from the Pressed Steel Car Company.

THE COLUMBIA STEEL & SHAFTING COMPANY, Pittsburgh, Pa., has ordered 50 gondola cars of 50 tons capacity from the Pressed Steel Car Company.

THE CONSOLIDATION COAL COMPANY, Fairmont, W. Va., has ordered 110 hopper cars of 55 tons capacity from the Pressed Steel Car Company.

THE NEW YORK SHIPBUILDING CORPORATION, Camden, N. J., has ordered 35 flat-bottom gondolas of 50 tons capacity from the Pressed Steel Car Company.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for second-hand equipment, as follows: 50 flat cars, 75 gondola cars and 50 box cars.

THE UNITED FRUIT COMPANY is inquiring for 40 steel underframe flat cars of 30 tons capacity and has given an order to the Pressed Steel Car Company for 929 steel superstructures for side dump cane cars.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS, reported in the *Railway Age* of June 25 as inquiring for 100 freight cars, has given an order to the Pressed Steel Car Company for 100 hopper cars of 55 tons capacity.

THE UNION TANK CAR COMPANY has placed orders for 3,900 tank cars. This is in addition to the 5,500 previously ordered in the latter part of 1919 for delivery this year. The company expects to have all these new cars delivered before January 1, 1921; this will make the company's total ownership of cars about 30,000.

Passenger Cars

THE CHICAGO & NORTH WESTERN is inquiring for 25 passenger cars.

THE GREAT WESTERN OF BRAZIL is inquiring for 9 first-class passenger coaches.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for three second-hand steel underframe electrically lighted observation end parlor cars.

Supply Trade News

New offices have been opened by the **American Rolling Mill Company**, of Middletown, Ohio, in the Hibernia Bank building, New Orleans, La., to cover the southern states, including Texas, excepting El Paso. The office will be in charge of C. C. Lynd, who has represented the American Rolling Mill Company at Atlanta, Ga., for several years past.

James T. Lee has been added recently to the sales engineering staff of the **Southwark Foundry and Machine Company,** Philadelphia, Pa. Mr. Lee for several years past was vice-president in charge of sales of the Hanna Engineering Works, Chicago. It is the purpose of the Southwark Foundry and Machine Company to greatly broaden its field of activity by adding to its present complete line of hydraulic and power machinery a full line of pneumatic and hydro pneumatic riveters and foundry molding machines.

Exum M. Haas has been appointed manager of the railroad department of the **H. K. Ferguson Company,** Cleveland, Ohio. Mr. Haas graduated from Purdue University in 1905. For eight years after completing his engineering course he was actively engaged in railroad maintenance and construction. From 1912 to 1917 he was western editor of the Electric Railway Journal, and the following three years was sales engineer for the Austin Company. Mr. Haas is a member of the committee on shops and terminals of the American Railway Engineering Association.

The Metal & Thermit Corporation, New York, has made arrangements to secure life insurance for all its employees who have served the company for at least six months. The amount of protection is graded according to the length of service, ranging from $700 for six months' service up to $3,000 for 20 years' service. The company bears the entire expense of this insurance, which is in addition to any compensation to which its employees might be entitled under the present state compensation laws. The insurance will be paid in monthly payments during the first year after death.

The Western Electric Company, through its board of directors, has promulgated an order extending the vacation privilege to all departments, which will provide vacations with pay for 4,000 shop employees. Previously factory workers did not receive the same benefits as the members of the sales, clerical, technical and executive branches, and any vacations taken during the summer months were taken at their own expense. The order was issued as an expression of appreciation for faithful service. Vacations of one or two weeks with pay will be granted, depending on the length of service of the employee.

M. E. Hamilton has become associated with the **Automatic Straight Air Brake Company** as field engineer, effective August 15. The company has started to build up its field organization to take care of the brake installations which it will soon be making. Mr. Hamilton entered railroad service on the C. K. & N. Railway (construction company of the Chicago, Rock Island & Pacific) in the fall of 1887 as fireman, at Goodland, Kans., and was promoted to extra engineer in the spring of 1889. Early in 1890 he entered the service of the Atchison, Topeka & Santa Fe as a brakeman, and in 1891 was promoted to conductor, at Galveston, Tex. After the Galveston storm in 1900 he left that road and went to Mexico where he ran an engine on the Mexican Central. In the fall of 1901 he returned to Galveston and worked for the Galveston, Houston & Henderson as engineer and roundhouse foreman until 1903 when he went back to the Santa Fe as engineer. In 1906 he was made air brake instructor; in 1909 he was made general air brake instructor of the system with headquarters at Topeka, where he remained until 1911, when he became railroad representative for the Garlock Packing Company. He re-entered railroad service as general air brake inspector for the St. Louis-San Francisco in 1915 and in 1919

resigned to become a field inspector of the Bureau of Safety, Interstate Commerce Commission.

Titan Steel Corporation Organized

The Titan Steel Corporation has been organized with headquarters at Newark, N. J. It has acquired the plant of the Hewitt Steel Corporation and will enlarge and re-equip the plant for maximum production, with an initial payroll of 1,500 men. The plant in question was conducted during the war for the manufacture of steel shells. Before the war it was owned by the Titan Steel Castings Company, but at the outbreak of hostilities was acquired by the Hewitt Steel Corporation for the making of steel shell castings. It is now being re-equipped for the economical production of railroad specialties. The new company has also acquired by purchase approximately two-thirds of the capital stock of the Crown Castings Company, a holding company for patent rights and privileges for the manufacture of a truck and body bolster for railroad cars. **E. H. Benners,** president of the holding company and patentee of the truck and bolster, is vice-president of the Titan Steel Corporation. The Titan thus obtains the use of these patents and also one for the Benners side frame, which Mr. Benners holds. **H. H. Hewitt**, president of the Hewitt Steel Corporation, is a director of the new company, which also has acquired the manufacturing rights of the Hewitt car trucks and journal boxes. **R. E. Jennings, Sr.,** of New York City, is chairman of the board. He is vice-president, First National Bank of Jersey City; director and former president, Carpenter Steel Company; director, Empire Trust Company of New York; director Eastern Steel Company of Pottsville, Pa.; director, Trust Company of New Jersey, Hoboken; formerly an organizer of the Crucible Steel Company of America. **R. E. Jennings, 2nd,** is president; he was vice-president, Hewitt Steel Corporation. **S. A. Benner** is vice-president; he was formerly general sales manager of the Carnegie Steel Company. **E. H. Benners** is vice-president in charge of sales and is also president of the Crown Castings Company, **E. E. Ledogar**, treasurer, was vice-president of Hunter Glover & Company, bankers, Cleveland. **R. J. Gill,** secretary, is a Baltimore attorney. The directors include: **J. T. Odell,** who was at one time general manager of the B. & O. at Baltimore; president and director, Marquette, Bessemer, Dock and Navigation Company; vice-president and director, Bessemer and Lake Erie Company; **H. H. Hewitt,** president, Hewitt Rubber Company of Buffalo; president, Metric Packing Company of Buffalo; president, Magnus Metal Company of New York City; president, Reading Car Wheel Company of Reading, Pa.; president, Hewitt Steel Corporation; **Hunter Glover,** head of the banking firm of that name, Cleveland, Ohio, and **J. R. Clark,** director of sales of the Federal Reserve Bank of Cleveland.

Trade Publications

Motive Power for Ships.—The Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has issued leaflet 3,482, entitled "Revolution in Ship Propulsion," which traces through the development of motive power for ships. Descriptions of the geared steam turbine drive, the steam-electric drive, oil-engine drive and the oil-electric drive are included in this leaflet.

Oil Separator.—The Griscom-Russell Company, New York, describes the construction of the Bundy oil separator in a 12-page bulletin, No. 1130. This separator is designed for the removal of oil from exhaust steam in power plants. Sectional views and drawings make the construction and operation clear and instructions are given for cleaning.

Forging Presses.—Bulletin No. 19, containing 24 pages, has been prepared for distribution by the Morgan Engineering Company, Alliance, Ohio, describing briefly the steam hydraulic forging presses built by this company, which consist of single frame types built in sizes from 150 to 500 tons' capacity and four-column types up to 12,000 tons' capacity. A general arrangement drawing of a typical modern forging shop is included in the bulletin.

Railway Construction

Canadian National Railways.—This company's forces are carrying out the work of extending and rearranging Island yard at St. John, N. B. The work comprises grading for yard extension, diversion of creek, construction of three pile trestles, signal and telegraph changes, drainage and fencing changes, rearrangement of existing main line and yard tracks, and the laying of new tracks. The approximate quantities of the principal items which this work covers are: rock cut, 5,000 cu. yd.; fill, 45,000 cu. yd.; creek diversion, 60,000 cu. yd.; ballast, 10,000 cu. yd.; lifting and relaying tracks, 3.3 miles; switches, 27; laying new tracks 4.7 miles, switches 31; relining existing tracks, 23; two double track pile trestles; one single track pile trestle.

Marshall & East Texas.—This company has applied to the Interstate Commerce Commission for permission to abandon its line from Gilmer to Marshall and Elysian Fields, Tex., which has not been operated for two years, and to salvage the property.

Michigan Northern.—This company has applied to the Interstate Commerce Commission for a certificate of public convenience and necessity for an extension from Lansing to Midland and Mount Pleasant, Mich.

Pere Marquette.—This company has applied to the Interstate Commerce Commission for permission to dismantle 11.47 miles of main line and 2½ miles of siding between Rapid City and Kalkaska, Mich., which were built to serve a lumber operation which ceased some years ago. It is stated that the traffic has disappeared and the line cannot be operated at a profit.

Texas & Pacific.—This company has appointed the Strauss Bascule Bridge Company, Chicago, to design a 145 ft. single-leaf double-track railroad bridge to be built over Bayou Plaquemine at Plaquemine, La. The bridge will be a Strauss heel trunnion bascule. Detail plans and specifications are now in course of preparation.

The Chicago & North Western has let a contract to the Ogle Construction Co., Chicago, for a 350-ton coaling station of the balanced bucket type, to be erected at Clinton, Ia.

The Nashville, Chattanooga & St. Louis.—This road has closed a contract with the Roberts & Schaefer Company, Chicago, for the mechanical equipment for a 375-ton capacity, two pocket, three-track, frame constructed, automatic locomotive coaling plant and "Rands" gravity sand plant for installation at Hollow Rock Junction, Tenn.

The Missouri, Kansas & Texas has closed a contract with the Roberts & Schaefer Company, Chicago, for a 300-ton, two-track, reinforced concrete, automatic electric locomotive coaling and sanding plant, using the Duplex shallow pit loader, for installation at Oklahoma City, Okla.

The Pere Marquette has closed a contract with the Roberts & Schaefer Company, Chicago, for a 500-ton, 3-track, reinforced concrete, automatic electric locomotive coaling and sanding plant, for installation at Saginaw, Mich.

The Uvalde & Northern is now under construction from Uvalde, Tex., to Camp Ward, a distance of 40 miles. The contract for the building is held by the L. J. Smith Construction Co., while James Halpin and C. Endsley, representing a syndicate of eastern men, are promoters of the line. Extensive cedar forests will furnish the principal traffic for this road.

"Best Station of Its Size I Ever Saw."—This is the introduction of the report of Inspector J. L. Ridley, on his visit to R. B. Shumate, agent for the Southern Railway at Piedmont, S. C. "I checked all outbound billing for a period of a month and half back without finding a single error. Checked behind agent on twenty-five inbound waybills and found he had made all corrections necessary before taking them into account. Tariff case in excellent condition." And on this showing Mr. Shumate is congratulated by Vice-President Lincoln Green.

Railway Financial News

ARKANSAS & LOUISIANA MIDLAND.—This company has been sold at foreclosure sale to interests holding and controlling what has been known as the Huttig, Mansfield & Nacogdoches system of railroads, together with interests owning oil, gas and carbon properties in Arkansas, Louisiana and Texas. The name of the new company is the Arkansas & Louisiana Missouri.

DELAWARE & HUDSON.—The Interstate Commerce Commission has approved a loan to this company of $1,125,000 to aid the carrier in making additions and betterments to promote the movement of freight train cars. The carrier is required to finance itself for the same purpose an amount equal to the loan of the government.

EDMONTON, DUNVEGAN & BRITISH COLUMBIA.—This road is now being operated by the Canadian Pacific, as heretofore announced. The Alberta Provincial Government, acting under the provisions of a law passed at the last session of the legislature, proposes to advance $1,000,000 to the railway company for improvements, taking a mortgage as security. The former management has retired and D. C. Coleman, of Winnipeg, Manitoba, has been elected president, in place of J. D. McArthur. Charles Murphy, of Winnipeg, has been elected vice-president in place of J. K. McLennan, of Edmonton, Alta. Charles Stewart, of Edmonton, Minister of Railways for the Province, represents the government in the board of directors. J. A. McGregor has been appointed manager, with headquarters in Edmonton.

ERIE.—This company has applied to the Interstate Commerce Commission for authority to extend for 10 years certain bonds of its predecessor companies, maturing this year, as to which the company will make an agreement with the holders, the company agreeing to pay principal and interest at maturity. The bonds are in New York & Erie 4th mortgage 5 per cent bonds to the amount of $2,926,000, Erie Railroad consolidated mortgage 7 per cent bonds to the amount of $16,891,000 and New York, Lake Erie & Western Railroad Co. first consolidated mortgage coupon 7 per cent bonds to the amount of $3,699,000.

The Erie is offering to the holders of $20,590,500 consolidated mortgage 7 per cent bonds, which mature September 1, 1920, to extend these bonds at 7 per cent with payment of $10 in cash for each $1,000 bond extended. These bonds are in two series, of which $16,891,000 are Erie bonds of 1870 and the other $3,699,500 New York, Lake Erie & Western bonds of 1878.

LONG ISLAND.—This company has applied to the Interstate Commerce Commission for authority to issue equipment trust certificates to the amount of $1,688,000 and notes to the amount of $419,279. The commission has ordered a hearing on the application before an examiner at Washington on August 16.

NEW YORK CENTRAL.—It is said that this company is contemplating the acquisition, through purchase or lease, of the Chicago River & Indiana and of the Chicago Junction Railway, both subsidiaries of the Chicago Junction Railway & Union Stock Yards Company. The Chicago River & Indiana operates a total of 47 miles, of which it owns 7 miles of main line and 11 miles of branch line in the city of Chicago. The Chicago Junction Railway operates a total of 24 miles, of which about 2 miles is over the Chicago River & Indiana, in the city of Chicago and the Union Stock Yards.

NORTHERN PACIFIC.—This company has filed with the Railroad Administration its claims for various amounts due the company arising from the federal control of its property. The claims amount to about $25,000,000.

NORFOLK & PORTSMOUTH BELT LINE.—A hearing on this company's application for authority to issue a note for $150,000 was held before an examiner of the Interstate Commerce Commission on August 11 at Washington.

Railway Officers

Executive

J. M. Sparling has been appointed assistant to the vice-president of the Grand Trunk, with headquarters at Montreal, Que., succeeding R. J. Foreman, promoted, effective August 1.

E. A. Frost has been appointed president of the newly-organized Arkansas & Louisiana Missouri (formerly the Arkansas & Louisiana Midland), with headquarters at Shreveport, La.; **F. T. Whited** has been appointed first vice-president; **G. S. Prestridge,** second vice-president, and **S. H. Dowell,** secretary and treasurer, with the same headquarters; other appointments are: **G. W. Nelson,** vice-president, St. Louis, Mo.; **F. G. Hudson,** assistant secretary, Monroe, La.; and **F. W. Scott,** assistant to the president, Huttig, Ark.

Financial, Legal and Accounting

H. A. Clifford has been appointed treasurer of the Northern Pacific, with headquarters at St. Paul, Minn., effective August 6, succeeding C. A. Clark, deceased.

J. L. Keenan has been appointed real estate, tax and insurance commissioner of the Arkansas & Louisiana Missouri, formerly the Arkansas & Louisiana Midland, with headquarters at Shreveport, La.

Operating

C. P. Grenfell has been appointed assistant trainmaster of the Rio Grande division on the Atchison, Topeka & Santa Fe, with headquarters at Hurley, N. M., effective August 10.

W. Stevenson has been appointed general manager of the Jonesboro, Lake City & Eastern, with headquarters at Jonesboro, Ark., succeeding F. S. Yantis, resigned, effective August 1.

W. C. Barrett, division engineer on the Lehigh Valley at Sayre, Pa., has been appointed trainmaster of the Seneca division, with headquarters at the same place, succeeding A. C. Kerrick, transferred.

J. F. Anton, trainmaster of the Panhandle & Santa Fe, with headquarters at Amarillo, Tex., has been promoted to superintendent of the Slaton division, with headquarters at Slaton, Tex., effective August 10, succeeding F. J. MacKie, who has been transferred.

S. A. Morrison, superintendent of the Sioux City division of the Chicago & North Western, with headquarters at Sioux City, Ia., has been transferred to the Northern Iowa division, with headquarters at Eagle Grove, Ia., effective August 1, succeeding J. P. Cantillon, who has resigned.

A. B. Buckworth, general manager of the Spokane & British Columbia, with headquarters at Vancouver, B. C., has been appointed general manager of the Pacific Great Eastern, with the same headquarters, effective July 29, succeeding **G. E. Macdonald,** who has resigned.

C. F. Urbutt, trainmaster of the Sioux City & Dakota division of the Chicago, Milwaukee & St. Paul, with headquarters at Sioux City, Ia., has been promoted to assistant superintendent of the Iowa and Dakota division, with headquarters at Mason City, Ia., effective July 1. **J. E. Ryan,** trainmaster of the Chicago Terminal division, has been transferred to succeed Mr. Urbutt, and **M. F. Washburn** succeeds Mr. Ryan.

W. D. Beck, superintendent of the Eastern division of the Western lines of the Chicago & North Western, with headquarters at Norfolk, Neb., has been promoted to superintendent of car service, with headquarters at Chicago, effective August 1, succeeding O. E. Hallberg, who has resigned.

M. E. Pangle, superintendent of the Black Hills division, with headquarters at Chadron, Neb., has been transferred to succeed Mr. Beck. **C. T. Boone,** superintendent of the Wyoming division, at Casper, Wyo., has succeeded Mr. Prangle. **G. A. Holmes,** assistant superintendent of the East Iowa division, with headquarters at Clinton, Ia., has been promoted to succeed Mr. Boone. **F. R. Lloyd**, trainmaster on the Galena division at West Chicago, Ill., has been promoted to succeed Mr. Holmes. **W. H. Noyes,** trainmaster on the West Iowa division, with headquarters at Boone, Ia., has been transferred to succeed Mr. Lloyd and **R. J. Hall,** chief train despatcher at Boone, Ia., has been promoted to succeed Mr. Noyes.

Traffic

S. S. Hosp has been appointed commercial agent of the Norfolk & Western, with headquarters at Minneapolis, Minn., effective July 1.

Fred C. Mayer, traffic manager of the Oklahoma, New Mexico & Pacific, with headquarters at Ardmore, Okla., has been appointed traffic manager of the St. Louis & Hannibal, with headquarters at Hannibal, Mo., effective August 1.

H. O. Mills, division freight agent of the Toledo & Ohio Central, with headquarters at Toledo, O., has been promoted to assistant general freight agent with the same headquarters, effective June 1, and the office of division freight agent has been abolished.

R. F. Clark has been appointed general agent of the Grand Trunk, with headquarters at Chicago, effective August 1. Other appointments of the Grand Trunk effective the same date are: **A. H. Davis,** general agent, with headquarters at St. Paul, Minn.; **G. H. Brown,** general agent of the freight department, and **C. J. Piper,** commercial agent, with headquarters at Minneapolis, Minn.; **L. E. Ayer,** general agent at Kansas City, Mo.

B. A. Gormaly, division freight agent of the Grand Trunk lines west of the Detroit and St. Clair rivers, with headquarters at Chicago, has been promoted to foreign freight agent, with the same headquarters, effective July 23. Other appointments are: **James Cameron,** chief of the tariff bureau, to assistant general freight agent, and **L. A. Veroneau,** chief clerk in the tariff department, to succeed Mr. Cameron. The position of division freight agent at Chicago has been abolished.

Mechanical

J. E. Stone has been appointed assistant master mechanic of the Southern Pacific, with headquarters at Sparks, Nev., effective August 1, succeeding Paul Jones, who has resigned.

A. D. Williams has been appointed master mechanic of the Texarkana & Fort Worth, with headquarters at Texarkana, Tex., effective August 1, succeeding F. M. Hill, assigned to other duties.

L. K. Sillcox, assistant general superintendent motive power of the Chicago, Milwaukee & St. Paul, has been appointed general superintendent motive power with headquarters at Chicago, succeeding R. R. Warnock.

C. H. Bilty has been appointed mechanical engineer on the Chicago, Milwaukee & St. Paul, with headquarters at Milwaukee, Wis., having returned from service with the United States Railroad Administration. **H. K. Fox,** acting mechanical engineer, has been appointed engineer of tests, with headquarters at the Milwaukee shops, Milwaukee, Wis. The appointments are effective on June 16.

G. Lamberg, division master mechanic of the Aberdeen division of the Chicago, Milwaukee & St. Paul, with headquarters at Aberdeen, S. D., has been promoted to superintendent of shops, with headquarters at Minneapolis, Minn., effective June 16. **E. W. Hopp,** master mechanic of the Racine and Southwestern division, with headquarters at Milwaukee, Wis., has been transferred to succeed Mr. Lamberg and **W. J. Hughes** succeeds Mr. Hopp.

Engineering, Maintenance of Way and Signaling

G. C. Pyle has been appointed chief engineer of the Arkansas & Louisiana Missouri (formerly the Arkansas & Louisiana Midland), with headquarters at Huttig, Ark.

Purchasing and Stores

Dan W. Roberts, division store keeper of the Union Pacific at Armstrong Station, Kansas City, Kan., has been appointed general storekeeper of the Pere Marquette, with headquarters at Detroit, Mich., effective August 1.

Railroad Administration

Max Thelen, director of the Division of Liquidation Claims of the Railroad Administration, expects to resign in September to engage in the practice of law in California.

Obituary

David E. Burley, formerly general passenger and ticket agent of the Oregon Short Line, died recently at Salt Lake City, Utah.

Melvin O. Adams, president of the Boston, Revere Beach & Lynn, died August 9 at his home in Boston at the age of 70. Mr. Adams was born in Ashburnham, Mass., and graduated from Dartmouth College in 1871. He began railroad service in November, 1890, as director and general counsel of the Boston, Revere Beach & Lynn and the following year was elected president, which position he held continuously until his death.

William H. White, president of the Richmond, Fredericksburg & Potomac, died on August 5 at Richmond, Va., at the age of 73. Mr. White was born at Deep Creek, Norfolk County, Va., and was educated in private schools and the Virginia Military Institute. He studied law at the University of Virginia from 1865 to 1867. After engaging in law practice for some years, in 1907 he was elected president of the road mentioned above.

Isham Randolph, at one time chief engineer of the Chicago & Western Indiana, died at his home in Chicago on August 2, at the age of 72 years. Mr. Randolph's first railway work was with the Winchester & Strasburg as an axman. He entered the service of the Baltimore & Ohio in 1872, serving in the employ of this road until 1880, when he was appointed chief engineer of the Chicago & Western Indiana. In 1888 he established himself in Chicago as a civil engineer in general practice. On June 7, 1893, he was appointed chief engineer of the Sanitary District of Chicago, in which capacity he directed the building of the Chicago drainage canal. He occupied this position until 1907, when he resigned, continuing his connection with this project, however, as consulting engineer. From 1905 to 1906 he was a member of the international board of consulting engineers of the Panama Canal Commission.



Photo from Keystone View Co., N. Y.

A New German Locomotive

EDITORIAL
Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Very Good—But Not Good Enough!

THE EFFORTS BEING MADE by the managements of the railways to reduce congestion and increase the amount of freight moved are bearing fruit. As was shown by detailed figures given by the *Railway Age* last week, the accumulations of cars at various points are steadily diminishing while the amount of freight handled is steadily increasing. The campaign to increase the average miles per car per day is resulting in numerous roads approaching or surpassing their past high records.

While, however, marked progress is being made, it is only sensible for railway executives and operating officers to recognize the fact that the progress being made is not as rapid as the welfare of the railways and public demands. In spite of the improvement in operation which has been made the number of cars being loaded and the number of tons being hauled are still less than they were at this season in 1917 and 1918. Freight demanding movement in the fall and early winter of each year almost always largely exceeds the amount which demands movement during the summer.

Car shortage in July and August almost invariably foreshadows a very much larger car shortage in October and November. In 1917 and 1918, when the movement of traffic during the summer was so vast, the railways in the fall and early winter proved entirely unequal to the demands. The amount of freight now actually in existence and awaiting movement on the farms, and in the storage yards and warehouses of manufacturers and other producers, probably is larger than ever before at this time of year. If there is added to this vast existing accumulation the normal increase of freight next fall the demands upon the railways will be unbearable unless they increase the efficiency of their operations beyond the standards attained in 1917 and 1918.

In order to increase operating efficiency to the point that conditions do demand, and will continue to demand, more speed must be made in repairing cars and putting locomotives in good condition. The statistics regarding the bad order car situation are not improving. Freight cars were allowed to get in such bad shape under government control that, in spite of all the efforts being made to expedite repairs, the number of cars needing repairs tends to increase.

Still greater efforts must be made to secure the re-location of equipment. It is still true that a large majority of the cars on each railway are foreign cars, and human nature is such that few railroad managements will make as great efforts to repair other companies' cars as their own.

Perhaps the most important reason why greater efforts to re-locate equipment are needed, is that it is still true that many railways have upon their lines many more cars than they own, while others have upon their lines many less cars than they own. Now, if a railway has been well managed and developed along sound lines, the number of cars it has provided for itself usually roughly approximates the number it can handle efficiently with its own locomotives, tracks and other facilities. Therefore, the usual result of some railways having on their lines a great many more cars than they own is that they become so congested that they cannot move cars with maximum efficiency, while the railways to which the excess cars in their possession belong are rendered short of cars and thereby disabled from moving all the traffic they are capable of moving. Consequently, the effect of faulty location of cars is to reduce the efficiency of operation of practically all the railroads of the country.

Cars usually get upon the tracks of a particular railroad because they are consigned to it under load. Unless the movement of traffic is controlled there is a natural tendency of freight cars to accumulate in excessive numbers upon certain roads and in certain large terminals. The only way to prevent this congestion from chronically developing when a traffic is moving which taxes the capacity of the railways, is for some means to be adopted to keep out of these terminals and off these particular railroads a greater number of cars than experience repeatedly has shown they can efficiently handle.

The simplest and most effective way to deal with the problem would be for the managements of the particular railroads on which accumulations and congestions constantly tend to develop, to refuse to accept more carloads of freight than experience has shown they can efficiently handle. There are few railroad managements that have shown the moral courage to refuse temporarily to accept more business, even when they have known from experience that for them to accept business beyond a certain point would cause accumulations and congestions on their lines, and thereby not only slow down the movement of business on their own lines, but also reduce the amount of business that could be handled by the railroads as a whole.

In the interest of the public, in the interest of the railroads as a whole, and in the interest of individual railroads there is a crying need at the present time for the display by railroad managements of the moral courage to refuse to accept traffic which they know, or ought to know, they cannot efficiently handle. Railroad managements dislike to refuse business because they fear it will impair their reputations in the eyes of shippers. Some of the most important railroads in the country within recent months and years have injured their reputations far more by accepting business they could not handle, and thereby acquiring a reputation for inefficiency in operation, than they could possibly have hurt them by frankly and courageously putting out embargoes when they had upon their lines all the business they could satisfactorily move.

The railways and the country are going through a period of transportation stress now, and only a very great increase in operating efficiency will prevent a still more acute crisis next fall. When that time comes, while the railways will probably be unable to show that they are succeeding in moving all the business offered to them, they must, in order to satisfy public sentiment, be able to give the public facts which will conclusively show that at least they are moving more business than they ever did before. We have no doubt that in spite of the present unsatisfactory condition of tracks and equipment the railways can move more freight than they

ever did before, but in order to do so, they must increase their efficiency more than they are now increasing it.

The needed increase in efficiency can be obtained only, first, by the individual operating organizations doing their utmost, and, second, by the railways co-operating as closely as they can together, each largely subordinating its own supposed immediate interests to the long-run interest of all.

Plain Questions About Plain Engines

Operating men are accomplishing today what would have been deemed impossible 20 years ago. They will be doing many things 20 years hence that would not be attempted today. Broadly speaking, it is the increased trainload that has made this possible and on which we are counting for the future. What has made it possible to haul the increased tonnage that developed on your railroad during the last 20 years? What is going to make it possible to cope with the tonnage problems that will develop within another 20 years? If the locomotive has been the biggest single factor in the past, will it not continue to be the only firm foundation upon which you can expect to build a better operating structure with which to meet the future? If your predecessors had been satisfied with the plain engines and had adhered to the types of 20 years ago, would your railroad be a solvent corporation today, would it be serving the public as it has a right to be served? If you fail to take advantage of *all* the refinements that are calculated to increase locomotive efficiency and capacity and saddle your railroad with plain engines in this enlightened period, will the public forgive you 20 years from now?

Sweeping in Front of Our Own Doors

One of the most difficult problems confronting operating officers at the present time is that of relocating equipment in accordance with traffic demands and at the same time getting it on the rails of the owning road. With the abolition early in the period of federal control of per diem and the removal of all restraint on the movement of cars, they became more widely scattered than ever before. This has given rise to a number of problems, not the least of which are those of the placing of equipment suitable for the traffic of the originating roads and the repair of the equipment on foreign lines. The Commission on Car Service is giving very close attention to this subject and among the suggestions which it made some time ago was one that each road study its own car location statement to ascertain the number of foreign cars on its lines and then to take the necessary steps to return them to their owners. If the officers in charge of each railway and of each individual division of each road will see that the equipment under their respective local jurisdictions is handled in accordance with the suggestions and instructions of the Commission on Car Service, the problem will be on a fair way to solution.

The First Fuel Commandment: Organization

There is no royal road to fuel economy and it will require an organized effort to reduce the fuel bill on any railroad. If the railroads hope to make any appreciable reduction in the current fuel consumption they must support an organization for this purpose; the first commandment with respect to saving fuel as with the successful conduct of every other activity of the railroad is to *organize*. If fuel economy were essential to getting trains over the road on time, the problem might properly be assigned to the operating department, or if it were requisite to developing the maximum capacity of a locomotive, the motive power department might be held wholly responsible. But fuel use is sensitive to almost every activity of the railroad and there is not a railroad in the country that can expect to derive maximum fuel efficiency from the facilities at hand without an organization that can provide thorough instruction for all employees directly responsible for fuel use and supervision sufficient to insure general adherence to good practice. The particular department with which this organization is identified is not a vital consideration nor is it an independent fuel department essential to fuel efficiency although such a department might prove very desirable. The important thing is that this organization have the breadth and capacity to co-relate the activities of other departments in a manner calculated to enlist their co-operation in everything about the operation of the railroad that makes for fuel economy.

Cutting Down the H. C. L.

Intelligent citizens generally are greatly disturbed over the continued high cost of living. Railroad employees have strenuously complained about it and have insisted upon a heavy wage increase to offset it so far as they are concerned; many of them are not unmindful of the fact, however, that part of this burden has been passed on to others who are much less able to carry it. Railway employees, if they will only realize it, can do more to force down the cost of living than any other body of men in this country. Primarily costs are dependent upon the relation between supply and demand. The supply of materials is today controlled almost entirely by the limited transportation facilities. Finished materials cannot get to the market; industrial plants are discontinuing or curtailing production because of the lack of raw materials, or the piling up of finished products which cannot be shipped; vast sums of money are tied up because of slow transportation; many men are employed at a heavy expense to follow up and expedite the movement of cars in transit. Railroad facilities cannot be increased rapidly enough to care for the enormous traffic. Railway officers and employes, however, by painstaking and intelligent effort and enthusiastic teamwork, can make much better use of the present facilities. Relief—and about the only relief that can be afforded to the people and industries within the next six months—will be measured almost exactly in the proportion that the human element on the railroads speeds up and makes better use of the present transportation machine. It is within the power of railroad employees very appreciably to reduce the high cost of living.

Engine Terminal Supervision

Abundant supervision of engine terminal forces is essential to the full utilization of terminal facilities, be these ample or meagre. What can the most painstaking preliminary inspection of locomotives arriving at terminals amount to if there is not the supervision to insure the execution of the work reported? What will be the actual return on an investment in a modern terminal if the supervision provided is not of a character to compel the full utilization of every improved feature? Terminal work does not naturally attract the highest class of mechanics and it is often necessary to utilize men who require more instruction and personal guidance than employees in other shops. Unexpected difficulties and annoyances are common to terminal operation and there must invariably be some one on the job who has the authority and the capacity to meet any emergency. It is a grave mistake

to have too few foremen at the engine terminal. Foremen for terminal work should be selected so far as possible from men who have been trained in engine house work and are accustomed to the unusual and frequently trying conditions imposed. The men in charge of terminal operation must be of the highest caliber, they must be clothed with ample authority and they should be dignified with a title and recompensed with a salary that indicates a full appreciation of the great responsibility and the serious character of the task.

What Form of A Labor Policy Have You?

The railroads undoubtedly must adopt some far more definite and constructive policy in regard to maintenance of way labor than they are now following, if they are to make substantial progress along the line of increasing the output per man and reducing labor turnover. Increases in wages actually have been resulting in decreased efficiency, making it evident that money is not such an important influence on efficiency as it was two or three years ago. Another point much commented upon is the lack of ambition in the average laborer of today. With these two incentives to better work gone, or so nearly gone as to be almost worthless, a new incentive will have to be developed. To be successful, this will require reversal of attitude on the part of a majority of officers. In spite of all that has passed, the old sentiment expressed in the sentences, "Treat 'em good and give them a real place to live in? What's the use? They don't stay long enough," still remains and is apparently as much alive as ever. If progress is to be made from now on, the maintenance laborer must be approached on his weak side and at present that consists of a strong desire to live better, eat better and play more than he ever did before. Of course, a laborer, either good or indifferent, does not stay and will not stay in one place if he can get more money plus better living conditions elsewhere. Remove the latter disadvantage of railroad employment, consider each man a fixture, give him opportunity for amusement, and the larger wage he can get elsewhere will largely lose its attraction, and a feeling of permanency will be created in the man himself. The situation should be studied as a man-to-man proposition and it should be remembered that the Golden Rule is not an empty phrase.

The Roads Are Taking the Initiative

As stated specifically by Judge Barton, the recent decision of the Railway Wage Board included no provision for the engineering employees of the railroads. Consequently, a differential has been set up to the disadvantage of the technical men, thereby creating a situation which was the subject of considerable discussion during federal control. Certain well known characteristics of government management made that period peculiarly propitious for the presentation of claims for special consideration by the various classes of railway employees and for the first time in railroad history the engineers were represented and received appreciable concessions. The question then raised concerned the opportunity for continuing organized efforts in behalf of the engineer after the return to private management. The answer has come quickly and in a form possibly unexpected. Many of the railroads are now themselves taking the initiative by arranging for adjustments of engineers' salaries which bid fair to eliminate the present disadvantageous differential. At this time it is impossible to say how general this tendency is—surely, it is to be hoped that those roads which have not undertaken such corrective measures will follow the lead of the others. While the above remarks relate particularly to the engineer, the necessity for adjustment of compensation applies with equal force to all classes not covered by the wage award, including the officers—in other words, to those who are employed for something beside the performance of a designated task, namely, the exercise of initiative and executive ability. In the employment of brains no road can afford to pay less than the market price. No class of men on the railroads deserve better of the managements than the subordinate officers; and every consideration of fairness and efficiency demands that the managements shall promptly and voluntarily take action which will at all times make the compensation of the subordinate officers relatively as great as that of the employees whose work they supervise.

Relieving Telegraph Wires of Peak Load

The constantly expanding business of the railroad telegraph departments has become a matter of real concern to more than one road. During federal control message traffic increased tremendously because of the centralization of authority at Washington and the regional headquarters. The Railroad Administration, various boards and committees established orders and practices which made it necessary to use the telegraph to a greater extent than ever before. Also the general expansion of business throughout the entire country required the more general use of the wires for commercial purposes. Since the return of the roads to private management message traffic has in general continued to increase and under present labor conditions it is a difficult matter to get experienced operators and other employees to handle the work as wisely and economically as is desirable. This congestion can be relieved to a considerable extent if all messages are prepared promptly and sent to the telegraph office as early in the day as possible. Another measure which will also relieve congestion, is that of using traingram service more generally. Many messages are prepared during the day and particularly in the late afternoon, which can be sent satisfactorily by traingram and delivered at destination either on the same day or early the following morning. However, to make traingram service a success its control should be centralized and all the departments through which such business is handled must co-operate to the extent that prompt and efficient service will result. Under any system adequate supervision is absolutely necessary, otherwise this method of communication will soon be discarded.

Organization and Efficiency

A duplication of work or of the use of materials by different departments in any organization tends towards decreased efficiency and monetary loss. In an organization as diversified as a railway it is evident that certain departments must have work more or less in common in which materials of a similar nature are used, as a consequence of which particular kinds of materials specified by each department are carried in stock, the variety of which could be cut down greatly by the co-ordination of materials under one responsible head. As an example of the duplication now existing on many roads electrical work is carried on under the divided jurisdictions of the mechanical, signal and telegraph departments and on some roads also under the chief engineer who may have an electrical engineer on his staff to handle station lighting standards and similar work. Much of this work is common to all of these departments and the men, whether on electrical, signal or telegraph pay rolls are passing each other frequently in the same territory to do work which any one of them might well do as he goes along. Again, each department specifies certain materials, such as wire, and each may

be using wire of a different manufacture, which means that money is tied up in more material in the store houses than is necessary or desirable. In an effort to improve this condition, some roads have made one man responsible for all work of a similar kind, eliminating duplication of effort and of materials. In some cases the signal engineer has been placed in charge of all signal and telegraph work, in others the superintendent of telegraph has handled the combined duties, while in still other instances one responsible head has jurisdiction over the signal telegraph and electrical work. The kind of organization best adapted to a road is dependent on the conditions existing on that system, but the results obtained with a combined organization have been good.

Spring Shop Needs

It is an undisputed fact that the departments for repairing and making new springs are very much underequipped in some railway shops; are poorly arranged for production in other shops; and in still others, the heat treatment is so carelessly given that satisfactory results cannot be obtained. Any of the above defects, either singly or in combination, will seriously affect the output not only of the spring shop as a unit but of the repair shop as a whole. Locomotive trailer springs, driving springs, pony truck springs and tender truck springs are essential parts of locomotive equipment. The total number of springs repaired annually is exceedingly large and if careful planning or the rearrangement of machines will reduce a little of the time required to repair each spring, the total saving will be proportionately large. In order to reduce labor charges to a minimum, machinery must be used wherever possible. The operations of shearing the plates, nibbing, cambering, hardening, drawing, banding and testing may all be performed with little hand physical work. Properly arranged slides from one machine to the next will reduce the labor of lifting springs. Quantity of output is desired but not at the expense of quality. Only too often, a locomotive repaired and ready for the road has to be kept out of service an additional day on account of trailer spring defects, such as broken sheaves, too light bands, or springs that will not stand up. Even heating and cooling are absolutely essential in hardening and particular care must be taken when drawing the temper. Pre-determined, correct temperatures can be maintained by using pyrometers. Questions of the proper solution for drawing, correct temperatures, the length of time required to heat plates of various sizes, and methods of testing, have been worked out and important results can be obtained by incorporating this approved practice in railway spring shops.

It Can Be Done

One of the goals which the Association of Railway Executives set before the roads in an announcement made on July 16, was to attain an average movement of 30 miles per car per day. That this would be no mean accomplishment is evident from the fact that the average movement in 1919 was 23.1 miles, while the highest ever reached for any year was 26.9 miles in 1916. The relief which the reaching of this goal would afford is best indicated by the statement that it would be equivalent to adding almost 700,000 cars to those in service last year. It is too early to ascertain the effect of the announcement of the executives, but the possibility of attaining this goal is indicated by figures which are now available from a number of roads which had already undertaken similar efforts individually. In studying these statistics it should be borne in mind that the goal set by the Association of Railway Executives is necessarily an average for the entire country and that the improvement on an individual road can only be measured by comparison with earlier performances. Thus, because of local conditions one road with an average of 35 miles per car per day may be doing poorer relatively than another road which, with other conditions has an average of only 20 miles. Bearing this in mind it is gratifying to note that one large western road increased from 23.16 miles in June, 1919, to 32.03 miles in June of this year, or 26 per cent, while another large western road increased from 27 miles in July, 1919, to 32 miles in July, 1920, or 18 per cent. Similarly encouraging records are being made by a number of other roads. However, if the goal which the executives have set is to be reached it is necessary for *every* road to make a corresponding increase. That it can be done by every road is indicated by the records referred to. That it must be done *by every road* is equally evident. No management can afford to convict itself of inefficiency by admitting its inability to improve its operation in this respect.

Conservatism and Electrification

"Is America to be recognized as more conservative than foreign nations in its reconsideration of problems of electrification of steam railroads after the war?" This is the sentence used by the Electric Railway Journal to introduce an editorial in its issue of August 14 entitled "Why Cannot Railways Here as Well as Abroad Electrify?" The tenor of its argument is that railways in Great Britain and in Switzerland are now electrifying, so why should we postpone our own electrifications as "an ultimate goal to be coveted for some future and better day."

These comparisons are unwarranted. With the exception of 18 route miles of mineral line between Shildon and Newport on the London & North Eastern, all the electrified railways in England are of the suburban type operated on the multiple unit system and are not for trunk line freight traffic which predominates in the United States. Further than that the London & South Western has recently decided to postpone an important electrification project because of the abnormal increase in costs of material, the refusal of manufacturers to give "firm" quotations or to guarantee deliveries within a reasonable time, and the impossibility of raising fresh capital while the present uncertainty as to the future position of the British railways continues.

As to Switzerland, the difficulty there is fuel. Since the signing of the armistice the Swiss railways have found it impossible to get the necessary supplies of coal which formerly came from Germany. It might almost be said that the Swiss prefer to use their extensive water power to run their railroads rather than to burn up their wonderful national forests.

We agree that the idea of electrification is "to be commended"—that is, where the conditions are properly favorable—but that is a thing for each individual railroad to decide. It cannot be decided on the basis of what is being done under entirely different conditions of operation abroad. Further than that, we must also take issue with the idea that the American railway men may be "conservative" in not giving more consideration to electrification. Consider, for instance, how difficult it is to raise capital at present, or how much it is needed for new cars, new locomotives, new yards, sidings, etc. Remember also the great progress that has been made in steam locomotive practice through refinements in design and the adoption of economy producing devices. There is no reason now for believing that American railway men will be more conservative than they have been in the past. We feel confident that they will adopt electrification for certain divisions as soon as it may become desirable for special or favorable governing conditions.

Modernizing Engine Houses by Reconstruction

The Boston & Maine Rebuilds Old Structures and Installs Monitor Roofs to Increase Efficiency

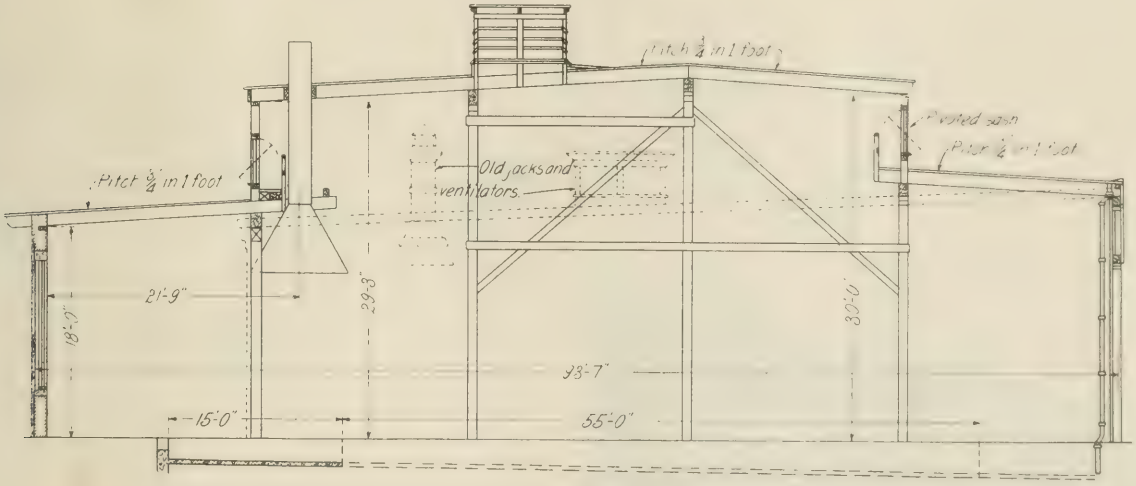
As a result of the shortage of money, material and labor which was available for railway use during the participation of the United States in the World War, the Boston & Maine has developed an interesting method of remodeling existing engine terminals. This consists in general of replacing old shed-type roofs by modern monitor roofs, giving a greatly increased clearance and resulting in better lighting, ventilation and working conditions. This has been accompanied in some instances by the lengthening of some of the stalls and pits and by some rearrangement of the enginehouse entrances, etc., while the entire structure has been reinforced or parts replaced wherever such work was needed.

To date this work has been completed on four enginehouses located at East Cambridge, Prison Point and East Somerville, Mass., and at Nashua, N. H., the first two being 50-stall houses and the last two 33 and 15-stall houses, respectively. All these structures are of the radial type having brick or stone foundations, supporting brick walls and a timber superstructure. Through natural causes resulting from their long use they had deteriorated greatly and in addition the increased size of the locomotives and the increase in engine movements have rendered them somewhat inadequate. This made it necessary that either new structures be built or that the old enginehouses be remodeled to fit the changed conditions. In order to secure a maximum amount of service for a minimum expenditure it was decided to remodel such houses as required immediate attention and a program was laid out on that basis.

The work on the East Cambridge house was the most extensive and embodied practically all of the changes which were made throughout the remodeling program. This, as stated, was a 50-stall house covering a full circle and having three entrance stalls, the entire unit being served by an 85-ft. turntable. All stalls were 75 ft. deep, the inner radius of the house being 95 ft. 6 in., and the angle between stalls 7 deg. 12 min. The distance between columns on the inner or turntable end of the stalls was 11 ft. 10 in. and between the pilasters in the rear wall, 21 ft. 5 in. Each stall was divided into four bays of about 18 ft. 6 in. each. In addition to the installation of a monitor roof at this house the program called for the extension of 12 stalls to give an increased length of one bay, or approximately 18 ft. 7 in., making a total depth of stall of 93 ft. 7 in.

The reconstruction work was carried out in sections of from two to five stalls, the number depending upon how many could be released from service conveniently at one time. All of the old roofing, rafters, purlins, smokejacks, ventilators and interior posts, etc., were removed and the old brick walls cut down to a line about 14 ft. above the floor. In the sections to be extended the old walls were completely removed down to the foundation supporting them.

The extension, as stated, was made one bay deep and consisted of a brick wall supported on concrete foundations and carrying a timber superstructure in the form of a shed roof. Outside of the construction of the addition which will be described later, the same methods were used throughout the remodeling program wherever the stall length remained unchanged. The old pier foundations were overhauled, the top being removed in most cases after which they were again built up and capped with a 1-in. cast-iron plate, 12 in. square, and drilled centrally to receive a 1-in. steel dowel.



An Additional Bay and Increased Head Room Improved the Working Conditions

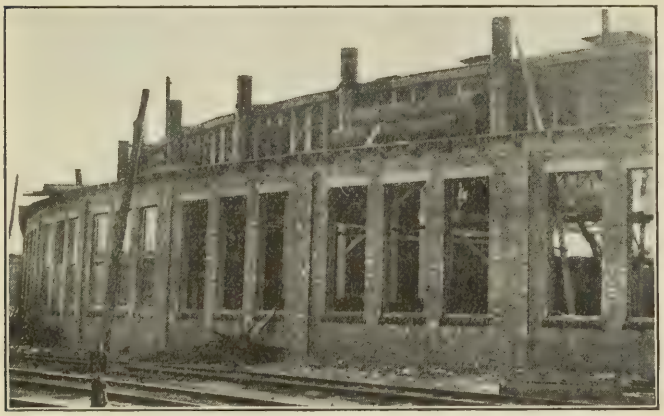
As the back wall of the monitor was to be the back wall of the engine house proper in all but the addition, it was built up to a height of 29 ft. 3 in. measured from the floor, while new pilasters were constructed the full height. Where the old foundations were not wide enough to carry the full depth of the pilasters which were 2 ft. 4 in. wide and 8 in. deep, they were corbelled out. All new work was thoroughly bonded to the old walls. Practically all of the interior posts were replaced by new 10-in. by 10-in. hard pine timbers while the majority of the old brick and wood columns between the doors in the inner wall were replaced by steel.

The monitor section had a depth of three bays or approximately 55 ft. 9 in. with 29-ft. 3-in. clearance at the back wall and 30 ft. at the front. The 10-in. by 10-in. interior posts carried 10-in. by 14-in. and 10-in. by 16-in.

purlins and 4-in. by 12-in. rafters which supported the roofing. The roofing was built up of 2-in. planking covered with a standard tar and gravel roofing. Drainage was in two directions, the hip or peak of the roof being off center or on the third toward the doors. A ¾-in. to 1-ft. pitch was used throughout in the roof construction of the monitors and the extensions.

Ventilation was secured by combination of movable sections and pivoted sash windows set in the back and end walls and in both faces of the monitors. In addition a 5-ft. by 8-ft. wooden ventilator was placed approximately over the center of each stall. The pivoted sash which was used throughout in the monitor was not mechanically operated from the floor and it was thus necessary to make some arrangement whereby they could be opened or closed without too much trouble. This led to the construction of two plank walks running around the entire house, one for each wall of the monitor. These consisted of two 2-in. by 12-in. planks resting on 4-in. by 6-in. supports which in turn were supported by hard pine members bolted to the brick work on the back wall and in the extension, by the rafters of the shed roof. This latter method was used throughout in the construction of the walk around the inner circle.

The 12-stall extension was carried on concrete foundations, which, because of their nature, are of considerable interest. The type of foundation decided upon consisted of concrete piles one of which was placed under each pilaster in the back wall, or approximately 23 ft. apart. The piles differed from the ordinary concrete piles, being 3 ft. in diameter and expanded at the bases to 4 ft. 8 in. in diameter. The piles which are known as Gow piles were poured in place, a method which necessitated the excavating of pits or wells which were carried down 40 ft. below the level of the old foundation. The concrete was then poured in sections, the forms being brought up after each section was completed. No reinforcing bars were used, the piles or piers being of mass construction. These piers



12-Stall Extension During Construction

carried heavy reinforced concrete beams 20 in. wide, 35 in. deep and 23 ft. long, upon which the walls and superstructure were carried.

The walls were of brick and were constructed similar to the remaining back walls of the enginehouse, the superstructure or roof being given the same treatment used before, while the rafters were allowed to extend through into the monitor to support the plank walk already described and, in addition, to form a partial support for the smokejacks.

In connection with this work the old 55-ft. engine pits were extended a distance of 15 ft., thus giving an over-all length of 70 ft. for the new pits. In constructing the pit additions the ends and side walls of the old pits were cut back and torn out down to the surface of the old foundations and back far enough to allow for a 2-ft. 6-in. lap of the extension.

The new work was supported on its outer ends by a concrete pile or pier similar to that used under the rear walls. In this case the base was increased to 5 ft. 6 in. in diameter and the main body of the pier, 3-ft. in diameter, was surmounted with a pedestal top poured so as to form a square bearing surface measuring 7 ft. on each side, or the full width of the pit walls and floor. The total length of the pile was 40 ft., as in the preceding case.

The pit extension, itself, consisted of two reinforced concrete walls 16 in. thick and 29 in. deep, united at the time of pouring by an 11-in. concrete floor crowned to correspond with the old floor. The upper surfaces of the walls



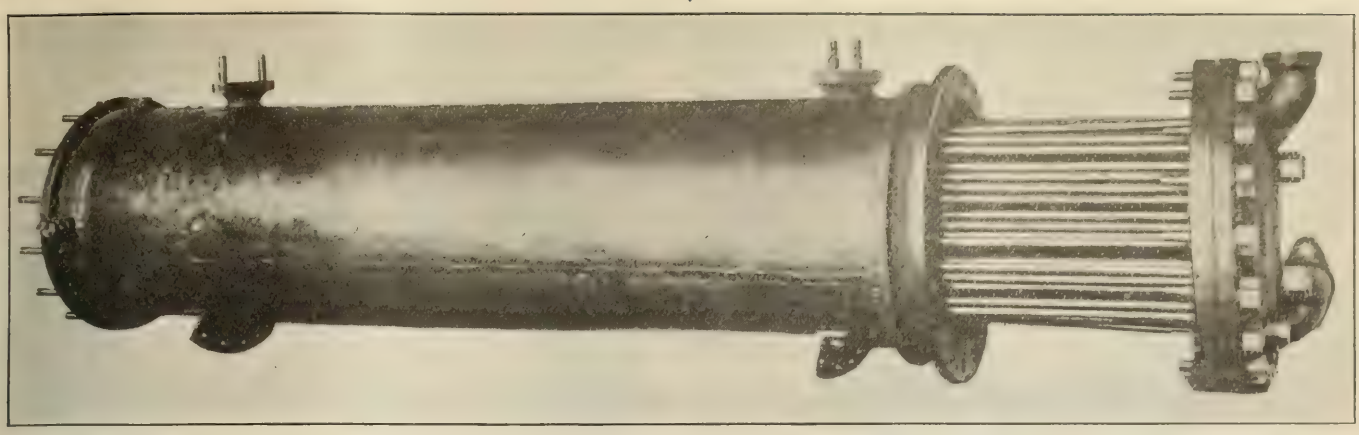
Note Old and New Brickwork on Rear Wall

were capped by 12-in. by 16-in. timbers, upon which the pit rails were carried.

The smokejacks used were designed by the Boston & Maine and were constructed entirely of wood covered with fireproof paint. Metal fastenings were eliminated wherever possible. The 3-ft. 6-in. by 8-ft. 9-in. bell was built up of ⅞-in. cypress planking, framed and braced by 2-in. by 4-in. timbers, the entire unit being bound together by the use of ⅝-in. oak plugs. The stack, with an interior diameter of 2 ft., was built up of 1⅜-in. by 3-in. by 14-ft. staves, the narrow edges being grooved centrally for its full length to receive a locking strip, which, in connection with five ¾-in. galvanized iron hoops, acted as a binder to hold the various staves in position and to prevent the leakage of smoke or gases. The only metal exposed to the action of the gases was the heads of the four supporting bolts and the cast-iron channels around the bottom.

This work was designed by and carried out under the direction of the engineering department of the Boston & Maine, A. B. Corthell, chief engineer, F. C. Shepherd, principal assistant engineer, and H. B. Fletcher, architect, with G. L. Huckins, engineer of construction, in direct charge of the work.

Railroading in 1871.—Wallace Doolittle, a Union Pacific pensioned engineer, relates the following: "I went to work for the Union Pacific early in the year of 1867 and worked in the car shops at Cheyenne over two years. In 1869 I began running as Pullman conductor between Omaha and Ogden. I was required to double the road each week. One trip I made in the winter of 1871 and 1872. We left Ogden on time and arrived in Omaha on the 28th day thereafter, having been delayed on account of snow. The railroad company had few snow fences or snow sheds at that time. At one little cut near Miser, Wyo., close to Rock River, we were detained just ten days. The company provided plenty of soda crackers and condensed milk, so no one suffered for lack of provisions."



The Knorr Locomotive Feed Water Heater

Feed Water Heating on European Locomotives

This Device Is Now Regarded as a Practical and Economic Necessity on Many European Roads.

By Robert E. Thayer
European Editor of the *Railway Age*

WITH THE PRESENT COST of coal anywhere from 200 to 1,600 per cent of what it was before the war, the railways of Europe have been forced to consider very carefully means by which locomotives can be operated with a decrease in fuel consumption. Superheating is, of course, quite universally adopted, although in England this method of saving fuel has not been developed to the same extent as on the railways in the United States. The use of feedwater heaters is one means of fuel economy which is now receiving the greatest attention particularly on the Continent. It is estimated that there are over 10,000 feedwater heaters in use on the railways of Europe. These are distributed amongst the Weir system, the Caille-Potonie system and the Knorr system, the latter having by far the greatest distribution. The Weir system is confined almost entirely to Great Britain, the Caille-Potonie to France and the Knorr to Germany, Holland and Switzerland.

The Weir System

The Weir system of feedwater heating consists of a double-acting steam feed pump which takes the water cold from the tender through the pipe *E* forcing it through the heater *A* into the boiler through the discharge pipe *G* as shown in Fig. 1. The pump is of a vertical type and is of a design largely used in marine service. The heater is shown diagrammatically in Fig. 2. It conists of a bundle of tubes of solid drawn copper expanded into tube plates *E* of rolled brass. These tube plates are fixed to the ends of a mild steel shell by collar bolts which also carries the end covers of the heater. The covers contain dividing ribs which cause the feed water to flow from end to end of the heater, making four passes. The exhaust steam from the clyinders enters the heater at *B* and from the pump at *C*. Thus it will be seen that the exhaust steam surrounds the tubes and with the feed pump between the heater and the tank the heater is subjected to boiler pressure.

The Caille-Potonie System

The Caille-Potonie system is of the open type, the water flowing from the tank to the feed water heater by gravity, a hot water pump being used to take the heated water from the heater and pump it into the boiler. A diagrammatic outline of a recent installation is shown in Fig. 3. The water from the tender passes through the pipe *M* to the "Y" fitting *P* which delivers the water to the top and bottom of the heater. The heated water is taken off at *J* passing through the pipe *Q* to the pump *S*. From there it passes through the pipe *T* to a check valve and into the boiler.

The exhaust steam for heating the feed water is taken from the exhaust nozzle *A* passing through the pipe *C* to the heater. The exhaust from the feed pump also passes to the heater through pipe *X*. The amount of exhaust steam to be taken from the exhaust pipe is regulated by a deflector valve which is set to deflect the proper amount of steam to the heater. The heater itself is kept at atmospheric pressure, a pipe *R* extending up from the top of the heater to above the water line in the tender. This not only provides a means of overflow for the heater but also permits the air and gas formed in heating the water to escape. A spring regulator valve is shown at *D*. This is placed in the pipe *C* between the heater and the exhaust pipes and is so regulated that when the pressure of the exhaust steam in pipe *C* exceeds a predetermined amount the supply of exhaust steam to the heater is reduced. Its purpose is to prevent the feed water in the heater being raised above a temperature which the pump can handle. The pump, however, is designed to handle water with a temperature of 209 deg. F. without a loss in its efficiency. As the temperature in the feed water heater increases the pressure of the exhaust steam in pipe *C* increases and overcomes the spring of the regulator valve and thus reduces the supply of the exhaust steam to the heater. A pyrometer is placed in the heater discharge pipe, the wires of which pass through the conduit 3 to a gage in the cab. A connection is made in the delivery pipe *T* and piped through *I* back to the cab to a gage which indicates the pressure of the feed water in the delivery pipe. Another connection is made in the delivery pipe for sprinkling the coal in the tender, the water passing up pipe *6* back to a tap in the cab.

The heater itself is shown in Fig. 4. The water surrounds the tubes and the exhaust steam passes through them. Entering at *A*, it makes three passes through the heater, the

condensed water passing out through the bottom at *B* and on to the track. The heater is provided with a settling basin which catches the precipitation of any scale forming matter as the water is heated. This basin has a cleaning hole as indicated in the drawing by means of which it can be cleaned every 400 or 500 miles depending upon the character of the water handled. The hot water steam pump in this system is located on a level with the feed water heater in order to reduce the lift to a minimum.

The Knorr System

The Knorr system operates with the heater under pressure, the pump being placed between the heater and the tank. Fig. 5 shows the general arrangement of this system.

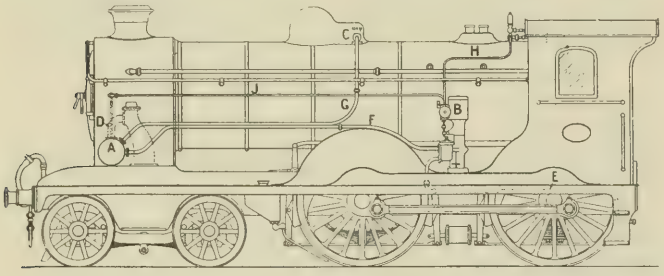


Fig. 1—Arrangement of Weir System of Feedwater Heating

Water from the tender passes to the pump *M* and from there to the heater *A*, being delivered from there to the boiler through pipe *F*. The exhaust steam is taken from the exhaust passages of the cylinder castings at *G* passing through the pipe *J* to the heater. Exhaust steam from the air pump is controlled, as indicated, from the cab. An illustration of the pump is shown in Fig. 6.

This diagram shows a flat feed water heater which is one of the earlier types made but the present standard heater is

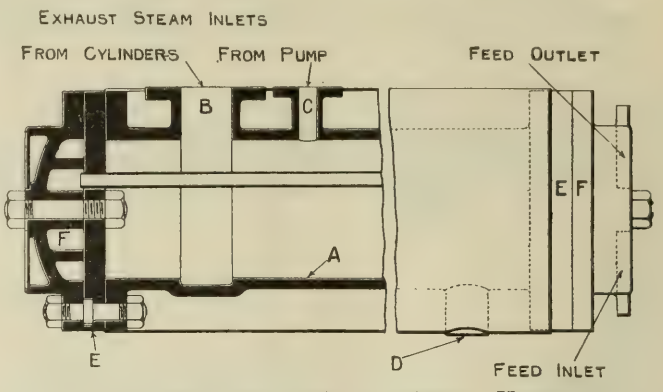


Fig. 2—Weir Locomotive Feedwater Heater

circular in shape as shown in Fig. 7. Also the condensate is shown as being discharged on to the track. More recent installations are arranged for the condensate and steam passing through the heater to discharge into the ashpan. This diagram also shows exhaust steam being taken from the exhaust passages in each cylinder but there are installations which take the exhaust steam directly from the exhaust pipe.

The heater as shown in Fig. 7 consists of a bundle of U-pipes which are held in only one tube plate. The water passes through these tubes making four passes, and the

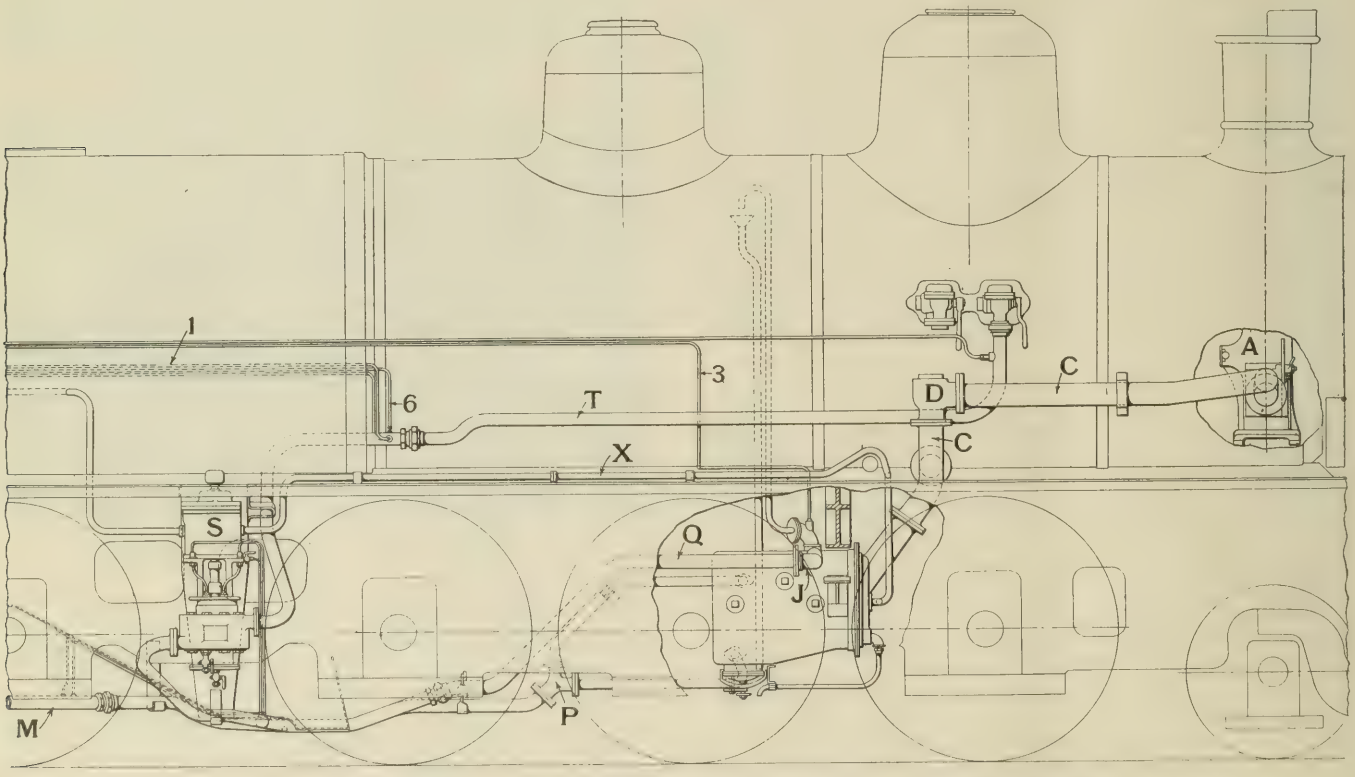


Fig. 3—Arrangement of the Caille-Pontonie System of Feed Water Heating

passes into the heater through the pipe *L* and the exhaust steam from the feed water pump passes to the heater through the pipe *K*. The condensate from the heater passes to the track through the pipe *R*. An oil pump for lubricating the feed water pump is shown at *Q* and *O* is a counter registering the number of the strokes of the feed pump. At *P* is located the steam valve for operating the feed pump. This exhaust steam surrounds them. The water enters the heater at *A* and is discharged at *B*. The exhaust steam enters at *CC* and the condensate out at *D*. The construction of this heater is such that all of the tubes can be removed intact with tube plate when it is desired. All of the tubes are bent to the same radius and are interchangeable. Any individual tube can be removed and replaced although it will be short-

ened by the length of its former bearing in the tube plate. With bad water difficulty is experienced in keeping these tubes clean on account of the U-shaped ends.

Development in England

In England but little has been done recently, although there is a tendency to seriously consider the application of feed water heaters to locomotives on account of the increase in the cost of fuel. The cost of locomotive coal has increased about 100 and 120 per cent. Almost every road has at some time or other done some experimenting—usually

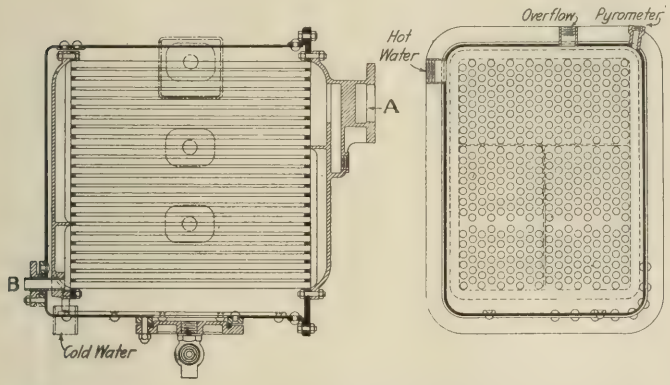


Fig. 4—Caille-Pontonie Locomotive Feed Water Heater

before the war. However, at the present time but few locomotives are equipped. Out of twelve railroads, five have none installed, one road has one, two have two, one has five, one has fifty-three and two have some, but the number was not stated.

Fig. 8 shows a 4-4-2 type side tank English passenger engine fitted with a feed water heater. Exhaust steam from the cylinders is admitted to the water tanks through the pipe *A*, the flow of which is controlled by a butterfly valve

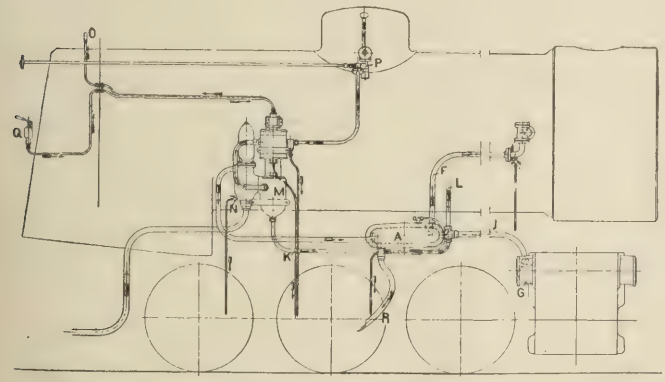


Fig. 5—Arrangement of Knorr System of Feed Water Heating

located at *B* and operated from the footplate. The temperature of the water is thereby rapidly raised, and as the hottest stratum lies at the top it is drawn off through the tubes *C* adjusted to the water level by a copper float, which is hinged at *D* thus allowing water to be taken at all levels by means of the "Weir" feed pump *E* and delivered to the boiler through an ordinary check valve *F* at an approximate temperature of 180 deg. F. This pump can be set to discharge into the boiler just as much water as is being evaporated and is capable of going very slowly without actually stopping.

The pump is driven by steam and the exhaust is utilized to heat the water in the tanks through pipe *G*. A supplementary heating ejector *H* is also fitted and takes steam from the boiler by means of the steam valve *I*. This is used to heat the water when the engine is being prepared for its day's work, and after it has generated sufficient steam. It is also used in turning the surplus steam into the tanks when the fixed boiler pressure is exceeded, and steam is being

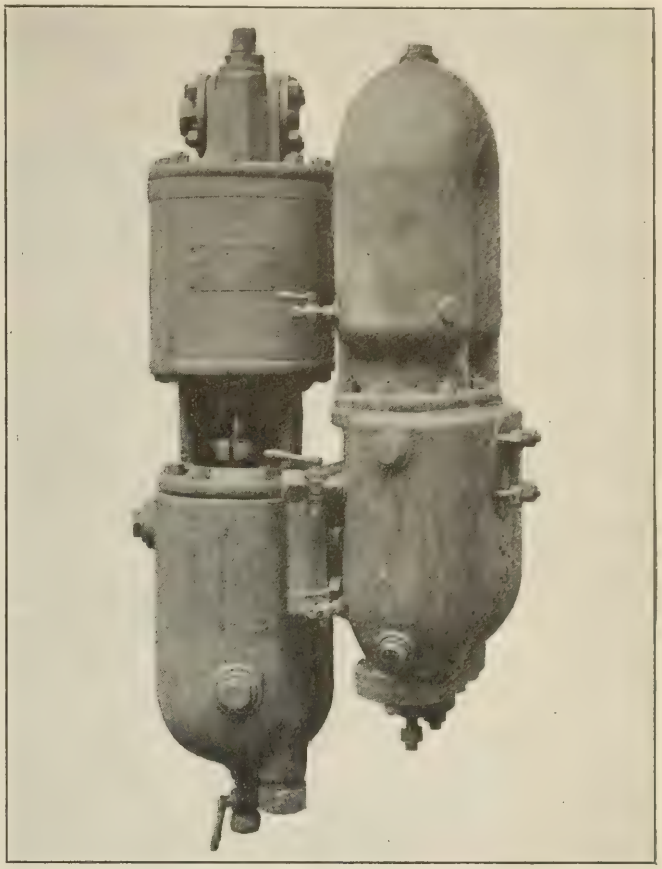


Fig. 6—Knorr Locomotive Feed Water Pump

blown off at the safety valves. This railroad has 42 engines fitted in this manner.

A similar arrangement of feed water heating is used on ten 4-4-2 tank engines, but in this case the delivery from the feed pump is taken to the check valve *F* fitted on a feed dome on the top of boiler (Fig. 9). The water at a tem-

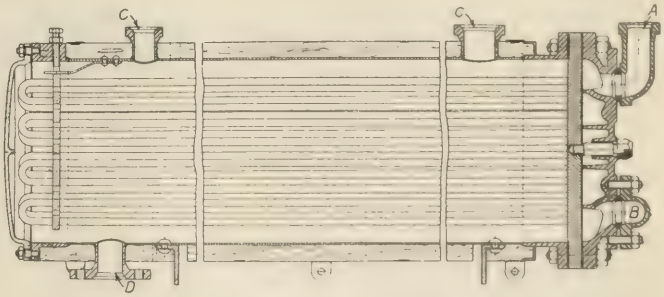


Fig. 7—Knorr Locomotive Feed Water Heater

perature of approximately 180 deg. *F* enters a closed drum at the center of the feed dome and clear of the delivery pipes *LL*, these being placed at the sides. As the drum fills the water overflows into the delivery pipes *LL* and passes into the boiler. The drum is made deep so that the sediment may be deposited at a sufficient depth from the mouth of the delivery pipes, as it has been found in the shallow domes that, owing to the velocity of delivery, a great bulk of the sediment is carried over into the boiler. A shield plate *M* is fitted over the steam pipe and as the water falls

onto it from the pipes *LL* it divides into streams which allows it to attain very quickly a temperature equal to that in the boiler. This arrangement has given entire satisfaction.

Feed Water Heating in France

The principal source of information regarding the development of locomotive feed water heating on French railroads was obtained from the manufacturers of the Caille-Potonie System. There are 146 of this type of heater in use, with 272 on order in France itself. There are 20 in Tunis, 8 in Belgium, 50 in Roumania and 3 in Turkey. Recent tests made by a prominent French road with the apparatus shown in Figs. 3 and 4 have shown a fuel saving of 17.8 per cent in fuel consumption per 100 ton-kilometers over the same locomotive using the injector and there was an increase of 22.3 per cent in evaporation. The cost of locomotive coal in France has risen over 700 per cent and there has been a manifest interest in feed water heating as shown by the large number of feed water heaters on order.

Use of Feed Water Heaters in Belgium

The following abstract of a letter from Belgium indicates clearly the situation there:

Before the war we had decided to experiment with various systems of feed water heaters. Our object was not so much to find out what economy could be effected by the use of preheaters to a locomotive—the importance of which economy is incontestable—as to compare the systems in question from the point of view of efficacy, smooth working and upkeep. The war prevented us going on with the matter.

Among the locomotives supplied to us by the Germans in virtue of the terms of the armistice, a fairly large number of them are fitted up with the Knorr heaters. The present condition of the service has not permitted us to try experiments with a view to determining the economies resulting from its use. At the beginning some difficulties were met with on account of the inexperience of the staff, but these have now disappeared.

With the view to making comparisons we have also decided to fit feed water heaters to some of the locomotives which are at present in the course of construction. Ten of the Consolidation locomotives which are ordered from England will be fitted with the "Weir" heater and five of the Consolidated locomotives ordered from America will be fitted with the "Worthington" heater.

Feed Water Heaters in Holland

The railways of Holland have also a "coal problem." The price of locomotive coal has increased about 1,200 per cent from since before the war, and locomotive feed water heating has become very popular. This country uses the Knorr system entirely. There are about 300 locomotives out of a total of about 1,000, that are equipped and the present program calls for the application of heaters to all of the principal locomotives. This includes locomotives weighing from below 50 tons to the heaviest locomotive of 102 tons. The railways in Holland have made no conclusive tests with the feed water heater but it is claimed that a feed temperature of from 190 to 210 deg. F. is obtained.

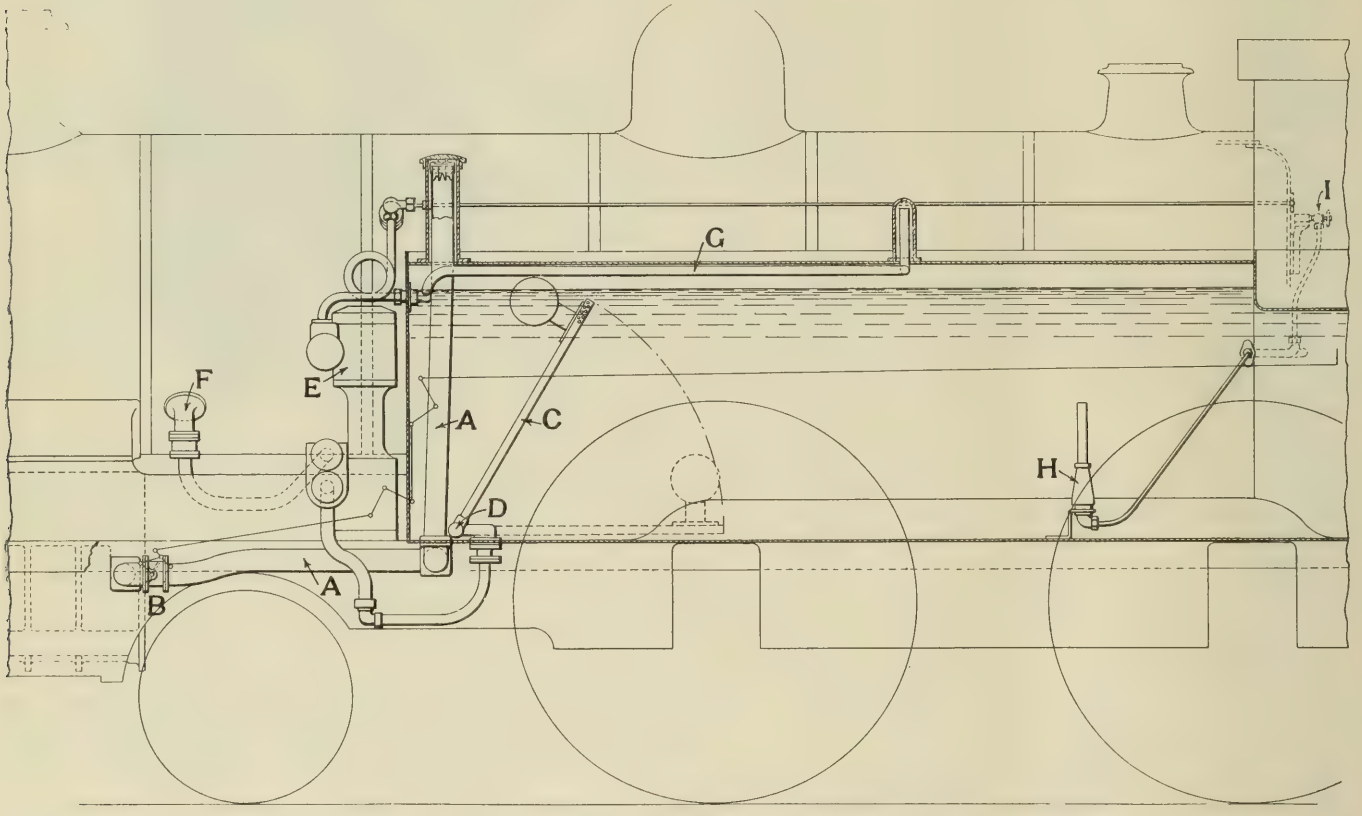


Fig. 8—Feed Water Heating Apparatus as Applied to English Tank Locomotive

Results Obtained in Switzerland

The situation in Switzerland is well outlined in the following abstract of a letter from the chief mechanical engineer of the Swiss Federal railways:

The first experiment with locomotive feed water heaters on the Swiss Federal railways was undertaken on a new 4-cylinder simple, superheated locomotive, which was put into service at the end of 1913. The locomotive was fitted with an exhaust steam and smoke box heater in conjunction with a Westinghouse feed pump. This experiment was not satisfactory; the exhaust heater was much too small, it required much repairing on account of faulty construction, the smoke box heater hindered the passage of gases so much that to obtain a sufficient head of steam about half the tubes of this heater had to be removed, so that the heating surface was

reduced from the original 253 sq. ft. to 134 sq. ft. This feed heater also required much repairing, as the thin tubes became bent and cracks appeared in them. In 1915, therefore, both feed-heaters were removed, the exhaust heater with the feed pump being applied to a smaller superheated compound locomotive for which it is suitable.

At the beginning of 1915 two new superheated compound locomotives were put into service with exhaust feed heaters; one locomotive was fitted with a Westinghouse feed pump and a feed heater from the Winterthur Locomotive Works, the other with a Knorr feed pump and Knorr feed heater. Both arrangements have proved successful.

On the trial runs, which were carried out on the section Erstfeld-Göschenen (Gotthard railway), with a continuous ascent of 2.5 and 2.6 per cent, a saving in coal of about 10 per cent per 100 ton-kilometer was established for engines with feed heater in comparison with engines of similar construction without feed heater. The performance of the engines have been improved quite considerably in consequence of the installment of feed heaters. Therefore the 15 superheated compound locomotives delivered in 1916 and 1917 have all been fitted with exhaust feed heaters, and feed pumps. Old Westinghouse air pumps have been used, with their air-cylinders replaced by water cylinders in conjunction

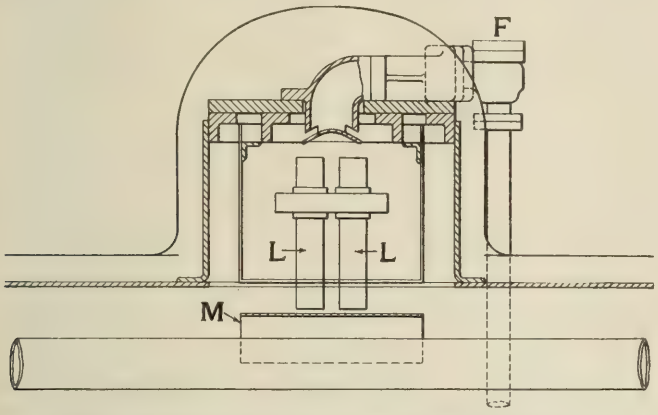


Fig. 9—Feed Dome for Feed Water Delivery

with a suction chamber. In the meantime, for the remaining 11 superheated compound locomotives feed heaters of the Knorr pattern have been ordered.

It has been found that the saving from feed heating on locomotives traveling chiefly on lines with alternately rising and falling gradients is small. The feed heaters are only suited for long sections which are run under steam.

There are in all up to the present 21 locomotives already provided with feed heaters and 11 others are shortly to be fitted with them.

Development of Feed Water Heating in Germany

Locomotive feed water heating in Germany is now as common as superheating in the United States. It is estimated that there are over 10,000 locomotives so equipped. It is not an after-the-war development there, for as early as 1909 the German railways began investigations and installations on a large scale were made soon after that. The Knorr system was adopted as standard and by the end of 1912 about 3,000 heaters were installed. At the present time there are well over 10,000 in operation and they are being applied at the rate of 2,000 a year. All new locomotives are equipped with this device and many old locomotives. With coal costing 200 marks now, as against a price of 12.5 marks before the war, it is estimated that the heaters pay for themselves through the economies effected in less than one year.

The only test data available in regard to this system of feed water heating are the results of tests made in 1913 on a passenger locomotive (Type 2-B) over a distance of 91 miles between Grunewald, just outside of Berlin, and Gusten. Three tests were made, one without the heater—Test A—one with the heater—Test B—under the same conditions as test A, and the third—Test C—with the heater and a heavier train. During test C two more stops were made than in tests A and B, but notwithstanding this fact the running time of test C was less than either tests A or B. The following table gives a summary of the results of these tests:

	Test A	Test B	Test C	Percentage difference B over A	Percentage difference C over A
Feed water heater.....	No	Yes	Yes	...	....
Running time (min.).....	129	131	125	1.5	—3.1
Train loads (tons).....	348	348	353	...	1.4
Coal consumption (lb.)...	5,672	4,300	5,400	—24.3	—4.8
Ton-miles per lb. of coal..	5.59	7.37	5.95	31.8	6.4
Water consumption (lb.).	31,000	31,900	36,100	2.9	16.4
Evaporation	5.45	7.42	6.68	36.1	22.6
Coal per sq. ft. of Grate area per hr. (lb.).....	108.5	80.9	106.5	—25.4	—1.8

It will be observed that there is a decided increase in the efficiency of the Locomotive in Test B over that in Test A, although the same load was hauled. Test C indicates that even a heavier load can be hauled when the feed water heater is used, with a decrease in fuel consumption and an increase in evaporative efficiency, than when the heater is not used.

The service rendered by the heaters has done much to relieve the severe locomotive shortage the German railways experienced after the war. In a paper before the Verein Deutscher Machinen-Ingenieure in December, 1912, Gustav Hammer, who is now the chief locomotive engineer of the Prussian-Hessian System, said that the principal reasons for the rapid introduction of feed water heating by exhaust steam are the greater economy obtained by the saving of coal and the increase of efficiency without the weight of the engines being increased much. The greatest economy in coal is naturally obtained with engines having the highest steam consumption and such engines cause a heavy strain on the boiler. The economical results obtained are not only due to the fact that a large amount of the heat from the exhaust steam is reclaimed, but also because it reduces the rate at which the fuel is burned on the grate. Both of these factors increase efficiency of the boiler. According to the conditions of the traffic the saving of coal varies, but, on an average, it may at least be 10 per cent.

Practical Advantages Demonstrated in Germany

More important still is the increase of the efficiency of the engine as a whole. If the friction weight and the efficiency of the machine are sufficient and only that of the boiler fails, this can be quite considerably increased by feed water heating. This is especially important for lines the permanent way and bridges of which do not allow a special increase of wheel loads. The tests of the Royal Railway Central Office, which were very thorough, have shown increases of the efficiency of the boilers of 20 per cent and more, in a way that cannot be disproved. In particular, these tests have shown that, with superheated steam engines, under otherwise identical circumstances, the production of steam can be increased from 12.5 lb. to 15.4 lb. per sq. ft. per hour by exhaust steam heating.

The preservation of the boiler is to be considered as a further very great advantage of the feed water heating. This preservation is, first of all, brought about by the smaller heating surface required with the same efficiency in comparison with the ordinary engine as about 1/6 of the heat contained in the exhaust steam is regained. It further results from the difference in the feeding of the boiler as well. When using the heater, the supply of feed water must be adapted to the consumption as exactly as possible. It is not an intermittent feeding, but a continuous one by the steam feed water pump, which can be adjusted very easily, and within any limits. It is not the same with the injector.

Furthermore, the boiler is supplied with water at a lower temperature with the injector than with the heater. The boilers properly fed with heated water must be considerably better and have a greater life than those fed with injectors only.

Status of Intrastate Advanced Rate Proceedings

WASHINGTON, D. C.

THE FOLLOWING compilation, showing the status of the proceedings before the various state railroad or public utility commissions on the applications of the railroads to put into effect on intrastate traffic the percentages of increase in freight and passenger rates recently authorized by the Interstate Commerce Commission as to interstate traffic, has been prepared by John E. Benton, solicitor of the National Association of Railway and Utilities Commissioners, for distribution among the state commissions, among whom there is naturally a great deal of interest to learn the final decisions of other commissions than their own. He has sent out an inquiry for this purpose to each commission. Sufficient time has not elapsed to permit the receipt of replies from all, but a considerable number have been received and from these and other sources of information he has made the summary statement, which will be supplemented in a later bulletin.

California. Hearings in progress. Consideration being expedited in every way. Commission has declined to receive evidence as to particular rates, which are held matters for adjustment after the commission makes its order, if a percentage increase is granted. A final decision is expected at an early date.

Georgia. The commission has called a conference for August 17 in reference to procedure and action to be taken by the commission on the proposed advance, at which carriers, the public, and commissioners of neighboring states have been invited to be present.

Idaho. Hearing to begin August 19.

Illinois. On August 11 the commission authorized intrastate freight rates to be increased 33 1/3 per cent and excess baggage rates 20 per cent, effective September 1, but denied all passenger fare increases under state two-cent fare law. (The foregoing facts are obtained from the press.) Illinois is partly in Official, partly in Southern, and partly in Western Territory. The increase allowed is undoubtedly a uniform increase applicable throughout the state, and intended to average the varying percentages allowed in the three territories by the Interstate Commerce Commission.

Indiana. Hearing to begin August 23.

Iowa. Understood hearing has been completed; also that commission has indicated doubt of its authority to authorize increase in statutory passenger rates.

Louisiana. Commission is now considering carriers' applications for advances in intrastate freight and passenger rates, fares and charges, and will probably render a decision on the applications in the near future.

Maryland. On August 12 the commission entered an order in part as follows: "WHEREAS, the Interstate Commerce Commission after full investigation and exhaustive hearing and argument by counsel having on the 29th day of July, 1920, filed its report and entered its order in Docket No. Ex Parte 74, authorizing and permitting carriers . . . to increase the freight rates and passenger fares of said carriers on interstate traffic in the amounts set forth in said commission's report and order, . . . IT IS, THEREFORE ORDERED: That permission be and is hereby given to all common carriers . . . to file and publish upon not less than five days' notice to the commission and the public, tariffs or supplements, either particular or blanket, applying the same percentage increase in all Maryland intrastate class and commodity freight rates, miscellaneous transportation charges, passenger fares, excess baggage rates, Pullman car charges, and milk rates, to the same extent and under the same conditions as authorized by the Interstate Commerce Commission upon interstate traffic by its report and order aforesaid."

Michigan. Under Michigan law, rates become effective on 10 days' notice, unless suspended. Carriers have filed tariffs, effective August 26, making the same percentage increase in freight and passenger rates as have been allowed by the I. C. C. These will not be suspended by the commission, but are subject to later investigation upon complaint or on motion of the commission.

Minnesota. Understood hearing is in progress.

Mississippi. Hearing to begin August 26.

Montana. Commission has approved carriers' application to the extent of proposed increases in rates on intrastate freight traffic and for switching and special services, but is understood not to have acted yet on proposed passenger fare increases.

Nevada. Hearing to begin August 16. It is understood that commission has tentatively indicated indisposition to advance passenger fares now on the basis of 4 cents or more, also that Nevada law does not permit commission to authorize horizontal increases in freight rates, but requires it to prescribe rates fixed on the basis of reasonableness to the public as well as of fair return to carriers.

New Hampshire. August 11 the commission made an order in part as follows: "It appearing that the conditions now existing which called for and necessitated an advance in interstate rates, apply equally to intrastate rates in New Hampshire, and hence, that it is just and equitable that the said advances in rates be filed effective simultaneously upon interstate and intrastate traffic, it is ordered, that said petitioners be and hereby are authorized to file effective on less than statutory notice not less than five days after filing, supplementary tariffs applicable upon intrastate traffic in New Hampshire in form and of effect as provided for and permitted upon interstate traffic under Interstate Commerce Commission Special Permission No. 50,340, issued August 5, 1920."

New Jersey. The law of New Jersey does not require railroad rates to be approved by the commission before they become effective, but does give the commission authority to suspend proposed new rates pending investigation of justice and reasonableness. The commission has called a conference for August 17 for consideration of proposed intrastate rate increases, at which carriers and the public will be represented.

New Mexico. Hearing to begin August 17. Commission understood to have indicated tentatively disposition to authorize freight increases corresponding to those authorized by I. C. C.; also like corresponding passenger fare increases where rates not now in excess of 3 cents, but not where rates do exceed 3 cents.

New York (Second District). Hearing to begin August 17. New York has a three-cent passenger fare law applicable on nearly all lines except the New York Central between Albany and Buffalo, where a two-cent rate is prescribed. It has also a two-cent mileage law. On June 15, 1920, the commission made an order requiring the New York Central to restore the two-cent rate between Albany and Buffalo, effective September 1. The carrier refused, and the commission began mandamus proceedings in the state court. The carrier sought an injunction in the United States court. The injunction was refused and later the writ of mandamus sought by the commission was also refused.

North Dakota. Hearing in progress. Commission understood to have indicated doubt that it has authority to increase rates prescribed by statute.

American Railway Supplies in South America

Second Article of Series by Railway Age's Correspondent Deals with Chile, the Trans Andine and Argentina

By John P. Risque

The divisions of Chile's systems are known as the Northern Longitudinal from Pintados to Pueblo Hundido. The Northern Central system runs from the latter point to Calera; the Southern Central is known as that part of the line from Calera, including Valparaiso and Santiago, to the southern terminal at Puerto Montt, including the short line on Chiloe Island. The Longitudinal is of meter gage; the Central 5 ft. 6 in. To the question as to how the Longitudinal manages to make a living under the conditions of a somewhat merciless competition waged by three regular lines of coasting steamers with an apparently unlimited number of well operated ships, almost any informed Chilean will answer that his famous Longitudinal is a strategic line and he will likely illuminate the details as to how his country can quickly and easily transport troops to points all along its vulnerable coast in the event of unpleasantness with a neighbor.

Paying traffic is said to exist between Pueblo Hundido and Baquedano and between the latter point and Pintados. North of Pueblo Hundido branch lines from the interior to the coast do a good business in the hauling of nitrate from the respective fields on the lines. Almost everybody's hand seems to be evident in the display of physical equipment throughout the Chilean systems—French, German, English and American rolling stock, European station layouts; standardization seems most remote. But the former shortcoming cheers the heart of the American; he senses a fair field and no favors—and the field is big.

Just at the present time this frontier republic's ability to buy has been enhanced by the revival of a world's demand for her breadwinner, nitrate. The production of this mineral was twice as great in January, 1920, as in March, 1919, and was in fact the largest amount shipped in any single month's history of the industry. The first sight of 5-ft. 6-in. gage track will bring the average inquisitive American to a point of sneaking in underneath and between all kinds of cars in order to familiarize himself with the reasons and alleged advantages of such a wide roadbed. When he emerges to face a Ten-wheel passenger engine with gay red driving wheels and an elaborate trimming of brass all around, it would be well to make a note of the lesson; the proud array of a Chilean's passenger locomotive is considered important.



Retiro Station of the Central Argentine Railway, Central Cordova Railway Station Adjoining It on the Right and the Buenos Ayres & Pacific Railway Station Adjoining That on Extreme Right. British Tower (a Present to the City of Buenos Ayres) in the Foreground

Cars on the wide gage include all kinds and makes. There are four and eight wheelers, both in wood and steel, with chain and hook couplers. Passenger cars follow our own in style and design and most of them seem to have been manufactured in the United States. Some have hooks and chains and the newer equipment has automatic couplers and West-

inghouse air brakes. Tracks along the main lines are well ballasted and well kept, interiors of cars are clean but exteriors universally proclaim a shortage of paint or its application.

Coal from her own mines constitutes Chile's railroad fuel. San Bernardo, a few miles from Santiago, the capital, contains the recently located hopes of the repairers of Chile's rolling stock. The new plant is immense and its equipment—American throughout—has been planned to take care of the country's entire needs in this direction.

The loud clapping of a brakeman's hands at a way station on the main line is acknowledged by a shrill note from the conductor's whistle. If the engineer hears it, he will calmly light a cigarette, offer one to the fireman, climb aboard and make acknowledgement with two tedious toots of his locomotive's overworked whistle. Everybody seems ready to go; but a hack drives up and somebody of some evident importance bustles out and the three-cornered signaling performance goes the rounds once again—and they are off, providing nobody else shows up. Trains run well when they once get started; and if they happen to be late, the passenger may instinctively cling to the seat as he wonders what are the speed limits on a wide gage track.

After arrival at Llai-Llai, a short distance from Santiago on the main line from Valparaiso, the passenger will travel a branch line, also of wide gage, to Los Andes, a Chilean station a few miles inland near the foot of the Andes. The night is spent at this point and the following morning the American resumes his journey again in the care of his most active and determined South American competitor, the Argentina Englishman.

Argentina

The Transandine railroad is British up one side and down the other, partly rack-railed and meter gage all the way to Mendoza, its terminal in the foot-hills of Argentina. A passenger's interest in the miniature equipment and German combination rack and rail engines resembling tiny Mallets,



One of the Finest Locomotives in South America and Typical in Construction. This 4-6-2 Hauls the Central Argentine's Fastest Heavy Passenger Trains. Engineer Sabio in Foreground, the First to Drive the "Rapido"

will be divided with the scenery, which, if he had not traveled already to the roof of the world in Peru, would prove a spellbinder. Like as not, however, he will be busy wondering how he is going to survive the ascent to the Cunbre tunnel, the top of the divide, without a struggle with soroche.

Emerging from the tiny Transandine car with its painfully hard seats, he again enters Britain—only more so—and will ride on English rails almost as straight as a string for 24 hours, all the way to the greatest city in South America, that stronghold of British investments, Buenos Aires, the capital of the Argentine. If he doesn't leave there on a ship, he will also leave on English rails; if he travels to the country, he will do the same.

En route to visit the little Uruguay neighbor across the river, he will find Britain monopolizing the transportation job in Uruguay as well as in Paraguay.

Brazil

Up in Brazil, however, he will not find the British in so strong a position from the railroad point of view as they are in the Argentine. There are, to be sure, two strong and influential British railway systems, but Brail has drawn upon other countries—notably France—for a share of the capital invested in her railroads. The Brazilians have also invested considerable quantities themselves and the Ameri-



Two Merchandise Cars, the Large One Having Been Built in France; Chilean State Railways

can railway supply man may expect to find business in Brazil that he would not find so readily available elsewhere—provided, that is, he does not make the grievous error of soliciting trade in Brazil in Spanish. The Brazilians speak Portuguese and are all mighty proud of the fact that they do. Catalogues and correspondence in Spanish under these conditions, naturally, are going to harm rather than help favorable relations.

One of the outstanding features in the Brazilian market just now is the electrification of the Paulista Railway. The line is one of those owned by Brazilian capital. It is a most progressive company in the hands of progressive men who have a liking for railway supplies American. The recent contracts placed in this country for the electrification of a most important section of its main line, point out better than anything else could the attitude of the road's officers and the possibilities in Brazil as a whole—other than, of course, on the British systems above referred to.

If by the time the traveller arrives in the Argentine he has not concluded that Britain is the master of transportation in South America, except in Chile and Brazil, and that he can come pretty near to making a round trip of the continent via their well managed systems, he might as well acknowledge it now. As a matter of fact, the combinations of all British rails and steamers from Panama to Punta Arenas on the West Coast and back again to the starting point via the coast of Brazil is, whether he dislikes the admission or not, the most comfortable traveling to be had in those countries.

Selling Railway Supplies in South America

The foregoing mention of the arrival in the Argentine brings forth a meaning of portentous import to the intending cultivator of the railway markets of South America. Boiled right down to a few words, it intimates that the open market encountered in Chile or Brazil exists in a meagre degree in Argentina, outside of the 3,000 miles of Argentine

Government roads. Of the approximately 22,500 miles included in the railways of Argentina, over 13,000 are managed from London. The desire for an American railroad specialty may, by some peculiar circumstance, originate on any of the numerous English owned and managed South American railroads. And its requisition may, for the same reason, be given impetus from the local headquarters. By the time it sifts through a watchful sieve of recently aroused patriots whose minds are on the home mill and factory, that requisition will either emerge with its nationality changed or it will enter a pigeon hole, there to await the letters of explanation from the executive who sent it in.

There are those who persist in arguments designed to dis-



San Bernardo Repair Shops, Chilean State Railways

arm the uninformed with contentions fallaciously warped to suit their own ends. They will point with mistaken enthusiasm to the thorough American equipment on some of the English lines in Latin America, as, for instance, the Peruvian Corporation's systems or the old American moguls and the automatic couplers on the very English Antofagasta & Bolivia Railway—and other specialties of American origin elsewhere on English lines in those parts. Thus they would seek to eliminate five years of changes of sentiment on South American railroads in their hectic excitement to avoid a frank and possibly damaging statement of the truth, which is, briefly, that English railroads under post-war pressure to maintain Britain's world trade at all costs will buy in England *every time*. If they buy elsewhere, it is due either to



Borsig 0-6-6-2 Meter Gage "Saddle Tanker." The Forward Engine Is for the Rack Rail and Runs Only When Traversing It, Drivers Propelling Twin Pinions Between Frames. Rear Engine, Ordinary Rail Type. This Machine Is a Simple Engine.

an oversight, an accident or a total and hopeless pressure, due to a paralysis of their own production. Striking evidence of this gradual decline to a point of such alleged paralysis is shown by the British Board of Trade's figures on England's railway exports for the two months of January and February, 1919, compared to the same two months' exports of the following year. In 1919 they exported $3,134,357; 1920 contributed railway material exports to the amount of $16,328,369. The healthfulness of the increase was indicated merely by a trifling betterment of 429 per cent.

It is not the purpose of this article to discourage enterprise intelligently directed in its efforts to sell railway materials to English roads—its purpose is to *tell the truth;* to awake some of those who are profoundly asleep as to the real facts. It is regrettable that the British Board of Trade did not state just what proportion of that 16 million dollars' worth went to Latin America. But in the absence of the details, the reader is asked to scan between the lines and is advised to temper the character of his campaign in an unfriendly field, with due consideration of the significance of the showing.

If he fails to find this exposition sufficiently convincing, he might be reminded of the Buenos Aires Western's recent order of 50 locomotives from a British plant at a cost said to exceed by 100 per cent the price of American manufacturers, who were not even allowed to bid and whose deliveries would have beat the competitors by over a year. Or likewise by the tale of a gentleman from San Francisco, who related to the writer on the steamer from Buenos Aires to Montevideo his tiresome tramp around the former city from one railroad to another in a fruitless effort to get an order for American tubes at 5 per cent less than any competition offered. Will English railroads buy in England if they can? Why not? Think it over.

Application of Increased Freight Rates in Illinois

The Interstate Commerce Commission has issued a supplemental report in the general rate advance case, ex parte 74, for the purpose of defining the application of the freight rate increases to Illinois territory.

Following its original report the commission was asked to indicate specifically the percentages of increase that should apply to freight rates, (1) within Illinois territory; (2) between points in Illinois territory and points in the eastern group; and (3) between points in Illinois territory and points in the western group.

The state of Illinois is so situated that it may be regarded, for transportation purposes, as partly within eastern territory and partly within western territory. Part of the state is embraced within official classification territory, and on traffic to and from the east the rates are usually governed by the official classification. On the other hand, some of the principal western railroads have their eastern termini within the state of Illinois, and on traffic to and from the west it has been the general practice to regard Illinois as being within western territory. Joint rates between that state and points west of the Mississippi River are governed by western classification. Because of these considerations, among others, the carriers have deemed it advisable to accord to the state of Illinois a basis of rates that partakes in part of the features of the eastern rate structure and in part of the features of the western rate structure.

Illinois territory embraces somewhat more than the state of Illinois proper, and for the purposes of this report, the Commission says, may be defined as follows:

All points in the state of Illinois, also points in Wisconsin on and south of the C. M. & St. P. Ry., Milwaukee to Madison, the C. & N. W. Ry. Madison to Dodgeville, and on and east of the Illinois Central, Dodgeville to the Illinois state line; also points on the west bank of the Mississippi River to which joint through rates subject to the official classification are now in effect from points in trunk line and central territories.

Upon further consideration of the record in this proceeding the commission finds that in the application of the increases authorized in its original report points in Illinois territory should be considered to be within the eastern group for the

purpose of applying the increases on intrastate traffic between points within Illinois territory; also on traffic between points in Illinois territory on the one hand and points in official classification territory east of the Indiana-Illinois state line on the other, and that an increase of 40 per cent may be made in such rates; and points within said Illinois territory should be treated as being in the western group on traffic subject to joint or single line through rates between points in said territory on the one hand and points lying within the boundaries of the western group (west or north of Illinois territory) on the other, and that an increase of 35 per cent may be made in such rates.

In its original report the Commission said, in effect, that in computing passenger fares the carriers should follow the same rule for the disposition of fractions as was approved for the publication of freight rates where stated in amounts per 100 pounds or any other unit, except as otherwise specifically provided. Its attention was later called to the fact that it has long been the custom of the carriers in constructing passenger fares to round out fractions to the next full cent. It is the commission's view that the practice heretofore observed may be applied in constructing the increased passenger fares, the surcharges for occupants of sleeping and parlor cars, and baggage charges, authorized in its original report.

Labor Also Is on Trial*

By E. E. Loomis
President, Lehigh Valley Railroad

THE RETURN OF THE RAILROADS to private control coupled with the recent rate award of the Interstate Commerce Commission has given birth to the popular idea that it is now "up to the railroad managers." It is argued that at last they have fair legislation and increased revenues, and that they must now demonstrate their fitness to handle the task before them if private operation of the railroads rather than government ownership is to be the future lot of the properties.

It may be that private control is on trial. Equally true, however, is the fact that another great element in our national life also is on trial. Not only must the railroad managers show their ability, but the men and women they employ must demonstrate their willingness to work and their right to the wages recently awarded them by the United States Railroad Labor Board.

The situation is complicated by conditions which became possible during government control. Under the United States Railroad Administration the various crafts engaged in rail road work affiliated in a closely knit organization which enabled their leaders to exercise great influence at Washington and to obtain among other things: Standardized wages and working conditions for the whole country; centralization of discipline enforcement in the hands of a board located at Washington; abolition of piece-work.

Experienced railroad managers always have opposed these ideas as contrary to efficient operation and good discipline.

In the meantime, requests for increased wages (to which practically all classes of employees were entitled because of the high cost of living) were not acted upon by the Railroad Administration but were left to the Labor Board, created under the Transportation Act. While this situation obtained, a part of the railroad workers—as a whole a body of upright American citizens of which the nation may be proud—became the prey of unscrupulous agitators. The result was the outlaw strikes of last Spring from which some roads have not as yet fully recovered.

The award of the Labor Board, generally satisfactory, has answered the one serious complaint of labor. The splendid *esprit de corps* of American railroad men, however, still staggers from the body blows it has received. Fortunately, the effect of these blows is wearing off and a sincere effort upon the part of railroad managers to build up the old-time feeling of loyalty to their lines is producing results. The Transportation Act of 1920 afforded a great help in this direction. It offered an opportunity to decentralize the railroads and place the operation of the lines in the general offices of each system rather than in Washington, restoring all of the personal initiative which goes with the realization that work consistently well done is going to result in greater opportunity for promotion and increased pay.

Union leaders oppose this, however, and are urging national agreements, the establishment of a national board of adjustment for the handling of grievances, and perpetuation of the country wide standardization of working conditions which obtained during government control. This wholesale standardization probably is convenient for the leaders but in many cases it is unfair to the rank and file of workers and experience reveals that it already has been the cause of much justified dissatisfaction. For example, in the southwest working conditions cannot be identical with those of the congested manufacturing centers of the east. Different ways of living, the variance in costs of food, fuel, clothing and shelter, and the operating methods of railroads so widely separated, must be considered if justice is to prevail. In short, wholesale standardization would strike a death-blow at the decentralization intended under the Transportation Act and the railroads would be robbed of the home rule necessary to the maintenance of efficiency and proper discipline.

A great opportunity for ambitious workmen themselves to build up morale within the rank and file would lie in the restoration of the piece-work system, the basis of shop efficiency before government control. While it prevailed the man who had energy and ability had a strong incentive to conscientious labor. It brought him increased earnings over the lazy and inefficient worker. Abandonment of piece-work by the Railroad Administration placed these two men on the same plane. The incentive of the ambitious, active worker was killed—no matter how hard he strove he could earn no more than the indifferent and inefficient fellow at the next machine. Fortunately, under our American system of education, the number of ambitious workers with brains must grow, and it is unlikely they will rest content to remain on the same basis with mere time-servers. The coming of the time when they will make themselves felt in the union organizations means much to railroad efficiency.

There must be constant education to accomplish these results. The fallacies of the agitators who fatten upon discontent, the economic losses to the workers themselves through useless strikes, must be pointed out, and above all, the self-respect of the workers must be encouraged. Much of the future success of American railroads depends upon their employees and the service they perform. If the men come to realize that they can hold the friendship and interest of the shipping and traveling public by a whole-hearted spirit of co-operation under the Transportation Act, that in this path lies their road towards progress, promotion and prosperity, they will play a big part in giving our country the transportation efficiency necessary to successful commercial development.

The country cannot buy right, the country cannot sell right, the country cannot live right, unless the railroads are doing their work. And under private management, with income enough to pay their way, they can. They must; they will.—New York Sun and Herald.

* A statement issued in New York on August 16.

Increased Express Rates Are Authorized

12.5 Per Cent Instead of 25.16 Allowed, with Condition That It Shall Not Be Divided with Railroads

WASHINGTON, D. C.

AN INCREASE of 12.5 per cent in express rates was authorized by the Interstate Commerce Commission in an opinion dated August 11 but made public on August 13, which does not take into consideration the award of the Railroad Labor Board handed down a few days previously increasing the wages of express company employees by approximately $33,000,000 a year. It is estimated that the decision will increase the revenues of the express company by approximately $36,000,000, or approximately half of the amount which would be raised by the method proposed by the American Railway Express Company, which proposed increased class and commodity rates were computed to represent an average increase of 25.16 per cent of present rates. The commission holds, however, that the full amount of the 12.5 per cent increase allowed should accrue to the express company, whereas its proposal was predicated on the present contracts between the express company and the railroads under which 50.25 per cent of the gross revenues go to the railroads. The commission assumes that the railroads will join the express company in arranging, by revision of the contract or otherwise, so that the increase will go to the express company, but the decision says nothing as to the commission's approval of the proposed new contract, planned to become effective on September 1, which has been submitted to it for approval.

On August 12, before the rate decision was handed down, the express company filed with the commission a petition calling attention to the wage award, which it said would have the effect of increasing its expenses by $43,800,805, because the salaries of many of its employees in the official class will have to be increased to keep them in proper relation to the wages required to be paid by the award. It also estimated that this increase in expenses would make its yearly deficit $76,375,650, and requested the authority of the commission to file as soon as possible tariffs of increased rates on milk and cream to correspond to the 20 per cent increases on these commodities allowed the railroads. The company also asked that, after another hearing, if necessary, it should be allowed to make another application to the commission for futher increases in rates to meet the new increase in wages and it called attention to the fact that the commission's order in the railroad rate case did not take into consideration the needs of the railroads for an increase in their revenues from express. The commission in the express rate decision authorized the company to increase the rates on milk and cream to equalize with the railroad rates.

An abstract of the express rate decision which is by Chairman Clark, follows:

Report of the Commission

Early in the period of federal control of railroads the director general declined to carry out the separate contracts between the railroad and express companies under which the business was theretofore conducted; whereupon, the respondent company was incorporated and, by contract with him and as his agent, took over on July 1, 1918, the express business on the railroad lines under federal control. The four major express companies formerly operating, viz, Adams, American, Southern and Wells, Fargo & Company. in turn controlling by lease the business and property of the Great Northern, Northern, and Western express companies. exchanged for respondent's capital stock at par the property theretofore used by them in the express transportation business, estimated by the director general to be the value of approximately $30,000,000 as of November 30, 1917, together with $3,000,000 in cash for working capital. Including additions and betterments not charged to operating expenses, made between the latter date and July 1, 1918, the authorized issue of capital stock at par aggregates $34,642,109.64. On November 18, 1918, the respondent was brought under federal control, but employed by the director general as his operating agent by a supplemental contract, under which, as under the original contract, respondent was guaranteed against an operating loss. By section 209(*i*) of the transportation act, 1920, that guaranty has been extended to and including August 31, 1920. In those contracts the preceding 10-year average basis of compensation for express privileges —that is, the amount paid the railroads for providing the transportation and certain terminal facilities—was adopted, and 50.25 per cent of the gross transportation revenues have accrued for those services and facilities; but as the aggregate accruals, less deficit, were, during federal control, paid over to the director general, respondent was relieved of the cost of their apportionment among transportation lines.

The petition recites, that during the year 1919, with certain considerable reserves for payment of loss and damage claims and for other items of expense applicable to that period, respondent operated at a deficit of $22,036,352.13, with prospects for an increasing future deficit, making necessary further and considerable increases in rates in order that respondent or any successor may operate at a profit. This estimate was reduced, by revision of the figures before the close of the hearings, to $21,819,488.28. The increased class rates which respondent now desires to establish, those designed for application within, but not between, the several zones being set forth in a schedule filed of record, are not formulated with reference to the present rates, but are based upon percentage increases of the original components prescribed by us, substantially as follows: An increase of 33 1-3 per cent in the combined terminal factors in the zones other than zone 4, namely, from 45 cents to 60 cents, of which 35 cents is to represent the express-terminal and 25 cents the rail-terminal allowance; and an increase of 75 per cent in the rail transportation or haulage charge in zone 1, of 50 per cent in the other zones, of 60 per cent in the interzone haulage charges to and from zone 1, and of 50 per cent in the other interzone charges. To this is added an increase of 25 per cent in the present commodity rates in zone 1, of 10 per cent in the other zones, and of 15 per cent between zones, with the exception of rates on milk and cream. Based on the results of one day's operations, June 12, 1919, the average general increase over present rates is computed to be 25.16 per cent. On the ground that milk and cream are carried in express and railroad service in practically the same manner and under the same conditions, it is proposed to establish such rates on those commodities as may be applied by the railroads.

The following revised extract from one of respondent's exhibits tabulating the adjusted domestic operations, interstate and intrastate, from 1911 to 1919, inclusive, shows the results for 1918 and 1919:

	1918	1919
Express, domestic	$250,917,736.05	$285,887,889.38
Miscellaneous transportation revenue	55,145.26	17,516.02
Charges for transportation	$250,972,881.31	$285,905,405.40
Express privileges, Dr.	127,069,058.13	143,429,819.72
Revenue from transportation	$123,903,823.18	$142,475,585.68
Valuation charges[1]	1,269,946.92	5,191,713.33
Total operating revenue	$125,164,770.10	$147,667,299.01

Operating expenses		
Maintenance	$6,470,439.74	$9,699,230.75
Traffic	247,488.33	244,611.35
Transportation	142,620,595.28	151,418,921.60
General	5,544,402.24	6,033,739.07
Total operating expenses	$154,882,925.59	$167,426,502.77
Net operating revenue	[2]$29,718,155.49	[2]$19,759,203.76
Uncollectible revenue	74,719.91	45,054.70
Express taxes	1,716,808.45	2,015,229.82
Operating income	[2]$31,509,683.85	[2]$21,819,488.28

[1] Excess-value charges, assessed in addition to transportation rates.
[2] Deficit

The figures for 1918 combine the operations of the seven old companies for the first six months and of respondent for the latter half of the year, while those for 1919 are respondent's. In connection with the tabulation it appears that an allowance of $8,863,580.05 made by the government to the four major companies in December, 1918, is not included in the figures for that year. Its inclusion would reduce the deficit to $22,646,103.80. It also is explained that the transportation expenses for 1919 have been reduced $4,000,000, representing the estimated accrual in that year's accounts for loss and damage, partially to offset underaccruals during the latter half of 1918 and thereafter payable. Similar adjustments, in stated amounts, were made for the preceding two years. A further exhibit indicates that if the wage scale in effect at the close of 1919 had been in force throughout the year and it had been respondent's duty to apportion the revenues among the transportation lines the operating deficit for that year would have been $27,514,391.28.

The exhibit from which the foregoing extract is taken discloses a deficit in 1914, amounting to $2,415,773.09, with profits exceeding $6,000,000 in each of the following two years, and a deficit of $5,473,694.78 in 1917. The gross transportation revenues increased from $123,224,685.91 in 1911, with the exception of declines in 1913 and 1914, to $285,905,405.40 in 1919, while the total operating expenses increased uninterruptedly from $53,056,611.26 to $167,426,502.77 during the same period. The ratio of wages to revenue increased from 26.75 per cent in 1911 to 35.59 per cent in 1919, and concurrently the ratio of the total other expenses to revenue increased from 17.22 to 23.77 per cent In both 1918 and 1919 the increases in gross revenues were materially lower than the increases in wages and other expenses. The most striking recent increases, however, are revealed in the item of loss and damage, exhibited by respondent, after adjustment of under- and over-accruals for the last three years, as follows:

	Transportation charges	Loss and damage	Per cent
1911	$123,264,760.28	$2,088,926 99	1.6947
1912	138,855,319.55	2,591,668.74	1.8665
1913	134,238,408.12	3,053,616.44	2.2748
1914	132,104,659.87	3,061,847.93	2.3177
1915	152,808,634.78	3,117,136.75	2.0399
1916	186,161,145.90	4,828,688.21	2.5938
1917	217,909,920.96	11,831,272.27	5.4294
1918[1]	{ 123,048,631.66	17,236,427.36	14.0078
	{ 128,128,620.71	14,216,960.31	11.0959
1919	285,905,405.40	20,576,161.56	7.1968

[1] Six months' periods, ended June 30 and Dec, 31, respectively.

An exhibit restating the results of the 1919 operations, and also as modified by the inclusion of an increase of 25.16 per cent in rates, a computed income tax, and a retroactive application of the wage scale in force at the close of the year, is as follows:

	Actual	Modified
Express, domestic	$285,887,889.38	$357,817,282.35
Miscellaneous transportation revenue	17,516.02	17,516.02
Charge for transportation	$285,905,405.40	$357,834,798.37
Express privilege, Dr.	143,429,819.72	179,516,930.55
Revenue from transportation	$142,475,585.68	$178,317,867.82
Valuation charges	5,191,713.33	5,191,713.33
Total operating revenue	$147,667,299.01	$183,509,581.15
Total operating expenses, other than commissions, chargeable to domestic transportation operations	$155,360,270.57	$161,055,176.57
Commissions	12,036,232.20	15,102,093.22
Uncollectible revenue	45,054.70	45,051.70
Taxes	2,015,229.82	3,206,742.71
Total	$169,486,787.29	$179,409,070.20
Net operating income	[1]$21,819,488.28	$4,100,510.95

[1] Deficit.

The results exhibited in the right-hand column are based upon 1919 as approximating an index for the period commencing September 1, 1920, when all the burdens of operation must be borne by respondent, and are contingent upon the application of the proposed schedules to interstate and intrastate business. The additional gross revenue would be $71,929,392.97. The item of $161,055,176.57, covering prospective total operating expenses other than commissions, includes $5,694,906, as representing the application of the above-mentioned wage scale for the entire year, together with the estimated cost, $1,500,000, of apportioning the express privileges in the course of private operation. Included in the item of taxes is a computed income tax of $912,221.94, not chargeable to operating expenses but taken into account to indicate the final result. At the same time, a further adjustment as to Sunday and holiday wage scales, effective in February, 1920, is estimated to add $1,900,000 to the pay roll for this year. On the other hand, respondent estimates, on the strength of the business of the test day, June 12, 1919, that proposed changes in certain items of its classification now pending in No. 11416, *Express Classification,* 1920, would, if approved in full, afford a further annual gross revenue of $4,488,857.30.

Detailed evidence is submitted showing the marked increase in prices since 1916 of numerous articles purchased and used in the express business and concerning extensive wage readjustments and increases in 1918 and 1919. Further wage demands, estimated to aggregate $73,835,679, now pending before the United States Railroad Board, are not taken into account in the proposed rate increase. Beyond the matter of additional revenue necessary to afford respondent living profits, the witnesses review in some detail the imperative need of materially augmented equipment and facilities of various kinds, estimated to involve an expenditure upward of $31,000,000, for the procurement of which respondent must have sufficient revenue to establish its credit.

While there has been little expressed opposition to such rate increases as may be necessary to enable respondent to maintain an efficient express service, there has been a very general objection to the proposed increase in so far as, by virtue of the 50.25 per cent basis of compensation for express privileges, it entails the assessment against shippers of practically two dollars for every dollar of additional revenue required to meet respondent's needs, notwithstanding that the railroad lines have asked for no further revenue from this source. Further objection has been made to an increase predicted in part upon a loss and damage account of such magnitude as that disclosed for 1919. There is also opposition to the schedule for zones 2, 3, and 4 on the ground that, because of changed conditions since the original schedule was prescribed, the rates proposed for application within those zones are relatively too high. Exceptional treatment is asked for certain commodities, later referred to.

As contributing to the growing loss and damage account, respondent cites an increase in the average claim payments from about $5 in 1915 to $14.20 in 1919, attributed to the increased cost of the commodities involved; a more zealous prosecution of claims by shippers; the substantial expansion of the volume of traffic, including much that should move by freight; the demoralization of the express service through the loss of experienced operatives to more lucrative employment and their replacement by less efficient men; insufficient working forces; inadequate terminal facilities; and the necessary use of considerable box-car equipment, with the incidental slower service and added difficulties in the matters of stowage and policing. Respondent's manager of its

loss and damage department, while testifying at length concerning steps taken to better the general situation, is without hope of a material reduction in loss and damage until suitable car equipment and adequate terminal facilities can be procured. The item of "loss" is indicated by a classified exhibit of claim payments in 1919 to have constituted approximately seven-ninths of the total payments. Some of the protestants ascribe its swollen proportions largely to the absence, in the case of shipments not valued over $5 per pound, of the former man-to-man check from point of origin to destination, and generally it is insisted that the 1919 item should not be recognized in full in the proposed rate increase. In fairness, however, it should be observed that the ascending ratio of loss and damage to transportation charges disclosed in the foregoing table is misleading, in that express rates have not increased during that period in proportion to the increased cost of the commodities lost and damaged. On the other hand, the contrast between the abruptly magnified figures for the war year 1918 and those for 1919 affords little indication of definite further reductions to follow. It is explained for respondent that the former man-to-man check gradually became incompatible with the dispatch of the steadily increasing volume of traffic; and while the installation, July 1, 1920, or as rapidly thereafter as practicable, of a new checking system is designed to afford a more complete record of shipments and thus obviate the more serious defects of the present system, it is under trial as an experiment, the results of which are conjectural. Based upon an exhibit purporting to show claim payments by respondent for 20 months beginning July 1, 1918, a maximum of $13,000,000 or not to exceed 4 per cent of the revenues is suggested by certain protestants as appropriate in determining respondent's needs; but we are unable to reconcile the figures with those submitted by respondent. Nevertheless, although the item is in the case, with no evidence of a measurable trend by which a definite lower figure may be taken for present purposes, a consistent bending of every energy and resource toward the elimination of avoidable loss and damage should be productive of substantial results.

The record falls far short of the essential data upon which to found a comprehensive and definite revision of rates in and between the several zones; and, paraphrasing our comment in the original case on rehearing, 35, I. C. C., 3, 13, such relief as respondent requires should be accorded without the results of a general investigation that necessarily would consume a considerable period of time.

Conceding, on the one hand, that the record tends to show that there should be a somewhat greater increase in zone 1 than elsewhere, over and above that which resulted from the advance of three scale numbers on January 1, 1919, and, on the other hand, that the proposed greater increase in the basic haulage charge in that zone would accomplish something toward that end, one substantial objection to the proposed basis would be the disproportionate increases in the long-haul rates. Whatever may be the precise facts as to relative terminal expenses, it is admitted that the short-haul traffic is not proportionately as remunerative as it should be. The contemplated increases in the long-haul rates would be materially modified by a percentage increase of present rates, as has been urged, although such situations as are present in the cited interzone rates from lower to higher rated zones would be somewhat magnified. Mindful of imperfections in both plans, we are confronted with the necessity of reaching a conclusion upon the record made, leaving future practical results to determine the occasion for further action.

The record abundantly establishes respondent's need of additional revenues to enable it to meet the mounting costs of operation and maintain an efficient express service, and the question becomes one of appropriate ways and means. Assuming that the test day was fairly representative of the year's average, although criticized of record as a relatively light day of the week, Thursday, in a light month as to certain classes of traffic, the additional gross revenues estimated to flow from the proposed rates, designed to include the 50.25 per cent apportionments of express privileges, represent an average increase of 25.16 per cent of the present rates, respondent's share of which would very closely approximate an average increase of 12.5 per cent. We have heretofore commented upon the desirability of some revision of the contract bases hitherto obtaining whereby additional revenues needed solely for the express service could be obtained without a double assessment upon shippers. *Increases in Express Rates, supra.* We pass over certain evidence submitted by the committee for the state commissions in zone 3 embodying a proposed substitute of compensation and their contention that we have power to prescribe it.

In what we here conclude we are not to be understood as governed by the view that an increase in express rates should consistently be restricted to the necessities of the express service alone, regardless of the railroad facilities and services devoted to the traffic, but merely that at this time and in the circumstances the additional burdens to be laid upon shippers should be kept within bounds as far as possible without sacrificing the just interests of the respective carriers. These considerations are emphasized by the pendency of further wage demands by respondent's employees aggregating almost $74,000,000, or more than enough to wipe out entirely the additional gross revenues estimated to flow from the proposed increased rates; and as the outcome of those demands can not be anticipated, the matter must be left to be dealt with as the results require.

As before stated, shippers of certain commodities oppose the application of the proposed increased rates, principally upon the ground that by reason of narrow margins of profit any substantially increased transportation costs would restrict the movement of the traffic. The particular commodities are bread and cake, ice cream, frozen fish, live fish, and laundry. Detailed testimony in amplification of the objections has been submitted. The bakers and ice cream manufacturers urge that with the restriction of shipments local and less wholesome products would replace the output of their specialized plants, and for all the foodstuffs the further objection is made that the cost of living would be enhanced accordingly. In addition to small profits on laundry handled by express the double movement of the soiled and laundered goods is cited as warranting special consideration. To some extent the protests have arisen from misconceptions of the degree of the proposed increases. At all events the protests are based upon commercial grounds, and no sufficient transportation or other compelling reason is advanced to persuade us that these articles should not share in the increased burdens necessary to be laid upon shippers generally.

Manufacturers of rubber tires and inner tubes ask for the establishment of carload commodity rates, to apply only when the articles are loaded and unloaded by the shipper, enough lower than the less-than-carload or any-quantity rates to compensate for the absence of a pick-up and delivery service in such cases. Coupled with a showing of the volume of inbound carload shipments of fabric and outbound shipments of tires and tubes, principally by express because of pressing demands, the opinion is expressed that with the restoration of normal freight service the carload express business will substantially decline. This opinion is an echo of the generally voiced criticism that respondent has permitted its express service to be broken down by the acceptance of volumes of traffic that should move by freight. As the expressed willingness of one of the principal manufacturers to load and unload is conditioned upon the placement of the cars at its plant, the reduced rates sought would make no allowance for the in-and-out switching. The record does not warrant a prescription of special carload rates.

Much has been said in the record concerning the encroachments upon the express service by what is spoken of as freight traffic, although no clear line of demarcation is pointed out. Admittedly the service has been subjected to burdens it ought not to bear, but here again the views of the shippers are not in harmony. Some recommend a limit of weight per shipment, as 200 pounds, while others sharply protest against any restriction that would prevent emergency shipments by express; for example, machinery necessary to avoid the closing down of plants, although in general properly the subject of transportation by freight. A suggestion from one source that such emergencies be provided for under a permit system is objected to from another. While what have been spoken of as "penalty rates" might tend to solve the problem, in this further particular the record is deficient, both as to a basis for their construction and as to classification of traffic for their application.

Upon all the facts of record we find that the proposed increased rates have not been justified. If granted as proposed, one-half of the additional gross revenue would accrue to the carriers over whose lines the respondent operates, and this record is barren of evidence showing need or warrant for augmentation of the revenues of carriers other than respondent.

We further find that an increase in the present rates of 12.5 per cent has been justified, subject to the exceptions below made as to rates on milk and cream.

We think that the full amount of these increases should accrue to respondent and we assume that the other carriers will join respondent in so arranging, by revision of contracts or agreements or in some other manner.

Under the circumstances no order will be entered, and in view of the approach of the end of the guaranty period respondent will be permitted to make such increased rates effective upon not less than one day's notice in the manner provided by the interstate commerce act. Its local and joint schedule of first and second class rates should be reissued, conformably to the foregoing finding, the second-class rates not to exceed 75 per cent of the corresponding first-class rates. For the time being respondent is hereby authorized to file a special blanket supplement or supplements to its current commodity tariffs to make effective the approved increased commodity rates, but within 90 days after the above effective date, unless otherwise authorized, those tariffs shall be reissued. In computing the increased rates fractions of less than one-half cent shall be discarded and fractions of one-half cent or more shall be treated as 1 cent, except that in computing increased commodity rates which apply per pound fractions of a cent may be retained or discarded, but shall not be treated in any instance as 1 cent. Rates on milk and cream may be made equal to those contemporaneously applied by the railroad lines between the same points. If there are no competing railroad rates between the same points, respondent's rates may be increased 12.5 per cent.

As soon as may be, the increased rates shall be conformed to the requirements of the fourth section of the act, so that, where rates are applied by circuitous lines or routes no higher than the rates by direct lines or routes between points common to such circuitous and direct lines or routes, higher rates shall not apply from or to intermediate points on the circuitous lines or routes for distances longer than those of the respective direct lines or routes between the common points.

There is now pending before us an application under section 5 of the interstate commerce act, requesting authorization for a continuance of the consolidation of the express companies into respondent. There has also been submitted to us for approval a proposed new contract to be entered into between respondent and carriers over whose lines it operates. Nothing said herein is to be taken as prejudicing or forecasting the decision in either of these proceedings.

This report does not take into consideration the award of the United States Railroad Labor Board, handed down as this goes to press, awarding increased wages to respondent's employees, and, as to which, respondent has suggested the necessity for a further application for increased rates, after study and analysis of the award.

Railroads Need Cash

WASHINGTON, D. C.

THE TOTAL COMPENSATION paid to the railroads by the Railroad Administration up to July 1 on account of their rental for the use of their property during federal control was $1,365,870,037, of which $1,335,523,268 was paid by March 1, when the roads were relinquished, $13,558,350 in June, and $16,788,419 in July. The total standard return for the 26 months of federal control amounts to about $1,950,000,000, so that about $585,000,000 of the rental was still unpaid on July 1. A considerable part of this is not expected to be paid, but is being offset against the expenditures made by the government for additions and betterments and equipment for the account of the companies during federal control. On March 1 it was estimated that under the terms of the standard contracts approximately $495,000,000 could be so deducted. In addition to this however, the Railroad Administration has withheld some of the rental due the companies, after allowing them what it considered absolutely necessary for fixed charges and other corporate expenses, pending a final settlement of the accounts between the railroads and the government, in order to protect itself by retaining possession of some of the money which it claims the railroads owe it.

Some large sums will also be due the railroad companies after September 1, when the six months' guaranty period provided by the transportation act expires. The guaranty is for one-half of the amount of the standard return, and while it is reduced somewhat by the roads that, like the Southern Railway, did not accept the guaranty provisions, it is somewhere in the neighborhood of $450,000,000. Up to July 1 the roads as a whole had earned practically none of this and while July and August may be expected to show somewhat more favorable results, the most the roads could possibly earn in those two months would fall far short of paying the retroactive wage increase, which from May 1 to September 1 will amount to about $200,000,000. It is roughly estimated, therefore, that the government will owe the roads after Sept. 1 something like $500,000,000 to $600,000,000 on account of its guaranty, less the amount of the advances which are being made from time to time. Many of the roads, particularly the eastern roads, have not been earning operating expenses, and very few could pay the back wages which will accrue by September 1 without an advance on account of the guaranty, to say nothing of the current interest and dividends. The advances are made by the Treasury Department, on certificates furnished by the Interstate Commerce Commission, after the roads have executed contracts and furnished security in accordance with regulations prescribed by the Treasury Department.

The Interstate Commerce Commission has received some 200 applications for advances on account of guaranty and has issued 163 certificates to about 120 or 130 railroads, amounting to approximately $100,000,000. Some roads have received more than one certificate. The first applications were for cash to meet interest and dividend payments and in some cases operating expenses, but recently there have been many for meeting the retroactive wage payments.

The guaranty accounts and the compensation accounts covering the 26 months of federal control are handled entirely separately, as the Railroad Administration has an appropriation of its own for the settlement of its accounts.

A Review of the Transportation Conditions

Reduction in Accumulation of Freight Cars—Car Shortage Increasing Because of Crop Movement

WASHINGTON, D. C.

A TOTAL OF 914,128 CARS of commercial freight was loaded on the railroads of the United States during the week ended July 31, according to reports received by the Commission on Car Service, as compared with 915,972 for the previous week and 914,297 for the corresponding week of 1919. The Southern district continues to show an increase as compared with 1918, as it has for the past three weeks. The summary compiled by the Commission on Car Service follows:

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

Summary—All Districts; Comparison of Totals This Year, Last Year, Two Years Ago

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year 1920	Corresponding year 1919	Corresponding year 1918	Received from connections: This year 1920	Corresponding year 1919	Corresponding year 1918
Eastern	1920	6,545	2,533	53,734	3,637	8 724	10,656	33,136	103,431	221,796	....	....	267,977	....	....
	1919	9,714	2,190	48,833	3,198	7,491	8,114	18,275	118,190	....	216,005	232,506	....	230,044	248,510
Allegheny	1920	2,770	3,377	59,603	4,781	3,976	10,958	34,416	68,170	188,051	....	....	135,709	....	....
	1919	4,715	2,885	54,874	3,117	4,619	13,662	37,387	73,695	....	194,954	228,333	....	142,328	195,148
Pocahontas	1920	252	161	23,964	730	2,113	187	3,940	7,502	38,849	....	....	20,166	....	....
	1919	396	178	21,240	497	2,095	252	114	11,178	....	35,950	41,973	....	18,259	23,416
Southern	1920	4,399	1,990	22,605	4,620	17,540	3,158	30,975	41,295	126,582	....	....	81,196	....	....
	1919	4,439	2,026	22,140	187	18,098	2,267	19,654	47,394	....	116,205	121,921	....	64,646	69,935
Northwestern	1920	8,090	7,034	8,939	1,369	17,663	45,922	28,945	39,101	157,063	....	....	61,317	....	....
	1919	11,024	8,331	9 076	1,644	17,500	44,122	21,408	46,058	....	159,163	160,414	....	61,328	71,244
Central Western	1920	13,263	8,244	11,506	488	6,504	3,298	32,527	44,591	120,421	....	....	67,985	....	....
	1919	17,743	9,441	19,662	295	5,931	3,024	23,595	47,509	....	127,200	127,536	....	67,866	61,555
Southwestern	1920	4,521	3,149	3,943	194	8,233	338	17,225	23,763	61,366	....	....	57,193	....	....
	1919	9,084	2,891	5,682	171	8,138	396	12,843	25,615	....	64,820	62,239	....	49,413	43,438
Total all roads	1920	39,840	26,488	194,294	15,819	64,753	73,917	181,164	327,853	914,128	....	....	691,543	....	....
	1919	57,115	27,942	181,507	9,109	63,872	71,837	133,276	369,639	....	914,297	....	....	633,844	....
	1918	....	....	....	....	....	....	....	....	....	....	974,922	....	....	713,246
Increase compared..	1919	....	....	2,787	6.710	881	2 080	47,888	....	....	....	....	57,659	..	..
Decrease compared..	1919	17,275	1,454	....	....	....	....	....	41,786	169	....	....	....	....	....
Increase compared..	1918	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Decrease compared..	1918	....	....	....	....	....	....	....	....	60,794	....	....	21,703	....	....

For the five weeks ending July 31 the railroads have loaded a total of 4,351,363 cars, as compared with a total of 4,279,343 for July, 1919.

The accumulations of freight cars in excess of current movement continue to show a reduction until the total is now less than it has been at any time this year with one exception. For the week ending August 6 the total was 84,949, as compared with 90,571 the week before. The reduction is brought about mainly by the decrease in the number of cars held for local destinations from 23,765 to 16,612.

The car shortage (deferred car requisitions), which have been showing decreases in recent weeks, are again increasing, in spite of the improvement in transportation conditions, as the demand for cars increases with the movement of the crops and the approach of the fall season. For the week ending August 1 the average was 132,370 for the United States and Canada, or 125,810 for the United States alone, of which 45,059 were coal cars.

Speeding Up Average Freight Car Movement

Reports received by the Commission Car Service showing the average miles per car per day, which the railroad executives on July 16 resolved to increase to 30, represent a marked improvement during the month of June, for which the complete reports have now been compiled. The average for June was 25.1, as compared with 21.4 for June, 1919. For May the average was 24.1 as compared with 20.1 in 1919; for April the average was 19.7 as compared with 19.9; for March it was 23.4 as compared with 19. All of the districts show an improvement for June. In the Eastern district the average was 22.5 as compared with 22.1 For the Allegheny district it was 17 as against 17.5; for the Pocahontas district, 41.3 as against 31.3; for the Southern district, 25.8 as against 21.8; for the Northwestern district, 25.9 as against 23.8; for the Central Western district, 29.9 as against 22.8; for the Southwestern district 25.8 as against 16.7. Thirty roads show an average mileage per car per day in excess of 30.

The semi-monthly bulletin of percentages of freight cars on line to ownership, as of August 1, issued by the Commission on Car Service, shows that the roads in the Eastern district on that date had 104.9 per cent, the Allegheny district 105.6 per cent, the Pocahontas district 71.6 per cent, the Southern district, 90.3 per cent, Northwestern district, 97.8 per cent, Central Western district, 95.7 per cent and Southwestern district 100.8 per cent. The Western district as a whole had 97.5 per cent.

Cars for Grain Loading

Shippers and others who have made inquiries by letter as to what the Interstate Commerce Commission proposes to do, if anything, to improve the car supply for grain loading in the Northwest, which was the subject of a recent hearing before the commission, are receiving copies of a statement prepared by the Bureau of Service of the commission, outlining the car situation as of August 11 as it affects the Northwest and what has already been done by the commission and by the Commission on Car Service, as follows:

"In view of the fact that this commission is receiving a great number of communications with respect to the car situation in the Northwest, it is believed that it will be helpful to set forth the facts as they are at present, in some detail.

"It should be understood that the commission is fully impressed with the great importance of providing an adequate supply of suitable cars in which to move the grain crop and appreciates the responsibility attaching to it in connection therewith; including the financial aspect. In fact the entire grain situation has been receiving constant attention for some time.

"It is, of course, fully understood that the demand for cars of all kinds and in all parts of the country at this time

is greatly in excess of the supply, making it necessary for all available equipment to be prorated among the various shippers, according to their respective needs. In this distribution and relocation of equipment first consideration is very properly given to the movement of grain, live stock, perishable freight and food products.

"The box cars of the country are badly scattered and in the various orders which have been issued requiring the movement of cars to the west, it has been specified that cars belonging to the roads to which they were being relocated, or which belong to roads in the same territory and which are best suited to the traffic, should be given preference in filling such orders. Perhaps the extent to which the box cars are scattered will be better understood from the following figures:

Percentage of home box cars on home roads by districts for Class I roads, July 15, 1920:

Eastern	12.6
Allegheny	19.3
Pocohontas	10.1
Southern	12.8
Northwestern	17.7
Central Western	13.8
Southwestern	13.9
Total	14.6

"It will be noticed that with the single exception of the Allegheny region, the Northwestern region has a greater percentage of its own cars than any other and, of course, more than the average for the country as a whole. It is frequently argued that the cars belonging to specific railroads should be at once returned to their owners, but this is impracticable and would result in a great sacrifice of equipment otherwise available for commercial uses generally. It would also involve the useless expenditure of a vast amount of power to haul the empty cars from various remote points of the country back to their onwers. However, both the orders and the regulations now in force provide for a gradual relocation of cars to their home lines and this course will make possible a comprehensive program of repairs and betterments.

"Box cars are now being moved toward the west practically as fast as the railroads are able to handle them and are being and will be rapidly distributed over the grain-producing districts, thus bringing the greatest practicable measure of relief to the grain-shipping interests of your section as early as possible. To get a better idea of the extent of this relocation, it may be stated that for the period June 1 to August 5, 1920, a total of 53,300 cars were ordered to the roads of the northwest, of which 33,909 have been delivered by the originating lines, or 64 per cent, and 28,342 received by the destination roads. This latter figure represents 53 per cent. This movement will be continued until the present emergency is passed.

"It is suggested that shippers keep in close touch with their railroad agents and transportation officials concerning the matter of local distribution of cars, co-operating heartily with the railroads in coopering and making as many of such cars cars suitable for grain loading as possible."

The Commission on Car Service has issued a circular to the railroads quoting a letter from C. B. Aitchison, of the Interstate Commerce Commission, to H. B. Thurston, chairman of the Pittsburgh Terminal Committee, with reference to the distribution of available equipment and the point raised by Mr. Thurston as to whether a railroad has the right to refuse to accept a carload from a shipper when the car has been received by the shipper under load and reloaded by him contrary to the requirements of the carrier.

Commissioner Aitchison said:

"It is generally understood that when a car received by a consignee, who is also a shipper, is unloaded by him, the contract with the railway company for the delivery of his goods is thereby fulfilled, and if in the interests of a fair distribution of cars, the carrier desires that such a car be not reloaded by the shipper unloading the car, it has a perfect right to request return of the car empty, and in the event of the shipper loading the car is justified in refusing to accept the load, requiring the shipper to release the equipment and turn it back empty.

"If such a practice were not proper, it would be impossible to make a fair distribution of empty cars, and shippers who are also large receivers of freight would at all times have more cars for outbound loading than they were entitled to, to the disadvantage of other shippers."

The Commission on Car Service says in its circular:

"It is generally recognized that the receipt of a car under load gives an industry no right to demand its use for reloading. If it is entitled to the car based upon a proportionate distribution between all shippers, it is proper that they should use it, but they should not be permitted to use it to the disadvantage of other shippers who do not have inbound freight to supply them with empties for outbound movement. The ruling of Commissioner Aitchison makes clear the rights and obligation of the railroads, and places upon them the duty of making a fair distribution of cars in cases of this kind. In cases of refusal to abide by this rule the facts should be reported to this commission for handling."

Summary of General Conditions

The Commission on Car Service has issued the following summary of general conditions as of August 12:

Box Cars—Demands continue heavy for box cars from all points, and are increasing, due to heavy grain movement. Good progress is being made on the transfer of box cars from eastern and southeastern roads to western lines in order to put on these lines a supply of box cars more nearly equal to their ownership and make available additional supply for grain loading. The watermelon movement is now over in southeastern territory, but it is necessary to give special attention to the handling of ventilated equipment by loading such cars to or in direct route to owners that they may be available for the fall perishable loading.

Automobile Cars—The movement of this class of equipment is not receiving the attention the situation demands and reports continue to reach us of improper loading. The handling of this class of equipment in accordance with car service rules should be strictly adhered to except when cars may be moved loaded or empty for Michigan, upper Indiana or Ohio, where loading is available.

Stock Cars—Demands continue heavy for stock cars required to move perishable freight from the Southwest, and material assistance is now required in building up the supply of stock cars in the Northwest where range cattle and sheep will start to move in a very short time. This class of equipment should be handled with the least possible delay and moved promptly to this territory.

Refrigerator Cars—Reports indicate that requirements for refrigerator cars are being reasonably well protected. It is necessay, however, that movement of these cars be given special attention as the demand may be expected to become active in the very near future, to the end that expeditious movement be accorded.

Flat Cars—The movement of agricultural implements has now reached its peak and flat cars should be handled as expeditiously as possible to insure reasonable car service for these shipments which must move within season. There is also a heavy demand for flats in the Southern territory to protect shipments of logs and timber, a large amount of which is stored and deteriorating through a lack of transportation.

Open Top Cars—In the first half of August production of bituminous coal will show slight improvement over the last half of July. The movement of empty coal cars from western to eastern lines is now progressing on a very encouraging basis, but it will be necessary to continue present orders in effect for some time before the excess eastern cars in the West are relocated to the home roads. The demand for mill cars

in the steel loading districts still continues very heavy but some improvement has been noted during the past week in the car supply, this being particularly true in and around Pittsburgh. Special instructions have gone forth to all railroads to rush the release and expedite the homeward movement of this type of equipment. The issuance of Service Order 12 by the Interstate Commerce Commission continuing in effect the restrictions against placing coal cars for other commodities should result in a continuance of the present favorable rate of coal production. Other commodities such as sand, gravel, stone, etc., will continue curtailed as a temporary emergency measure, but these can be protected when the movement is not materially out of line to the coal fields, and in cases of emergency special permits will be issued by the Interstate Commerce Commission to cover movements in the opposite direction.

Deseamed Rails Show Reduced Base Failures

Nearly Half Million Tons in Service Up to Six Years Show Marked Freedom from Half-Moon Breaks

A REPORT ISSUED by the Interstate Commerce Commission in December, 1919, on its investigation of a derailment on a middle western road caused by a base fracture of a rail emphasizes the importance of the elimination of seams in standard rails. The fracture which resulted in the accident was of the class commonly called half-moon breaks and originated in a longitudinal seam on the under surface of the base about midway of its width. The large number of failures of this type on the same road prompted the investigation in which 748 rails were inspected which failed in this manner. Surface seaminess on the base was a factor common to all which were examined critically. These failed rails represented the product of six mills and had been in service on different divisions of seven railroads. Their weights ranged from 75 to 107 lb. per yard. The periods of time in the track were from 4 months to 13 years. It is apparent, therefore, that according to the extent of the seaminess and also influenced by traffic conditions, half-moon breaks occur early or are deferred for a term of years.

One of the chief causes to which surface seaminess is ascribed is the original surface condition of the rail ingot. Air entrapped against the sides of the ingot mould by the rising metal as it is poured from the ladle forms small disc-like apertures or flaws on the ingot surface. These minute flaws or holes develop into seams under the action of the several passes of the rolling process, the original irregular defect being compressed and elongated into a finely drawn-out seam, frequently six or eight inches in length. A section of rail bar five inches in width has been known to contain 15 or more distinct seams of this character, from 1/16 in. to 8 in. long.

There is also enveloping a steel ingot a partially decarburized, and therefore softer, surface about 5/16 in. in depth and varying from eight to ten points lower in carbon than the interior metal of the ingot. During the rolling operation, this partially decarburized surface becomes gradually thinner under the successive drafts so that in the finished rail the softer, weaker layer of metal varies from 0.01 to 0.04 in. in thickness. It is this soft surface that under the cold rolling action of the wheels causes rail heads to slough off in service and form fins.

It was in the effort to eliminate these two recognized and menacing defects in steel rails that the Lackawanna Steel Company's deseaming process was devised and installed as a part of its standard practice about six years ago. The method consists essentially in treating the rail bar while hot and during the rolling by milling off the surface of the head and base sufficiently to secure freedom from surface defects. Not only are the seams in the head and base eliminated, but the softer, partially decarburized surface is also removed so that the rolls in the remaining passes do their work on the true higher carbon steel of the rail bar. The deseaming machine subjects the top and bottom surfaces of the hot rail bar to the cutting action of teeth on two opposed rotating saw discs just after the bar leaves the last roughing pass. The bar with head down is forced between the saw discs by a pair of driven pinch rolls, adjustable to bars of various sizes and having guides for the top, bottom and sides of the bar. Adjustment at the saws is made for a cut 1/8 in. or at the most 3/16 in. deep. After leaving the saws the rail bar travels along the mill table to the finishing rolls where the final passes are made.

The finished rails made by this process show an absence of the seams and surface defects on the head and base so characteristic of rails produced by the ordinary process, and in addition the harder, firmer surface resulting from the elimination of the soft, partially decarburized layer of metal aids materially toward greater service and reduction of wear. The improvement in head surface in regard to wear and flow of metal is hardly less important than the increased safeguard against base weakness and failure.

In the beginning the treatment was applied only to the base portion of the rail bar but after careful inspection and investigation had proven the efficacy of the development in removing the weak, seamy metal of the ingot, the practice was extended to include both head and base locations and since the middle of 1914, the deseaming process for both head and base has been a permanent part of Lackawanna practice in the production of standard rails.

During 1914 and 1915, about 50,000 tons of deseamed rails were supplied to 11 prominent trunk lines in the southern, central and western states, and installed under widely varying conditions of roadway and traffic. An exhaustive survey and investigation of these installations in 1916 by a well-known inspection agency developed that the rails were rendering excellent service compared with past experience on the same roads, although the length of time they had been in use was hardly sufficient for conclusive results. At that time those roads which had adopted thick base sections as a possible solution to their base troubles expressed a keen interest in a further needed improvement in the wearing qualities of the rail head, while the roads which were still using as a standard a thin base rail were deeply concerned in the possible elimination of base breaks and failures. At the time of the investigation, noticeable results in both directions were apparent.

In January, 1920, a further investigation was made of these installations which substantiated the previous findings and justified the expectations then formed of the future results. On the road which was the subject of the I. C. C. investigation, earlier referred to, over 1,000 tons of deseamed rails had been in service since 1915 with no failures of any kind developing to date. The standard section of this road

is a thick base design, but even with this type the number of base failures in rails of ordinary manufacture was such as to draw the special attention of the Commission.

One of the largest trunk lines serving the Northwest has approximately 17,000 tons of rails in its tracks made under the deseaming process and installed from 1914 to date. In this entire tonnage no breaks of any kind had occurred up the time of the inquiry although the severe traffic conditions had developed numerous failures in rails of other mills. One of the most prominent roads of the central west has in service nearly 12,000 tons of deseamed rails. In reporting rail failures to the A.R.E.A. for 1918, no base breaks were shown in this tonnage, a total of 8 failures only of all classes being recorded, these failures all traceable to causes other than would be affected by the deseaming process. A similar experience on another central western system has so impressed the chief engineer of the road that the deseaming requirement has been incorporated as a part of his standard rail specifications.

On another large system serving the Central and Northern States only ten failures of any nature have occurred in 30,000 tons of deseamed rails laid in track beginning in 1914, none of which were base breaks. Equally satisfying results mark the experience of two of the largest systems in the northwest which have used a total of over 63,000 tons of deseamed rails since the process was instituted in 1914. In 36,000 tons representing the installation on one of the systems, 22 failures were reported in the A.R.E.A. statistics for 1918, 2 only being classed as base failures. On the other system, an installation of 27,000 tons developed, according to the same record, only 5 failures, none of which occurred in the rail base.

Summarizing, the inquiry from which the above data were obtained covered nearly 125,000 tons of rails laid in 1914 and later on 7 principal trunk lines of the west and northwest. In the total tonnage, there have been reported 45 failures, 15 being classified as broken, 2 as base breaks. Even considering all breaks as chargeable to base seams in the rail, the aggregate of 17 such failures would constitute an extremely low average in the tonnage involved.

The rail failure statistics of the American Railway Engineering Association offer convincing figures on the effectiveness of the deseaming process. In the rollings of 1913, the year just preceding the installation of the process, the failures in Lackawanna rails as reported in 1917 statistics, averaged one failure per 2.60 miles of track. In 1914 rollings, this average was reduced to one failure per 6.31 miles of track, although the process was in use only a part of that year. In 1915 rails, the miles of track per failure increased to 19.45 and in 1916 to 94.80.

The A.R.E.A. statistics mentioned carry reports on approximately half a million tons of rails made since 1914 by the deseaming process. This tonnage embraces a considerable variety of rail sections and chemical specifications, and is installed under widely differing conditions of climate, maintenance and service, making it extremely representative for comparative and analytical purposes. In the entire quantity there had developed up to the date of the compilation of statistics, only ten base failures. A consideration of this showing in comparison with a record in the same period of 249 base failures in approximately three million tons produced by the ordinary practice in five other mills.

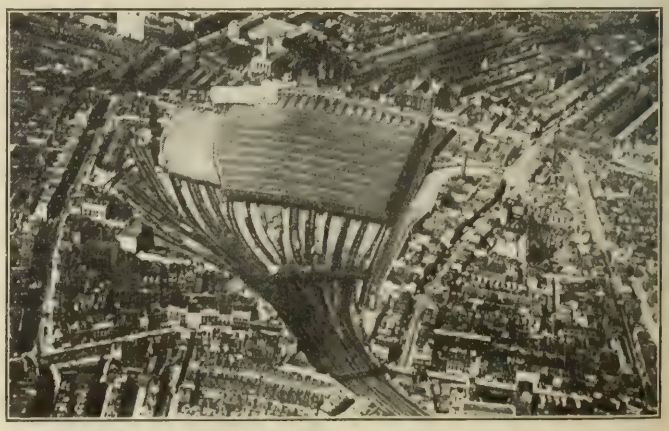
It is time the public understood that transportation must be treated as a vital industry. It must be made a profitable industry to all engaged in it, not out of special consideration for them, but as a fundamental condition for the health and growth of all business. This statement applies as well to the capital invested as to the labor employed.—Bulletin of the National City Bank of New York.

Operating Statistics for March and Three Months

THE INTERSTATE COMMERCE COMMISSION has begun the issuance of a monthly statement of operating statistics somewhat similar to those compiled by the Railroad Administration, giving totals and averages by regions and for the United States. The compilation of averages for the United States for March and three months is as follows:

	Item	March		Three months ending March	
		1920	1919	1920	1919
45.	Net ton-miles per mile of road operated...	168,387	132,022	453,657	367,783
46.	Net ton-miles per frt. train mile	725	690	685	658
47.	Net ton-miles per loaded frt. train car-mile	28.3	27.7	27.9	27.8
48.	Gross ton-miles per frt. train-mile	1,450	1,441	1,380	1,368
49.	Per cent loaded to total frt. train car-miles (excl. caboose).....	72.3	68.1	71.7	67.2
	Ratio loco.-miles (excl. light), to train miles:				
50.	Freight*	1.08	1.08	1.08	1.09
51.	Passenger*	1.01	1.01	1.01	1.01
52.	Per cent net to gross ton-miles, frt. train.	50.0	47.9	49.6	48.1
	Car-miles per train-mile:				
53.	Freight train*.....	36.4	37.6	35.3	36.1
54.	Passenger train*.....	6.2	6.2	6.2	6.1
55.	Car-miles per car-day.	23.8	(1)	23.3	(1)
56.	Net ton-miles per car-day	495	(1)	466	(1)
57.	Per cent serv. of total cars on line.....	93.0	(1)	93.3	(1)
58.	Per cent stored of serv. cars	(1)	(1)	(1)	(1)
59.	Per cent home of total cars on line.....	(1)	(1)	(1)	(1)
	Costs per freight train-mile:†				
60.	Locomotive repairs....	$0.449	$0.443	$0.461	$0.449
61.	Train enginemen.....	.271	.220	.276	.222
62.	Fuel for train locomotives	.551	.523	.580	.535
63.	Other locomotive supplies	.041	.044	.046	.047
64.	Enginehouse expenses.	.106	.117	.112	.118
65.	Trainmen	.313	.260	.315	.260
66.	Train supplies and expenses	.062	.067	.070	.065
67.	Total	1.793	1.674	1.859	1.696
	Costs per passenger train-mile:†				
68.	Locomotive repairs ...	.277	.258	.286	.257
69.	Train enginemen.....	.124	.111	.125	.109
70.	Fuel for train locomotives	.255	.233	.266	.240
71.	Other locomotive supplies	.023	.023	.024	.023
72.	Engine house expenses	.073	.074	.075	.075
73.	Trainmen	.137	.125	.140	.122
74.	Train supplies and expenses	.083	.083	.095	.085
75.	Total	.972	.907	1.011	.911
	Fuel for train locomotives, charged to Account No. 394:				
76.	Net tons of coal.....	9,997,200	8,108,715	29,738,188	25,227,682
77.	Average cost per ton.	$3.49	$3.45	$3.64	$3.44
78.	Gallons of oil.....	136,731,279	102,625,310	417,922,562	319,709,871
79.	Average cost per gallon	$0.036	$0.039	$0.033	$0.037

* Excluding mixed and special.
† Including mixed and special.
(1) Figures are not available.



An Airplane View of Waterloo Station, London

How One Railway Personnel Department Operated

A Review of the Organization Created During the War on One Road and Some of the Results

By C. C. Cook
Maintenance Engineer, Baltimore & Ohio, Baltimore

Baltimore, Md.

Early in 1918 the constant withdrawal of employees from railroad service and the forced necessity of filling the vacancies from any available source drew the attention of the management of one of the larger systems then under federal control to the need of a department which would secure an adequate supply of efficient workmen and provide ways and means for their retention in service. It was decided to establish a personnel department, modeled upon the organizations which had then been most successful in larger industrial companies, in so far as the principles and methods of such organizations could be made effective in railroad work. This railroad had for a number of years maintained at system headquarters a well-organized service record bureau which covered all of the 60,000 or more employees with the exception of the "floating" unskilled labor in the maintenance of way and stores departments. The records of that bureau were dependent upon the monthly payroll and other periodical reports from division officers and were designed to keep as near current as possible the individual record of each employee so far as the date of his employment, the character of his service as to merit and discipline and the date of his separation from service were concerned. It was not possible to learn from these reports or records the exact condition with respect to the general or local employment situation any earlier than two to three months after the actual change had taken place. This service record bureau, however, had maintained admirable records for the purposes for which they were intended and it served as a splendid nucleus for an enlargement into a personnel department.

In starting the work the chief operating officer issued circulars announcing the creation of the department of personnel and outlined its purposes, as follows: (1) To develop fields for recruiting workers; (2) to maintain a list of prospective employees for all branches of railroad service; (3) to select new employees of proven character and ability to perform their duties; (4) to provide opportunities for training employees along Americanization, scholastic and vocational lines; (5) to provide equal opportunity to all for advancement through the development of a "Promotion List"; (6) to welcome at all times suggestions from any employee and arrange for their impartial consideration by the proper officers; (7) to arrange transfers of employees according to the fluctuations of work and mutual advantage of the men and the road; and (8) to ascertain definite reasons for employees separating from service and arrange for corrective measures.

The organization of the department follows:

Position	Duties
Manager	General direction.
Assistant manager	Supervision field forces and statistics.
Chief, service record bureau	Service records.
Supervisor of office equipment	Employment and transfer of office forces.
Chief labor agent	Direction of labor agents.
Employment supervisors (One at each division headquarters)	To carry out purposes of department on their respective divisions.
Traveling employment supervisors (One at each division headquarters)	To asssist employment supervisors.
Labor agents (One at each center of supply of laborers)	To handle special demands—principally unskilled labor.

The work of the department was divided into four phases:

(1) Selecting, testing and hiring the worker.
(2) Record of service of the employee.
(3) Training and placing the employee.
(4) Retaining and serving the employee.

The exigencies of the war situation demanded that extraordinary effort and importance (otherwise undue) be given to the hiring of men who were then urgently needed in all departments. The work of employment, however, was systematized in such a way that a report of each individual hired at any point on the system was on record in the division and general office not later than two days after being employed. This was accomplished by means of an "Employment Slip" which gave all essential information for record of the party employed and was made out in triplicate by the employment supervisor. One of these copies was retained by the employment supervisor, one was sent to department headquarters and one copy was delivered by the employee to the foreman, who in turn receipted and forwarded it to the employment supervisor.

These "employment slips" were designed so that they formed a card index divided as to division, department and occupation. It was possible for one clerk in the central office to maintain this card record strictly up-to-date and prepare daily a statement of the number of men employed in each occupation on each division and system as a whole, and this notwithstanding that a total of 22,690 men were employed in the five months from August to December, 1918, an average of nearly 200 new employees per working day.

On Saturday of each week each employment supervisor secured from the heads of the various departments and forwarded to headquarters on a standard form a statement of the number of men of each occupation which were needed. This form showed for each location and for each occupation the following information:

(a) Number of men hired last week.
(b) Average number required per day.
(c) Average number in employ per day.
(d) Number short (b-c).

This weekly record was compiled for the system as a whole and the management was completely informed each week as to the status of each department and each occupation on each and all divisions and each and every station or location on the system.

At the end of each month the employment supervisor secured from the division officers of each department a report of men who separated from the service. These separations were reported to headquarters and from these and preceding reports a monthly statement of "Labor Turnover" per division and department was made. The "Labor Turnover" results, as developed by this report were startling, as for instance in November, 1918, a certain department on one division had a turnover of 1020 per cent., while the same department on another division had 52 per cent and all departments on the system 126 per cent. Certainly there was evidence of need for determining the cause for such great variations in similar occupations in the same department, and the need for corrective measures.

Again it was surprising that during the "Armistice" month, when the demand for labor was at its peak, the labor turnover on a leading railroad system was considerably less than the majority of the industries—many of whom had much-heralded reputations for higher and bonus

pay and special inducements to workmen which railroads were unable to make.

Selection and Tests of Employees

Personnel Department representatives were carefully chosen, mainly from the ranks of the other departments, and their abilities as transportation, mechanical or maintenance of way and structures men were relied upon in selection of employees. A system of "Occupational Qualifications and Test" cards similar to those in use in the U. S. Army, but developed by specialists in railroad occupations, was designed for assistance of these representatives and promised to be of invaluable help in selection of desirable employees. This feature had not been developed further than the training previously offered by other departments through their instruction schools and manuals, except to the extent that new employees of foreign extraction were urged to take advantage of the Americanization schools available in the more congested localities. The field for development of training along vocational, scholastic and Americanization lines is wide and is one that promises most beneficial results through proper organization and development.

The one most essential need of the railways is that of the establishment of consistent and harmonious relations between the company, its officers and employees. A decaying morale resulting from many conditions associated with the world war had set in even prior to 1918. It was and still is necessary to eradicate all suspicion of diversity of interests and of favoritism or tyranny in management, and to inculcate throughout the entire personnel the spirit of cooperation, helpfulness and unfailing justice and loyalty.

It was felt that the personnel department, with its outlined purposes, afforded the most practical and definite way for the accomplishment of those ideals. When any company assigns competent and enthusiastic representatives to the special duty of dealing with the human element in its business, and those representatives, with an intelligent understanding of the problems and of the hopes and the aspirations of the employees, are forming a contact between the company and the employee similar to that which existed between employees and employers when organizations were small and the head of an industry was in personal touch with each of his employees, that company is in a fair way to arrest the discontent of which much complaint is now heard and will turn a disinterested and perhaps sullen crowd of workers into a loyal and happy band of employees.

It is not to be construed that these features have been neglected by those in charge of the various departments, nor is it to be feared that a personnel department will attempt to usurp the prerogatives of officers of other departments. The conditions that have resulted in the comparative neglect of the problem of the employee have arisen out of the emergencies that called for the extreme effort in production of transportation, and out of the plight in which the railroads found themselves when caught between the upper and nether millstones of limited revenues and leaping expenses. It is only important now that the situation be realized and definite means for its remedy be adopted and enforced.

It is a difficult and thankless task for the pioneer in developing a personnel department. Prejudice, suspicion and doubt as to the benefits on the part of those unfamiliar with its purposes or with its successful operation in leading industries, large and small, must be overcome. Men of optimism, tact, vision, energy and strength of character are needed to formulate and carry out the policies. But above all is needed the adoption of the principles of the work as a policy of the company by the authority of its highest officer or board of direction. It is not paternalistic, neither is it welfare work. It is a cold business proposition, one for the management to adopt or discard. It will not grow up from the bottom.

The problem of selecting, training, serving and retaining desirable and efficient employees is an intensely practical one that has been tested at least far enough by one railroad personnel department to justify the prophecy that an improvement in relationship between company and employee lies in that direction.

Proposed Capital Expenditures for 1920

WASHINGTON, D. C.

CAPITAL EXPENDITURES for additions and betterments and new equipment during 1920 to the amount of $762,256,108 had been authorized or proposed by 122 Class 1 railroads before the rate decision was announced, according to a compilation of replies received by the Interstate Commerce Commission in response to a telegram sent to the roads for the purpose of advising the commission, in connection with its disposition of the $300,000,000 loan fund, as to the probable expenditures to be substantially completed during 1920. The telegram was sent by Alfred P. Thom, counsel and vice-chairman of the Association of Railway Executives, on March 20, but the compilation published herewith gives a summary of the information furnished by the roads up to July 1, as their estimate of the most essential expenditures.

The table given herewith represents replies from 54 eastern, 19 southern and 49 western roads. They were asked to state the proposed expenditures under the different classifications shown in the table which had been authorized or substantially decided upon, but the replies indicated various degrees of definiteness as to the different items as many roads had not yet definitely determined upon their budgets and many had made plans contingent upon their receiving loans from the $300,000,000 fund provided by the transportation act. Therefore in some cases the items represent specific authorizations and in other cases the estimates of the railroad officers of their minimum requirements and it is regarded as probable that in many cases the amounts proposed will be increased as a result of the rate decision, as the estimates indicated the amount of work which the roads considered most desirable and necessary for the public service, made at a time when they were still somewhat uncertain as to the future. The summary of the information furnished up to July 1 is as follows:

Final summary of replies received by the Interstate Commerce Commission from 122 Class I roads in response to telegram requesting information regarding authorized and proposed capital expenditures to be substantially completed during the year 1920:

	Item	Eastern District	Southern District	Western District	United States
1	Additional main tracks	$9,857,669	$1,493,850	$11,661,253	$23,012,772
2	Additional yard tracks and sidings	23,252,029	3,791,112	15,440,110	42,483,251
3	Signals and interlocking plants	3,897,696	316,944	2,553,116	6,767,756
4	Shops	21,979,435	5,207,055	16,668,918	43,855,408
5	Station and station facilities	4,377,089	2,345,635	9,725,266	16 447 990
6	Extensions and branches	3,099,844	512,322	2,763,916	6,376,082
7	All other road improvements	62,101,761	13,821,133	77,542,929	153,465,823
	Road expenditures not itemized	.....	.....	.....	.....
	Total, road	128,565,523	27,488,051	136,355,508	292,409,082
8	Locomotives	46,041,564	11,511,045	48,063,557	105,616,166
9	Box cars	42,165,896	5,962,071	49,131,633	97,259 600
10	Open top cars	40,508,475	3,956,175	21,672,500	66,137,150
11	Refrigerator cars	4,995,000	4,762,500	15,130,000	24,887,500
12	Other freight train cars	5,616,401	2,089,836	15,567,318	23,273,555
13	Passenger coaches	24,979,475	3,267,606	7,532,765	35,779,846
14	Other passenger train equipment	7,318,120	1,699,746	5,378,061	14,395,927
15	All other equipment, new	3,409,769	682,851	8,259,689	12,352,309
16	Improvements to existing equipment	25,204,347	2,009,991	17,663,435	44,877,773
	Equipment expenditures not itemized	600,000	7,723,000	1,237,000	9,560,000
	Total, equipment	200,839,047	43,664,821	189,635,958	434,139,826
	Expenditures not separated between road and equipment	35,707,200	.....	.....	35,707,200
	Total	365,111,770	71,152,872	325,991,446	762,256,108

General News Department

The National Railways of Mexico will advance its freight rates 25 per cent on September 1 according to recent reports from Mexico City, although the advances will not apply on traffic between certain competitive points.

The headquarters office of the Railway Employees' Department of the American Federation of Labor has been moved from Washington to Chicago in order to be near the office of the Railroad Labor Board.

Harry J. Bell, formerly supervisor of safety for the Northwestern region, U. S. Railroad Administration, has been appointed secretary of the Chicago section of the National Safety Council and the Chicago Association of Commerce.

A temporary injunction restraining employees of taxicab and transfer companies from soliciting business in its station and upon its platforms at Milwaukee, Wis., has been granted the Chicago & North Western. The company claims that it has entered into an agreement with the Milwaukee Transfer Company, by which passengers are conveyed to any part of the city. The transfer company has been granted the right to solicit on trains and to use the disputed property for parking purposes.

The Erie, on August 10, reopened its Chicago river barge service, which has been discontinued since the beginning of the war. The reestablishment of the barge service was coincident with the reopening by the Erie of its freight depots at Kingsbury and Erie streets and Webster avenue and the river. The cars are loaded upon the barge at the Eighteenth streets yards of the railroad and are towed by tug to the north side terminals, where they are distributed by electric locomotives. The service was resumed at the request of the North Side Business Men's Association. A description of this service appeared in the *Railway Age Gazette* of November 2, 1917, page 807.

The Joint Conference Committee of the national societies of civil, electrical, mechanical and mining engineers has issued an invitation to engineering and allied technical organizations to become charter members of the Federated American Engineering Societies, the organization conference of which was held in Washington, D. C., on June 3 and 4, and the proceedings of which were reviewed in the *Railway Age* of June 11, page 1667. The engineering societies are also asked to appoint delegates to the first meeting of the American Engineering Council, which will be held this fall and of which more detailed notice will be made later.

Outlaw Strike Leaders Indicted by Jury

Indictments against 41 leaders in the "outlaw" railroad strike voted by the federal grand jury at Chicago on August 4 have been refused by Judge Samuel Alschuler because the names of those indicted became known several hours before the grand jury completed its report. Judge Alschuler ordered the indictments placed under seal until an investigation of the alleged "leak" is completed. The indictments as drawn up charge the men with violation of the Sherman and Lever acts in conspiring to tie-up the transportation of necessities of life through the agency of "outlaw" yardmen's strikes last spring. All of the men named in the indictment are members of the Chicago Yardmen's Association, of which John Grunau is president, and of the United Enginemen's Association, of which H. E. Reading is chairman. According to press reports both men are named in the indictment.

The "Super Power Zone" Survey

The scheme for creating a "super-power zone" on the Atlantic coast, noticed in the *Railway Age* of February 27 (page 645), is to be the subject of a survey of production and distribution methods, by the Geological Survey, work on which has already been begun. This survey will cover the territory between Boston and Washington, and from the Coast back 100 to 150 miles, and will include a comprehensive study of methods for the utilization of water power.

George Otis Smith, director of the Geological Survey, announces that "the chief objective of the survey is to investigate the possibilities of economy that might result from the establishment in the Boston-Washington industrial district of a general system for the generation and distribution of electrical power. It will also include research into probable future electrification of railroads and more complete electrification of industries. All possible sources of power, developed and undeveloped, will be studied. . . ."

W. S. Murray, of New York, is the consulting engineer in charge of the survey, with Lorin E. Imlay, Henry W. Butler and Carey T. Hutchinson as his chief assistants. Congress has appropriated $125,000 for the survey and it is expected to be completed in about 18 months.

Chicago Section, American Welding Society

A Chicago section of the American Welding Society was organized at a meeting of the members of the welding trade in Chicago on August 3. Representatives were in attendance from many of the railroads and also from many of the larger local industries. M. B. Osburn, assistant superintendent of the Pullman Car Works, was elected chairman; O. T. Nelson, president of the General Boilers Co., was elected vice-chairman, and L. B. Mackenzie, president of the "Welding Engineer," secretary and treasurer. Directors for three years are: E. Wanamaker, electrical engineer, C. R. I. & P.; H. B. Bently, superintendent of motive power and machinery, C. & N. W.; Andrew Oliver, welding supervisor, Standard Oil Company, and W. M. Brady, commercial engineer, General Electric Company. Directors for two years are: Harold Cook, managing editor of the "Acetylene Journal"; W. A. Slack, president of the Torch Weld Equipment Company; K. R. Hare, district manager of the Transportation Engineering Company, and J. M. Jardine, partner, Western Welding & Equipment Company. Directors for one year are: W. H. Bleecker, Jr., district manager of the Page Steel & Wire Company; Oliver Mitchell, partner, A. F. Mitchell & Son; Walter L. Senhert, president of the Welded Products Company, and Don B. McLeod, secretary and treasurer of the Gas Products Association. Meetings will be held on the second Tuesday of each month in the rooms of the Western Society of Engineers.

Railway Employees Elected to Board of Directors

The Duluth, Missabe & Northern has recently elected to its board of directors a number of its officers "who have shown by their skill and efficient service that they are qualified to act upon the board of directors."

The membership of the board is now as follows: W. A. McGonagle, president of the road; C. E. Carlson, secretary; C. W. Kieswetter, traffic manager; W. H. Hoyt, chief engineer; J. W. Kreitter, superintendent; J. W. Kempton, treasurer; Joseph Seifert, auditor.

C. P. R. Has Taken Back 7,008 Returned Soldiers

The Canadian Pacific now has in its employ 18,330 returned soldiers who enlisted in the Canadian, British and United States armies, or more than 20 per cent of the total payroll.

Every man in the company's employ who volunteered was given six months' pay and was promised a position on his return of equal value to the one he left.

Of 11,062 men who joined the army 1,100 paid the supreme sacrifice, 2,088 were wounded and 7,008 who applied for reinstatement were given employment at a higher wage or salary.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JUNE, 1920

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.					
Pittsburgh & Shawmut	103	$114,999	$4,648	$120,527	$30,213	$40,370	$1,310	$48,362	$5,487	$125,743	104.32	$5,216	$112	$5,328	$24,501
Pittsburgh & West Virginia	63	166,069	8,921	193,474	69,543	27,989	1,483	71,940	9,354	192,428	99.45	1,045	14,215	—14,231	58,307
Pittsburgh, Shawmut & Northern	209	100,263	4,939	108,627	37,078	49,775	1,233	53,671	5,564	147,328	135.62	—38,701	1,891	—40,593	4,270
Port Reading	21	57,257	.....	70,073	18,860	4,163	18	52,810	4,780	80,632	115.07	—10,559	12,007	—22,567	—82,837
Quincy, Omaha & K. C.	255	69,392	24,974	103,765	68,241	25,081	762	57,979	5,306	157,296	151.58	—53,531	4,172	—57,666	—47,646
Rich., Fred. & Potomac	117	419,326	247,014	814,205	92,178	145,185	5,737	362,497	26,139	646,851	79.44	167,354	31,050	136,303	—425,010
Rutland	415	269,384	126,654	485,388	140,296	176,662	6,150	259,468	15,541	600,152	123.64	—114,764	18,238	—133,002	—175,666
St. Joseph & Grand Island	258	200,789	34,695	254,069	146,935	48,237	2,152	139,953	14,058	353,780	139.24	—99,711	11,882	—111,593	—214,069
St. Louis, Brownsville & Mexico	548	182,442	179,146	399,414	113,344	102,877	13,431	198,820	24,525	452,871	113.38	—53,457	12,306	—66,038	—178,865
St. Louis Merchants Bridge Terminal	9	.....	.....	313,567	47,959	60,046	862	258,757	7,777	375,401	119.72	—61,834	9,845	—71,802	20,815
St. Louis-San Francisco	4,757	4,927,060	2,084,976	7,548,943	1,223,673	1,566,377	61,730	2,766,737	225,968	5,826,287	77.18	1,722,655	249,962	1,472,379	127,609
St. Louis Southwestern	968	1,458,401	176,584	1,699,534	246,366	282,122	49,876	495,201	52,903	1,131,246	66.56	568,288	70,437	497,850	214,862
St. Louis Southwestern of Texas	807	557,946	121,119	728,142	216,794	245,143	18,568	366,089	38,234	884,497	121.47	—156,355	23,000	—179,382	—46,493
St. Louis Transfer	6	.....	.....	104,528	8,541	13,779	240	55,777	2,551	80,887	77.38	23,641	273	23,368	3,779
San Antonio & Aransas Pass	736	212,682	100,257	342,646	85,031	86,909	7,810	245,596	20,293	445,460	130.00	—102,814	13,750	—116,584	2,424
San Antonio, Uvalde & Gulf	317	79,702	37,126	124,887	18,337	14,473	2,457	63,379	5,413	104,061	83.32	20,826	2,200	18,626	28,674
Seaboard Air Line	3,563	2,830,479	789,944	3,970,125	1,069,616	1,311,572	109,633	2,449,976	191,111	5,162,264	130.02	—1,192,139	150,000	—1,342,964	—1,817,100
South Buffalo	11	65,001	.....	124,487	7,772	16,615	1,053	87,379	2,031	114,851	92.26	9,636	3,580	6,056	19,128
Southern Railway	6,971	7,782,387	2,998,451	11,777,265	1,815,897	2,590,902	184,457	6,311,601	411,861	11,440,426	97.13	336,839	412,124	—76,440	—225,170
Alabama Great Southern	313	726,295	198,799	984,664	96,113	178,020	18,593	378,742	26,666	705,924	71.69	278,739	34,413	243,797	125,443
Cincinnati, New Orleans & Texas Pacific	338	1,194,504	333,073	1,617,743	230,619	446,476	23,785	711,146	41,573	1,460,947	90.30	156,796	60,490	96,305	—102,662
Georgia Southern & Florida	402	236,764	101,041	377,933	72,052	113,013	8,331	248,308	13,569	458,315	121.26	—80,381	19,250	—100,089	—76,515
New Orleans & Northeastern	207	477,009	167,992	636,156	104,593	156,030	10,152	330,363	27,926	634,150	99.68	2,006	43,119	—41,109	—107,426
Northern Alabama	110	97,480	12,728	112,436	30,534	10,840	1,690	71,208	3,952	118,225	105.14	—5,788	4,580	—10,369	—15,060
Southern in Mississippi	278	71,296	40,002	122,563	80,208	31,741	2,846	108,671	7,345	230,812	188.32	—108,249	9,860	—118,049	—75,404
Southern Pacific Co.	7,105	11,414,999	4,841,684	18,080,938	2,304,035	3,086,844	121,800	6,225,400	411,828	12,555,260	69.45	5,525,679	1,726,069	3,799,065	570,971
Southern Pacific S. S. Lines	...	377,513	30,236	415,606	2,185	229,865	8,946	450,837	24,744	736,243	177.14	—319,638	9,997	—329,635	—366,270
Spokane International	165	114,502	17,562	136,698	27,322	7,869	2,268	37,855	5,110	82,700	60.50	53,998	5,170	48,828	23,448
Spokane, Portland & Seattle	549	520,441	237,592	814,902	151,596	99,843	9,213	245,610	23,707	543,182	66.65	271,720	90,610	181,110	29,205
Staten Island Rapid Transit	23	78,794	112,768	212,950	41,822	32,970	1,556	109,108	10,299	195,755	91.92	17,195	15,000	2,195	—17,362
Tennessee Central	292	140,849	52,186	209,193	44,372	48,380	5,001	118,560	10,257	226,532	108.28	—17,339	5,670	—23,043	17,321
Terminal R. R. Assn. of St. Louis	36	.....	.....	383,391	61,760	68,659	911	167,181	10,870	313,490	81.77	69,900	36,469	33,431	11,784
Texarkana & Ft. Smith	93	141,835	22,314	177,411	22,036	19,673	4,982	61,635	5,820	114,050	64.28	63,362	8,070	55,292	10,241
Texas & New Orleans	469	478,911	175,008	728,780	222,004	226,667	9,143	295,513	21,671	807,428	110.79	—78,648	42,473	—121,500	—209,823
Texas & Pacific	1,946	2,049,309	968,883	3,244,296	553,707	658,210	38,624	1,275,705	92,718	2,660,520	82.01	583,776	120,800	461,625	—33,438
Toledo & Ohio Central	503	959,096	68,206	1,081,712	193,558	292,211	9,885	602,465	28,387	1,130,051	104.47	—48,339	114,702	—163,042	—288,555
Toledo, St. Louis & Western Ry	454	865,715	36,586	943,627	308,098	205,584	14,481	387,224	16,489	931,876	98.75	11,751	31,000	—19,249	—22,801
Toledo, Peoria & Western	247	113,225	47,166	171,589	27,898	36,351	2,018	77,376	7,230	150,813	87.89	20,776	8,500	12,276	48,098
Trinity & Brazos Valley	368	93,493	21,820	125,573	46,728	47,236	2,212	55,153	10,661	161,989	128.99	—36,416	7,210	—43,626	24,022
Ulster & Delaware	128	69,669	27,449	121,786	16,973	20,990	4,587	84,791	7,512	135,447	111.21	—13,661	5,000	—18,661	9,774
Union R. R. of Pennsylvania	40	.....	.....	1,128,062	131,088	247,326	259	648,493	9,714	1,036,881	91.91	91,181	12,733	78,448	254,408
Union Pacific	3,614	6,812,369	2,065,486	9,854,262	2,389,612	2,278,170	111,686	3,268,653	348,697	8,734,312	88.63	1,119,951	484,264	635,631	—1,799,071
Utah	98	164,137	1,107	165,640	26,328	36,049	159	39,638	3,179	105,353	63.60	60,283	5,067	55,221	29,444
Vicksburg, Shreveport & Pacific	171	200,961	101,563	330,666	67,456	65,895	6,871	116,881	11,738	272,475	82.40	58,191	13,717	44,469	—5,899
Virginian	523	1,167,690	66,165	1,372,154	172,618	276,371	8,242	490,254	32,738	976,663	71.18	395,491	64,382	331,110	—40,285
Western Pacific	1,011	1,024,222	290,035	1,403,839	213,296	174,454	29,245	439,814	34,331	920,502	65.57	483,338	59,861	423,475	171,780
Western Maryland	797	1,223,233	96,879	1,405,528	423,671	580,100	34,312	699,491	68,591	1,828,562	130.10	—423,034	50,000	—473,034	—516,470
Western of Alabama	133	115,679	78,285	213,751	37,009	57,756	10,164	102,131	12,039	223,341	104.49	—9,591	7,175	—16,766	—31,215
Wheeling & Lake Erie	511	1,238,152	64,068	1,460,575	228,197	302,457	10,710	571,488	32,591	1,148,504	78.63	312,072	64,800	247,272	—130,937
Wichita Falls & Northwestern	328	135,312	46,260	193,579	74,666	27,034	651	122,417	8,771	233,424	120.58	—39,845	10,596	—50,442	—49,771
Wichita Valley	256	72,896	34,387	113,923	35,120	16,373	.....	59,459	686	111,638	97.99	2,286	5,707	—3,422	—14,022
Yazoo & Mississippi Valley	1,381	1,821,723	415,077	2,355,577	612,854	626,459	23,525	939,083	60,045	2,266,681	96.23	88,896	81,417	6,475	—229,289

SIX MONTHS OF CALENDAR YEAR 1920

Alabama & Vicksburg	141	1,015,238	397,206	1,569,702	239,538	294,074	31,442	569,615	59,565	1,212,436	77.24	357,266	81,700	275,487	246,289
Ann Arbor	301	1,791,599	307,921	2,281,158	324,358	512,742	35,687	1,164,706	82,310	2,119,991	92.93	161,167	103,400	57,735	—47,140
Arizona Eastern	378	1,512,492	319,332	2,004,292	398,341	296,166	20,119	61,527	106,868	1,456,971	72.69	547,322	166,715	380,436	60,614
Atchison, Topeka & Santa Fe	8,702	63,987,314	24,837,167	99,492,068	14,516,518	23,338,332	1,072,917	34,262,162	1,763,677	74,922,955	75.31	24,869,113	5,027,224	19,536,313	6,767,236
Atlanta & West Point	93	760,065	519,216	1,482,698	187,879	257,464	37,419	564,408	56,203	1,127,376	76.04	355,322	47,655	307,666	15,410
Atlanta, Birmingham & Atlantic	639	2,059,894	439,395	2,785,175	618,000	797,492	108,560	1,458,759	108,711	3,091,927	111.01	—206,752	98,360	—406,437	403,363
Atlantic City	177	661,885	1,073,377	1,849,101	300,848	255,767	9,872	1,091,800	9,747	1,668,642	90.24	180,459	84,182	96,257	—208,247
Atlantic Coast Line	4,891	83,900,095	9,468,455	36,919,086	5,056,393	7,343,942	413,558	16,691,835	769,738	30,536,364	82.71	6,382,723	1,600,000	4,775,154	232,725
Baltimore & Ohio Chicago Terminal	90	.....	.....	1,014,189	264,308	342,932	7,050	822,256	64,529	1,527,697	150.63	—513,508	177,760	—691,269	—13,288
Baltimore & Ohio	5,153	77,585,877	13,342,862	99,786,722	14,200,152	30,213,365	1,168,966	46,636,151	2,673,405	95,601,455	95.80	4,185,267	3,313,504	852,244	4,270,916
Baltimore, Chesapeake & Atlantic	87	413,466	160,934	626,931	59,626	317,959	6,579	420,600	22,080	826,844	131.88	—199,913	22,200	—222,113	177,983
Bangor & Aroostook	658	2,503,950	482,926	3,213,002	722,009	726,206	23,477	1,248,665	103,298	2,868,665	89.28	344,336	156,616	187,718	60,910
Beaumont, Sour Lake & Western	118	763,646	180,392	991,463	197,106	137,699	15,188	358,161	31,884	739,702	74.61	251,761	16,100	235,642	248,369
Belt Ry. Co. of Chicago	31	.....	.....	1,861,140	219,543	366,922	3,525	1,173,356	46,201	1,809,547	97.23	51,593	131,773	—80,180	—13,549
Bessemer & Lake Erie	225	4,618,541	215,349	5,018,071	667,978	1,906,676	79,968	1,876,535	172,239	4,740,316	94.46	277,755	91,000	186,729	—865,558

Mechanical Handling of Materials

A Materials Handling Section of the American Society of Mechanical Engineers was organized at a meeting in the Engineering Societies Building, New York City, Friday, August 13. Robert M. Gates, Lakewood Engineering Company, acted as temporary chairman, and a spirited discussion was formally opened by Harold V. Coes, of Ford, Bacon & Davis; Fred M. Feiker, vice-president, McGraw Hill Co.; E. Logan Hill, formerly secretary of the Port and Harbor Facilities Commission of the U. S. Shipping Board, also assistant general manager of the Erie R. R. A nominating committee was appointed and ballots will be sent out for the election of officers just as soon as the committee makes its report.

Hearings Before Railroad Labor Board

The United States Railroad Labor Board, sitting in Chicago on August 13, heard representatives of the Lighter Captains' Union of New York, who are requesting increased compensation. The hearings in this case occupied but one session of the board. On the afternoon of the same day the board began hearings upon the application of all of the employees of the Bangor & Aroostook who are asking for wage increases comparable with those granted other railway workers on July 20. A separate hearing for the employees of this road is necessary because it was not represented by the Conference Committee of Managers of the Association of Railway Executives which presented the railroad's side of the recent wage hearing which terminated with the award of July 20.

An Extensive Installation of "Slow-Boards"

Acetylene gas lights—of use presumably in daylight as well as in darkness—are to be set up at certain points classed as dangerous on the highways of Maryland; and, according to a Baltimore paper, the State Roads Commission has adopted a plan to install several thousand of them, providing suitable warnings for high speed motorists at all railroad crossings, cross-roads, sharp curves and steep descending grades. It is proposed to use red lights at the approaches to railroads, green for cross-roads, yellow for curves and blue for grades.

The lights are made by the American Gas Accumulator Company and it appears that the scheme contemplates the use of the lamp posts for the display of advertisements—advertisements in sufficient amount and variety, no doubt, to pay the whole cost of installation and maintenance.

There is some question of the legal status of a highway bearing an advertisement, and, at last accounts, activities had been suspended pending the receipt of an opinion from the attorney general.

To Promote Trainmen's Health

F. J. Bailey, a Texas railroad conductor, writing in the Railroad World, of San Antonio, calls for more regular rest-hours for trainmen. The Russell Sage Foundation, investigating railroad employees' working conditions, in Illinois, reports that "irregular hours and the unbroken periods of work for week after week and month after month, without a regular day of rest, are arduous features of railroad employment." This was the finding in a study of industrial conditions in Springfield, Ill. Mr. Bailey, enlarging on this condition, from his own experience, calls on his fellow workers to take more reasonable views of life. He quotes Secretary of Labor William B. Wilson, in an address at the annual memorial service of the Railroad Brotherhoods in Philadelphia, who spoke of the fallacious economy of the railroad labor schedule calling for sixteen hours as the maximum of a day's labor. Secretary Wilson "hoped to see the time when railroad men, instead of spending every other night or so away from home, would be enabled to spend all their off hours at home with their families." Continuing, Mr. Bailey says: "Organized railroad men in England have demanded that runs be arranged to permit all trainmen to return home the same day. This would be regarded by many as a revolutionary suggestion; but it is not at all impossible of accomplishment. The cost of shortening divisions so that crews arriving at the same time from opposite points could exchange trains, each returning to his point of departure, would be considerable, but it would be balanced by improvement in the service, by the increase in the contentment item of the cost of living which cuts such an important figure and the health of the men, and by the elimination of that in the case of train service men who have to maintain practically two establishments. . . ."

Federated American Engineering Societies

This is the name proposed for an association now being promoted by members of the Engineering Council which was organized for war work in 1917. Invitations have been sent out to the 150 leading engineering societies in the United States to appoint delegates to an organization meeting in the Fall. The new organization will have an executive body to be known as the American Engineering Council, representation in which will be granted to the component organizations. Calvert Townley, president of the American Institute of Electrical Engineers (New York), in a statement outlining the proposals, says that the national council will co-ordinate the work of State councils and of local affiliations whenever these activities are of national importance. It will have an annual meeting and an executive subcommittee of thirty members will meet monthly. The invitations which have been sent out declare the purpose of the organization to be "to further public welfare wherever technical knowledge and engineering experience are involved and to consider and act upon matters of common concern in the engineering and allied technical profession."

A Study of "Snow-Burnt" Rail

The chief of the Bureau of Safety of the Interstate Commerce Commission has just issued a report of an investigation of the derailment of a passenger train on the St. Louis-San Francisco Railroad near Keighley, Kans., on December 26, 1918, which was caused by the breaking of opposite rails which had been snow-burnt, apparently caused by an engine slipping on account of being stalled in the snow. In view of the frequency with which wheel-burnt rails are found in service, a study of the effects of such burning has been undertaken by the commission. The report summarizes the present situation with the statement that "the suggestion that wheel-burnt rails be removed from the track indiscriminately as a menace to safety would not appear justifiable in view of the inadequacy of the data upon their condition and the large number of such rails which are carrying present equipment without rupture. They are due to a condition so common that avoidance of their formation would likewise appear an impracticable demand." The report further states that "the means of distinguishing between safe and unsafe rails of this type unfortunately has not been made known" and that further investigations of the same problem are now in progress with rails involved in another derailment.

A Surprise Check on Whistling

Enginemen on the Missouri, Kansas & Texas Railway of Texas have received from their respective superintendents a circular calling attention to the importance of regular whistling at highway crossings. A check was made, for a limited time, and it was found that of 6,468 cases where an engineman passed a road crossing, the whistle was sounded 5,696 times, or 88.1 per cent. The circular says that this result is gratifying, but—

"A rating of 88 per cent is too far from being perfect to satisfy. There still exists a hazard of 12 per cent. We must reduce this hazard. We must have as nearly 100 per cent as it is humanly possible to make it. We owe to the public this solemn duty.

"It is not believed that accidents at crossings can be entirely eliminated until the elimination of the reckless automobile driver is brought about, but certainly we can do everything reasonable to eliminate such accidents by observing the rules of the railroad and the laws with respect to sounding whistle and ringing bell at all public crossings, and by taking such precautionary measures as will occur to all reasonable men.

"We solicit your earnest co-operation to the end that crossing accidents may be reduced to the lowest possible minimum. We are counting on you."

Ninth Annual Safety Congress

The program for the Steam Railroad Section's meetings during the ninth annual Safety Congress of the National Safety Council, to be held at Milwaukee, Wis., from September 27 to October 1, has been announced as follows:

September 29, 9:30 a. m.

Address by W. M. Jeffers, general manager, Union Pacific.

Safety and Time Service.

Webb C. Ball, general time inspector, Bureau of Railroad Time Service, Cleveland, Ohio.

September 30, 9:30 a. m.

Shop Accidents.

J. A. McNally, safety agent, Wabash, St. Louis, Mo.

Economic Phases of Railway Safety Work.

Samuel O. Dunn, Editor *Railway Age*.

Transportation Accidents.

C. H. Baltzell, superintendent, St. Louis-San Francisco, Fort Smith, Ark.

September 30, 2 p. m.

Round Table Discussion.

Chairman, Harry A. Adams, Bureau of Safety, Interstate Commerce Commission.

Suggested Topics.

Use of Statistics in Connection with Safety Work.

J. C. Clark, assistant to general manager in charge of safety, Oregon Short Line, Salt Lake City.

Competition in Safety Work.

R. C. Richards, president National Safety Council, Chicago & North Western, Chicago.

Duty of Safety Committee Members.

Marcus A. Dow, general safety agent, New York Central.

October 1, 9:30 a. m.

Maintenance of Way and Motor Car Accidents.

Arthur Ridgway, assistant chief engineer and safety officer, Denver & Rio Grande, Denver, Colo.

Safety Work of the Interstate Commerce Commission.

W. P. Borland, chief Bureau of Safety, Interstate Commerce Commission.

Public Safety.

C. M. Talbert, director, Department of Streets and Sewers, St. Louis, Mo.

Frisco President Enlists Aid of Employees in Personal Appeal

James M. Kurn, president of the St. Louis-San Francisco, recently addressed a letter to members of "the Frisco family" in which he said, in part:

"The war and its aftermath have torn us away from many of our old standards of habits and thought. I earnestly desire that this condition shall not operate to destroy the happy family relationship which obtains between the management and the employees of these properties. The Frisco is in a fair way to become one of the most successful railroads in the United States, and it will achieve that result if you, I, and all of our associates, each in his proper place, do our part in a hearty, co-operative spirit.

"I believe firmly in the payment of an honest day's work and expect an honest day's work for an honest day's pay. I want to and will give every employe a square deal in all our relationships, feeling that the inherent spirit of fair play with which the average American is born will influence all of you to reciprocate. It is my earnest desire that every one of the large army of employees of these companies who is industrious shall earn a comfortable living for those dependent upon him, in order to be able to provide for the bringing up of his family in the right kind of surroundings and give his children an education which is the birthright of all American citizens. This can be accomplished readily if we all pull together to make the operation of this railroad a success.

"To the supervisory officers I say, emphatically, interest yourself in your employees, lend a helping hand and a word of counsel at every opportunity, feel at all times that the men who have grown up, and are growing up on this railroad, have an interest in the property's successful operation, and that the management and owners have a large reciprocal interest in the employees. Discipline must, of course, be maintained in an organization as large as ours, but we must be absolutely just in all our relationships of every character with the rank and file of the organization. Promote at every opportunity, good feeling and mutual understanding, seek untiringly for the co-operative help of those under your charge, welcome every suggestion as to the improvement of conditions and betterment of our operating practices, make them feel by every means in your power that every one of them is an important part of the Frisco family organization. If you do this you will find your own burdens lighter, the tasks of administration easier to perform and you will have the satisfaction of knowing that your men are not only working for you but also working heartily *with* you. The respect and regard of the working organization should be highly prized by every officer.

"Let us all continue to get together on the basis of mutual understanding and confidence, and I predict for these properties a record of achievement that will eclipse anything that the Southwestern section of the United States has ever seen. And while we are achieving this we will have the hearty satisfaction of a contented family organization and the utmost harmony between the men who work and the men who direct the work."

Master Blacksmiths' Association Meets at Detroit

The twenty-sixth annual convention of the International Railway Master Blacksmiths' Association was held at the Hotel Statler, Detroit, Mich., August 17, 18 and 19, with over 100 members in attendance. After the usual opening exercises, John Carruthers, D. M. & N., president of the association, delivered his address. After setting forth the reasons which made it necessary to hold the convention at Detroit instead of Birmingham, Ala., the place selected by the association, Mr. Carruthers said, among others things: "Never before in the history of railroading have we stood so much in need of the newest and most approved methods to obtain better service and the greatest possible production. It is up to the supervisory forces to untangle the mess in which the roads have been returned to their owners."

Following a paper on Frame Repairing by H. H. Hoeffle (L. & N.), the discussion brought out a variety of methods of applying the different autogenous welding processes to frame repairs. It is evident that all of these processes are being used successfully, but with all of them the question of contraction requires careful study. It is generally at the bottom of the trouble when failures occur. The application of the electric welding process to this work is meeting with favor because of the small amount of contraction which must be allowed for, thus simplifying the preparation for the welds. In discussing the electric and gas welding processes the need for properly trained men with a knowledge of metals and the effect of heat on them as well as skill in manipulation, was dwelt on by several of the members. The effect of making welding a preferred job in the various crafts has been detrimental in this respect as the men tend to change jobs before becoming thoroughly experienced welders.

A paper on Spring Making and Repairing was read by J. W. Riley (Lehigh Valley), describing the spring plant at the Sayre, Pa., shop of that road. Here modern machinery has been introduced to eliminate the uncertainty of hand forming, which is still quite generally the practice in railroad shops. The discussion centered around the practicability of making and repairing springs in railroad shops. The concensus of opinion was in favor of this practice rather than purchasing manufactured springs and having them maintained by the manufacturer. Where adequate facilities have been provided the members who took part in the discussion generally reported not necessarily a decreased cost per ton of work done but a great decrease in the amount of repairs necessary with a decreased over-all cost of spring maintenance.

Papers were also read on the following subjects: Heat Treatment of Iron and Steel, Reclaiming Plants, Autogenous Welding, Case Hardening, and Carbon and High Speed Steels.

A report of association business transacted during the convention as well as the election of officers for the coming year will appear in next week's issue.

Traffic News

Freight Rate Hearings in Canada

Hearings were begun at Ottawa, Canada, on August 10 before the Dominion Board of Railway Commissioners in connection with the application by the Canadian railways for increases in their rates. The railways originally asked for a 30 per cent increase in freight rates but following the granting of increased wages similar to those allowed by the United States Railway Labor Board the application was amended. The carriers are now asking for a 40 per cent increase in freight rates, 20 per cent in passenger rates, with a surcharge on parlor or sleeping car fares of 50 per cent. It is estimated that the increase requested will result, if granted, in increased revenues amounting to $126,000,000.

The railways in the hearings to date have been represented by E. W. Beatty, president of the Canadian Pacific, Howard Kelly, president of the Grand Trunk, and D. B. Hanna, president of the Canadian National, and others. Shippers from various parts of the Dominion have also testified and expressed their opposition to the proposed increases.

Western Railroads Petition State Commissions for Increased Rates

Railways operating in western states in which there are state regulatory bodies, are petitioning for increased freight and passenger rates to place intrastate traffic on a parity with interstate traffic. The action taken by the Public Utilities Commission of Illinois is described elsewhere in this issue. The result of the action taken in that state, it is believed, will influence to a certain extent the action taken in other western states and may result in the reopening of the whole freight rate case before the Interstate Commerce Commission. The Iowa Railroad Commission has already taken action similar to that of the Illinois commission in its hearings on this subject at Des Moines, Ia., on August 5.

Hearings on the application of the railroads operating in the various western states have been held as follows: Colorado on August 12, Idaho on August 19, Texas on August 11, Ohio on August 16, California on August 6.

The date for the hearings in Missouri and in Washington and Nevada has not been fixed.

Illinois Railroads to Fight Low Intrastate Rates

The refusal of the Public Utilities Commission of Illinois to grant the application of railroads operating in that state for increased freight and passenger rates in order to place intrastate traffic on a parity with the rates recently authorized by the Interstate Commerce Commission for interstate traffic will, according to present indications, reopen the entire rail rate question before the Interstate Commerce Commission. The denial of the railroads' application was noted in the *Railway Age* of August 13.

In its decision the state commission made the following provisions:

It refused an increase of passenger rates from two cents to three and six-tenths cents per mile.

It refused a 40 per cent increase in freight rates, allowing, however, a 33⅓ per cent temporary increase.

It refused increased surcharges on Pullman and parlor car travel.

It refused an increase in commutation rates.

It refused a 20 per cent increase in rates for milk and cream on both passenger and freight trains.

It awarded an increase of 20 per cent on excess baggage rates, effective on September 1.

Immediately following the decision conferences were held by the railroad representatives who presented the application of the roads before the state commission and plans were formulated to carry the fight to the Interstate Commerce Commission. It was recognized, however, that a final ruling on the case cannot be expected before September 1, when the railroads pass completely out of federal control. It may be possible that the Illinois roads will compromise temporarily, pending the ultimate decision, by continuing to charge the present three cent rate after September 1 and impounding the difference between the legal state rate and the rate placed in effect during federal control.

Three state commission men representing the National Association of Railway and Utilities Commissioners sat with the Interstate Commission throughout the recent rate hearing which resulted in the $1,500,000,000 rate increase decision. These representatives recommended that the various state commissions take similar action. Walter A. Shaw, president of this association, is also a member of the Illinois commission.

An explanation which is current among western railway executives is that the Illinois commission, like other commissions in states where there are two cent fare laws, desired to keep its record clear. The belief generally is that the state body realizes the necessity for higher fares but is not willing to go on record as endeavoring to nullify a state law. The attitude assumed, therefore, is that the matter will be left to the Interstate Commerce Commission.

Coal Production

The total output of bituminous coal for the week ending August 7 is estimated at 10,334,000 net tons, in the weekly bulletin of the United States Geological Survey. This is 546,000 less tons than the production of the week before the miners' strike in Illinois. The order terminating the strike did not reach the men in time to effect a general resumption of work on Monday, August 2, and on that day the loadings were but 80 per cent of the average before the strike, but by Thursday and Friday they had passed the pre-strike average. Production during the first 187 working days of the year 1920 has been 18¼ million tons behind 1917 and more than 38 million tons behind 1918, but is 45½ million tons ahead of 1919. Anthracite loading for the week shows a decrease of 6 per cent, as compared with the corresponding week of 1919.

The mine reports for the week of July 31 picture the paralysis of operations in the Eastern Interior field caused by the strike of the daymen. Adjacent districts were benefited by the cars released because of the inactivity in the fields affected by the strike. Labor shortage and strikes caused a loss of 31.8 per cent of full time output, while the loss attributed to transportation was but 19.6 per cent.

Dumpings at Lake Erie ports increased during the second week of the operation of the amended lake order of the Interstate Commerce Commission (Service Order No. 10). The total for the week was 832,701 net tons, the largest tonnage handled in any week this season, but far short of the maximum performance in earlier years. The cumulative lake movement since the opening of navigation now stands at 7,647,000 tons, as against 13,190,000 in 1918 and 14,375,000 in 1919. Reports to the American Railroad Association of cars leaving the mines for lake destinations show a shortage of 4,546 cars at the end of the first week of the operation of the service order, and of 8,232 cars at the end of the second week. The order required a movement of 3,840 cars per day. Shipments on August 9 exceeded the daily quota.

Tidewater shipments continued in great volume during the first week of August. There was a decrease in the movement to Hampton Roads, but an increase at the four other ports. Statistics supplied by the Tidewater Bituminous Coal Statistical Bureau show that during the first week of August the movement to New England reached 256,000 net tons, while exports were 490,000 net tons. The first week of the operation of Service Order No. 11 saw a slight reduction in exports and a decided increase in the tonnage to New England. The latter was still somewhat short of the goal of 1,250,000 net tons fixed by the order. The rail movement of bituminous coal to New England increased again during the week ended August 7.

The bulletin includes the following interesting statement regarding railroad fuel stocks:

The railroads consume 28 per cent of the soft coal mined,

and normally held about the same proportion of the total quantity of coal in storage. Data on railroad fuel stocks from July 1, 1916, to January 1, 1919, are given in the following table:

STOCKS OF BITUMINOUS COAL HELD BY RAILROADS FOR FUEL, EXCLUDING COAL IN TRANSIT†

(NET TONS)

Date	Eastern District	Western District	Southern District	Total
July 1, 1916.....	6,115,000	2,246,000	824,000	9,185,000
January 1, 1917.....	3,981,749	2,234,345	427,388	6,643,482
July 1, 1917.....	3,622,000	3,068,000	486,000	7,176,000
January 1, 1918.....	4,051,193	3,960,269	878,789	8,890,251
July 1, 1918.....	3,797,000	4,849,000	1,310,000	9,956,000
January 1, 1919.....	4,736,693	7,111,268	1,796,741	13,643,702

†Complete data on railroad fuel stocks are available for January 1 of the years 1917, 1918 and 1919. For the other dates, the figures given are estimates of the total based on actual reports from roads normally carrying over 90 per cent of the stocks.

It will be seen that stocks of railroad fuel ranged during the two and a half years covered by the table from a minimum of 6,643,000 tons to a maximum of 13,644,000 tons at the beginning of 1919.

In comparison with these figures the stocks held by the railroads in the first half of 1920 were small. Data furnished the Geological Survey by the American Railroad Association indicate that 124 of the principal carriers had on hand on February 29, 1920, in cars and in stock piles, 4,275,348 net tons of coal, and that on May 31 their holdings had decreased to 3,411,348 tons. The questionnaire used in obtaining these statistics asked specifically for "tons in cars," and "tons in stock piles." Many roads furnished also the tons in chutes, and it is probable that others included the quantity in chutes under the caption "Tons in cars." As not all of the quantity in chutes was obtained, however, the figures are somewhat short of the total amount of fuel coal held by the railroads. Allowing for the small roads not reporting, the results of the inquiry may be summarized as follows:

STOCKS OF BITUMINOUS COAL HELD BY RAILROADS FOR FUEL, IN CARS AND IN STOCK PILES, FEBRUARY 29, AND JUNE 1, 1920

(IN NET TONS)

Date	Eastern District	Western District	Southern District	Total
February 29, 1920....	2,290,000	1,880,000	614,000	4,484,000
June 1, 1920.....	1,461,000	1,840,000	443,000	3,744,000

These figures, although not strictly comparable with the data for previous years, indicate clearly that railroad-fuel stocks on February 29, 1920, were far below those of the years immediately preceding. Yet from February 29 to June 1, 1920, largely as a result of the switchmen's strike, the stocks continued to decline. The decrease has been most pronounced in the Eastern district. While stocks are low in the Southern district they are still about as high as they were from January 1 to July 1, 1917. In the Western district also they are not far below the level of July, 1916, and January, 1917. Furthermore, stocks in the Western district decreased but little from March 1 to June 1, 1920.

According to a statement issued by the National Coal Association, every indication points to the effective operation of the new program recently put under way to overcome the acute soft coal shortages in the Northwest and New England as well as the rest of the country. The experience of the last two weeks shows that close co-operation of all the interests involved, under the comprehensive coal priority plan, is all that is needed to put an end to the emergency through which the nation has passed the last five months, it says.

Advices to the National Coal Association from the Ore and Coal Exchange at Cleveland, through which the movement of coal from bituminous mines to the Great Lakes for transshipment to the Northwest, under priority order No. 10 of the Interstate Commerce Commission, is being handled, indicate that there has been an appreciable increase in coal shipment during the last two weeks. Other advices show that the movement of coal to relieve the acute situation in New England has advanced to a point where ample coal is being dumped at tidewater ports and shipped all-rail, to meet New England's requirements.

Although the flow of coal from bituminous mines to the Great Lakes has been below the requirement, as laid out in the schedule evolved by the operators and railroad executives, still there has been such an improvement as to impel those handling the situation to believe that the shortage in the Northwest will be overcome before the close of Lake navigation in November. To do this, it is said, the Pennsylvania Railroad System, the Wheeling & Lake Erie and one or two others of the railroads running out of coal fields that supply the Northwest, must accelerate the movement of cars to the mines. Up to the week ending August 14 they had failed to live up to the schedule fixed. As against this, the Baltimore & Ohio, Chesapeake & Ohio, Norfolk & Western, and other roads, have given approximately the supply of cars required of them.

While shipments of 1,200,000 tons are needed each week to satisfy the lake demands up to the close of navigation, the actual dumping at lake docks had fallen considerably below. During the week ended August 7 approximately 795,000 tons were loaded at the docks, but the aggregate, it is reported, was increased during the next week. The railroads unloaded 15,903 cars during the week of August 7, as against the 24,000 which Daniel Willard, chairman of the advisory committee of the Association of Railway Executives, had assured the operators that the railroads would place at the mines each week and haul to the lake ports.

Later reports from the Coal and Ore Exchange show that the railroads for the first three days of the week ending August 14 exceeded the average daily quota of 4,000 cars at the mines serving the Great Lake movement. Reports show that these cars were loaded at the mines: Monday, 4,767; Tuesday, 3,450; Wednesday, 4,213; a total of 12,430 for the three days. Shipments from the mines on Thursday and Friday, it is reported, indicate that the full quota of 24,000 cars for the week might be reached.

The part played by the small, speculative "wagon" mine in absorbing open-top equipment, which is badly needed to overcome the shortage in cars in the great bituminous, producing fields, is pointed out by Jonas Waffle, secretary of the Indiana Coal Trade Bureau, in a statement issued by the National Coal Association. An effort to bring about drastic regulation by the Interstate Commerce Commission of the distribution of equipment to these "wildcat" mines has been launched by operators in the National Coal Association, who say that they have tied up hundreds of cars needed to relieve the acute coal shortages in the Northwest, New England and other points.

Ordinarily, as Mr. Waffle points out, the "wagon" mine, located at a considerable distance from a railroad track, sells coal only in the immediate vicinity of the mine. During coal emergencies hundreds of other "wagon" mines, owned by speculators, spring into existence, not only taking an appreciable supply of cars, which are held for days at their mines, but selling their coal in the open market at exorbitant prices. These "wagon" mine manipulators, along with the speculators in tidewater shipments, have been responsible for the high prices which have prevailed in the upset market, he said.

Finds No Dumping of Potatoes at Wilmington

As a result of a thorough investigation, the United States Department of Agriculture branded as having "no foundation whatever" reports that large quantities of potatoes were recently dumped into the Delaware river near Wilmington for the purpose of keeping up prices. Numerous inquiries as to the truth of the reports led the Bureau of Markets to send a representative to Wilmington to make a personal investigation of the matter at first hand.

No evidence whatever of dumping was found, according to his report to the department. The rumor was found to have been the result of gossip which had grown to considerable size through circulation. Railway officials, dealers, city health and market officials, and numerous persons involved in the circulation of the reports were interviewed. No one was found, however, who could substantiate the story in any particular. One railway employee through whom the story was traced, declared that during his fifteen years' experience on the railway he had never seen food dumped.

The department has on several previous occasions investigated similar reports of dumping foodstuffs. Frequently such reports were based on the dumping of small quantities of condemned produce. The department never has found a case where any quantity of merchantable produce, upon which the freight had been paid, has been dumped.

Commission and Court News

Interstate Commerce Commission

The Interstate Commerce Commission has suspended, from August 18 to December 16, the proposed rules and regulations requiring the prepayment of freight charges on traffic from points in the United States to points in Canada, as published in Item No. 290 of Supplements 13 and 14 to F. A. Leland's I. C. C. No. 1316, and in Item 290 of Supplements 13 and 14 to W. J. Kelly's I. C. C. No. 917.

The Interstate Commerce Commission on Wednesday suspended the provisions of a tariff filed by J. E. Fairbanks, which was to become effective on Thursday, August 19, putting into effect the new reconsigning rules authorized by the commission, which provide for an emergency penalty of $10 a day for detention of open-top and coal and coke cars. These provisions were suspended at the request of a special committee of the National Industrial Traffic League, which went to Washington to protest against the tariff as being more sweeping in its effect than was intended.

Increase in Hudson & Manhattan Fares Denied

The Interstate Commerce Commission has denied the application of the Hudson & Manhattan for authority to increase its passenger fares between Jersey City and Hoboken, N. J., and Hudson Terminal, New York City, to 8 cents, and to establish a similar rate between Jersey City and Hoboken and stations on its uptown line in New York, where a 10-cent fare is now charged. The commission finds the present rates of 6 and 10 cents, respectively, which were recently put into effect by the company at its suggestion, to be justified and requires cancellation of the suspended tariffs proposed by the company.

Personnel of Commissions

Walter E. Miller has resigned from the staff of the Railroad Commission of Wisconsin to engage in other business.

State Commissions

The San Francisco-Oakland Terminal applied to the railroad commission of the state of California, on August 10, for an increase in passenger fares, between San Francisco and points in Alameda, over what is known as the Key division, substantially in excess of the amount granted by the Interstate Commerce Commission.

Adjustment of the rates for transporting rice charged by the Southern Pacific, Western Pacific, Atchison Topeka & Santa Fe and nine other roads is asked by the Rice Growers' Association, Rosenberg Bros. & Co., and a number of rice merchants of the state of California in an application heard before the commission of that state on August 9. The application asked that the rice rates be placed on a par with the rate for transporting grain and beans. The request of the rice men, if granted, will mean a reduction in rice rates approximating 25 per cent.

Court News

Larceny from Freight Yard by Consignee's Agent

Under an indictment for larceny of goods from a railroad car in a freight yard, the Circuit Court of Appeals, Ninth Circuit, holds that an agent of the consignee authorized to receive and receipt for the goods is guilty of larceny thereof from an interstate carrier if he took possession of them without giving a receipt therefor, and with intent at the time he took possession to steal.—Undelman v. United States, 264 Fed. 942.

Foreign Railway News

Deficit on Swedish States Railways

LONDON.

An official statement issued by the Swedish States Railways states that the expenses in the year 1919 exceeded the receipts by 11.07 million kroner, or about $3,000,000.

The Dover-Folkestone Railway Reopened

LONDON.

The cost of restoring the line on the South Eastern & Chatham Railway, between Dover and Folkestone, along the coast which was thrown out of use in December, 1915, owing to a landslide, cost £310,000 (approximately $1,550,000), the whole of which has been paid by the British government.

Passenger Train Mileage in Great Britain

LONDON.

Sir Eric Geddes, Minister of Transport, has recently stated that the passenger train mileage run on all standard gage railways in Great Britain during the year 1919 was about 69,000,000 miles less than in the year 1913, or a reduction of 25 per cent. The statistics for 1913 do not enable any definite figure of saving to be arrived at. The statistics for the year 1919 show the average miles per engine hour of passenger trains to be approximately 10.

Austrian Railway Electrification Bill

LONDON.

The Austrian Government has recently issued a bill regarding the electrification of the Austrian state railways. The bill was introduced on July 15, in the Constituent National Assembly, and provides for the electrification of 650 kilometers (400 miles) of the western part of the railway system by the end of June, 1925, at a cost of 5,096,000,000 crowns, or approximately $1,000,000,000 at the normal rate of exchange, which is to be raised by loan. At a later date, 1,135 kilometers (700 miles) are to be electrified.

Exports of Car Wheels and Axles in June

The exports of car wheels and axles in June totaled $346,100, the detailed figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce being as follows:

CAR WHEELS AND AXLES

Countries	Dollars	Countries	Dollars
Italy	7,216	Dominican Republic	3,279
Netherlands	584	Brazil	19,273
Spain	8,758	Colombia	294
England	3,184	Ecuador	254
Bermuda	10	Peru	6,472
Canada	89,732	Venezuela	1,008
Guatemala	800	China	52,437
Honduras	135	Kwantung	46,977
Nicaragua	21	British India	2,041
Salvador	241	Dutch East Indies	42,874
Mexico	13,960	Japan	14,918
Trinidad and Tobago	327	Siam	2,000
Other British West Indies	21	Philippine Islands	12,366
Cuba	16,918		
		Total	346,100

The Swiss Coal Situation

A new six months' coal agreement has been signed by representatives of the Swiss and German Governments, Trade Commissioner H. Lawrence Groves reports from Zurich. Under its terms Switzerland will receive from 15,000 to 20,000 tons of coal and coke and 15,000 tons of briquets per month. The agreement will run until January 15, 1921.

At the same time Trade Commissioner Groves cables that in connection with approving terms of a $25,000,000 loan in the United States for the Swiss Federal Railways, the National Council has recommended to the railroad authorities that all construction work which is not of an urgent or indispensable character be suspended. What funds are avail-

able will be used to push the electrification program which is already well advanced on the Gotthard line. The difficulty of obtaining coal and its high cost make it urgent that the Swiss railways develop and utilize as rapidly as possible the water power resources of the country which are still untouched.

Exports of Cars in June

The exports of freight cars in June totaled 945, valued at $1,031,798, the detailed figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce being as follows:

EXPORTS FOR CARS FOR RAILWAYS

Countries	Passenger		Freight and other		For other railways		Parts of cars
	No.	Dollars	No.	Dollars	No.	Dollars	Dollars
Poland and Danzig	..	....	350	100,820	....	....	....
Sweden	..	....	....	....	....	....	1,995
England	..	....	....	....	....	....	2,590
British Honduras	..	....	6	3,954	....	....	....
Canada	..	....	57	7,335	22	43,800	71,160
Honduras	..	....	35	41,950	....	....	526
Salvador	2	25,851	1	7,753	....	....	95
Mexico	..	....	19	46,200	1	750	5,500
Jamaica	..	....	....	....	....	....	181
Cuba	..	....	230	366,239	50	66,538	20,011
Haiti	..	....	....	....	....	....	150
Dominican Republic	..	....	5	2,925	6	12,000	567
Argentina	..	....	....	....	....	....	3,181
Brazil	..	....	....	....	45	6,943	1,487
Chile	..	....	6	14,000	....	....	217
Colombia	..	....	....	....	....	....	3,442
Dutch Guiana	..	....	....	....	....	....	5,603
Peru	..	....	....	....	158	55,006	43,222
Venezuela	..	....	....	....	....	....	5,020
China	..	....	....	....	....	....	301,592
British India	..	....	3	21,160	....	....	44
Dutch East Indies	..	....	33	7,590	....	....	489
Japan	..	....	....	....	....	....	14,798
Philippine Islands	..	....	....	....	50	14,150	17,620
British South Africa	..	....	200	411,872	....	....	187,520
Total	2	25,851	945	1,031,798	332	199,187	687,010

England's Railway Deficit

LONDON.

The Ministry of Transport has just issued a white paper showing the results of railway operation in the year 1919-1920, together with an estimate of the receipts and expenditures for 1920-1921.

It says that the deficit on the working of the controlled railways for the financial year 1919-1920 was estimated at £45,000,000 (approximately $180,000,000) but the realized deficit is £41,349,530 (approximately $165,398,120). The receipts included an additional revenue of about £10,000,000 ($40,000,000) derived from the increase in freight rates which came into operation in January, 1920, and for which no allowance could be made in the estimate, while the expenditure also exceeded the estimate in consequence of wages concessions, a rise in the cost of material, and some overtaking of arrears of maintenance and renewals which could not then be foreseen. The excess of receipts over expenditure on actual railway working was £7,161,220 (or $28,644,880). The following is a summary of the main identifiable increases in expenditure since the question of revision of rates was referred to the Rates Advisory Committee last October.

	Per annum
Increased cost of materials	£12,000,000
Increased cost of coal	3,500,000
Increases to shopmen (11 shillings)	4,000,000
Increases to conciliation grades (5 shillings)	4,500,000
Increases to enginemen (3 shillings)	.....
Increases to conciliation grades (1 shilling)	2,000,000
Findings, National Wages Boards	7,000,000
Increases under sliding scale consequent upon rise in cost of living and other concessions, April 12 to July 1	6,800,000
Hire of rolling stock	750,000
Rates, taxes and compensation	3,200,000
Making a total of	£43,750,000

The statement further contains an estimate of the receipts and expenditure which may be expected in a full year under present conditions. The excess of receipts over expenditure for Great Britain in 1919-1920 is expected to be turned into a loss of £4,500,000 ($18,000,000) and the net liability falling on the exchequer for the railways of the United Kingdom is estimated at £54,500,000 ($218,000,000) instead of £41,349,530 ($165,398,120), which was the liability in 1920. The liability in respect of the Irish railways is estimated at £2,200,000 ($8,800,000).

The following table gives the main items in the full year's estimate in comparison with the actual results:

	Actual results year ended March 31, 1920	Estimate for a full year under present conditions
Great Britain:		
Guarantee of 1918 net receipts	£45,659,000	£45,600,000
Interest on new capital expenditure	1,016,000	1,200,000
Total Government guarantee	£46,675,000	£46,800,000
Railway receipts:		
Passenger train traffic	£102,405,875	£105,000,000
Freight train traffic	91,964,210	134,000,000
	£194,370,085	£239,000,000
Less expenses of collection and delivery	10,817,587	13,000,000
	£183,552,498	£226,000,000
Miscellaneous	2,016,015	2,000,000
Total railway receipts	£185,568,513	£228,000,000
Railway expenditure	177,980,766	232,500,000
Net receipts—railway working	£7,585,747 Loss	£4,500,000
Other business—loss	426,527	1,000,000
Total net receipts	£7,161,220 Loss	£5,500,000

The estimated loss of revenue from passenger train traffic during the railway strike in September 1919, is put down at £1,500,000 and freight train traffic at £1,000,000.

With reference to the present inquiry of the Rates Advisory Committee it is pointed out that it is undesirable to impose increases of rates at short intervals to meet the successive alterations in the price of materials and in rates of wages, and it is therefore necessary to impose increases of rates at a higher level than the present rate of expenditure will justify in order that the loss already sustained in the current year may be recovered. The government realizes that there is some risk attaching to any substantial increase in rates that it will lead to such displacement or cessation of traffic as will result in loss instead of gain. In announcing its acceptance of the findings of the National Wages Board the government stated that, while agreeing with the board's view that the wages settlement should not be disturbed until stable trade conditions had returned, in the opinion of the cabinet this must be accepted with the qualification that should forthcoming increases in railway rates and charges, consequent in large measure upon the increased cost of labor, not produce additional revenue, it would be impossible that the present level of wages could be maintained.

English Railway Statistics

LONDON.

The Ministry of Transport has recently issued its statistics for the four weeks ended May 23, which shows that the total tonnage carried by the railways in Great Britain for that period was 27,468,099 tons, or an increase of 10.30 per cent on the previous four weeks. The average length of haul was 57.67 miles. The average train load increased from 132.69 tons for the four weeks ended April 25, to 135.35 tons for the four weeks ended May 23. The Great Central Railway has the highest average, 169.66 tons; the Great Northern, 163.20 tons; the North Eastern, 158.44 tons; the Great Western, 151.43; the Midland, 147.16 tons, and the London & North Western, 146.53. The average carload for all railways in Great Britain was 5.49 tons, and the train-miles per engine hour was 3.22, and the ton-miles per engine hour, 436. The freight train receipts per ton-mile were 1.559 pence as against 1.715 pence for the previous four weeks.

Increase in Great Britain's Number of Passengers

LONDON.

Replying to a question asked in Parliament, the Minister of Transport has issued an official report giving the number of passengers carried on the railway systems of Great Britain for the years 1913 and 1919. They are as follows:

	1913	1919	Increase
6 months ended June 30	384,494,723	471,124,186	86,629,463 or 22.53 %
6 months ended December 31	433,487,116	503,135,780	69,648,664 or 16.07 %
	1913	1920	Increase
3 months ended March 31	184,625,201	242,662,814	58,037,613 or 31.44 %

The passengers carried on these railways represent approximately 73 per cent of the total for all standard gage railways in Great Britain, and the number of season ticket holders in 1919 shows an increase of over 54 per cent as compared with 1913.

Equipment and Supplies

Locomotives

THE ST. LOUIS-SAN FRANCISCO is inquiring for 10 Consolidation type locomotives.

THE CENTRAL ANDREITA (Cuba) will have one locomotive built at the Baldwin Locomotive Works.

THE CIEGO DE AVILA (Cuba) will have one locomotive built at the Baldwin Locomotive Works.

THE CENTRAL ESPERANZA (Cuba) will have one locomotive built at the Baldwin Locomotive Works.

THE CENTRAL NAJASA (Cuba) will have one locomotive built at the Baldwin Locomotive Works.

THE CENTRAL SANTA AMELIA (Cuba) will have one locomotive built at the Baldwin Locomotive Works.

THE SEABOARD AIR LINE is inquiring for some light Mikado type locomotives.

THE TENNESSEE CENTRAL is inquiring for some 2-8-2 type locomotives.

THE CARNEGIE STEEL COMPANY, Pittsburgh, Pa., has ordered 2 locomotives from the Baldwin Locomotive Works.

THE ATLANTIC COAST LINE is inquiring for 2 6-wheel switching locomotives.

THE BOSTON & MAINE is inquiring for 26 8-wheel switching locomotives, 5 Mallet type and 9 Santa Fe type locomotives.

THE PELICAN BAY LUMBER COMPANY, Klamath Falls, Ore., has ordered one logging locomotive from the American Locomotive Company.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for a 36-in. gage American Mogul or 10-wheel type locomotive, not over 25-tons in working order, 150 lb. steam pressure and wheel base to take 30 to 35 degree curves.

Freight Cars

A. MCNEIL & SONS COMPANY, Grand Central Palace, New York, is inquiring for 200 hopper-bottom gondola cars.

THE STUDEBAKER CORPORATION, South Bend, Ind., is inquiring for from 100 to 200 flat cars of 40 tons' capacity.

THE BROWN HOISTING MACHINERY COMPANY, Cleveland, Ohio, is inquiring for 50 trucks.

THE BALTIMORE & OHIO has renewed its inquiry for 500 steel underframe refrigerator car bodies of 40 tons' capacity.

THE TRINIDAD GOVERNMENT LINES has ordered 30 cane cars of 10 tons' capacity from the Magor Car Company.

THE NASH MOTORS COMPANY, Kenosha, Wis., is inquiring for 50 automobile cars of 40 tons' capacity.

THE SEABOARD AIR LINE, reported in the *Railway Age* of May 28 as inquiring for 100 phosphate cars, has changed this inquiry to 300 cars.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for a second-hand standard gage caboose car.

THE AETNA EXPLOSIVE COMPANY, 165 Broadway, New York, has ordered from the General American Tank Car Corporation five tank cars of 6,000-gal. capacity, to carry muriatic acid.

THE ELECTRO BLEACHING GAS COMPANY, 18 East Forty-first street, New York, has ordered from the General American Tank Car Corporation five tank cars to carry liquid chlorine.

Supply Trade News

H. H. Knapp has been appointed treasurer of the **U. S. Light & Heat Corporation,** Niagara Falls, N. Y.

Walter E. Miller will engage in private practice as a civil engineer, giving attention to investigations and studies of steam and electric railways and public utility problems, especially the valuation of such properties, ratemaking therefor, reports of efficiency of operation, designing, estimating and supervising construction of new properties and improvements of existing plants. Temporarily his headquarters will be in the Pioneer Block, Madison, Wis.

A company is being organized to construct freight car repair plants at St. Paul, Minn., and Minneapolis which will have capacities to repair 6,000 cars annually and can later be enlarged to handle 15,000 cars per year. The company is now in the market for machine tools and appliances suitable for equipping a modern plant of this type. **Claude H. Siems, Alan G. Siems** and **C. C. Semple** are the promoters and the company's headquarters are in the Guardian Life building, St. Paul, Minn.

Harvey W. Cutshall, supervisor of gas engines and special equipment on the St. Louis-San Francisco, has been appointed general manager of **Mudge & Co.,** in general charge engineering and manufacturing, effective July 1. Mr. Cutshall was born on January 23, 1876, at Maddensville, Pa. From 1893 to 1896, he was employed on the Chicago, Rock Island & Pacific as assistant agent and operator on the West Iowa division. Later he was engaged in the electrical contracting business and for a time was with the McCormick Harvesting Machine Company. In 1904 he was appointed superintendent of telegraph and signal engineer of the El Paso & Southwestern, which position he held until 1911. Two years later he was appointed manager of the service department of the Hudson Automobile Agency at Springfield, Mo. He was appointed to the position he held at the time of his recent appointment in September, 1916.



H. W. Cutshall

The Uehling Instrument Company, 71 Broadway, New York, manufacturers of fuel economy equipment, announces that it is now being represented in the New England states by the **Smith Engineering & Supply Company,** 89 State street, Boston, Mass., manufacturers' agents and engineers, specializing in power plant equipment. **S. W. Smith,** president of the latter company, was until very recently associated with the Uehling Instrument Company, with headquarters in its New York office.

Trade Publications

PUBLIC RELATIONS.—The Western Electric Company has published a booklet containing reprints of ten advertisements in the interests of the electrical industry and public utilities with the object of promoting better public relations. The issue is one of a series that has been incorporated in booklet form.

TWIST DRILLS AND REAMERS.—The Whitman & Barnes Manufacturing Company, Akron, Ohio, which is now manufacturing

twist drills and reamers exclusively, has revised its catalogue to cover only these products. It contains 120 pages, giving prices and all necessary data. In the back of the book are tables of tap drill sizes, decimal equivalents of regular sizes, cutting feeds and speeds, etc.

CHAIN BLOCKS.—The Machine Shop issue of Hoisting Hints, published by the Yale & Towne Manufacturing Company, Stamford, Conn., contains a number of illustrations of Yale spur gear chain blocks handling heavy lifting operations in machine shops of many industries. These hoists are made in 17 sizes, with capacities ranging from ¼ to 40 tons, the booklet containing prices and specifications.

PNEUMATIC TOOLS AND ELECTRIC DRILLS.—The Independent Pneumatic Tool Company, Chicago, has revised its catalogue of Thor tools. The new book contains 78 pages, giving descriptions, illustrations, dimensions and sizes, and covers the new additions to the line, consisting of motor driven air hoists, pneumatic sand rammers, a universal vise for pneumatic drills, hose coupling, power screwdriver, hose clamp and hose mender.

BOILERMAKERS' TOOLS.—The line of railway and boilermakers' supplies manufactured by the Lovejoy Tool Company, Chicago, is listed and briefly described in catalogue No. 10, containing 32 pages, illustrated. The line includes ratchets, drilling posts, punches and dies, expanders, flue cutters, pneumatic hammers, rivet forges and ball-bearing jacks for railroad use.

RADIAGRAPH CUTTING TORCH.—The Davis-Bournonville Company, Jersey City, N. J., has issued a bulletin describing the No. 1A Radiagraph. This is a portable, mechanically operated cutting torch for cutting and beveling plate and structural steel. It cuts to straight and circular lines, and when the torch is set at an angel, bevels the edges of boiler plates. The bulletin shows some characteristic cutting done with it.

INSTRUCTION BOOK FOR WELDERS.—A new edition of the Ever-ready instruction book distributed by the Oxweld Acetylene Company, Chicago, is a comprehensive treatise on everyday oxy-acetylene welding and cutting. It is a compact reference book, containing 55 pages, 5 in. by 8 in., illustrated. Practical information on modern practices in welding and cutting is presented in a manner so that it can be easily grasped by the beginner, at the same time being valuable to the experienced welder and cutter.

TWIN CITY ENGINES.—The Minneapolis Steel & Machinery Co., Minneapolis, Minn., has recently issued a 48-page illustrated bulletin which is devoted to the line of internal combustion, heavy duty motors, manufactured by this company. The pages contain a full description of the methods of construction and utilization of these motors while the illustrations include photographs, drawings and power curves of the motor and of actual installations where the motors are driving hoists, pumping units, ditch diggers and drag-line excavators, etc.

DIE HEADS.—The Eastern Machine Screw Corporation, New Haven, Conn., has compiled a 96-page catalogue covering H & G automatic self-opening die heads and collapsible taps, and, in addition, includes much valuable data relating to thread cutting that should be useful to men working out threading problems. The descriptions are concise and are well illustrated. They cover four types of die heads, a new H & G collapsible tap and chasers for the die heads. Detailed instructions for opening the heads, installing chasers, closing the heads and adjusting the pitch diameter, with information on cutting speeds and lubricants also included.

THERMIT PIPE WELDING.—The Metal & Thermit Corporation, New York, has issued the third edition of its thermit pipe-welding pamphlet, No. 16. In the new edition the subject of thermit pipe welding has been revised and brought up to date. The making of thermit pipe welds is described in detail. The pamphlet also contains reports on successful tensile strength and vibration tests of thermit welds conducted by Stevens Institute, and a chart showing the comparatively low cost of a thermit welded pipe as compared with the cost of installing compression flanges with bolts and gaskets. The new edition also contains an account of a 10-year pipe test during which 700 ft. of 4-in. thermit welded pipe was constantly subjected to a hydraulic pressure of 1,500 lb. per sq. in., without requiring any attention.

Railway Construction

THE INTERSTATE COMMERCE COMMISSION has approved loans to various railroads to assist them in financing new improvements. See items in *Railway Financial News*.

ATCHISON, TOPEKA & SANTA FE.—A contract has been given to The Roberts & Schaefer Company, Chicago, for building a 400-ton, four-track, reinforced concrete locomotive coaling plant, complete with a Rands gravity sands plant, at Dodge City, Kan.

BIG SOUTH FORK.—This company has applied to the Interstate Commerce Commission for a certificate authorizing it to build a line in Scott County, Tenn., for a distance of 14 miles, from a point on the Oneida & Western at or near where it crosses the Big South Fork of the Cumberland river.

CHICAGO, BURLINGTON & QUINCY.—A contract has been let to G. A. Johnson & Son, Chicago, to build a 16-stall roundhouse, a coal pocket, a clinker pit, a washout sump, and wash and locker rooms at Galesburg, Ill. Contracts for the building of passenger depots at Mound City, Mo., and Kirkesville, Mo., have been let to T. S. Leake & Co., Chicago.

CHICAGO, MILWAUKEE & ST. PAUL.—Contracts have been let to the Ogle Construction Company, Chicago, to build a 160-ton coaling station at Dubuque, Ia.; a 200-ton coaling station at Corliss, Wis., and a 200-ton coaling station at Davis Junction, Ill.

CHICAGO & NORTH WESTERN.—A contract has been let to the Ogle Construction Company, Chicago, to build a 300-ton coaling station at Carroll, Iowa.

COLORADO & SOUTHERN.—Contracts have been let to the Ogle Construction Company, Chicago, to build a 150-ton coaling station at Walsenburg, Colo., and a 50-ton coaling station at Boulder Junction, Colo.

FORT WORTH & DENVER CITY.—A contract has been given to the Ogle Construction Company, Chicago, to build a 150-ton coaling station at Delhart, Tex.

MISSOURI, KANSAS & TEXAS.—Land has been bought and plans are being made to build new locomotive facilities at Oklahoma City, Okla., for which the following contracts have been let: For grading, bridges and culverts, to List & Gifford Construction Company, Kansas City, Mo.; for a 300-ton reinforced concrete coaling plant, to Roberts & Shaefer Company, Chicago (mentioned in the *Railway Age* of August 13), and for steel combination water tank and softener, capacity 100,000-gal. of softened water, to Graver Corporation (William Graver Tank Works), Chicago. The buildings will include a 100 ft. turntable, 8-stall roundhouse, machine shop and power plant, toilets and lavatory, storehouse, boiler washing plant, etc. Contracts for the buildings have not yet been let.

NEW JERSEY, INDIANA & ILLINOIS.—This road is constructing track and yard facilities in the southern part of South Bend, Ind., which will serve the Studebaker Corporation, the Oliver Chilled Plow Works, and other industries in the vicinity. The Dominion Construction Company, Toronto, Canada, is the contractor.

UTAH TERMINAL.—This company has applied to the Interstate Commerce Commission for authority to build an extension of 3.63 miles in Carbon County, Utah.

ON STATE CONTROL.—Those who advocate state ownership supported by general taxation will use this rate increase as an argument to prove that private ownership is bad. But they will not make much headway. The fact is that this rate increase of a billion and a half was made necessary by the waste and ruin wrought by state control. And the American way of doing business is to leave it to private interests, permitting them to charge a fair price for their services rather than muddle the whole matter by government interference, and finally taxing the public to make good enormous deficits created by poor management.—Leslie's.

Railway Financial News

The Loan Fund

The Interstate Commerce Commission has now certified loans from the $300,000,000 fund to 17 roads for a total of $51,669,655.

Ann Arbor.—The Interstate Commerce Commission has approved a loan of $35,000 to this company to enable it to provide itself with 3 new switching locomotives at an estimated cost of $116,775. Of the total cost of the locomotives, 50 per cent is to be financed by the issue of equipment notes to or through the builders, approximately 20 per cent is to be paid in cash by the carrier and approximately 30 per cent is represented by the government loan.

Ashland Coal & Iron Railway.—The Interstate Commerce Commission has issued an order authorizing this company to issue its promissory note, or notes, to the amount of $150,000, for the purpose of refunding notes maturing in August and November.

Arkansas & Louisiana Missouri.—This company has applied to the Interstate Commerce Commission for authority to issue equipment trust notes to the amount of $220,000 to be used in the purchase of four 10-wheel freight locomotives, 1 steam wrecker, 1 Jordan ditcher, 1 steam bucket crane and 2 steel passenger coaches, at a cost of $287,703, of which $67,703 is to be paid in cash.

Chicago Great Western.—The Interstate Commerce Commission has approved a loan of $997,830 to aid this carrier in purchasing 10 heavy freight locomotives at a total estimated cost of $552,000, and in reconstructing 697 box cars, 200 steel hopper cars and 75 refrigerator cars at an estimated total cost of $1,142,660, and also in making additions and betterments to roadway and structures which will expedite the movement of freight train cars, at an estimated total cost of $301,000. The contribution of the carrier to meet the loan of the government is $997,830. The item of $301,000 is to cover the installation of additional yard tracks at or near Oelwein, Ia., at a cost of $120,000, the installation of additional shop and roundhouse equipment at Oelwein and larger turntables at Chicago and Des Moines at a cost of $181,000.

Chicago, Milwaukee & St. Paul.—This company has filed its claim with the Railroad Administration for causes arising from federal control of its property. It is understood that the amount which the company considers is due it from the government aggregates about $25,000,000, of which approximately $16,000,000 is for equipment.

Chicago & Western Indiana.—The commission has approved the making of a loan of $8,000,000 to aid this carrier in meeting its collateral trust gold notes due, by extension, September 1, 1920. The carrier itself is required to finance, on a basis satisfactory to the commission, the remaining $8,000,000 of its maturing obligations. The carrier is a terminal railroad serving 12 trunk lines at Chicago. It is the owner of valuable terminal facilities and equipment.

Holders of the $16,000,000 notes of the Chicago & Western Indiana maturing September 1, 1920, have been asked to extend half of the amount of their holdings in new 15-year 7½ per cent collateral trust bonds, the other half to be paid in cash on maturity date. The offer is made in a letter to noteholders from H. G. Hetzler, president of the company, who states that the new issue of bonds will be repurchased by sinking fund operations prior to its maturity. The new bonds will be secured by 140 per cent of their principal amount in the company's first and refunding mortgage bonds. President Hetzler adds that in his judgment the value of the property mortgaged to secure such first and refunding bonds is materially in excess of the company's total debt. Payment of sums sufficient to take care of interest on the company's debt and the sinking fund necessary to retire the new issue within fifteen years are assured under long term leases to the proprietary companies. President Hetzler's letter states that in order to make the loan of half the amount of the maturing debt from the government loan fund available it will be necessary to secure the assent to the plan of holders of not less than 86 per cent of the notes.

Deposits of notes with the Bankers' Trust Company under the plan are requested.

Cripple Creek Central.—This company has declared a distribution of capital of one per cent on the outstanding $3,000,000 4 per cent non-cumulative preferred stock. This is the sixth payment from capital on the preferred and reduces the par value of preferred shares to $94.

Delaware & Hudson.—The Interstate Commerce Commission has approved a loan of $1,125,000 to this company to aid it in making additions and betterments to promote the movement of freight train cars. The road is required to itself finance for the same purpose an amount equal to the loan of the government. The total of $2,250,000, including the company's contribution, will be used to finance the elimination of the Whitehall tunnel at a cost of $500,000 and a new yard at Glenville, at a cost of $1,250,000 and one at Port Henry, at a cost of $500,000.

New York Central.—This company has sold to a syndicate of bankers, headed by J. P. Morgan & Co., an issue of $25,000,000 of 10 year 7 per cent bonds, which will be offered for public subscription by that syndicate within a few days. The issue will be offered, it is understood, at par and interest, subject to formal approval by the Interstate Commerce Commission. The New York Central has to meet on September 1 a maturity of $15,000,000 of one year 6 per cent collateral trust gold notes, dated September 15, 1919, and floated to retire an issue of two year 5 per cent collateral notes. Back of those notes, which fall due in September, was deposited $20,000,000 of the New York Central & Hudson River refunding 4½ per cent bonds and $3,750,000 of the Reading Company's first preferred stock.

Norfolk & Portsmouth Belt Line.—The Interstate Commerce Commission has authorized the issue of a promissory note for $150,000 for one year at 6 per cent, payable to the Norfolk National Bank of Norfolk, Va.

Northern Pacific.—The claim filed by this company against the Railroad Administration for amounts said to be due the company for causes arising from federal control, as mentioned in last week's issue, is for $25,796,397, of which $8,597,394 is for undermaintenance of way and structures, $7,741,379 for undermaintenance of equipment and the balance is for miscellaneous items, including balance of compensation.

St. Louis Southwestern.—The Interstate Commerce Commission has approved for two years from March 1 a lease to this company of the Valley Terminal Company of East St. Louis, most of the stock of which has been owned by the St. Louis Southwestern.

Western Maryland.—This company has applied to the Interstate Commerce Commission for a loan to assist it in financing additional passing sidings at a cost of $27,800, an engine terminal and yards at Bowest, Pa., at a cost of $100,000, dredging at Port Covington, Baltimore, at a cost of $95,000 and an enlargement and extension of the coal pier at Baltimore at a cost of $400,000.

The Dominion Board of Railway Commissioners of Canada has granted the application of the American Railway Association for an increase in through rates, insofar as Canada is concerned, to correspond with increases recently granted by the Interstate Commerce Commission. The order, issued on August 14, says: "It is ordered that the proportions of through rates, fares and charges between the United States and Canada, fares in both directions, in effect at the date of this order, accruing within Canada, may, by general or blanket supplement to existing tariffs, be increased to the extent that the through rates, fares and charges shall conform to the increases granted by the order of the Interstate Commerce Commission; except on coal and coke, increases which are reserved pending the judgment of the board in the application of Canadian carriers for increased rates within Canada."

Railway Officers

Financial, Legal and Accounting

O. P. Barry, ticket auditor of the Chicago, Milwaukee & St. Paul, with office at Chicago, has been appointed auditor of expenditures, with the same headquarters, effective August 1, succeeding W. C. Dorsey, who has resigned.

Operating

George B. Butts has been appointed superintendent and car accountant of the Abilene & Southern, with headquarters at Abilene, Tex., effective August 1.

A. C. Peterson has been appointed assistant superintendent of the Superior division of the Chicago, Milwaukee & St. Paul, with headquarters at Green Bay, Wis., effective August 1.

F. E. Devlin, trainmaster on the Chicago, Milwaukee & St. Paul, with headquarters at Green Bay, Wis., has been promoted to superintendent of the Racine and Southwestern division, with headquarters at Beloit, Wis., effective August 15, succeeding E. W. Morrison, who has been assigned to other duties.

F. M. Clark, superintendent of the Danbury division of the New York, New Haven & Hartford, with headquarters at Danbury, Conn., has been transferred to the New York division with headquarters at Harlem River, N. Y., succeeding C. H. Motsett, resigned and **J. W. Cuineen,** assistant superintendent of the Central New England, with headquarters at Poughkeepsie, N. Y., has been appointed Mr. Clark's successor, effective August 15.

J. P. Houston, superintendent of the Eastern division of the Minneapolis & St. Louis, with headquarters at Oskaloosa, Iowa, has been promoted to assistant to the general manager, with headquarters at Minneapolis, Minn., effective August 15. **F. O. Coleman,** assistant superintendent of the Eastern division, with headquarters at Oskaloosa, Iowa, has been promoted to succeed Mr. Houston; **C. A. Hodgman,** superintendent of transportation with headquarters at Minneapolis, Minn., succeeds Mr. Coleman and the position of superintendent of transportation has been abolished. **E. J. Sturdevant** has been appointed superintendent of car service, with headquarters at Minneapolis, Minn.

Traffic

N. C. Osborne has been appointed general eastern freight agent of the Seaboard Air Line, with headquarters at New York, succeeding H. M. Runyon, resigned, effective August 16.

E. F. Flinn, general freight agent of the Grand Trunk, with headquarters at Chicago, will act as general western freight agent of the Canadian National; **J. D. McDonald,** general passenger agent, with the same headquarters, will also act as general western passenger agent of the Canadian National. The following general agents of the Grand Trunk will also represent the Canadian National in the same capacity: **C. G. Orttenburger,** at Chicago; **J. H. Burgis, H. H. Hamill,** at Detroit, Mich.; **W. J. Gilkerson,** and **George H. Brown,** at Minneapolis, Minn.; **H. W. Ploss,** at Milwaukee, Wis.; **A. Z. Mullins,** at Grand Rapids, Mich., and **W. H. Burke,** at St. Louis, Mo. **W. H. Spicer,** district freight agent in charge of the Michigan territory of the Grand Trunk, will act as general agent of the Canadian National, succeeding F. A. Shaw, transferred. **C. E. Wagner** and **A. S. Munro,** commercial agents of the Grand Trunk at Saginaw, Mich., London, Ont., respectively, have been appointed commercial agents of the Canadian National also, and **V. G. Snell,** division freight agent at Stratford, Ont., will be division freight agent of the Canadian National.

Albert V. Kipp, whose appointment as general freight and passenger agent of the Salt Lake & Utah, with headquarters at Salt Lake City, Utah, was announced in the *Railway Age* of August 6 (page 269), was born on April 12, 1880, at Kewaunee, Wis. Mr. Kipp entered railway service in June, 1901, as a telegraph operator for the Chicago, Rock Island & Pacific. In September, 1902, he became a telegraph operator for the Union Pacific, which position he held until 1908, when he entered the traffic department of this road. During the next seven years he was traveling freight agent, with headquarters at Denver, Colo. From 1915 to 1918 he served as contracting freight agent with the same headquarters. During the war he was in the traffic department of the United States Food Administration, as district representative, with headquarters at Denver. Upon the conclusion of these duties he re-entered the service of the Union Pacific as traffic agent, at Denver. In March, 1920, he was appointed general agent, with headquarters at Butte, Mont., which position he occupied at the time of his recent appointment.



A. V. Kipp

Engineering, Maintenance of Way and Signaling

J. J. Ochs, assistant in the chief engineer's office of the Chicago & Alton, has been appointed office engineer, with headquarters at Chicago, effective July 1, succeeding J. E. Schwab, who has been appointed city engineer of Alton, Ill.

Obituary

N. F. Thompson, district engineer of the western district of the New York Central, with headquarters at Buffalo, N. Y., died July 26 at Roswell, New Mexico. His death was due to chronic throat trouble. Mr. Thompson was born at Lansingburgh, (now Troy), N. Y., on October 16, 1884. He graduated from Troy Academy and then entered Rensselaer Polytechnic University, graduating as civil engineer in 1907. He began railroad work shortly afterwards as draftsman in the engineering department of the New York Central. He was soon promoted to assistant engineer of grade crossing, and in 1912 was appointed engineer of grade crossings. His appointment as district engineer of the middle district, with headquarters at Albany, N. Y., occurred in March, 1917. He was transferred to the western district in January, 1918.

Arthur Patriarche, formerly vice-president of the Pere Marquette, died at Detroit, Mich., on August 16. Mr. Patriarche was born on June 13, 1849, at the Isle of Jersey. His first railroad work began in September, 1872. From 1875 until 1882 he served as agent of the Flint & Pere Marquette at Bay City, Mich. He then became general western agent at Milwaukee, Wis., and in September, 1883, was appointed assistant general freight agent. He was promoted to general freight agent in 1886 and retained that position until 1891, when he was appointed traffic manager. In 1900 he took over the same duties with the Pere Marquette, successor to the Flint & Pere Marquette, serving that road as traffic manager until 1904, when he was appointed general traffic manager. For a short time afterwards he served as freight traffic manager, but in January, 1906, he resumed the duties of general traffic manager and retained them until 1908, when he was appointed assistant to the president. A short time later he was elected vice-president and served in that capacity until 1912.

EDITORIAL
Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Special Cars for Special Service

At this time when the roads are naturally giving much consideration to the ordering of additional cars for the handling of revenue traffic, it is pertinent to consider whether the facilities may not also be amplified by substituting for many cars now employed in company or revenue service cars designed primarily for specific work and thereby more efficient and economical in the performance of such work. A survey of the number of cars used, temporarily or permanently, in company service on the average road will show that a large number are in constant use for such regular and continuous operations as the transportation of cinders and other refuse, ballast materials, coal for stations and water stations, etc. In some instances, equipment obsolete for revenue service is assigned to this work. In other cases, operating conditions may make advisable the use of revenue cars for the occasional transportation of company supplies. However, those few roads which have given this subject careful study have found that there are many places in which special service cars, such as dump cars, may be employed in a manner to reduce the drain on revenue equipment and at the same time promote economy of operation because of their special application to those services for which the cars are designed. The possible result that may be gained by the release of standard equipment in this manner from company service should be considered at the present time when determining on equipment needs.

Overtime a Necessity

While the average percentage of bad order freight cars on the railroads as a whole has shown little improvement for several months past the conditions on an appreciable portion of the roads appear to be well within normal limits. And, as a corollary to this statement, conditions on many railroads are far worse than the average. Therefore, no program for the improvement of the bad order situation can be laid down which is suitable in detail for general application. The measures taken must be adapted to local conditions. But if the average for the country is to be improved, extraordinary efforts must be put forth by those roads whose proportion of bad order cars is materially above the average. The need for overtime work on car repairs was never greater at any time during the Railroad Administration's control than it is at present. During the last half of 1918, when a special drive was made to improve car conditions the total number of bad order cars was reduced from 179,600 to 153,800 in a period of about nine weeks. This, of course, was accomplished by concentrating on light repairs and resulted in the number of cars requiring heavy repairs increasing from less than 50 per cent of the total number of bad order cars to about 59 per cent. The latest available figures indicate that there are between 175,000 and 180,000 cars in bad order at the present time of which 62 per cent, or approximately 110,000, are in need of heavy repairs. If an increase in this number is to be prevented and a reduction hoped for, a large number of repair points must resort to overtime. Much can also be accomplished by equalizing the accumulation of bad orders between repair points. This is not only necessary in order that full advantage be taken of all available facilities but it is desirable as a means of equalizing the burden of overtime.

Watch the Individual Car

In making a trip of inspection over his lines recently, the president of a large railroad chanced to notice a car standing at the end of the track which showed evidence of having been there for some time. On questioning the division officer he was informed that the car in question had been placed there only recently. Later investigations showed that it had been standing for ten days, although the purpose for which it was set could have been accomplished in a day. This incident is not cited to imply that the superintendent should have known how long this car or any other individual car had been standing at any one place on his division, but rather that he should have known that no serviceable car was standing at any point on his division longer than was necessary to accomplish the purpose for which it was placed. The problem of car movement is that of keeping *every* car moving. It involves close supervision at each siding and station on the division. It is self-evident that if all unnecessary delays to each car are eliminated and it is kept moving to the maximum practicable extent, the maximum mileage will be secured from *all* cars and the problem of handling the traffic of the country will have been solved insofar as it is possible to solve it with the equipment now available.

Liberty Bond Holders Please Note

Holders of temporary first Liberty Loan converted 4s and 4-¼s, second 4s and 4-¼s, and third 4-¼s are now entitled to exchange their temporary bonds for permanent bonds with all coupons attached. There is no way for holders of these temporary bonds to collect their interest after the date of the last coupon unless they exchange their bonds for permanent bonds. There are about 4,000,000 individual holders of the Third Liberty 4-¼s and interest on these bonds is due September 15. Holders, however, in order to get this interest must exchange their bonds before September 15. The federal reserve banks have made arrangements for the exchange of bonds and railroad men can make the exchange through a bank, or, in most cases, where the bonds were bought through the railroad company, the company will advise as to how the exchange should be made. The process is simple. It consists in handing in to the bank the temporary bond which now has no coupons attached and receiving in exchange a permanent bond with the new coupons attached. The sale of Liberty Bonds to railroad employees was a great success from the point of view of raising money for the government. It also was of real educational value. The railroad companies went to considerable expense and a great deal of trouble to induce their employees to buy Liberty Bonds, primarily possibly through a

feeling of patriotism, but it is of permanent value to a railroad to educate its employees in habits of saving and especially in accustoming them to investment in securities. It would seem, therefore, that it would be well worth while for each road to call the attention of employees who are Liberty Bond holders to the fact that temporary bonds should now be exchanged for permanent ones.

Frozen Material Stocks

Although it may be slightly incongruous to suggest anything frozen in mid-August, it may be pertinent to refer to the very large amount of money that is tied up in unapplied material at a time when bankers are discussing frozen credits prominently in connection with the scarcity of available capital which the railroads are feeling so keenly. As it is plainly the duty of every railroad to carry the least stock of material consistent with safety, it would be interesting to know what is the lowest quantity of materials that can be relied upon to meet the occasion without embarrassing the operation of the railroad. This is a quantity that should be known for every railroad and should be regarded as much an index to efficient operation of the property as the average train tonnage or weight per loaded car. Has this amount been determined on your railroad and how does it compare with the amount of material neighboring roads are carrying in proportion to the business that you and your neighbor are handling? A reduction in material stocks can often be accomplished without affecting the quantity of material available for the actual current requirements of shop and roadway. It may be effected by cutting out the dead wood or it may be accomplished by centralizing material stocks scattered all over the railroad, but in any event, it calls for a strong centralized organization in which strictly business principles predominate. Such an organization would be a dangerous tool in other than experienced hands and every action must be tempered with consideration for the actual needs of each department.

The Convention Habit

What can the railroads expect to gain by sending their traveling engineers or men from any other branch of the service to a convention? Doubtless this thought has occurred to many executives and may even now be agitating the mind of some official confronted with the question of approving the large expenditure that is necessarily involved in sending a group of traveling engineers to the convention in Chicago next month. But how many executives in this situation have ever considered just what the convention habit has accomplished for American railroads or how important a part the free interchange of ideas between representatives of all railroads has played in promoting their progress and welfare? What would our railroads be doing today if no community of interest were recognized or if each railroad ignored the experiences of the other? The Traveling Engineers hold an intensive convention. They come to Chicago with a serious purpose and the meetings are all-day affairs. But at that, it is the individual contact of the man from Pennsylvania with the man from Oregon and the man from Texas with the man from Ohio that makes the convention a live factor in American railroading. It is the open exchange of ideas and experiences acquired under a great variety of conditions that will get your men out of the rut into which they can easily fall if confined to a single division on your railroad for any length of time. Some roads can well afford to send every traveling engineer on their staff, others cannot. But every railroad should be represented at the coming convention. The consideration that will be accorded the fuel problem in the face of an approaching coal shortage alone justifies a large attendance. Those who are fortunate enough to attend this convention should appreciate the fact that it is not only the expense of the trip, but the time lost at a critical period that may have caused their superior officers to hesitate over permitting them to attend the Chicago meeting. They must attend solely with the idea of acquiring something in the way of knowledge and enthusiasm that will more than justify the trip.

Operate Repair Shops With Less Coal

While the amount of coal used in the operation of railway repair shops is a small proportion, possibly not over 10 per cent of the total coal consumption of railroads, thousands of tons are required annually for this purpose and every effort should be made to use it economically. One of the most important ways in which the coal can be saved is by utilizing exhaust steam from the steam hammers in shop heating systems. A butterfly valve limiting the exhaust steam pressure will obviate any difficulties in hammer operation. Another important way of saving fuel is by the installation of suitable boilers over large forging and annealing furnaces in either blacksmith shops or boiler shops. In this way much of the heat incident to operating these furnaces can be saved and utilized to produce steam, thus reducing the demand on power houses. In machine shops there is a possibility of economizing in power consumption and thus saving fuel. Machines should not be left running when not in use for operations that can be performed as quickly on lighter machines. The practice of stopping all leaks in the compressed air system as soon as they developed should be encouraged. Small air operated devices of doubtful merit use a great deal of air and should be cut out if the work can be done as quickly and easily by hand. Another practice to be condemned is the blowing out of steam pipes and valve chambers with air just before a locomotive leaves the shop. Fuel saved by any one of these methods may not necessarily be large, but the total saving due to the elimination of waste power, waste heat and waste light throughout all the shops would be considerable.

Pere Marquette and the Guarantee

The Pere Marquette was one of the comparatively small number of railroad companies which elected to operate during the six months immediately following the return of the roads to their owners on its own financial responsibility, thus refusing the government's guarantee of a continuation of an amount of net revenue equal to the rental paid during government operation. At the time the company made this choice everything appeared to be in favor of such a course. Under government operation the Pere Marquette had made remarkable progress. The year 1919 was exceedingly profitable to the government, the actual net earnings of the Pere Marquette property being far in excess of the rental which the government was paying the corporation. In the first six months of the calendar year, which includes four months of private operation, the Pere Marquette earned $17,398,000 gross, or something over $2,000,000 more than in the first six months of 1919. Operating expenses, however, ran up to a figure that wiped out all gain in gross and turned a net after the payment of taxes and rentals of $2,206,000 in 1919 into a deficit of $173,000 in 1920. So far as can be seen, this unfavorable showing is through no fault of the

Pere Marquette management. Apparently what has happened is this: The outlaw strike particularly seriously affected some of the connections of the Pere Marquette. Congestion followed and the Pere Marquette, on which loadings were heavy, found itself unable to make deliveries, especially in respect to its eastern connections. Naturally congestion on its own lines followed. So far as can be learned, there was nothing either in change of character of the business handled or the normal cost of handling this business which could have been foreseen when the guarantee was refused, or which will continue to affect the Pere Marquette.

The Second Fuel Commandment: Supervision

The railroads have every right to expect the utmost consideration for fuel economy from every employee that handles fuel. But are they getting it? Do all these men know how to save coal? Have they the inclination to economize? Having set up an adequate organization for the purpose of conserving coal it is obviously the duty of this organization to see that all employees are instructed in the economical handling of fuel and that these instructions are generally observed. If the first fuel commandment is to organize, the second is to supervise. The organization must be capable of supervision and this implies more than will be found on many railroads having an organization for this purpose. *Real supervision means hard work, it necessitates riding more freight trains with green firemen than passenger trains with seasoned crews.* It is safe to say that more than one fuel organization has become discredited because the traveling firemen became too dignified to actually show the inexperienced firemen how to handle the scoop, or because the fuel supervisors have found it convenient to confine their attention to passenger trains, or even because the fuel superintendent has spent most of his time in an office and attempted to prove by the manipulation of figures that he is saving millions instead of devoting all his time and energy to active and constructive supervision over the actual use of fuel. The railroads must have supervision over fuel use if they hope for real fuel efficiency, but this must be supervision that supervises.

Where Will Money Go the Farthest?

It may be too late to undertake any extensive improvements that will afford relief during the coming winter, even if the money be at hand for such expenditures. What mechanical and operating men must consider at this time are the improvements that can be hastily effected with the funds available. Where will this money go the farthest towards fortifying the railroad against the coming winter? Would not a comparatively small expenditure on each engine terminal do more than anything else to eradicate the weak spots that developed last winter? A large terminal on an important railroad was completely blocked a few days ago because a single water crane refused to function. Consider what a few additional water cranes may save you in time and money next winter. A very large percentage of coal chutes are in need of repairs that should not be postponed until the winter months. An extra locomotive crane for coal and ash handling if ordered now may save the day when some coal chute or an older crane breaks down under the stress of winter conditions. The purchase of a single machine tool for some isolated terminal may obviate the necessity for shipping machined repair parts to this terminal at a time when all the trains are running late and the express is unusually heavy. The labor shortage would not be so much in evidence during coming months if some improvement in drop pit facilities or in arrangements for handling heavy engine parts could be arranged for. A hot water boiler washing system would save coal and add materially to the power available at the terminal where engines have always encountered the greatest delay.

What About the Bonus System?

Reconstruction as applied to the present period in railroad history, implies the restoration of practices abandoned during government control if investigation in the light of present conditions demonstrates their worth. One idea which met an ill-timed fate in the tender years of its youth was the bonus plan as applied to maintenance of way work. After about four or five years of general application on a single railroad, the Baltimore & Ohio, this system was being introduced on the Pennsylvania Railroad when the government took over the railroads and the plan was unable to survive the standardizing process of centralized labor control. The giving of increased compensation for extra effort represents an ideal arrangement which has practical limitations as applied to complicated, diversified work such as is done by the maintenance of way forces. The plan also entails the employment of a considerable clerical force. It does, however, accomplish a definite increase in the output per man, and in view of the urgent necessity for making some improvement in this direction, the possibilities of restoring the bonus system should be carefully considered. The fact that the bonus plan was discontinued has an advantage for the roads which once had it in force, in that it enables them to start anew with rates properly adjusted to their past experience, something that would be fatal to a system in actual operation. One suggestion for an improvement would be to extend its application to the supervisor so that he also would be rewarded in proportion to the results obtained on his sub-division.

Motor Truck and Water Competition

A philosopher might find an interesting commentary on the economies of transportation in the recent development of motor truck freight business between New York and Albany. The Hudson river affords a free waterway which can be utilized by boats of large tonnage capacity. Nevertheless, the freight which is carried by water between Albany and New York and intermediate points is very small indeed when compared with the freight which the New York Central and West Shore carries. Now comes the motor truck freight industry which is succeeding in building up a considerable business hauling freight in small units between Albany and New York and intermediate points. The carriage of freight by rail is supposed to be more expensive than by water, and the carriage by motor truck is more expensive than the carriage of freight by rail. The obvious conclusion would appear to be that cost is by no means an all-important factor in determining how freight shall be moved. If it were, the river boats would compete successfully with the parallel railroad and the motor truck would fail to compete successfully with either the railroad or the boat lines. Of course, the motor trucks are getting only a very small proportion of all the freight carried. In other words, there are classes of freight which, on account of the time element or other consideration of service, will move by motor truck rather than by rail even when the charges are higher. There are also other classes of freight which the boat lines can still get, but the great bulk of the freight goes by rail even under conditions which are most favorable to boat service and to motor truck service. Advocates of inland waterways will do well to give a passing thought to these facts.

Freight Moved Breaks Record of 1920

INCREASES in railway operating efficiency have been effected so rapidly within recent weeks that the railways probably are now moving more freight than they ever moved before at this time of year. The number of cars of freight loaded in the week ending August 7 was the largest of the year 1920. It was 942,150 carloads. This was 70,077 carloads more than were moved in the corresponding week of 1919, and only 5,805 carloads, or one half of one per cent, less than the number moved in the corresponding week of 1918.

How great has been the improvement in transportation conditions since the railways began to recover from the effects of the "outlaw" strikes, and to make their drive to establish a new standard of efficiency, is indicated by the fact that in the first week of August the number of carloads moved was greater by 154,000, or about 20 per cent, than in the first week in June. The freight loaded in the first week of August in the Southern, Central Western and Southwestern districts was greater than ever before in the corresponding week of any year. There is no reason for doubting that the improvement in operating results which had been gained throughout the country up to the week ended August 7 has been continued up to the present time, and that therefore, as already indicated, the amount of traffic being moved in the country as a whole is now greater than ever before at this time of year.

Support is given to this view by the statistics regarding the production and transportation of coal. The amount of bituminous coal produced and transported in the week ended August 14 was the largest of the present year, being 11,728,000 tons. Further support is afforded by the statistics regarding the accumulations of freight cars awaiting movement and those regarding car shortage. The accumulations of freight cars had been reduced on August 13 to 79,213, which is the best record yet reported for the year 1920. The number of deferred car requisitions in the United States—in other words, the so-called "car shortage"—also showed a reduction in the week ended August 7 to 119,359, after having shown an increase in the preceding week.

The increase in the amount of traffic being handled, and the reduction of congestion and of "car shortage," are chiefly attributable to the efforts the railways have been making to increase the average miles moved by each freight car daily. As has often been pointed out, every increase of one mile per day made in the average travel of each car is roughly equivalent to adding 100,000 to the available supply of cars. There are no car mileage figures later than those for June available. Statistics for the months for which they are available show, however, that since the railways were returned to private operation the record of car movement has been as follows: March, 23.4 miles as compared with 19 miles in March, 1919; April, when the effects of the "outlaw" strikes were being most felt, 19.7 miles as compared with 19.9 miles in 1919; May, 24.1 miles as compared with 20.1 miles in 1919; June, 25.1 miles as compared with 21.4 miles in 1919.

The railways are still a long way from having effected the improvement in the efficiency of their operation which they have set out to make. So long, however, as they can show by actual results that they are constantly increasing their efficiency and the amount of business handled they cannot be justly criticised by the public if they do not handle all the business offered to them. Just how much greater will be the improvement effected in operating methods and results will depend not only on the efforts put forth by the railway managements, but also on the co-operation they receive from the public, and especially from the shippers and consignees of freight.

Railroads Hauled More Freight, But McAdoo Hauled it Farther

IT WAS ONE of the boasts of the Railroad Administration that under its direction the railroads succeeded in handling a greater volume of traffic during the year 1918 than they had ever handled before. The net ton-miles of revenue freight transported by the Class I roads in 1918—that is, the number of tons multiplied by the number of miles they were carried—aggregated 400,379,284,111, as compared with 394,382,077,643 handled by the same roads in 1917, when they were still under private management. This represents an increase of about 1.5 per cent in the number of units by which the work done by the roads is measured. In 1916 the ton-miles were 362,444,397,129. Many officers of the Railroad Administration were not satisfied with the showing made by their figures, however, and insisted that they were saving so many ton-miles by their "short-routing" campaign, in handling freight by the most direct routes, that the increase in the volume of real business handled must have been greater than the 1.5 per cent indicated by the statistics.

The Interstate Commerce Commission has since published statistics for the Class I roads, however, showing the tons of freight originated on the roads during 1918—that is, the actual amount of freight regardless of the distance it was moved or the number of roads it moved over—which show a total of 1,263,265,890 tons, as compared with 1,264,015,725 in 1917 and 1,202,000,067 in 1916. In other words, under government management in 1918, during 11 months of which the United States was at war, the roads handled 749,835 less tons of freight than they did in 1917, during 9 months of which the country was at war, although under government management they carried the freight a greater number of miles. The *Railway Age* showed some time ago (January 16, 1920, page 219) that according to the official statistics of the Interstate Commerce Commission the average haul per ton of freight in 1918 was the longest ever known, 175.54 miles (over the individual railroad), as compared with 173.75 miles in 1917, and that the amount of unnecessary roundabout routing corrected by the campaign conducted under unified operation of the railroads, although it may have resulted in some slight economies in some instances, was not sufficient to exert a perceptible influence on the economic conditions which for some years have been increasing the average distance over which freight is being shipped. The average haul per ton of freight over the railroads considered as a single system increased from 312 miles in 1917 to 316 miles in 1918.

While there is no particular object at this late day in attempting to detract from the showing made by the Railroad Administration it is at least interesting to note that while the government broke the record for *ton-miles*, the record for the number of *tons* hauled still belongs to private management.

MEMBERS OF THE AMERICAN LEGION who operated trains during the railroad strike last April, and conveyed thousands of commuters to and from New York, are to be placed on trial on charges of aiding the railroads as against the employees, at the New Jersey State Convention of the American Legion to be held at Atlantic City, September 9. Col. William M. Mead, commander of the Capt. Harry B. Doremus Post of Hackensack, who commanded the Legion forces that operated trains on the Erie, is one of those who is named. Colonel Mead has justified his actions on the ground that the strike was unauthorized. "Had it been a genuine union strike none of the legion posts would have interfered," he says.

Letters to the Editor

The Uniflow Engine

New York.

To the Editor:

Replying to the communication of F. W. Dean, in your issue of August 13, the locomotive to which he refers is evidently one which was built by the Brooks Locomotive Works, with the central exhaust cylinders of Col. E. A. L. Roberts, whose operations in the torpedoing of oil wells made him famous, and was put in service on the Dunkirk, Allegheny Valley & Pittsburgh R.R. in 1875. After several months' service on that road, it was placed on the Lake Shore & Michigan Southern, and after a few weeks' service on that road, it was returned to the Brooks Works, which sold it in June, 1880, to the Ohio Central.

An illustration of the cylinder and valve of this locomotive, and particulars regarding it, furnished by M. L. Hinman, of the Brooks Works, will be found in the *Railroad Gazette* of October 7, 1898, p. 721. An illustration is also given in the same article, of the central exhaust cylinder of the Shepherd & Clark, U. S. Patent No. 124,980, dated March 26, 1872. The Eaton Patent No. 17,142, April 28, 1857, and Herlinger Patent No. 70,841, November 12, 1867, are also referred to.

The above examples will indicate that what is generally known as the "Uniflow" or Stumpf central exhaust cylinder, was known and put in practice by others than Prof. Stumpf, at comparatively early dates.

J. Snowden Bell.

Col. John Stephens and the Pennsylvania Railroad

New York.

To the Editor:

An advertisement of a leading banking institution of this city, which appeared in several issues of a local journal last week, contains a reproduction of an old wood engraving of the "De Witt Clinton" and train, and a paragraph entitled "Progress of American Railways," in which I note the following statement relative to Colonel John Stevens, viz:

"Stevens and his sons, in 1815, received the first charter granted in the United States for a railroad, and in 1823 they built a road from Philadelphia to Lancaster, which afterwards became the first link in one of the great systems."

By reference to the "History of the Pennsylvania Railroad Company," by William Bender Wilson, Philadelphia, 1899, a standard and interesting work, it will be seen that the foregoing statement is materially erroneous. As a matter of fact, an act of incorporation for the formation of a company "to carry his (Col. Stevens') project into effect," was approved by the Governor of Pennsylvania, March 31, 1823. It was entitled "An act to incorporate a company to erect a railroad from Philadelphia to Columbia in Lancaster County," and nine incorporators were provided for, but neither Col. Stevens nor his sons were among them. (p. 8). "As no practical steps were taken towards building the road, the legislature, in 1826, repealed its charter." (p. 11).

The road was built by the Commonwealth of Pennsylvania, under an act of the legislature of March 24, 1828, contracts for 40 miles of its construction being let in April, 1829, and a single track from Philadelphia to Columbia was completed in April, 1834. (pp. 11, 12).

While ample credit was due, and is given by the author, Mr. Wilson, to Colonel Stevens, for his earnest, though unsuccessful, efforts to build the road, and disclaiming any disposition on the part of the writer to disparage his energy and ability, the foregoing correction is made in the interest of historical accuracy.

J. Snowden Bell.

The Railroads and the College Man

State College, Pa.

To the Editor:

I have been reading a pamphlet generally known as the "National Shopmen's Agreement." As you have stated in your columns, the agreement does not prohibit the employment of railroad special apprentices, in fact it makes no mention directly or indirectly of the college man.

The more I learn of the situation, and I have before me facts from many sources, the more am I amazed at the action of some railroads in refusing to employ college graduates. An official of a large Eastern road writes: "The railroads at the present time are bound by agreements with the Federated Craft, which prohibits us from employing college graduates as special apprentices. I do not know how long this agreement will be effective, but as long as it remains in effect we will have to abide by its provisions." Is there any agreement other than the one referred to above, consummated in October, 1919?

On the other hand, a prominent official of another road writes: "In acknowledgment of your letter, would say that we expect to continue to handle special apprentices just as we have done in the past."

Why this difference of interpretation?

I have read the paragraphs referring to the number of apprentices and how they shall be appointed. The purpose of the several articles of agreement on this point seems to be very clear, that they are discussing the training of *workmen*. Surely the shop crafts unions did not regard the training of a special apprentice as a means of developing workmen. They know full well that the railroads need technical men and that sooner or later their own interests will suffer if college graduates are not trained along the lines of their special ability on the railroad. If the agreement is intended to exclude the technical graduate, it would at least be sound judgment to state that fact; nothing could be lost by clearly defining the issue. If there was such a purpose in mind, should not graduates in civil, electrical, mining and chemical engineering come under the same restrictions?

If the name "special apprentice" confuses the purpose of his training with that of the regular apprentice, let the course be designated as the "graduate engineers' course," or a similar name suggestive of his place in the organization.

Another college year is rapidly approaching. A young man writes, "I had expected to take your course in Railroad Mechanical Engineering. I was brought up in a railroad town and want to follow work in a motive power department, but I am told that the railroads don't want engineering graduates. Is that so? If it is, I prefer to start out in other lines." My answer was in substance that I know of two roads that need him and if he has the real stuff, they want him; but I know of many others that will need him but I don't know now whether they really want him.

Whatever the interpretation, some of the outstanding facts are too apparent to be lost sight of.

(1) The railroads, as a whole, are not getting sufficient young men of special engineering ability.

(2) The industries want the college graduate, are sending to the colleges for them and are paying a living wage.

(3) The colleges are asking why this branch of engineer-

ing activity is discriminating against the college man.

(4) Mechanical engineering teachers are advising their students to keep out of the railroads.

(5) Young men in the making are willing to pay the price of success but they are not going to mark time with an industry that does not clearly define its policy or take care of its men.

The situation is *not* serious or acute, providing the railroads will go along as heretofore and not read into the agreement something which was never put there. It *is* serious if the railroads are marking time, for in any event, many of them are now playing a losing game.

The colleges are trying to do their part in the training of men. What shall we answer when asked the straight question, "Do the railroads want the college man?"

A. J. Wood,
Prof. Railroad Mech. Eng.

Some Supervising Officers Overlooked

New York.

To the Editor:

Most men who have made a study of labor conditions were anxious to see just what effect, if any, would result from the decision handed down by the Labor Board at Chicago on July 20.

The $.85 per hour rate for shop mechanics authorized by the board will, of course, be of material help and should enable the men in charge of the shops to secure a better class of men providing the outside industries do not repeat what was done in 1918 shortly after supplement 4 to General Order 27 was issued. The industries were paying slightly higher rates than those afterwards authorized by Supplement 4 and proceeded promptly to further raise their rates of pay so that the $.68 per hour rate given to the roads would not compete with them.

The Navy has now under consideration demands that have been made for higher rates; if these are granted the ship yards are very liable to follow suit. There will in this event be a reviving of the unrest among the shop men just at the time when it is very necessary to let wage matters rest and give attention to the business of again trying to build up an efficient organization.

The wages paid mechanics by the Navy and ship yards are now higher than those authorized by the Chicago award; while their base is $.80 per hour, two and one half times the rate is overtime allowance in the yards and in the Navy the bonuses paid, together with time that is allowed the men for days they do not work, make their $.80 rate for mechanics better than that now paid by the roads.

Rebuilding an efficient shop organization unfortunately was given a serious setback by the Chicago award embodying a continuation of the rules, working conditions and agreements in force under the authority of the United States Railroad Administration; very little headway can be made in bettering conditions until these rules are materially altered and modified. There are a great many rules in the so-called National Agreement which effectually block building up an efficient organization. The supervisory forces are faced with a most difficult task.

The unions have energetically looked after the interests of the men. The supervisory forces relied entirely on the roads seeing that their interests were properly protected. The basis of all the wage adjustments was to give the most to the lower paid men. This is a beautiful idea—one that sounds fine to the ears of the general public. But has it not been carried a little too far? The supervisors in many instances have been shamefully treated!

It can hardly be expected that men of the ability required under the present conditions—men who measure up to the standards exacted by the difficult tasks now confronting the supervisory forces in the shops—will stay in the service of the roads unless they are given the consideration they justly deserve. The war put an entirely new angle on the nature of their tasks; it is hard work to build up a good working organization, even in normal times; constant energetic effort must be put forth now or no headway will be made. The old efficient team work of all hands must in some manner be brought back to life in spite of the obstacles that have been placed in the way. This requires a high degree of talent on the part of those who must supervise the work. Will it be recognized?

F. Orman.

Employees' Compensation Laws—Their Present Status in Different States

New York City.

To the Editor:

Reading your report (June 11, page 1686) of the annual meeting of the Association of Railway Claim Agents, held at Atlantic City in May, it occurs to me that your readers may be interested in a general statement of the present status of compensation legislation.

Something over ten years ago, the Association of Railway Claim Agents appointed a committee to consider compensation legislation, and we drafted the first suggested act providing different amounts for specific injuries in compensation and death cases, based on number, relationship and age of the next of kin, and proportionate to their needs. At this time there was not a state in the Union with a compensation law. The federal government had a so-called compensation act, which went into effect August 1, 1908, but it applied only to the relatively few government employees engaged in hazardous employment.

At present the states of Arkansas, Florida, Georgia, Mississippi, North Carolina and South Carolina are alone without compensation laws.

This whole movement is of very recent growth. While New York was the first state to enact compensation laws and two were put on the statute books in 1910—one, a compulsory law, was held unconstitutional, and the elective act is still on the books, but literally "dead,"—it is fair to say that in 45 states and territories the present compensation laws were enacted between May, 1911, and January, 1920, less than nine years. There are 14 compulsory and 31 elective acts, in addition to the federal act. In 39, some form of insurance, security or proof of financial responsibility is required of the private employer. In 28 there is no "state insurance," so-called.

There are limits in either time or death payments in 35 laws, minimum 240, maximum 416 weeks; and money limits, $3,000 to $6,000, in 22.

In Nevada, New York, North Dakota, Oregon, Washington and West Virginia and under the federal law payments in death cases run until re-marriage or death of widows. The Oklahoma law does not apply to deaths.

Waiting periods are prescribed in all states except Porto Rico and Oregon. Payments for permanent total disability run for life in 17; limited in all others. All are on a percentage wage base except that Oregon, Washington and West Virginia (as to death) are on a flat rate or pension basis. There are medical provisions in all except Alaska, Arizona and New Hampshire; limited in time or money in all but seven.

With the exception of Arizona, New Hampshire and (in special instances) Ohio, the compensation remedy is exclusive. In Arizona and New Hampshire employees have

an option of election after injury between compensation and a suit for damages. In Ohio an employee has this option where the employer is in default for insurance premiums, and has an action for damages against his employer for injuries caused by wilful negligence or failure to comply with the statute with reference to safety guards, etc; this in addition to compensation. Incidentally, in Ohio the right to recover damages for injuries caused by a third party is retained, without loss of compensation. In most states where the injured employee elects to take compensation this right of action is subrogated to the employer on payment of compensation.

In Porto Rico, Massachusetts, Oregon, North Dakota, Nevada, Washington, Wyoming and Texas, employers are required to insure the payment of compensation. There is no right of self-insurance. This right and privilege is very valuable to the large employer; it is absolutely essential to a railroad company whose employees are entitled to compensation only when engaged in intrastate commerce, as there seems to be no way of overcoming the difficulty of applying a premium rate to the payroll of railroad employees who may regularly or irregularly engage in both interstate and intrastate commerce.

It is the intention of the Claim Agents' Association to appoint various state sub-committees and endeavor to have the broad general compensation principles made uniform in the different states; and especially to preserve the right of self-insurance and secure it in the states where it is now prohibited. Efforts will be made to have compensation made the exclusive remedy against the employer in the states of Arizona, New Hampshire and Ohio.

FRANK V. WHITING,
General Claims Attorney, New York Central.

The Maintenance Settlement

CHICAGO.

TO THE EDITOR:

On page 151 of *Railway Age,* issue of July 23, 1920, you published an article dealing with the subject of claims against the Railroad Administration. In discussing that phase of the subject which has to do with the differences between the positions of the carriers and of the railroad administration, it is stated that the carriers contend that the basis of comparison should be that of the number, quantity and quality of physical units of materials used as distinguished from the so-called accounting method relied on by the railroad administration, which is based on the money expended and the man hours of labor employed. This article is somewhat inaccurate and by reason thereof becomes misleading in that it tends to show that the carriers are not willing to accept an accounting method of comparison.

The carriers have no objection to an accounting method of comparison, have not set up any engineering method and they are perfectly agreeable to having the comparison made in the form and manner provided for in the contract. They do not contend that the director general's obligation is measured by the quantity or quality of physical units of materials used as a thing apart and distinguished from the accounting method of comparison. However, they do contend that the measure of maintenance is the same relative amount, character and durability of physical reparation, which is the precise language of the contract, contained in the last lines of paragraph c of Section 5 thereof, and that these words are the determining factor which must be satisfied by the equation applied to the test period expenditures.

In the second column, at the top of page 151, the statement is made that "the standard contracts between the companies and the government provided that the property should be returned in substantially as good condition as when taken over with a proviso that the expenditure of the same amount of money as in the test period, after making proper allowance for differences in *prices, wages, volume of traffic, etc.,* should be taken as a compliance with that covenant." This, also, is an inaccurate statement. I desire particularly to call your attention to an error made in stating that the contract calls for a proper allowance for the differences in price, wages, volume of traffic, etc., where, by merely substituting the word "price" for the word "cost," which is the correct word, your correspondent unconsciously puts an entirely different meaning into the contract. What the contract does call for is an adjustment to make due allowance for differences that may exist between the *cost of labor and material and between the amount of property taken over and for any difference in use,* and the carriers contend that the differences in the cost of labor are not synonymous with differences in prices of labor or rates of wages but must fully reflect the change in cost of labor resulting either from the difference in wages or the difference in the amount of time required to accomplish the same amount of physical reparation.

In some of the earlier drafts of the contract the word "price" of labor was used in place of the word "cost." Later it was recognized that in view of the change in relative productivity of labor an equation confined to the difference in price would be insufficient, and the language was changed, and the word "cost" substituted specifically for the purpose of enlarging the equation to include all factors which might be involved in causing the cost of labor to change.

It is very evident that the railroad administration in its desire to limit the amount of its obligation to the carriers is attempting to use such a basis of adjustment as will minimize to the greatest extent possible the effect of the proviso in its determination of the equation factor. It has been seeking for some time to lay the foundation for the claim that the railroads are seeking to avoid being limited to the terms of the contract and is striving to develop the thought that the administration is not responsible for inefficiency of labor. In my judgment, they will have accomplished a good share of their undertaking if they can establish the belief, through the press and otherwise, that the provisions of the contract calls only for an equation for differences in "rates of wages" or "prices of labor," instead of "cost of labor."

As a matter of fact, the mere inefficiency of the labor itself is only one of the causes which resulted in the cost increasing more than the mere increase in wages. Among the factors which resulted in increasing the cost of labor was the failure to secure the material needed promptly, so that in many cases the laborers had nothing to work with and lost much time on that account. Furthermore, the local federal officers were hindered in their plans for carrying out their maintenance work by frequent changes in plans at Washington, so that they did not know from month to month, and until late in the season, what work they would be permitted to do. Also owing to the fact that all questions of organization and discipline were subject to review at Washington it was practically impossible for the local officers to make any substantial efforts to enforce disciplinary measures. Again, the change from ten to eight hours' basis increased the cost of labor at least 15 per cent in many instances. None of these things are chargeable to the inefficiency of labor itself but are more properly chargeable to the inefficiency of management of labor.

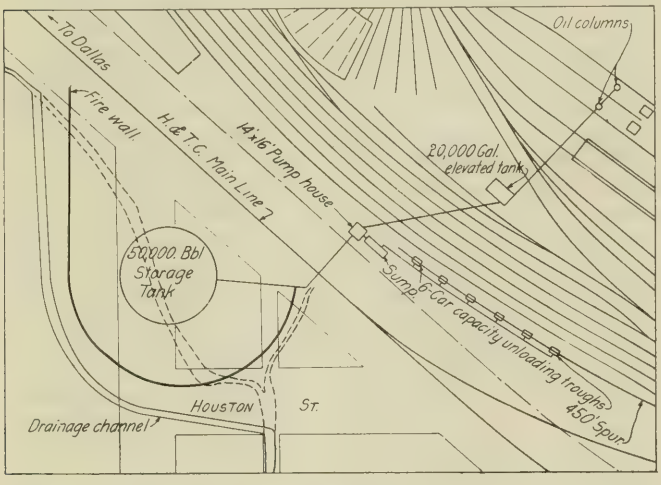
The article referred to goes on to say that the lesser companies are gradually conceding that the position taken by the railroad administration is correct, but that the larger companies are still contending for some other basis. It appears to be true that some of the lesser companies, because of the urgency of their needs, are giving up their contentions and are settling with the government for whatever they can get, realizing their helplessness, but I hardly consider that this situation indicates that they are conceding the correctness of the railroad administration's position. ENGINEER.

Installing Facilities for Handling Locomotive Fuel Oil

New Storage and Service Stations on the Missouri, Kansas & Texas Present Interesting Problems

By R. M. Stubbs
Engineer of Bridges, Missouri, Kansas & Texas of Texas, Dallas, Tex.

AMONG THE FEW improvement projects of any considerable magnitude undertaken by the southwestern railroads since the war, has been the equipping of a number of Texas lines for the use of oil as fuel for locomotives. The long haul from coal fields producing a suitable quality of locomotive fuel, the abundant production of the Texas oil fields and the possibility of delivering Mexican oil at the Gulf ports in large quantities at low cost, have combined to make this change in fuel especially attractive for the railroads of southern and western Texas.



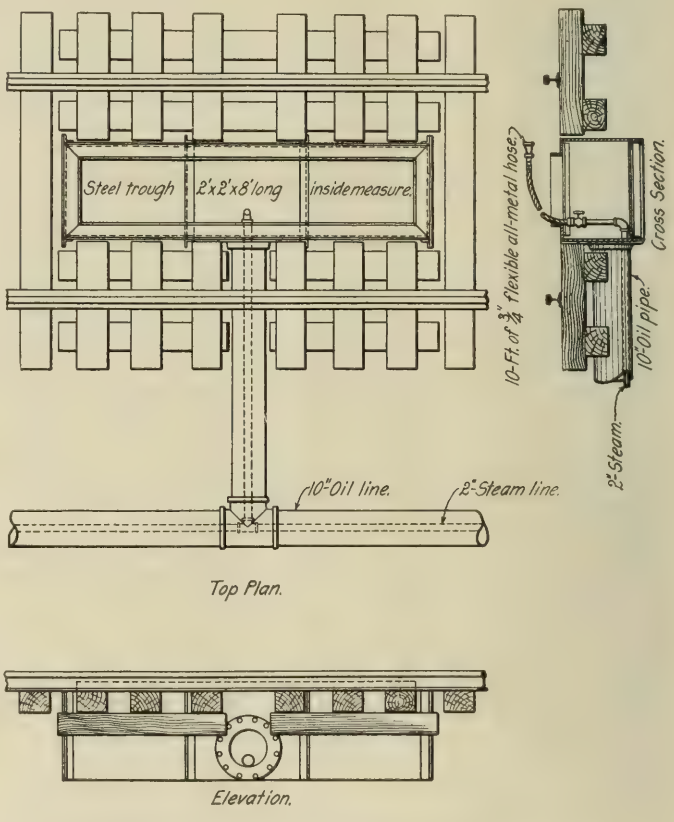
Typical Oil Service Installation at One of the Engine Terminals

For the Missouri, Kansas & Texas, of Texas, and its subsidiary, the Wichita Falls & Northwestern, the change from coal to oil, which had been under consideration prior to the war, was definitely determined upon during the summer of 1919. Contracts were entered into, with the Panhandle Refining Company for delivery at Wichita Falls, Texas, of fuel oil for use on the W. F. & N. W., and with the Mexican Petroleum Corporation for Mexican oil from the Tampico field, to be delivered at Galveston to fill the requirements of the M. K. & T. of Texas. In September work was started on the facilities necessary for unloading and storing oil, and for delivering it to locomotives, and the necessary changes in the locomotives. This work is now nearing completion. The first oil burning locomotives were placed in service last fall. In February, the change was made general on the Smithville district, comprising the lines from Waco south to Galveston and San Antonio. By June 1 practically all the service stations included in the plans were handling oil, though the full contemplated storage capacity at a number of points was not yet available for use.

Fewer Fuel Stations Required

The Mexican oil is delivered to the railway at Galveston through a receiving and storage station constructed and operated by the Petroleum Corporation. From Galveston the oil is moved in tank cars to the various service stations, the location, general makeup, and capacity of which are shown in the table. As the oil has a thermal efficiency per pound more than 50 per cent greater than that of bituminous coal, and its use involves less wastage in handling and firing, the same tender capacity permits a considerably longer spacing between service stations than is possible with coal, and it is in general unnecessary to maintain intermediate stations between engine terminals.

The installations comprise facilities for unloading the oil from the tank cars, for holding in storage a supply varying in amount with the location and importance of the station and for delivering it into the tenders of the locomotives. The oil is unloaded from the tank cars direct into steel troughs, two feet by four feet in section and eight feet long,

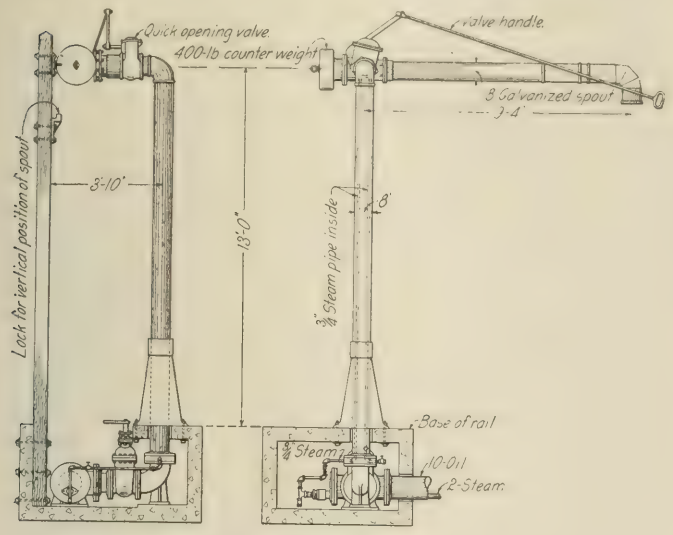


Steel Troughs for Receiving Oil from Tank Cars

which are spaced 40 ft. on centers between the rails of the unloading tracks. As a precaution against fire or accident, these troughs have hinged wooden covers, protected by galvanized sheet iron, which are kept closed except when cars are being unloaded. An outlet pipe in the side of each trough connects it to 10-in. manifold pipe leading to an underground sump tank, also of steel. The sump tank, generally of a capacity of 12,500 gal., is placed as deep in the ground as is consistent with the suction of the pumps,

in order to obtain the maximum fall through the manifold pipe from the unloading troughs.

Fairbanks Morse "Santa Maria" pattern steam pumps fitted with special valves suitable for handling oil, have been used at all stations. Two sizes of pumps were purchased with capacities of approximately 100 and 200 gal. per min., respectively. For the larger stations, increased capacity and security against failure are provided by duplicate installations. Pumps are so connected that they can draw, as desired, from either the sump or the storage tank, and discharge to the storage tank, the delivery tank, or direct through the delivery columns to locomotive tenders. Eight-inch wrought pipe lines lead from the pumps to storage and delivery tanks.



Form of Column Provided for Delivering Oil to Locomotives

The storage capacity varies at different stations according to the quantity of oil consumed, and the distance from the source of supply. In general, it was the intention to provide storage for about two months' needs. At each of the larger terminals there is a steel storage tank of the type commonly used by the oil companies, with capacities of 55,000, 37,500,



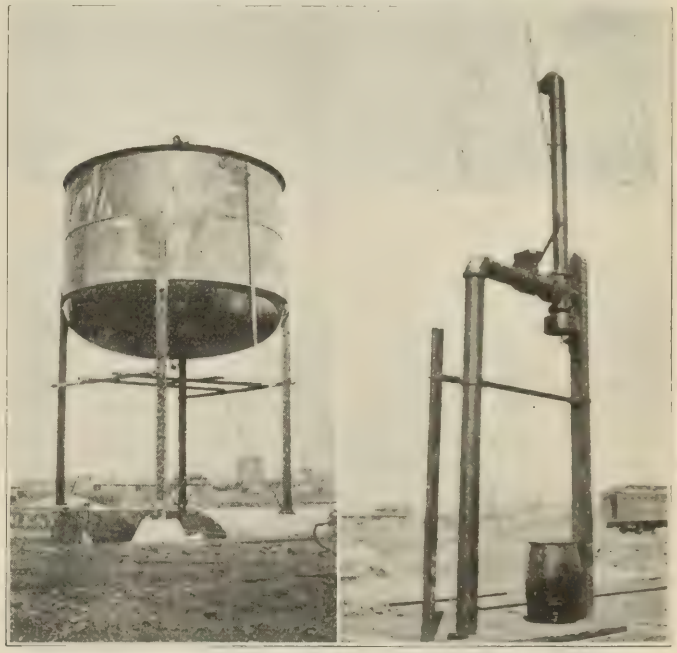
Grading for a 15,000 Bbl. Tank at Hughes Springs

or 15,000 bbl. These are flat bottomed tanks, erected on a level earth bed, sometimes with a thin surface of sand to equalize the bearing. They are surrounded by an earth levee or "Fire-wall," enclosing a volume 50 per cent in excess of the tank capacity, to provide a margin of safety in case of fire or accident to the tank.

At these larger stations, 20,000-gal. delivery tanks deliver oil by gravity to the service columns. These tanks are horizontal cylinders elevated on steel bents 20 ft. above the rail level of the engine tracks. A smaller type of station combines the storage and delivery in one 100,000-gal. tank, elevated on a steel tower, similar to tanks in common use in railroad water service. On the W. F. & N. W., all the tanks used, both for sump and delivery, are reclaimed tank car shells and the delivery tanks are mounted on framed timber bents.

Ten-inch lines connect the gravity delivery tanks with service columns on the engine tracks. The telescopic spout in common use in railroad water service cannot be used to advantage with oil on account of the unavoidable drip. While this is negligible in water service, with oil both the loss by dripping and the resultant fouling of tracks and grounds make it desirable to use some more rigidly connected type of spout, even at the cost of some loss in convenience of handling. The design used by the M. K. & T. consists of a counter-balanced spout swinging in a vertical arc on a packed slip joint. This joint is in a horizontal arm, parallel with the track to be served, leading at the required height from a vertical column of eight-inch pipe, and supported beyond the spout on a timber post. A quick-opening valve, set in the horizontal arm, is operated from the locomotive tender by a lever which swings with the spout.

Mexican fuel oil of the low gravity in use as locomotive



A Combined Storage and Delivery Tank and a Fuel Oil Crane

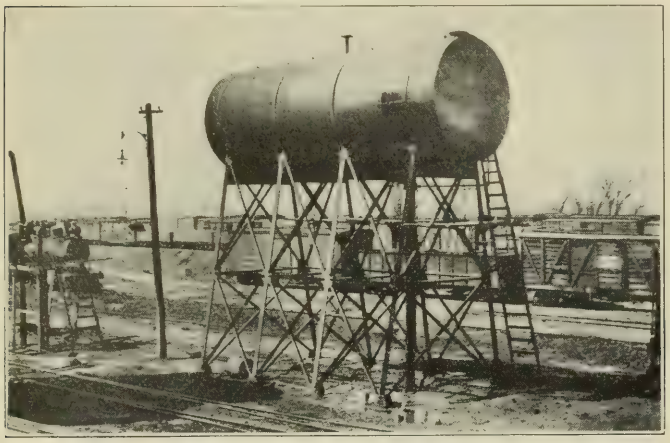
fuel (the M. K. & T. contract specified 15 to 17 deg. Baume), is very thick when cold, having almost jelly-like consistency. To be handled successfully it must be heated to a temperature of approximately 120 deg. This requirement adds greatly to the difficulty of designing satisfactory plants for handling the oil, increases the first cost of the installation, and furnishes a source of continual trouble in maintenance. In the M. K. & T. plants, steam heating pipes of two inches maximum diameter are laid inside all oil pipe lines and all tanks contain heating coils, varying with the size of the tank, supplied with steam.* Most of the tank cars used for transporting this oil contain heater coils, and when the cars are spotted on the unloading tracks, these coils are connected to the station heating system by one-inch flexible steel hose outlets from each unloading trough.

Pipe lines are not enclosed but are painted with asphalt paint and buried two feet in the ground. If a suitable

* For details of the manner in which this was worked out by the Gulf, Colorado & Santa Fe R. R., see the article on Handling Heavy Oils at Locomotive Fuel Stations, published in the Railway Age of April 9, 1920, page 1147.

covering were available which would be water tight, yet permit of easy access for repairs, it would be possible to run the steam lines along the oil pipes on the outside. Covering the pipe would add to first cost, but such an arrangement would not only reduce maintenance costs by rendering the steam lines accessible, but would result in a more gradual application of heat to the oil lines. Several line breaks have occurred as the result of inexperienced pumpmen turning on an excessive amount of steam, or neglecting to turn off steam after the oil was sufficiently heated.

Wherever oil stations are located at terminals four-inch



Delivery Tank at Waco, Tex.

supply lines to the power plant boilers have been run from the delivery tank, the burners being fed by a controlled gravity flow. In installing oil burners two things are necessary for successful operation. There must be an impact pedestal of fire brick to intercept and flare the flame, and a small pipe coil located in the fire box to superheat the oil and steam before they pass to the burner.

Fire Protection Important

As fire protection, all large storage tanks are directly connected with the live steam supply by 2½-in. pipe lines, for



A 55,000 Bbl. Storage Tank

smothering any tank fire. Hand operated Foamite Fire Foam engines of a capacity of 40 to 250 gal. have been placed at each station. Bond wires are installed at delivery columns, bonded five or six rail lengths, to prevent the possibility of fire from sparks from stray currents passing from the rails to the pipe lines through a locomotive being served with oil. Regulations of the Board of Fire Underwriters have been complied with in the design and construction of facilities. No serious objection on the part of local authorities to the location of tanks was met with except at Houston, Tex., where it was impossible to secure permission to erect a storage tank of any description above the ground surface. This made it necessary to use an underground reinforced concrete tank, and pump direct from it to the delivery columns, doing without the usual gravity delivery tank.

All locomotives in use on the Missouri, Kansas & Texas of Texas and the Wichita Falls & Northwestern are being converted as rapidly as possible from coal to oil burners. The change is accomplished by placing in the coal compartment of the tender separate oil tanks of the same shape as the coal space, necessary piping connections and burners are installed and the fire-box changed to accommodate the oil. This work is being handled by W. H. Maddocks, mechanical engineer, under the general direction of F. K. Tutt, mechanical superintendent.

The installation of piping and machinery, including unloading facilities and delivery tanks and columns, at all Texas points, has been carried out under contract by the National Boiler Washing Company of Chicago. This company also prepared the detail designs for pipe work and connections. The storage tanks are furnished and being erected by the Chicago Bridge and Iron works, and asbestos roofing applied to them by the Johns-Manville Company. The improvement was started under the direction of J. M. Metcalf, principal assistant engineer, while the writer has been in direct charge of construction.

FUEL OIL STATIONS—TEXAS LINES

Station	Capacity of Tanks			Capacity of Pumps	Number Track Troughs	Number Cranes	Total Capacity Gallons
	Storage bbl.	Delivery gal.	Sump gal.	gal.			
Denison	55,000	20,000	12,500	2-200	6	2	2,892,500
Greenville	37,500	20,000	12,500	2-200	4	2	1,982,500
Dallas	None	100,000	12,500	1-200	3	1	112,500
Fort Worth	37,500	20,000	12,500	1-200	5	2	1,982,500
Waco	55,000	20,000	12,500	2-200	6	2	2,892,500
Granger	None	100,000	12,500	1-200	3	1	112,500
Smithville	55,000	20,000	12,500	2-200	5	2	2,892,500
Houston	None	55,000	None	1-200	3	2	55,000
San Antonio	"	100,000	12,500	1-200	3	2	112,500
Hughes Spgs	15,000	20,000	12,500	1-200	4	2	812,500
Walnut Spgs	None	20,000	10,000	1-100	1	1	30,000
DeLeon	15,000	20,000	12,500	1-200	4	1	812,500
Stamford	None	100,000	12,500	1-100	2	2	112,500
Wichita Falls	55,000	20,000	12,500	1-200	None	2	2,892,500
Altus	None	2-10,000	10,000	1-100	1	1	30,000
Elk City	"	2-10,000	10,000	1-100	1	1	30,000
Woodward	"	2-10,000	10,000	1-100	1	1	30,000
Forgan	"	10,000	10,000	1-100	1	1	20,000
Galveston	4-55,000	None	None	2-1,000	—	—	11 440,000
Trinity	3,000	"	"	1-100	None	1	156,000



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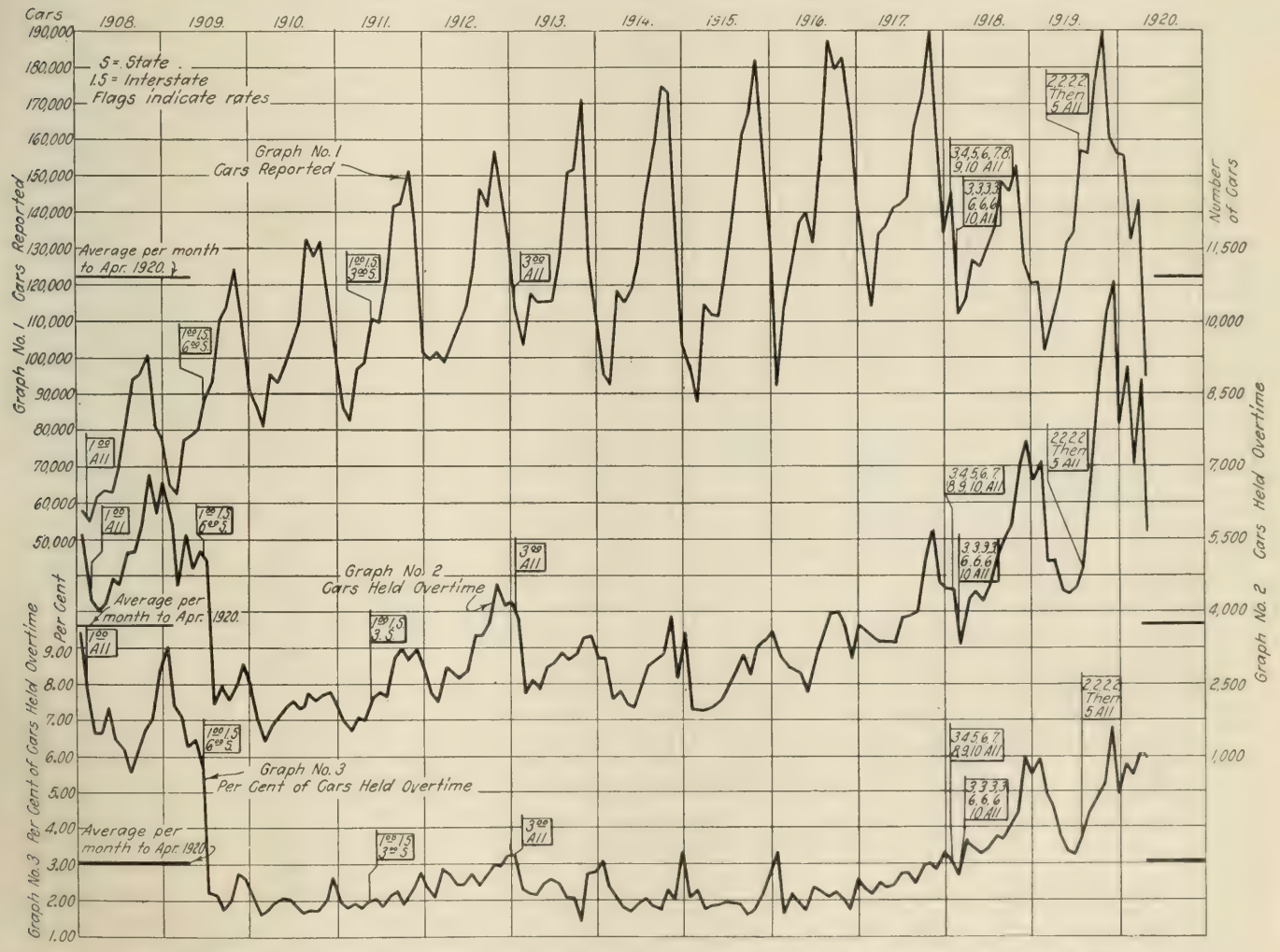
Board of Directors of the United Association of Railway Employees of North America Who Called at the White House to Ask Secretary Tumulty to Intercede for Them with the Railroads

Pacific Car Demurrage Bureau's Campaign

Efficiency of Stringent Straight Rules and High Demurrage Rates Is Shown by Graphs

THE PACIFIC CAR DEMURRAGE BUREAU, San Francisco, Cal., campaigning for car conservation, has been advocating and assisting in the education of railway employees, shippers and the public in an effort to convince all that stringent, straight rules and an increase in demurrage rates are necessary if the carriers are to meet the present transportation crisis successfully. This bureau in abiding by its slogan "car detention causes car shortage, delay, waste, demurrage; car conservation gives surplus cars, speed service, economy" has prepared a pamphlet containing the shape of stringent straight rules and a high demurrage rate to force the delinquent shipper to load and unload cars promptly. Our long experience in car detention matters in our several states under different rules and rates permits of but one conclusion, i. e., that a high demurrage rate and stringent straight rules alone will secure the results desired.

"At the present time, owing to conditions having been brought home to them, shippers are more than ever inclined to co-operate with the carriers in any fair measure that will



Graphs Showing the Cars Reported, the Cars Held Overtime and the Per Cent of Cars Held Overtime

graphs showing the comparative car conservation resulting from the various demurrage rules and rates in effect in California for the period from 1908 to 1920. An analysis of the facts brought to light by these graphs is appended to each of them. The recommendations and platform of the Bureau, under the management of R. C. Munholland, were quoted in the *Railway Age* of July 30, page 177. The introduction to the pamphlet, the graphs and their analyses follow:

"It has been our invariable practice to sell the shipper, not demurrage, but car conservation. However, in this we are encouraged or discouraged by the backing we have in bring about their salvation. It has, therefore, been our thought that a campaign of education should be inaugurated to convince the shippers, as well as the carriers, that stringent straight rules and an increase of demurrage rates are absolutely necessary if we are to tide over the present crisis.

"In the charts that follow we show the fluctuations under various rules and rates. Figures used in preparing the charts were taken from our monthly reports filed with the Interstate Commerce Commission and our various state commissions; they are, therefore, authentic and their accuracy can be relied upon."

ANALYSIS OF GRAPH NO. 1

Peaks

Highest, October, 1917.....190,488 cars
Lowest, October, 1908.....100,988 cars

The peaks covering the greatest number of cars reported occurred in different years as follows:

August—1910 and 1916
September—1914
October—1908, 1909, 1911, 1912, 1913, 1915, 1917, 1918 and 1919

Valleys

Lowest, February, 1908..... 55,186 cars
Highest, February, 1917.....114,328 cars

The valleys covering lowest number of cars reported occurred as follows:

January—1916
February—1908, 1909, 1910, 1911, 1913, 1914, 1915, 1917, 1918 and 1919
March—1912

Average

Average cars handled monthly.....122,400 cars

Note—We have shown opposite number scales at left and right of all charts short lines to designate average per month for entire period to April 30, 1920. By glancing across or laying a string or rule, you will readily ascertain the comparative fluctuation above or below this average.

"During the period the $6 rate was in effect on state and $1 on interstate traffic, July 1, 1909, to April 30, 1911, there were 2,291,552 cars reported. From July 1, 1918, to April 30, 1920, when the demurrage rate was $3 for the first four days, $6 for the next three and $10 thereafter; also a $2 rate for first four days and $5 thereafter on all traffic, there were 3,071,102 cars reported, an increase of 779,550 cars or 34.02 per cent. (Comment on detention during these two periods follows on other charts.)

"It is said the car shortage at the present time is 200,000 cars. Say the average cost per car is $2,000, it would require a total investment of $400,000,000 to overcome the alleged deficiency in equipment, not to mention interest, taxes and depreciation thereon. Does it appear like a sane business policy by the same ethics governing commercial business to tie up capital, incur depreciation, interest and taxation on sufficient equipment to carry the peak load of four months of the year, when traffic is normal or sub-normal for the balance of eight months of the year? Since the public pays in the long run would it not be better to have strict car conservation 365 days in the year and have equipment available when needed? If all abuse of equipment were eliminated it would enable carriers to operate with less equipment, thereby avoiding congestion on line as well as at terminals, make rapid movement en route and in general reduce the cost of operation and secure maximum efficiency in the service which will be reflected in the freight rate.

"I claim there never has been a car shortage in this country, but that through abuse of equipment there is, and always will be, a deficiency of empty cars available for loading until such time as the proper corrective measures are put into actual practice."

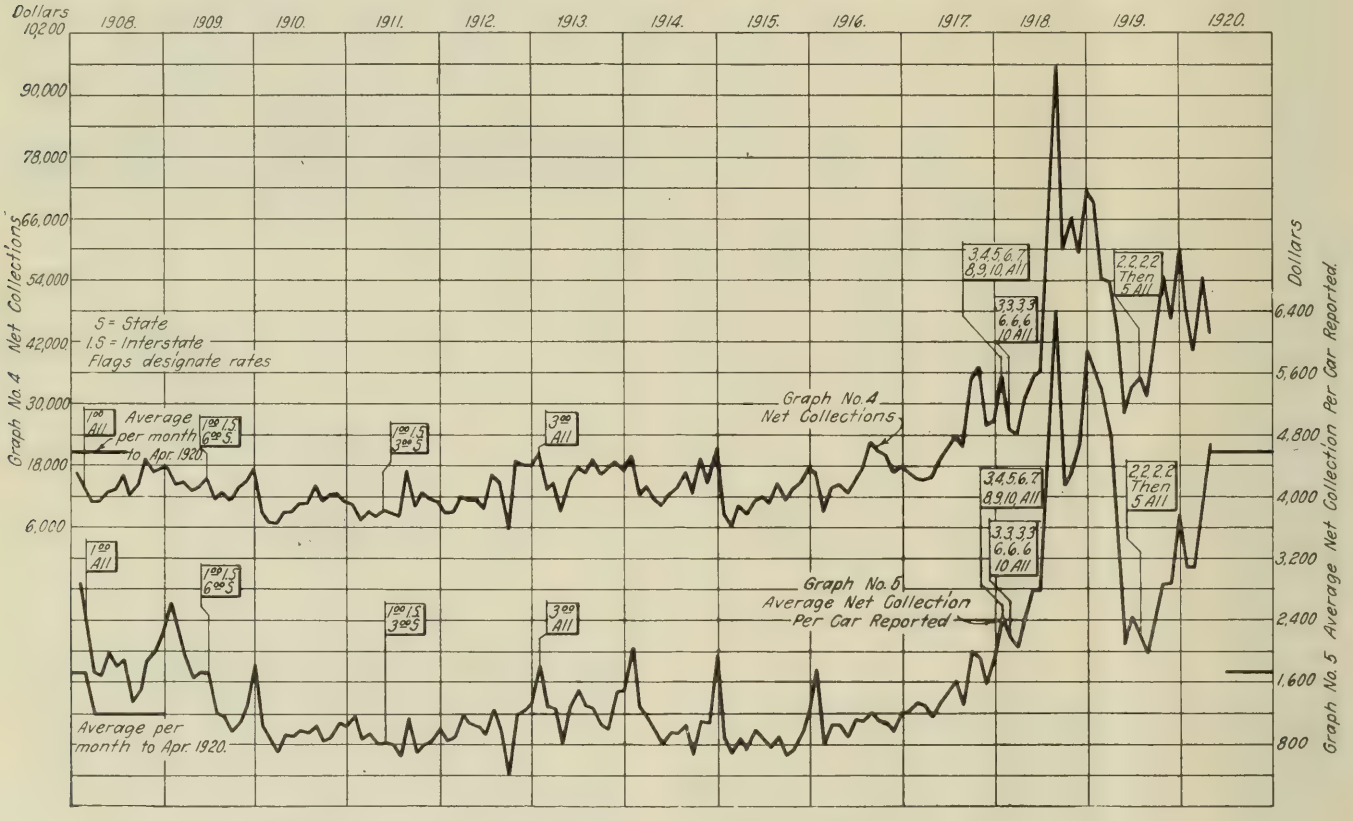
ANALYSIS OF GRAPH NO. 2

Peaks

Highest, November, 1919.....10,846 cars
Lowest, November, 1910..... 2,292 cars

The peaks covering the greatest number of cars held overtime in different years occurred as follows:

January—1909 and 1913
September—1911 and 1916
October—1908, 1912, 1914 and 1917
November—1910, 1918 and 1919
December—1915



Graphs Showing the Net Collections and the Net Collections Per Car Reported

Valleys

Lowest, February, 1910.....1,290 cars
Highest, April, 1919.....4,430 cars

The valley points occurred as follows:

February—1910, 1911, 1912, 1913, 1916, 1917 and 1918
March—1908 and 1915
May—1914 and 1919
July—1909

Average

Average cars held overtime monthly.....3,800 cars

As in the case of total cars reported, as shown in graph No. 1, the high and low peaks in cars held overtime occurred in October and February.

During the period, July 1, 1909, to April 30, 1911, when there was a $6 rate on state and $1 rate on interstate traffic, there were only 44,712 cars held overtime; whereas, from July 1, 1918, to April 30, 1920, when the rate was $3 for the first four days, $6 for the next three days, and $10 thereafter; and $2 for first four days and $5 per day

thereafter, there were 149,238 cars held overtime or under demurrage, or an increase of 104,526 demurrage cars or 233.78 per cent.

"Manifestly a high demurrage rate has this effect on the average railroad man and shipper, that, when a car earns $6 a day it is thought of in terms six times greater than if the rate were only $1 a day, and, it naturally follows, is handled and conserved accordingly."

ANALYSIS OF GRAPH NO. 3

Peaks

Highest, January, 1908 ..... 09.39 per cent
Lowest, December, 1910 ..... 02.68 per cent

The peaks covering greatest per cent of cars held overtime for each year were as follows:

January—1908, 1909, 1913 and 1916
November—1918 and 1919
December—1910, 1911, 1912, 1914, 1915 and 1917

Valleys

Lowest, October, 1913 ..... 01.41 per cent
Highest, August, 1908 ..... 05.44 per cent

The valleys covering lowest per cent of cars held overtime were as follows:

February—1910, 1912, 1916, 1917 and 1918
April—1911
May—1914
June—1919
August—1908
September—1909 and 1915
October—1913

Average

Average per cent of cars held overtime per month ..... 03.05 per cent

"During the period July 1, 1909, to April 30, 1911, when there was a $6 rate on state and a $1 rate on interstate traffic, the percentage of cars held overtime was 01.95 per cent, while during the period of July 1, 1918, to April 30, 1920, when the rate was $3 for the first four days, $6 for the next three days, and $10 thereafter; also $2 for first four days and $5 thereafter, the per cent of cars held overtime leaped to 04.86 per cent, or an increase of 02.91 per cent, or practically an additional three cars for each hundred handled. The greatest per cent of cars held overtime occurred in December, indicating that market and business conditions at that time are the cause of cars being held in excess of other periods."

ANALYSIS OF GRAPH NO. 4

Peaks

Highest, August, 1918 ..... $95,004
Lowest, August, 1910 14,280

The peaks in net collections per month were as follows:

January—1909, 1913 and 1919
August—1910, 1911, 1916 and 1918
October—1908, 1912 and 1917
December—1914 and 1915

Valleys

Lowest, September, 1912 ..... $5,750
Highest, May, 1919 27,815

The valleys in net collections per month were as follows:

February—1911, 1915 and 1916
March—1910, 1917 and 1918
April—1908 and 1913
May—1914 and 1919
September—1909 and 1912

Average

The average net collections per month for entire period $20,500

"It is only natural that there should be fluctuations in the net collections for the simple reason that adjustments of disputed accounts are made 12 months in the year, but the figures here given are of interest to shippers, representing as they do the actual amount of money for which they are penalized by reason of detaining the carriers' equipment.

"Especially is it of interest to note that the net collections during the period of the $6 rate on state traffic with $1 on interstate—July 1, 1909, to April 30, 1911—were $239,004, while from July 1, 1918, to April 30, 1920, when there was only a $3 rate for the first four days, $6 for the next three days, and $10 thereafter, and a rate of $2 for first four days and $5 thereafter, the net collections were $1,149,063, or an increase of $910,059, or 380.77 per cent. In other words, the increased cost to the shippers, because of the present low demurrage rate, amounts to an actual loss of $37,891 per month or $1,263.08 per day. Surely so large an amount is worthy of the utmost consideration because it bespeaks not only the loss in car conservation, but the financial loss as well. As usual the consumer pays while he is awake as well as asleep. Is it not a fact that if this waste were eliminated, or materially reduced at least, it would have a most wonderful effect on the car supply by a material increase in the number of cars available for loading and wipe out the abominable car shortage?"

ANALYSIS OF GRAPH NO. 5

Peaks

Highest, August, 1918 ..... $ .6382 per car
Lowest, November, 1910 ..... .1087 per car

The peaks in the net collections per car reported were for months as follows:

January—1908, 1909, 1911, 1913, 1914, 1916 and 1919
August—1918
September—1917
November—1910
December—1912 and 1915

Valleys

Lowest, September, 1912 ..... $ .0406 per car
Highest, March, 1918 ..... .2044 per car

The valleys in net collections per car reported were during months as follows:

February—1916
March—1910 and 1918
April—1913 and 1917
July—1911
August—1908 and 1919
September—1909, 1912, 1914, 1915

Average

The average monthly net collection per car reported was... $ .1700 per car

"It is illuminating to note that the demurrage cost to shippers for each car handled under the $6-$1 rate was only $0.1043, while under the following sliding scale rates of $3, $6 and $10, and $2 and $5, it jumped to $0.3742 for each car handled, indicating a net saving of $0.2699 for each car had the old rate continued in effect, or an increase of 269.09 per cent. Surely no shipper could ask for a better argument in favor of a high demurrage rate and stringent straight rule. The net collection per car reported can be likened to a tax on every car loaded and unloaded, and the possibility of a net saving of 27 cents on each carload of freight handled is easily understood, even by a layman, as it is a net gain to everyone concerned."

Intrastate Advanced Rate Cases

WASHINGTON, D. C.

JOHN E. BENTON, solicitor of the National Association of Railway and Utilities Commissioners, has issued a supplemental bulletin, similar to that published in part in last week's issue, regarding the status of proceedings before the various state railroad commissions on the railroads' applications for increases in rates. The details given in the supplement as well as the information concerning those states to which reference was made in the original report but omitted in last week's issue, are as follows:

The following states have definitely disposed of the carriers' applications for rate increases: California, Illinois, Iowa, Maryland, Michigan, Montana, New Hampshire, New Jersey, New York (2nd District), Pennsylvania, Rhode Island, Virginia, West Virginia, and Wisconsin.

In the subjoined statement Mr. Benton summarized reports from states not covered in the previous bulletin, and also transmitted additional information with reference to the action taken in several of the states covered by the earlier bulletin:

California: Commission on August 17 authorized increase of 25 per cent on freight rates and 20 per cent on passenger fares on steam railroads, interurban railroads and boat lines, effective on one day's notice.

Florida: Hearing held on August 18 to consider the proposed increases in freight, passenger and miscellaneous rates,

and to determine what adjustment, if any, should be made in present rates.

Illinois: Illinois decision referred to in previous bulletin recognizes the apparent present financial necessities of the carriers, but treats the situation as an emergency which may properly be dealt with in a temporary order, granting increased rates without prejudice to any future proceeding which may involve the lawfulness of such advanced rates. The freight, miscellaneous and excess baggage rate increases were allowed in substantial harmony with those granted by the I. C. C. upon condition that "it is understood that this increase is authorized upon condition that these applicants shall render adequate and efficient service." Passenger fare increases and the surcharge on Pullman fares are denied for want of jurisdiction to increase statutory passenger fares. Increased rates on milk and cream were denied because of the inability of the commission to determine from the evidence presented the amount of the increase, if any, which should be made.

Iowa: At hearings held on August 5 and 17 Iowa shippers did not oppose the carriers' applications, and understood that rates in harmony with those determined upon by the I. C. C. have been authorized.

Kansas: Hearing to begin September 14.

Minnesota: Hearing for trunk lines held on August 16 and those for short lines will be set later. The commission indicates position is that it has no jurisdiction over statutory passenger rates. No petitions have been filed with the commission asking for increases in excess baggage, pullman and milk and cream rates.

Nebraska: Hearing held August 3. Decision not yet announced.

New Jersey: Increases in harmony with those authorized by I. C. C. allowed, except as to intrastate shipments of sand, gravel and broken stone for road building and repair. On this subject the commission said: "It is the opinion of the board, giving due consideration to all the sources and to the public nature of the work for which the material is used, special rates may be made on shipments of sand, gravel and broken stone for use in road building and repair, and this would not be an unjust and unreasonable discrimination either on intrastate or interstate traffic."

New York (Second District): Application for increased freight rates granted, but power of suspension for 30 days is reserved. Passenger rate increases were denied on the ground that passenger rates are held by statute and cannot be increased by the commission. Increases on milk and cream and excess baggage were also denied.

New York (First District): The commission has allowed carriers' applications to increase freight rates, but denied increased passenger rates, including rates on milk and cream.

Ohio. Hearing to begin August 16. Ohio has a three-cent passenger fare law, and a serious question to be presented at the hearing is whether the commission has authority to grant an increase beyond that rate.

Oklahoma. Hearing to begin August 23.

Oregon. Commission has under consideration permitting carriers to file tariffs on ten days' notice, subject to attack or suspension after hearing to begin August 16.

Pennsylvania. On August 10 the commission entered an order in essential part as follows: "It appearing that after a thorough and exhaustive hearing and investigation of the necessity for an advance in rates for transportation by the steam railroads subject to the jurisdiction of the Interstate Commerce Commission, as evidenced by a copy of the entire record of such hearing and investigation filed with this commission, the Interstate Commerce Commission has found and determined that the existing rates should be increased on a general percentage basis fixed by it, and become effective on five days' notice to the public. . . . It Is Ordered: That carriers by railroad in the state of Pennsylvania be . . . permitted to file special supplements to their existing tariffs, . . . making increases therein not exceeding the percentage of increase on existing rates, fares and charges fixed by the Interstate Commerce Commission, such increases to become effective on five days' notice. . . . This permission does not preclude the determination of complaints that may be filed against such rates and charges which shall be subject to investigation and correction."

Rhode Island. On June 2, 1920, the commission issued an order: "That permission be . . . granted . . . to put into effect without the statutory . . . notice . . . tariffs covering . . . interstate traffic under whatever conditions the Interstate Commerce Commission may authorize for interstate traffic in . . . Ex Parte 74, without prejudice to the right of the commission to inquire into the reasonableness of any rates advanced thereby, and to take such action as may be advisable under the law, said tariffs to become effective upon one day's notice."

South Dakota. Hearing in progress.

South Carolina. Hearing held August 19 on freight and passenger increase. Request of American Railway Express Company for increase of 12½ per cent also heard.

Tennessee. General hearing held August 20. Four-cent passenger fare and freight rate increases authorized by the I. C. C. have already been allowed the Tennessee Central Railroad on account of its financial condition.

Texas. Hearing held August 4 and 12. An early decision is expected.

Virginia. Commission allowed all increases in harmony with decision of I. C. C.

West Virginia. The commission on August 10 granted carriers authority to increase class and commodity freight rates 40 per cent, following the order of the Interstate Commerce Commission, effective August 26, after five days' notice. West Virginia has a two-cent fare law and its effect after September 1 is under consideration. A further hearing will be held September 15 as to passenger rates, Pullman charges, excess baggage and milk rates. Pending final decision such rates now in force will continue in effect.

Wisconsin. Increases in freight, switching, miscellaneous, and milk and cream rates allowed by commission on same basis as those allowed by I. C. C. Increased passenger fares denied for want of jurisdiction over statutory fares. Increases in commutation rates were allowed with a maximum of two cents per mile fixed by statute. Excess baggage rates to be considered further in connection with tariffs to be filed.

Wyoming. Hearing held on August 16. Case now pending.



Photo from International

U. S. Railroad Artillery Train Touring Country on Recruiting Mission

What is Value for Rate Making Purposes?

Suggesting a Rational Method Peculiarly Applicable to Solution of the Railroad Problem

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In 1898 the Supreme Court of the United States of America delivered itself of an opinion[1] that has been the subject of discussion in one way or another ever since, and it is probable that even now no one knows just what was meant by the opinion. It is an opinion that has reduced public service enterprises to the status of public servants working for a wage. It is an opinion which in its practical application has taken much value from privately owned public utility enterprises, and but for the invention of the quantity known as going value and its use by far-seeing supreme court judges, would have taken away all inducement for the investment of private capital in these enterprises.

This opinion is as follows: "What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience." This sentence of the opinion was followed by another which with omissions immaterial to the subject in hand was, "On the other hand what the public is entitled to demand is that no more be exacted from it . . . . than the services rendered . . . . are reasonably worth."

Comparatively little attention has been paid to the second sentence. In one case[2] at least it was used, but with an interpretation that is even more troublesome than the application of the first sentence. This interpretation is that the value of the service to be considered is "the value of the service rendered to each individual" rather than the value of service to the customers in the aggregate.

In the case of the ordinary public utility, to charge what the service is worth to each individual would result in almost as many different rates as there are individuals served, because with all of the things that affect value considered, it would be quite doubtful whether the value to any two, or certainly to any large number of consumers would be the same per unit of service. One consumer of water has a good well or a good cistern, and the value of public water service to him is not the same as to his neighbor who has no well or cistern. One consumer of water attaches great importance to a daily bath, to a high degree of cleanliness about his establishment, to a well sprinkled and kept lawn or garden, and to him the value of a water supply is much greater, not only because of the greater quantity used, but per unit of service rendered, than it is to his neighbor who is less particular concerning his person and his premises.

One consumer of gas uses it only for lighting; another uses it only for cooking; and a third uses it only for power production in a factory, large or small; and the value per unit is not the same to any two of these three. Indeed, as between two consumers who use gas for cooking, the value of the service per unit is greater to that one who attaches a considerable value to the element of cleanliness than to that one who considers only the question of economy of fuel.

The value of a railroad fare to him who goes on a business errand, resulting in great profit to himself, is altogether different from the value of the same fare paid by the passenger who is on a pleasure excursion, an errand of mercy, or on a hurried trip to the bedside of a dying relative.

It is thought that there has been no change from this opinion by the United States Supreme Court, but the Supreme Court of the state of Maine has given an interpretation which if adopted, helps some. In furnishing directions to some appraisers it says,[3] "In the aspect now being considered the worth of a water service to its customers does not mean what it would cost some one individual or some individuals, to supply themselves, for one may be blessed with a spring and another may have a good well. It means the worth to the individuals in a community taken as a whole. It is the worth to the customers as individuals; but as individuals making up a community of water takers. In the very nature of things, a water system is usually intended to supply a somewhat compactly settled community, or a community whose geographical elements are somewhat restricted . . . such a community must in general stand as a whole. The rates in such a system are generally and properly uniform, although the expense of supplying some, as those nearer the source of supply, is actually less than that of supplying those at the outermost limits."

If this interpretation will stand in the United States Supreme Court, the difficulty introduced in the Kansas City Stock Yards case will disappear. We are still left with the difficulty of finding what is the worth of the service in any given case, but as will appear later, this seems to be much more easily determinable than is the value on which the serving company is entitled to a fair return as stated in the first sentence of the opinion first above quoted.

No court has ever told us what value is, nor how it is to be determined. In another part of the decision from which the opinion first above quoted is taken, the court said, "and in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stocks, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property."

Now, it is submitted that no person can consider original cost of construction, the amount expended in permanent improvements, the amount and market value of bonds and stocks, present compared with original cost of construction, the proper earning capacity under particular rates prescribed by statute, the sum required to meet operating expenses, and possibly other matters, not mentioned, and give each such weight as must be just and right, and arrive by such consideration at anything like the reasonable value of any particular property, unless paramount weight is given to one of the items, or at most two, and the others are either ignored or held in the background of the person's mind to cause him to add or subtract a judgment amount from the value determined from the consideration of the one or two principal items.

As a matter of fact this is just what has come about, and almost uniformly in the United States Supreme Court the cost of reproduction as of the time of valuation has been the controlling item on which value has been based. Not "the

[1] Smyth vs. Ames, 169 U. S., 466, p. 546.
[2] Cotting vs. Kansas City Stock Yard Company, 183 U. S., 89.
[3] Brunswick and Topsham Water District vs. Maine Water Company 99 Maine, 381.

present as compared with the original cost of construction," but simply th epresent cost of construction or, as it is commonly called, cost of reproduction. And it is feared that engineers are responsible for this outcome.

Probably cost of reproduction is a better name than present cost of construction, because if one may judge from the decision concerning the propriety of including the cost of removing and replacing paving over mains, as given in the Des Moines Gas Case[4], it would appear that it is not present cost of constructing the property now existing at any given date, but the present cost of doing for the present property what was done when it was produced, that is to say, to reproduce the work that was produced originally. By originally is meant originally with respect to the property now existing and not simply the original plant as it may have been when first constructed.

There can be no question but that the present cost of producing a property which consists largely of mains laid under paved streets would include the cost of taking up and replacing pavement over the lines of those mains, but the decision in the Des Moines case, above referred to, says that this is not an item to be included in an estimate of the cost of reproduction, when that cost is used as an item of value, if the mains in question have been laid before the paving.

However much masters and courts may have said that they were considering all the matters to be considered in arriving at a judgment value of a property, what they have done in almost every case is to determine from the evidence a reasonable amount to represent cost of reproduction as of the time of the valuation, to subtract from this a sum determined to represent the accrued depreciation of the physical items, and in rare cases to add a sum to represent the appreciation of physical items, and to the total thus obtained to add one more item which has been called "going value," and which was invented without a name and first applied in the Kansas City Water Works case[5].

The language used in that case with respect to the element now being considered was as follows: "The fact that it is a system in operation, not only with a capacity to supply the city, but actually supplying many buildings in the city,—not only with a capacity to earn, but actually earning, —makes it true that 'the fair and equitable value,' is something in excess of the cost of reproduction."

Later on this "something" was given the name "going value," and although some inferior courts have declared that there is no such thing as going value, or that if there is it is sufficiently accounted for when a complete cost of reproduction is allowed, the U. S. Supreme Court has consistently followed the opinion of the Federal Court in the Kansas City Water Works case, and has declared quite recently in the Denver Water Works case,[6] that the item of value is existent and is an element of value attaching to a property over and above its fair cost of reproduction.

And so it has come about that the value of a public utility enterprise is most commonly found by estimating the cost of reproduction new, the amount of depreciation existing in the property at the date of valuation, the amount of appreciation, and the item of going value, and adding these four quantities with their proper signs. The sum is called the fair value of the property.

It ought to be clear without argument that the value of an enterprise cannot be determined by assigning a certain value to the physical plant used in connection with the enterprise and another value to the business of the enterprise. The plant would be worth only salvage without the business, actual or potential, and the business could not exist without the plant. The two go together and cannot be separated. The business adds to the value of the physical property and the physical property is absolutely essential to the business. It seems to be absurd therefore to find the value of a public utility or any other business by assuming or estimating some costs of construction and guessing at an item known as business value and adding the two together, and calling the sum value.

No attention whatever is paid to the earning capacity of the property. Ordinarily no attention is paid to the fact that the franchise under which the enterprise is operated, is a short term franchise about to expire or already having expired, if such be the case. The property is considered to be a public necessity and of indefinite life.

Even going value is treated in many of the decisions as a cost rather than a value, although it is called value. It is considered to be what is sometimes known as development expense, that is to say, the deficiency in earnings, below the fair return on investment, which is almost always the result of early years of operation. But ideas are very confused in this matter because the development expense that is found is, as a rule, what it is assumed would be incurred in building up at once a property of the magnitude of that under consideration in any case, although the actual development expense, if any, was an expense occurring when the property was comparatively new and presumably of very much less magnitude than at the time of valuation, and more or less wild guesses have to be made as to how long it would take to develop a property of the magnitude of that under consideration in the community in which it is, with conditions as of the time of valuation. This procedure does violence to our common sense, since it is inconceivable, at any rate with respect to the larger communities, that they could have reached their importance as at the time of valuation, without a previous creation and long time growth of the utility under consideration.

In most of the cases in the Federal and Supreme Courts, the item of going value has been simply guessed at, the master or the court saying that in his opinion it ought to be about "so much,"—the master in the Des Moines Gas case frankly admitting that he could not say why it was "so much," but he just thought it was.

In a recent most excellent and illuminating report in the San Francisco Gas Case[7], Standing Master in Chancery, H. M. Wright, takes the ground very positively that there is but one value to such utility, that the value to sell or purchase is identical with the value for rate making, and he proceeds to determine that value in the case in question by adding going value to cost of reproduction less depreciation, and this seems to be the very best that our courts have been able to do with the question "What is the fair value of the property of a public utility on which it is entitled to a fair return?" It is feared that this is a fact for the reason that no better evidence has been forthcoming from the engineer witnesses.

What was contemplated in that old decision of Smyth vs. Ames when the principle was first enunciated? The purpose of this article is to assert that the question has not been properly answered as yet and to try to point out what seems to be a far more rational procedure under the law than has heretofore been obtained.

Did the court mean value or did it mean something else? Is it practicable to use value as a basis for rate-making in the case of a regulated public utility, and would it not be better to try to follow the second sentence quoted in the beginning of this paper rather than the first—that is to say, would not it be better to base charges or rates on what the service is worth rather than on the basis of a fair return on the fair value of a utility company's property?

[4]Des Moines Gas Company vs. City of Des Moines, 238 U. S., 171, June 14, 1915.

[5]National Water Works Company vs. Kansas City, 62 Fed. 853, 27 U. S. App., 165, July 2, 1894.

[6]Denver vs. Denver Union Water Co., 246 U. S. 178, March 4, 1918.

[7]Pacific Gas and Electric Company vs. City and County of San Francisco, et al. Not decided at the time of writing.

The court said in the decision from which the quotation was made that one of the things to be considered in arriving at value is "probable earning capacity under particular rates prescribed by statute," but is that a possible consideration in connection with a rate case? Why the court itself has said in effect that the value of a public utility property at any time in a rating question cannot be based on its earning capacity, because this earning capacity depends upon its rates and its rates are in question. And yet it is fundamentally true that the value of any property developed and used for gain and devoid of any element of sentimental value is a function of the dependable net earning capacity of the property.

Now, if this earning capacity is limited by statutory rates, the statutes fix the value of the property and the rates cannot be found by the consideration of fair return on the value, because the value is fixed by the rates.

Is it possible that the court meant original investment with such additions, abandonments, depreciation and appreciation of physical items as may have accrued? It seems almost certain that it could not have been value that the court meant when it said value. It seems almost certain that the word was misused and that its misuse has continued, founded on this precedent, until this day.

Misuse of the Term "Value"

There is one sort of public utility not commonly called a public utility, the rates for service of which are founded on what its service is worth rather than on the value of the utility's property or enterprise. This is the banking industry. Statutes in various states fix the limit of interest rate that shall be charged and this is possible because of the general recognition of the worth of the use of money. Curiously enough no matter what may be the value of money at any time, the worth of its use seems to remain fairly constant, varying through only a small percentage range as compared with the percentage range of the value of money itself as a purchasing medium.

Seven or eight per cent was considered a fair return for public utility service before the war and apparently is considered a fair return rate at the present time, when the value of the dollar is perhaps only about half what it was before the war.* The interest rate charged by banks, while on the average a little higher, perhaps from 10 per cent to 15 per cent higher than before the war, is by no means twice as high, and if one's money were invested in a public utility yielding a 7 per cent return before the war and one could now dispose of his interest at par, the same money could be reinvested at 7 per cent. But to build a new utility like that in which the money had been invested would cost twice as much as that utility had cost, so that if the investor were to put his money into the construction of a new utility he might hope to secure only half the return that he had realized from the previous investment.

The merchant who is selling goods is probably earning the same rate of profit that he earned before the war on, let us say, twice the former cost of his merchandise and is thus earning twice as much in numbers of dollars as before the war. If the purchasing power of the dollar has been cut in two the merchant is in practically the same position that he was before the war. But the utility, held to a fair return of 7 or 8 per cent in these times of high prices, is earning only the same number of dollars as it was earning before the war, if its business is considered to be the same, which means that it is actually securing in value only half as much as before the war and therefore is not in nearly so favorable a position—financially—as it was before the war.

If the purchasing power of the dollar has been cut in two, the worth of the utility service to its consumers is at this time twice as much in dollars as it was before the war. But unless the utility's property is valued at twice as much as it was before the war, it cannot earn a proper return for the service it renders. This would seem to argue somewhat in favor of cost of reproduction at present day prices as a proper method of valuation, because by such a method the property would be valued at approximately twice what it was before the war and therefore at the same fair rate of return would be earning twice as many dollars for its service as before the war, or the same number of dollars in purchasing value.

But it is not necessarily a good argument for this method of valuation if another rational method can be found to provide for fair earnings, because cost is value only by accident. If fair earnings are based on the worth of the service rather than on a fair return on the value of the property, it appears to be possible to find this other method which is within the law.

Perhaps it must be assumed that the two parts of the opinion already discussed, namely the fair return on fair value sentence, and the worth of the service sentence, are equivalent statements; that fair return on fair value must of necessity result in charging what the service is worth. These sentences surely could not be contradictory in a single opinion. So it may be argued just as well that what the service is worth will produce a fair return on the fair value of the property used. It is believed that this second conception, proceeding from worth of service to value of property rather than from value of property to worth of service, which seems to be practically an impossible procedure under modern regulation, is the one rational interpretation of what should be done in a given case to conform to the law as expressed in the Smyth vs. Ames case.

A Rational Method of Calculating Value

One is driven into inconsistencies, violent assumptions and absolutely baseless guesses in applying the cost of reproduction, less depreciation, plus going value theory of the value of a property, and it would seem to be high time that a more rational and defensible procedure in determining the value of property and proper rates for service should be developed by the courts. Perhaps this can be brought about if engineers in giving their testimony can make it appear that their procedure in arriving at the conclusion to which they testify has been proper and rational and in accordance with the law. This doesn't necessitate changing the law at all; it only means interpreting it in a more rational way than it has been interpreted heretofore.

It would seem to be necessary for one only to speculate for a little while on the fact that the value of any business concern is based on what it can earn, that its earnings are controlled by the public, if it is a public utility, and that therefore to say that its rates shall be such as to yield a fair return on a fair value of the property is simply a gross absurdity if it means that the value is to be found first and the rates established afterwards, because this cannot be done, since the value must depend on the rates that are established. And yet this is what is being done constantly in all of our courts, led by all of our engineers, under what seems to be a mistaken notion of the necessary sequence of procedure. Possibly this arises from two facts—one the fact that in the Smyth vs. Ames decision the fair return on fair value statement precedes the worth of the service statement, and the other that people are commonly accustomed to think of earnings on the investments as a rate on the investment, which they immediately misinterpret in applying this notion to a regulated industry as equivalent to value. Certainly no greater mistake could be made than to understand that investment is synonymous with value. Each investment has its own particular value and is itself not that value. The

*Note: This statement was written before the recent rise in interest rates.

investment of one hundred dollars may result in a creation hundred dollars. The value of the investment is one thousand dollars.

Now let us see if we can proceed from the second principle to the first and determine reasonable rates without respect to value—rates based on what the service is worth, and from the resulting earnings determine the fair value of utility property so that finally we may arrive at the conclusion that the fair value of a utility property in the mind of the court when writing the opinion in the Smyth vs. Ames case, is that value a fair return on which results from charging the consumers of the service rendered what the service is reasonably worth.

It is believed that in competitive businesses it is always cost that forms the basis of the charge to customers. One competitor may be able to produce his goods at a lower cost than another, and hence with the addition of the same profit rate, will be able to undersell his competitor. It becomes necessary then for the competitor to lower his profit rate or improve his producing methods. In non-competitive businesses, unregulated, the charge is always based on what the traffic will bear. The owner of a protected invention sets the price at that which he thinks will yield him the largest return. He fixes what in economics is known as the monopoly price. This is not the highest price at which some of his goods will sell, nor the lowest price at which he can sell at some small profit, but the price in between these two limits which combined with the quantity of goods sold will yield him the largest net return.

But in a non-competitive, regulated business, such as we have come to regard our public utilities, we ought to—if we can—fix the fair price for the service rendered and then allow the utility to earn what it may be able to earn, charging not more than the maximum price. This is our procedure with the banking industry.

But we cannot fix a fair price for such commodities or services as public utilities have to sell. Within reasonable limits, over a considerable territory, the value of the use of money varies within narrow limits, and a fairly uniform price maximum can be fixed, and, as a matter of fact, is fixed by statutes in the various states. In a new country with large risks and unsettled conditions the rate is always higher than in an old country with stable conditions. But the same is not true with respect to the commodities and services furnished by public utility concerns. A thousand feet of gas is not worth the same in the city of New York as it is in the city of Chicago or in the city of St. Louis or in Oklahoma City, or in the village of Podunk, in the state of New York, primarily because the cost at which a consumer can supply himself with gas or its equivalent in heating or lighting power is altogether different in New York from what it is in Chicago or St. Louis or the other places mentioned. There may be other reasons why it is worth different sums in these different places, having to do with the uses to which it can be put; but if this element is to be introduced, then, as was indicated in an earlier part of this paper, there would be almost as many worths to a thousand feet of gas as there might be consumers. The result seems to be that with respect to a publicly regulated property, the property of a public service corporation, the cost of the service must be the basis of charges, must indeed be the basis of estimating worth of the service.

The community of X can establish a gas plant and supply itself with gas at some certain cost. But rather than do this itself in what is ordinarily the inefficient methods pertaining to public work, it prefers to ask some other corporation to establish a plant and to supply the gas. No corporation can be found which will be willing to undertake this at cost, because men doing business must earn a profit, else they cannot live. Corporations doing business must earn a profit else they cannot live, and the community of X must recognize this and be willing—if it prefers to have its gas enterprise developed by private interest—to establish a rate for the service which will be equal to the cost and such a profit as will induce the private interests to undertake the enterprise.

Now the investors who lend their money to the corporation proposing to undertake this enterprise for the community of X—whether they lend their money on promissory notes (bonds which carry a definite rate of return) or on certificates of stock which carry either a definite rate of return or no fixed rate of return, must be satisfied, before they will invest their money with the corporation, that what it can earn is at least equal to the cost of the service it renders and a profit considerably in execss of that necessary to yield an ordinary interest rate on the money invested. Therefore the things to be determined are (1) the amount of the investment necessary to produce the required plant; (2) the cost of furnishing the service; and (3) the rate of profit that the community will be willing to allow the corporation to earn on the cost of its service, rather than undertake the enterprise itself.

This price of service that the community is willing to pay, made up of cost and a profit rate, must be assumed to be the worth of the service to the community, and in this there is but one quantity that must be estimated or determined by judgment, and that quantity is the profit rate. In case a dispute arises some time after the plant is in operation, as to what constitutes the proper profit rate, this matter must be settled by a court, and judgment must be used. Courts have hesitated to say what is a fair rate of return. They have said that a given rate is confiscatory or not confiscatory, but they have not been willing thus far to fix the minimum rate that will not be confiscatory. To the layman it would appear to be the duty of the court to deliver an opinion when any given case is before it in which the question arises as to what is the fair rate of return. It is recognized, however, that this is merely the opinion of a layman, unlearned in the law, and there may be some good reason why the court should not say what the fair rate of return is in any given case. It doesn't appear to be clear that making such a decision is a legislative function, but it must be somebody's function, and if not legislative, then it would seem to be judicial. It is recognized clearly that it is a legislative function to order particular rates for services, but it is not clear that it is a legislative function to determine what is a fair rate of return for money invested in a given enterprise.

Now then if the worth of the service is determined to be its cost plus a profit that a community is willing to pay, rather than serve itself, it ought to be easy in any given case to arrive at fair rates for service, and at any rate to arrive at a gross fair earning of property. We should proceed thus: (1) Determine the actual reasonable investment in the plant, and the reasonable rate to be paid for money so invested by the corporation that is doing the business. (2) Determine the cost of operation from the books of the company. (3) Determine the reasonable annual allowance to be reserved for accruing depreciation. (In our minds we must divorce the corporation from its stockholders. The corporation—a legal individual that is doing the business—must secure the money necessary for the enterprise, and it must be assumed that it will have to pay a going rate of interest for this money whether it is borrowed on bonds or certificates.) The interest is one element of the cost of service. The operating costs, as these are commonly kept in the books of the corporation, are comparatively easy of ascertainment. There is sometimes some difficulty in distinguishing between cost of service and expenditures that really belong to capital, but are sometimes confused with operating expenses; but it is not a serious matter to find the cost of operation. It is not difficult either to determine a reasonable sum that should be laid aside annually to provide for

the growing depreciation of the physical property. This is an item of the cost of service.

If operating cost contains allowances for all contingencies, these three items—the interest on the investment, the cost of operation, and the depreciation allowance, constitute the total cost of the service. In times of high prices these costs will be larger than in times of low prices. But the interest item and the depreciation item will not vary much, and hence in times of very high prices—meaning times of low value of a dollar—it will be necessary to allow a somewhat higher profit rate on the cost of service than in times of low prices or high value of the dollar.

Therefore at any given time—when the question of the establishment of a fair rate has arisen, we may proceed to determine what the fair rate should be by estimating the total cost of service made up of the three items of interest on the investment, cost of operation, and depreciation allowance, and adding to the sum of these three a profit sum determinated by multiplying the sum of the three items of cost by a reasonable profit rate. The total sum of the two items, cost of service and profit, constitutes what should be the gross earnings of the serving company, and these gross earnings will furnish the basis for the determination of fair rates when the quantities of products sold for various purposes are known.

The Smyth vs. Ames decision says that what the public is entitled to demand is that no more be exacted from it than the services rendered are reasonably worth, and the foregoing procedure seems to establish the reasonable minimum worth of the service which is rendered. We have thus complied with one provision of the law at any rate in what appears to be a really rational and fair procedure, without subterfuge, without wild guesses, without the attempt to separate two things that are inseparable and then add them again; we really seem to have arrived at a fair estimate of the reasonable worth of the service rendered. The public cannot demand that it shall be charged less than this, and the company cannot demand that it shall be permitted to charge more than this.

Fair Value

Can we proceed now from the basis thus furnished to find the fair value of the property so that we shall have two estimates that shall be harmonious—a fair value on which a fair return will be earned by rates based on the worth of the service?

Could anything be simpler? We have determined the interest on the investment and the profit to be earned and the sum of these two divided by fair rate of return will give the value of the property.

This is not a value that is capable of division into value of physical items and value of business. If it were capable of such division, perhaps the cost of the physical items would represent physical value and the difference between that and the value just found would be the business value. But neither of these is what it would seem to be under such a division. As has been said, the physical items are worth only salvage without the business, and the business could not exist without the physical items. One gives value to the other, and how much of the total value belongs to one and how much to the other is a question that cannot be answered; but the result is the fair value on which a fair rate of return will be the basis of fair charges equivalent to the worth of the service.

The method of arriving at gross earnings described in the foregoing has one disadvantage which to some persons may seem to be so serious as to prohibit its use. This is that there appears to be not only no incentive to economy of operation, but rather an incentive to extravagance, since profit is to be a rate of return on operating expense, among other things. It is suspected that under continuous regulation fixing rates from year to year the disadvantage is very serious unless it can be recognized that economy of operations brought about by a company shall result in increased earnings, perhaps an increased profit rate sufficient to overcome the apparent objection.

In the case of the first use of the method, there is no more objection, no more disadvantage, than there is to the commonly employed method which also allows operating expense as one of the items to be earned.

The method seems to be peculiarly applicable to the railroad situation in that its use would seem to do for transportation what has already been done for the use of money, namely, fix the worth of the service for a large district and then permit the companies operating within that district to earn whatever rates of return or profit they may be able to earn, while charging no more than the worth of the service, possibly sometimes charging less.

The procedure would be to determine: (1) the district within which rates should be uniform; (2) the total investment in all properties within that district and the average interest rate paid on outstanding obligations; (3) the total cost of operation within the district, including, if desirable, the depreciation allowance; then with these quantities determine the interest item of cost by multiplying the total estimated investment, not cost of reproduction, by the weighted average rate paid on outstanding obligations; add this interest and the cost of operation, including depreciation allowance, and find a proper profit on this total cost. Thus will be determined by summing these several items the total earnings for the district.

The process then of determining rates would be more or less complicated, but no more complicated than now. The various ton mileages of the various commodities and the passenger mileage would have to be found, and judgment rates fixed for the several classes of service, and adjusted until the application of these rates to the various services, respectively, will produce the necessary gross earnings.

Thus with the value of various kinds of service in a given district determined, and the rates fixed, those roads of superior location and management will presumably earn more than the estimated average profit, and should earn more; those roads of inferior location and inferior management—the two not necessarily going together—would presumably earn less than the average profit rate and should earn less. Thus will apparent justice be done and ordinary business conditions be established for railroad rate-making as nearly as is practicable with any regulated property.

In the working out of the foregoing suggestions, the matter of primary importance is to determine the fair profit rate to be allowed as a maximum, and, if value is wanted, the fair rate of return; and there is a relation between these two, the profit rate and the fair rate of return; not necessarily a definite relation, but it is probable that the profit rate should always be considerably more than the fair rate of return.

It is believed that a proper and intelligent application of the suggestion made above will result in the substitution of logical and defensible processes in rate making and in valuation for what now appear to be absurd and defenseless methods.

The Vanadium Corporation of America, 120 Broadway, New York, recently completed work on a narrow gage railroad for carrying ore and mine supplies from its mines at Minas Ragra, Peru, to Lake Pun Run, about 6 miles. Contracts have been let to the Foundation Company, New York, to build a second railroad from Lake Pun Run to Ricran, which is on the Cerro de Pasco Railroad; it will be about 12 miles long. On the completion of this work the company will have a through rail and water route from its mines to the seaboard. This will do away with the use of llama pack trains in transporting its ore. The company expects to have the new line completed and in operation the latter part of this year.

Report of Electric Railway Commission

SWEEPING REFORMS in the electric railway industry, designed to restore public confidence and vitally needed credit, are recommended in a unanimous report made by the Federal Electric Railways Commission to President Wilson. The commission has been investigating the condition of the industry for more than a year, during which time it has covered the field thoroughly by hearing 95 witnesses and examining hundreds of reports and answers to questionnaires. Outstanding among the recommendations is that for the installation of the service-at-cost plan of operation. This plan, now operative in Cleveland, Cincinnati, Dallas, Montreal and other cities, will, it is believed, remove the industry from the field of speculative gain, furnish rides at the lowest possible cost and restore credit and public confidence. Primarily, the plan provides for furnishing rides at actual cost, which shall govern the rate of fares, and for protecting the investor by guaranteeing a fixed return on an agreed valuation of his holdings.

"We strongly recommend the principles of the service-at-cost contract, not as the only solution, but as one means of solving a very difficult problem," the report declares. "The controlling element in its favor is the restoration of public confidence in the corporation due to the removal of those elements of friction which have so frequently engaged the attention of the public. It might also be said that to a certain extent it removes the railways from the idea of speculative gain and places them on a common-sense business basis where the people pay for the service they get and where the opportunity for large profits no longer exists, since economies and lower operating costs are reflected in reduced charges for service. When the contract once is established, the opportunity for municipal corruption is reduced to the minimum."

Chaos faces the industry unless credit is restored and co-operation between public, managements and employees established, the report insists, and no words are minced in telling the three parties to the situation where their respective duties lie. Managements are advised that their primary duty is to serve the public with the highest efficiency at the lowest cost, with their cards face upward on the table, and not to use the industry as a means of obtaining profits beyond what may be necessary for upkeep, to pay a fair return upon the agreed value of the property and to secure the investment of funds further required. The public duty is declared to be the supervision and control of railway properties, with the view of safeguarding the public interest, and the allowance of such return upon the fair valuation of the property as may be agreed upon in the contract between the city and the company. By reason of such supervision the future attitude of the public should be one of friendliness and co-operation. Employees, it is said, should have a living wage and humane hours of labor and working conditions and a right to deal collectively with their employers, through committees or representatives of their own selection, but it is added that "all labor disputes should be settled voluntarily or by arbitration and the award of such board should be final and binding on both parties."

Other important declarations of the report are:

That public ownership and operation, generally speaking, are undesirable unless the results under private operation prove unsatisfactory, but the right of the public to own and operate all public utilities should be recognized and legal obstacles in the way of its exercise should be removed; that extensions into outlying territory benefiting private property should be paid for by assessments on such property in proportion to the benefits received, and that the cost of such extensions should not be added to the valuation of the railroad property upon which a fair return is to be allowed; and that franchises should fix no limit as to the time they shall run nor the fares that may be charged.

As to the present condition of the street railway industry, the commission finds that its financial credit has been lost and that in many localities it is not properly performing its public function. This is considered to be due to increased costs of labor and material, overcapitalization and financial mismanagement, public distrust and antagonism, failure of the fixed five-cent fare to meet existing conditions, extensions into unprofitable territory in furtherance of real estate speculation, and failure of employers and employees to properly co-operate; hence the physical impossibility of giving the necessary assurance of security to investors.

The report estimates that from $175,000,000 to $200,000,000 annually will be required to properly carry out the future needs of the industry and it emphatically declares restoration of public confidence is one of the vital necessities of restored credit.

As to the relative merits of public and private ownership and operation, the report says: "We are unanimously of the opinion that, under existing conditions, private ownership and operation is preferable to public ownership and operation."

The commission makes no recommendation of any fixed valuation plan, but it emphasizes the importance of determining by arbitration or otherwise the fair value of the railway property "as the basis for the financial return of the company," and also as the basis upon which it may, if desired, be taken over by the municipality. "The public," it adds, "should know what it is paying for and this question can not be settled without knowing what the property is worth." It is recommended that communities wishing to adopt the service-at-cost plan study the practice and records of the Interstate Commerce Commission on the subject of railway valuation.

One of the most striking features of this report is that it is unanimous, indicating an agreeement among men whose interests are so divergent as to cause the belief that they would not be able to agree upon the issues involved. The chairman, Charles E. Elmquist, was at the time of his appointment president of the National Association of Railway & Utilities Commissioners; the vice-chairman, Edwin E. Sweet, is assistant secretary of the Department of Commerce and has served as mayor of Grand Rapids, Mich.; George L. Baker is the present mayor of Portland, Oregon; Philip H. Gadsden is president of the Charleston, S. C., Consolidated Railway and Lighting Co., and he represented the American Electric Railways Association; William D. Mahon is the president of the Amalgamated Association of Street and Electric Railway Employees of America, and Charles W. Beall, a New York banker, represented capital investors. Dr. Royal Meeker, commissioner of labor statistics, was appointed as the representative of the Department of Labor, and Louis B. Wehle represented the Treasury Department.

FORTY-NINE RAILROAD REGULATORS AGAIN.—There are constitutional ways by which Congress can put the states out of business as disorganizing and injurious meddlers with the country's unified common carriers, and they will be employed if the states do not show more team-work with the federal commission in this matter. —*The N. Y. World.*

AN EFFECTIVE REMEDY.—The increase in freight rates allowed by the government would amount to almost seven cents on a lady's cloak shipped from New York. But that seven cents as it is passed down the line will furnish somebody an excuse for marking up the price of the garment about $70. When an excuse is wanted, a mighty thin one will do. When a merchant mentions the freight rate as a warrant for a price boost, hit him on the head with a hammer.—*Los Angeles Times.*

Improved Water Indicating Devices Necessary

Tests Demonstrate Unreliability of Many Water Indicating Appliances on Modern Locomotives*

THE DEVELOPMENT of the locomotive has created new difficulties in design, construction, maintenance and operation. One of the perplexing problems which has presented itself is that of securing a correct indication of the height of water over the crown sheet under all conditions of service. The grave importance of this matter is evidenced by the number of crown sheets damaged, due to low water, where careful investigation fails to disclose any contributory cause.

In the locomotive boiler, which usually has a sloping back head and is generally equipped with arch tubes and brick arch, the heat severely impinges on the door sheet and back end of the crown sheet, creating severe agitation and rapid circulation up the back head and through the arch tubes. The water glasses and gage cocks, as generally applied, only indicate a corresponding level of water while the locomotive is at rest and with no steam escaping, but when the safety valves lift or with the throttle valve open and the locomotive in operation the gage cocks, when applied directly in the boiler, indicate a higher level of water than do the water glasses when they are properly applied and maintained.

Realizing that this variation creates an unsafe condition and that its cause should be determined and a remedy applied the Bureau of Locomotive Inspection of the Interstate Commerce Commission has recently completed a series of tests with different devices on a number of locomotives of different classes, on 14 railroads in various sections of the country, for the purpose of determining the action of the water in the boiler and its effect upon the gage cocks and water glasses.

Preliminary Tests

The locomotives on which the first series of tests was made were of the 2-8-8-2 Mallet compound type, used in bad-water districts, equipped with boilers of the crown bar type, with wide fireboxes and Schmidt superheaters, and using oil for fuel. The devices for indicating the water level consisted of three gage cocks spaced 3 in. apart, and applied directly in the back head near the knuckle, at right angles to the sloping sheet, and one water glass with bottom connection entering the back head approximately 3 in. below the back end of the crown sheet, and the top connection entering the back head 2 in. below the knuckle. The lowest reading of the water glass and gage cocks was 3⅝ in. above the highest part of the crown sheet.

The back heads of these boilers were braced by a "T" iron, extending crosswise, at approximately the same level as the back end of the crown sheet.

In order to determine the action of the water as indicated by these appliances, observations were made during five trips in freight service, covering a distance of 680 miles, under varying operating conditions and on varying gradients. With the locomotive on straight track and no indication of foaming, water would issue from the top gage cock when it was opened, both while standing and in operation, while the safety valves were open or the throttle valve open, regardless of the water level in the boiler as registered by the water glass.

At the completion of the fifth trip, three additional gage cocks were applied in the back head, parallel with the horizontal center line of the boiler, the top one entering the back head 10½ in. below the top knuckle and 10½ in. to the right of the vertical center line, with the same vertical reading as the standard application. These were applied for the purpose of determining the effect of changing their location toward the vertical center line of the back head and away from the knuckle, where the upward circulation of the water was believed to be greater than near the center of the back head.

An experimental water glass was also applied on the left side of the boiler, opposite the back flue sheet, the top connection of which entered the wrapper sheet on the top center line, 15 in. back from the throttle dome, while the bottom connection entered the wrapper sheet on the side. The lowest reading of this glass was 1 inch above the highest part of the crown sheet. This glass will be referred to as the "experimental water glass."

With this arrangement, observations were made during five additional trips, when the same conditions were found to exist that had been noted in the previous tests, with respect to the original gage cocks, namely, full water showed at the top gage cock, regardless of the level indicated by the water glasses, while the experimental gage cocks indicated a level approaching that indicated by the water glasses while operating with open throttle or safety valves blowing.

While operating with throttle wide open and water glass three-fourths full, the bottom connections to both water glasses were frequently closed and drain valves opened, when dry steam would steadily flow through the experimental water glass and solid water would flow through the original water glass, which glass also showed the water in severe agitation while the locomotive was in operation. These experiments demonstrated that the level of water indicated by the gage cocks and water glasses varied with their point of connection with the boiler, and indicated that a higher level of water prevailed at the back head than existed further ahead.

It is believed that the transverse "T" iron which was applied to the back heads of these boilers, hindered the movement of water up the back head near the center, and consequently decreased the variation between the level of water indicated by the experimental gage cocks and that registered by the water glass.

As a result of these experiments, which were brought about by the large number of crown sheets being damaged and fusible plugs being melted, the gage cocks and water glasses were moved toward the vertical center line of the boiler, which seems to have relieved the situation to a considerable extent.

Second Series of Tests

It having been concluded that the false registration of the gage cocks, when screwed directly in the boiler back head, and the agitation of the water in the water glass when top connection is made near the knuckle, were due to the rapid circulation of the water upward, carrying it a considerable distance above the level further ahead; a number of locomotives were equipped with water columns, as shown by Fig. 1:

These locomotives were of the Santa Fe, or 2-10-2 type, equipped with Schmidt superheaters, Street stokers, used bituminous coal for fuel, carried 180 lb. steam pressure, with firebox 132 in. long and 96 in. wide, with brick arch

*This account of recent government tests is abstracted from a report prepared by A. G. Pack, chief inspector of the Bureau of Locomotive Inspection, Interstate Commerce Commission. The full text of the report will appear in the Railway Mechanical Engineer for September.

supported by four arch tubes and back head sloping 15 deg. from the vertical.

By this arrangement, it was believed that when entering the boiler far enough ahead of the back knuckle to obtain dry steam at all times through the top connection to the column, and by taking water from well below the crown sheet and below the agitated portion of water which was believed to exist near the back end of the crown sheet and back head, a more correct reading could be obtained than when the gage cocks were screwed directly in the boiler head. During an approximate six-month period, however, that these locomotives were operated with this arrangement, very considerable trouble was encountered, due to the extremely erratic and unreliable action of the water indications.

Tests which were subsequently conducted to determine the cause of the irregular indications developed the fact that these were occasioned by the lowering of water in the column due to the volume of dead water contained in the long pipe through which the bottom connection to the column was made and which was evidently due to the density and weight of the water at different temperatures, the temperature being much lower than that of the water in the boiler, due to the pipe and column being exposed to the cold atmosphere without circulation.

Actual Water Conditions Determined

Subsequent tests were conducted for the purpose of determining, if possible, the general outline of the flow of water which evidently existed at the back head when high evaporation was taking place.

To further determine the approximate outline and proportions of the water conditions existing at the back boiler head, while the locomotive is being operated with heavy throttle or when steam is being rapidly generated and simultaneously escaping from the boiler, tests were made with appliances shown in Fig. 2, covering a distance of 808 miles, in bad-water districts, on approximately level track and while handling regular tonnage.

The locomotive on which these tests were made was of the heavy 2-8-2 type, equipped with superheater and Duplex stoker, using bituminous coal for fuel. The boiler had a sloping back head, with firebox equipped with brick arch supported by four 3-in. arch tubes, the brick arch extending to within 52 in. of the door sheet and 30 in. of the crown sheet.

The water-indicating apparatus consisted of four gage cocks applied directly in the back head near the knuckle, one water column to which three gage cocks and one water glass were attached, one water glass with a 9-in. reading, standard application, with both top and bottom cocks entering boiler back head direct, one water glass applied for experimental purposes with the bottom cock entering the boiler head direct and with one top connection entering the boiler head on back knuckle and one entering 13 in. ahead of the back knuckle, and four exploration tubes or sliding gage cocks.

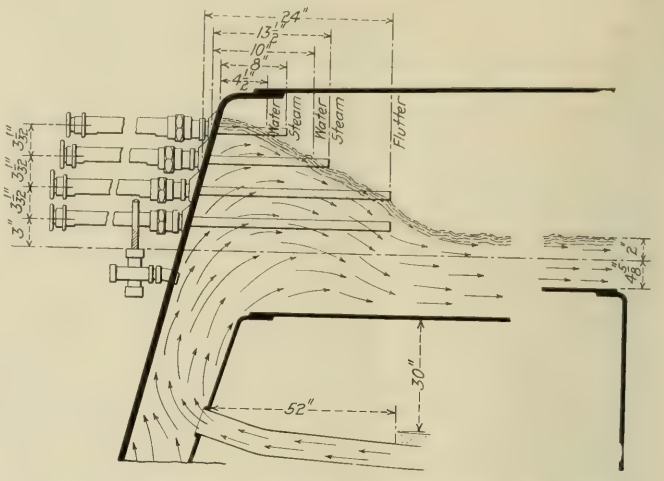


Fig. 2. Outline of Water as Determined by Tests

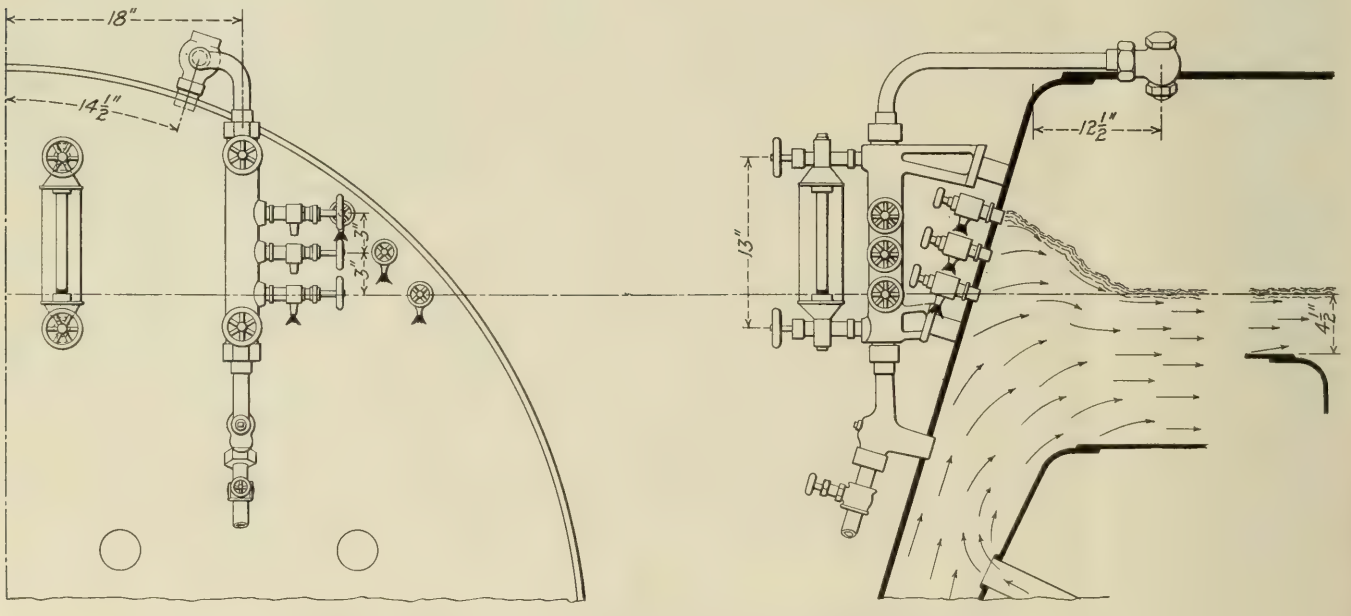


Fig. 1. Water Indicating Devices Used in Preliminary Tests

Fig. 2 shows a side elevation of these exploration tubes or sliding gage cocks entering the back head parallel to the horizontal axis of the boiler through suitable stuffing boxes, with a vertical pitch of 3½ in., giving a total vertical reading of 10½ in., with a horizontal adjustment of 24 in. Gradations were marked on these tubes so that accurate readings could be taken and recorded. The lower one of these tubes entered the boiler head on a level with No. 2 gage cock. The lowest reading of all water glasses

and gage cocks was 4⅝ in. above the highest point of the crown sheet.

It will be noted from Fig. 2 that while tube No. 1 was submerged, tube No. 2 showed a flutter of steam and water at an adjustment of 24 in.; tube No. 3 showed water at an adjustment of 10 in. and steam at 13½ in.; tube No. 4 showed water at an adjustment of 4½ in. and steam at 8 in. These readings were taken while the experimental water glass and water glass attached to the water column registered 2 in. of water, and the gage cocks attached to the water column showed one gage, while the four gage cocks applied in the back head registered full.

The water in the territory where these tests were made is very light and foams badly when compound is not used. About 110 readings were taken with these tubes or sliding gage cocks and other appurtenances used to register the water level. It is impossible to outline this flow of water accurately, as it changes with the operating conditions and the condition of the water in the boiler; but it is believed that this serves to illustrate the general condition which prevails to a greater or less extent in all locomotive boilers, especially those equipped with brick arch and arch tubes, while the locomotive is working heavy throttle or steam is rapidly escaping from the boiler.

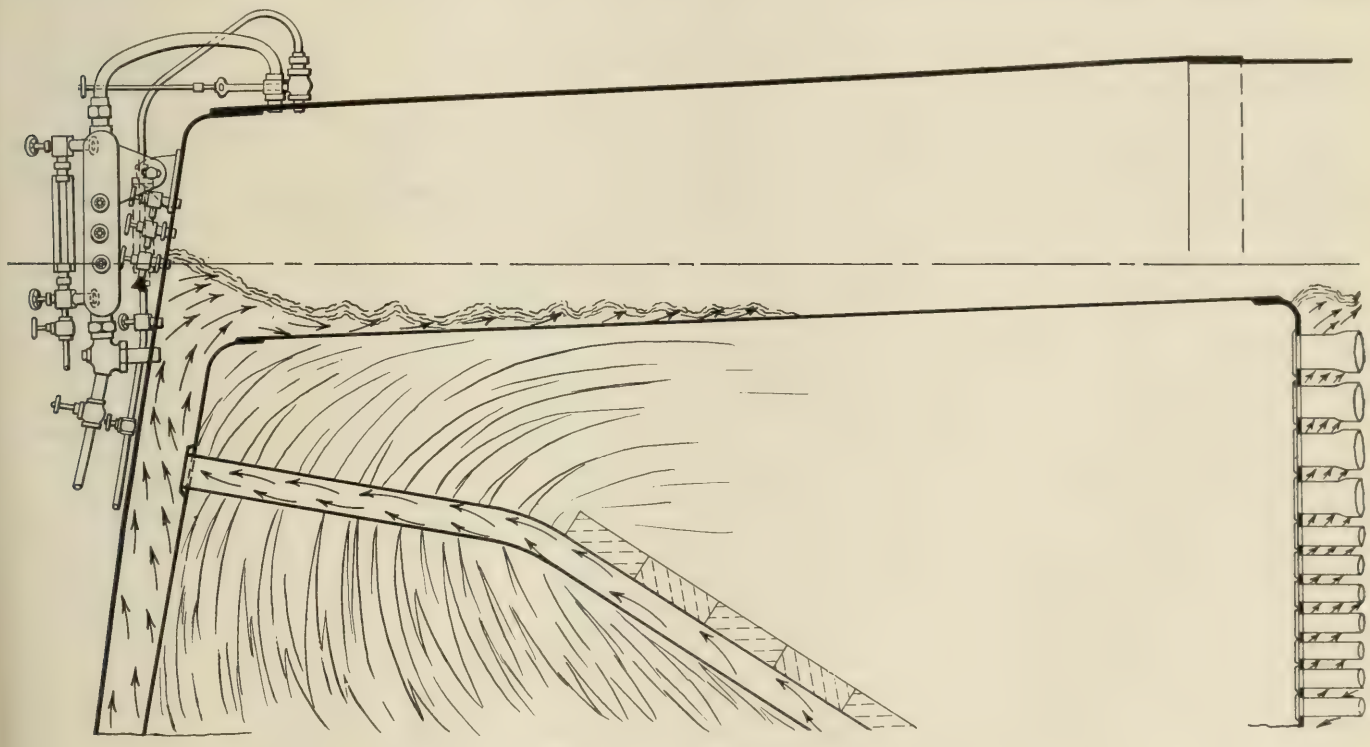


Fig. 3. Dangerous Condition Due to False Registration of Gage Cocks

Observations Made with Light in Boiler

Tests were made on a comparatively small locomotive, used in switching service, equipped with a wagon-top, radial-stayed boiler, having narrow OG firebox and vertical back head, the diameter of the largest course being 59 in. The special feature which should be borne in mind is that no arch or arch tubes were used in this boiler and that the back head was vertical. So that the action of the water could be observed, a glass tube was inserted in the top of the wrapper sheet which permitted the use of an electric light inside the boiler, which clearly illuminated the steam space over the crown sheet. Five bulleye sight glasses were applied over the back end of crown sheet, two over the front of crown sheet and three in the vertical back head, so that the action of the water in this part of the boiler could be seen while under steam pressure.

Both main rods were disconnected, crossheads blocked at the end of the stroke and the valve stems disconnected and so placed that steam was discharged through the exhaust nozzle and stack, creating a forced draft on the fire, representing operating conditions as nearly as possible. When the throttle was closed and no steam was escaping from the boiler, the surface of the water was approximately level, with a distinct circulation noted from back to front and from the sides toward the center of the crown sheet. When the safety valves lifted, the water rose with fountain effect, around the edges of the firebox, from 1 to 2 in., and the circulation was materially increased. When the throttle was opened and steam was being generated and escaping from the boiler in greater volume, the level of water throughout the boiler was seen to rise 1 to 1½ in., which rise was registered by the water glass, and a marked flow of water, with fountain effect, was observed rising around the firebox at the back head and wrapper sheets, reaching a height above that over the remaining portion of the crown sheet of approximately 2 to 4 in., in proportion to the amount of steam being generated and simultaneously escaping from the boiler.

The important feature to be noted is that this height of water, as seen at the back head, was approximately 4 in. at its maximum, and was registered by the gage cocks, while at the same time it could be seen that the water glass was registering the level further ahead over the crown sheet. These observations establish beyond question that when steam is being generated and is escaping there is an upward movement of water at the back head of the locomotive boiler which carries it above that further ahead over the crown sheet, and that the gage cocks, when applied directly in the boiler, register this rise of water and do not indicate the level further ahead, while the water glass registers the level of water further ahead and not the fountain of water at the back head.

Since a difference of 4 in. was observed between the

height of water at the back head and that further ahead in this boiler, which had a vertical back head and OG type firebox and was not equipped with brick arch or arch tubes, there can be little question but that in the modern locomotive boiler, which has a sloping back head and is equipped with brick arch and arch tubes, this difference between the height of the water at the back head and further ahead over the crown sheet must be materially increased.

General Conclusions

The feed water which enters near the front end is much lower in temperature than that in the boiler, which, due to its density and weight, naturally lowers and moves toward the firebox sheets where the greatest evaporation takes place. As the water is heated it rises, due to its decreased weight, influenced by the steam bubbles rising to the surface where they explode. This circulation causes a movement of water from front to back in the lower portion of the boiler, and upward around the firebox, and from back to front in the upper portion. This circulation unquestionably takes place with sufficient rapidity to carry the water in the boiler around the firebox sheets above the general water level, due to the limited space in the water legs, where the greatest amount of heat is applied.

Fig. 3 illustrates a condition which may exist where the water glass registration is ignored and the gage cocks applied in the boiler are depended upon to register the correct level. Since practically all enginemen have been taught to rely on the gage cocks in preference to the water glass, this is an especially unsafe condition, and is, no doubt, the cause of many damaged crown sheets.

It is recognized that the volume of water in the boiler increases in proportion to the amount of steam being generated and in the same ratio that the steam bubbles below the surface are formed and expanded, the volume of which depends to a very considerable extent upon the purity of the water in the boiler and its ability to the release steam generated, consequently increasing the height of water in the same proportion, which height is registered by the water glass.

Improved Arrangement Recommended

Since it has been established that gage cocks screwed directly in the boiler do not correctly indicate the general water level, the question arises to what would be a proper appliance. After careful investigation and tests, it is believed that Fig. 4 illustrates a water column that will afford the safest and most practicable method yet disclosed for accurately indicating the general water level in the boiler under all conditions of service. This arrangement has been recommended by the Bureau of Locomotive Inspection and was adopted as recommended practice by the Committee on Standards, of the U. S. Railroad Administration, at its February, 1920, meeting.

The larger connection to the top of the column, and restricted openings in the gage cocks, which should be not more than ¼ in. in diameter, are suggested for the purpose of preventing the water from being raised when the gage cock is opened wide; the object being to compensate for the lowering pressure in the column through the larger top connection, the area of the smallest opening of which should be not less than 1½ in. copper pipe, or preferably larger. Very recent tests indicate that to avoid the possibility of inaccurate readings, due to raising the water in the column when the gage cocks are opened excessively wide, the inside diameter of the column may be made 3½ in. and that of the top connection 2 in.

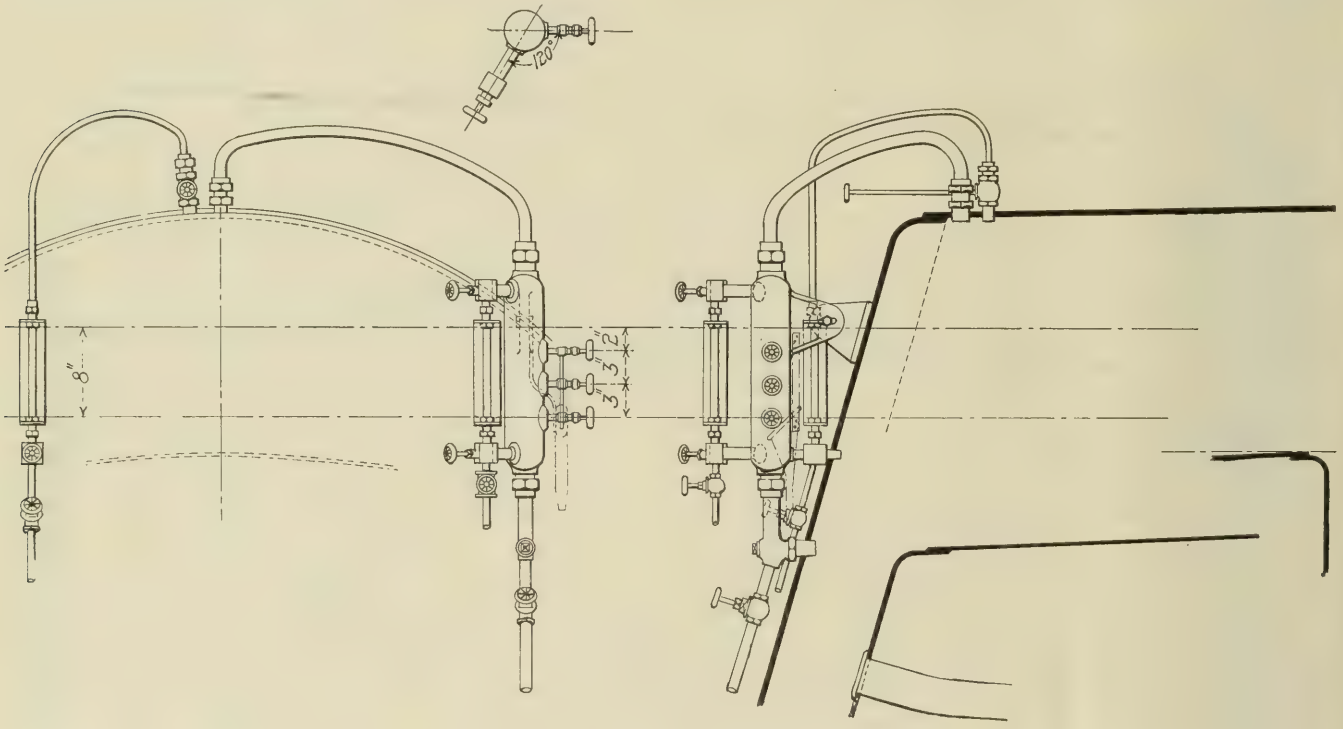


Fig. 4. Recommended Arrangement of Water Indicating Devices

It is recommended that the bottom water glass cock and bottom connection to the water column enter the boiler horizontally, and that the water column and water glasses should stand vertical.

Steam-pipe connections to water columns and water glasses should be made as short as possible, so as to obtain a supply of dry steam at all times, and so arranged as to thoroughly drain and be free from short bends or any possibility of sags or traps. It has been definitely established that where traps or sags that will retain the water or condensation are permitted in the top connection to water glasses or water columns, the reading of the water is materially affected, causing a higher level to be indicated.

Passenger Fares Increased in Great Britain

New Adjustments Raise Ordinary Fares 75 Per Cent Above Pre-war Level and Season Tickets 50 Per Cent

THE RATES ADVISORY COMMITTEE of the Ministry of Transport has made an interim report giving its recommendation for a temporary increase in passenger fares which has been accepted and was made effective on August 5. The ordinary passenger rates have been increased 16⅔ per cent and the season tickets* 25 and 36 per cent above existing rates, or 75 per cent and 50 per cent, respectively, above the pre-war rates. This is part of a general increase in rates to wipe out a £54,500,000 ($270,000,000) deficit for the current year and is to be effective until July 31, 1921, when it is hoped that they will be reduced. In its endeavor to allocate a proportionate amount of this deficit to passenger traffic the committee after investigation determined that 40 per cent of it should come from passenger traffic revenue and 60 per cent from freight revenue. This was based on the fact that in 1913 the proportion of passenger revenue to freight revenue was 46 to 54 per cent and for the first four months of the present year 44 to 56 per cent.

In this report the committee stated that "the two cardinal rules which we conceive govern the fixing of rates and fares are (a) that except for some special reason of policy no rate or fare should be less than the cost to the railways of conveying the traffic and (b) that no rate or fare can be charged which is greater than the traffic will bear."

As regards the first rule, it was found impossible to discover from the representatives of the railway companies the relative cost of carrying freight and passengers, but figures furnished by the Ministry of Transport show that under present conditions the cost per mile of running a passenger train was ten shillings and ten pence ($2.70) and for running a freight train 18 shillings and 11 pence ($3.72) without any allowance in either case for interest on capital. The ratio of these costs is approximately 36 to 64, respectively, and it was thus deemed proper to treat the passenger fares on more favorable terms in comparison with the freight rates.

The railway companies in presenting their evidence before the committee recommended that the passenger fares be increased 100 per cent above the pre-war level, but the committee felt that, due to the development of other modes of travel such as trams, omnibuses, char-a-bancs, motor cars, etc., and further that such a large increase would tend to discourage travel on railways to the extent that the aggregate receipts would be impaired, such an increase was not justifiable. It was therefore decided to increase the ordinary fares 16⅔ per cent above existing fares, which had already been increased 50 per cent on January 1, 1917, thus making a total increase of 75 per cent over the pre-war rates. This last increase gives a rate of 1¾ pence equivalent to 3½ cents per mile for third class, with the second class approximately 50 per cent and first class 100 per cent greater than this.

In addition to ordinary fares the committee considered excursion rates, workmen's fares, season tickets and special tickets to shippers which are discussed under their respective headings below.

The committee did not make a statement as to the definite amount of revenue the present increases would bring to the companies and stated that a more definite statement would be made with their report on the increases in freight rates.

*Season tickets include those issued for monthly, two-monthly, three-monthly, half-yearly and yearly periods.

Excursion Fares

Before the war and up to March, 1915, the English railways issued excursion tickets, week-end tickets, tourists' tickets and other tickets at less than the ordinary rate, and there has been a strong demand on the part of the public for their re-institution. The committee concluded, however, after consultation with representatives of the railways that it was hardly the time now to re-establish these arrangements, due to the shortage of rolling stock, particularly locomotives. Evidence was presented on behalf of the railways to show that during 1919, 1,066,000,000 passengers were carried at ordinary fares as against 880,000,000 traveling at ordinary and excursion fares in 1913. However, after the report of the committee had been made public the demand for excursion fares was so great that the Minister of Transport decided to permit "Holiday day excursion" trains to operate on all railways with the exception of the Caledonian, Cambrian, Glasgow & South Western, Great Western, London & North Western, London & South Western and North British Railways under the following conditions:

(1) The tickets to be available for both the outward and return journey on the day of issue only, and by the scheduled trains only.

(2) The fare to be charged to be the single ordinary fare in operation for the time being for the double journey, fractions of 3 pence to be reckoned as 3 pence.

(3) No baggage to be allowed.

(4) The trips to be run during mid-week only and to be available to the public generally; they should be for purely holiday traffic, and only introduced from centres of population to holiday resorts.

It is believed that as conditions improve these excursion trains will be permitted to run on all roads.

Season Tickets

All the British railway companies issue season tickets, yearly, half-yearly, and quarterly and in many cases monthly, at rates which are based on the principle of the rate per mile decreasing as the distance increases, so that for short distances they sometimes amount to a weekly charge equal to six times the return fare; but for long distances the weekly charge is sometimes less than one return fare. The justification for the high ratio in the case of short distances appears that on an average each season ticket is used for three single journeys per day. To the railway companies this traffic is satisfactory even at the low fares, seeing that it is regular, and good trainloads are provided at hours which are well ascertained. When ordinary passenger fares were increased by 50 per cent on January 1, 1917, the object was to restrict unnecessary travel rather than to produce revenue, as previously stated, and no increase was then made in season ticket rates, but in May, 1918, the season ticket rates were increased, for distances under 12½ miles, by 10 per cent and for distances over 12½ miles by 20 per cent.

The fact that the rates for ordinary tickets were increased in a greater proportion than those for season tickets resulted in a substantial increase in the number of the latter, and it is recorded that in 1913 the number of season tickets issued on the British railways was 569,310, as against 901,082 in the year 1919. Representatives of season ticket holders urged that as the amounts paid for such tickets are in

most cases part of the necessary cost of living, no increase or only a small increase should be made in the rates. The committee however felt that at a time when all the costs of living have arisen there is no valid ground for excepting this item and throwing upon others the share in the increased expenses of operating the railways which is properly attributable to this class of traffic, and accordingly recommended and advised that the charges for season tickets be increased by 50 per cent over the charges in force before May, 1918.

Workmen's Fares

English railways for over 35 years operated what are known as workmen's trains in the early morning hours, between 6 and 8 o'clock, on which passengers were carried at exceedingly low rates. Examples of some of the lowest of these rates will serve to show how very cheap they were. The Great Eastern operated a train over a distance of 10¾ miles each way for a round-trip fare of 2 pence (4 cents) and the Great Western, a train over 18 miles each way for 8 pence (16 cents). Numerous other roads carried similar rates. There have been no standard rates for these workmen's fares; about 33 per cent of them were, before the war, a single third-class fare (1 penny—2 cents per mile) for a round trip. The committee felt that under the present circumstances, these fares should be substantially increased, particularly on account of the fact that workmen's wages have increased to such a great extent since the war. It was recommended therefore, and these recommendations have been carried out, that the following scale of charges should be made:

For any distance not exceeding 2 miles....	3	pence for the round trip
For distance between 2 and 2⅓ miles....	3½	pence for the round trip
For distance between 2⅓ and 2⅔ miles..	4	pence for the round trip
For distance between 2⅔ and 3 miles....	4½	pence for the round trip
For distance between 3 and 3⅓ miles....	5	pence for the round trip
For distance between 3⅓ and 3⅔ miles..	5½	pence for the round trip
For distance between 3⅔ and 4 miles....	6	pence for the round trip

For distances over four miles—6 pence for the first four miles and ½ pence for every half-mile over four miles.

Shippers' Concessions

There has long been a custom among the British railways of issuing to those shippers who send large yearly consignments of goods by rail, tickets for use by their employees at rates lower than ordinary season tickets. These tickets are not issued for distances less than 50 miles in England and 30 miles in Scotland. Before the war the amount of traffic consigned necessary to qualify a shipper to receive such a ticket was in Great Britain so much as would produce a sum of £300 ($1,500) in freight rates. This was increased during the war to £500 ($2,500) and when the rates were increased on January 15, 1920, the figure was increased to £750 ($3,750), representing approximately the same amount of traffic as was previously represented by £500. A shipper whose traffic represents double the qualification is entitled to two tickets and so on. The reduction allowed on these shippers' tickets is not uniform on the various British railways, but the following figures taken from a table supplied by the London & North Western may be taken as fairly representative:

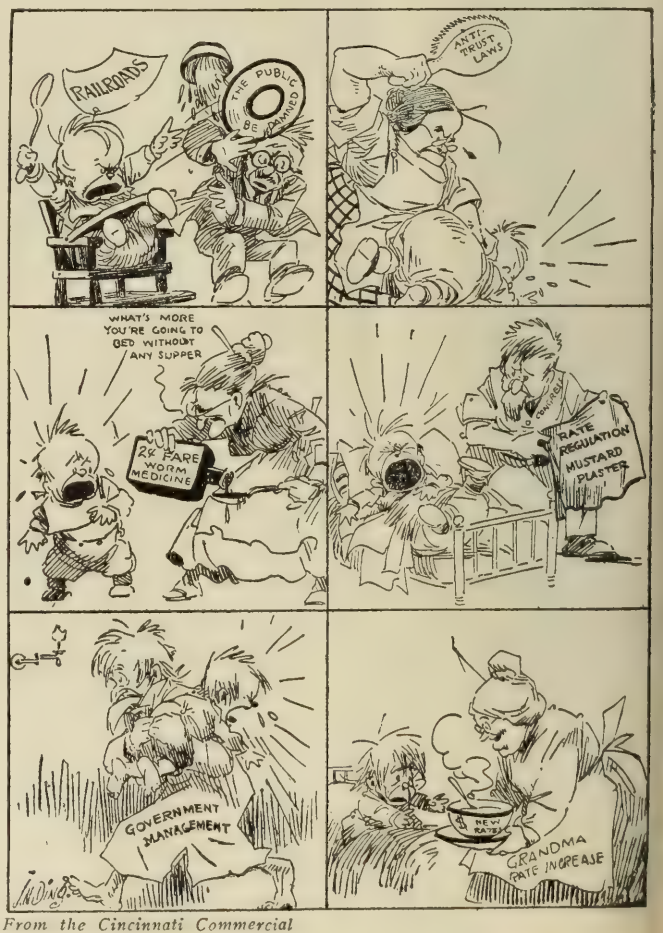
	Percentage of traders' tickets below ordinary season tickets	
	First class	Third class
50 miles	45	39
100 miles	37	32
150 miles	35	33
200 miles	37	37
300 miles	46	46
400 miles	51	51
500 miles	54	54
600 miles	56	51

When ordinary season tickets were advanced 20 per cent the rates for shippers' tickets were advanced in the same proportion. The committee considers that there is no good reason for continuing such large concessions to shippers doing a large business and recommend that in future no greater reduction should be made on shippers' tickets as compared with the ordinary season tickets than 20 per cent. They also advise that when the rates for carriage of freight are increased, as is now proposed, the amount of traffic necessary to qualify for the issue of a shipper's ticket should be increased so as to be traffic producing freight rates to the amount of £1,000 ($5,000).

Junior Workers' Fares

Prior to the war, season tickets were issued at half the ordinary rates to children under 15 years of age, and to pupils, teachers, scholars, student and medical students, art students, apprentices, and articled clerks who were learning a trade or a profession, and also to junior clerks and messengers up to the age, in each case, of 18 years. As from April 1, 1920, season tickets have been issued at half the ordinary rate for residential purposes only, to all applicants under 16 years of age and to scholars, students, and apprentices, including articled clerks, and articled pupils (not in receipt of salary, wages, or any monetary allowance whatsoever), under the age of 18 years.

The committee is of opinion that the latter practice should be continued but, if the charge for season tickets is increased, recommend and advise that the benefit of season tickets at half the ordinary rate should be extended to the classes above-named who are in receipt of nominal salary, wages or remuneration, which for this purpose should be taken to mean not more than 18 shillings ($4.50) per week, the other conditions attached to the issue of such tickets at the present time being maintained.

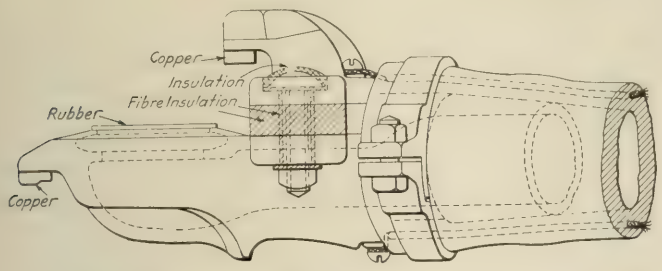


From the Cincinnati Commercial

Everybody's Been so Busy Administering Discipline, They Forgot to Feed Him

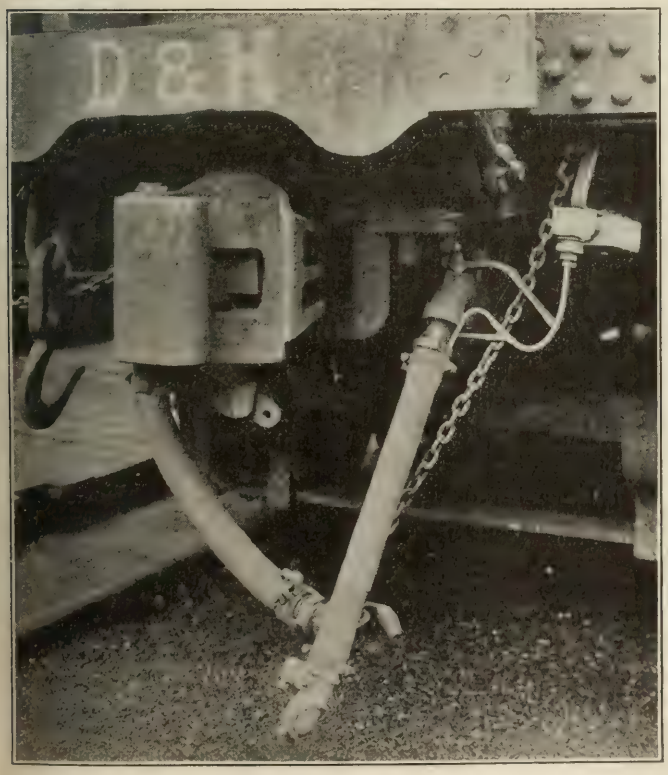
United States Electric Train Signal

THE DELAWARE & HUDSON COMPANY has in use on a local passenger train an electric signal, taking the place of the usual air signal, and it has been tested for over a year. It is giving satisfactory service; the train circuit is normally closed, so that any failure of battery or wires would be at once revealed. The electric apparatus, an electro-magnetic valve, sounds a whistle. There is a



Arrangement of Wiring in Hose and Coupling

whistle, with a miniature semaphore, not only on the engine, but also one in each car of the train, and all signals are audible and visible throughout the train. The whistle on the locomotive is loud enough to be heard readily above any conflicting noise. With this arrangement each signal given to the engine is repeated in each car; and it is possible, with a suitable code, for the engineman to signal to the conductor



Electrical Connections for Trains. Signals Are Made Through Hose and Coupling

at any time. Signals are, of course, communicated instantaneously. The train circuit is energized by gravity batteries 4-volt—one in each car. There is no battery on the locomotive.

The train is made up of a locomotive and four cars and runs between Troy, N. Y., and Rutland, Vt., 86 miles, six round trips a week. The circuit controller in each car is actuated by the usual cord extending the length of the car. Air is taken from the brake system train line.

The connection between the cars is by means of insulated wire in the brake hose coupling, and the man who couples the air hose by the same operation completes the electrical connection. The couplings are insulated as shown in the smaller illustration.

The electrical connection through the hose is said to be as effective as a separate connection could be, and its cost is less. This installation was in use throughout last winter and there was no trouble from ice or snow.

The experiment on this short train has illustrated the advantage and practicability of such a signal on freight trains; and except for the difficulty incident to using foreign cars, the system could be adapted to the longest train. It would be available also for telephone communication between the locomotive and the caboose. Extensive experiments, continuing through the winter, were made, also, two or three years ago, on the Canadian Pacific and the Canadian National.

The proprietor of this system is the United States Train Signal Company, 97 Exchange street, Portland, Me., and it is patented by William E. Benn and George E. Davies.

The apparatus on the Delaware & Hudson train was inspected and tested last June by the Bureau of Safety of the Interstate Commerce Commission. W. P. Borland, chief of the bureau, reporting on this test says that "the device is designed upon sound principles, and if properly installed and maintained it is capable of producing reliable train signal indications."

Efforts to Prevent Coal Accumulation at Tidewater

WASHINGTON, D. C.

FOR THE PURPOSE of reducing the detention and accumulation of cars of bituminous coal awaiting transshipment at tidewater terminals, and thereby reducing the number of cars required for the tidewater coal traffic, representatives of the railroads and of the coal operators have agreed upon a plan of embargoing such traffic except upon permits to be issued by the terminal railroads. The Interstate Commerce Commission has issued order after order to promote the shipment of coal to tidewater for New England and to the lake ports for the Northwest and recently the railroads have been able to transport the required tonnages of coal to those points, but it has been ascertained that this does not always get it to the desired destination, partly for the reason, it is said, that the would-be consumers of the coal are not always willing to pay the prices asked by the owners of it and partly because of a scarcity of boats to complete the journey started by the railroads, with the result that the entire situation plays into the hands of coal speculators.

Daniel Willard, chairman of the Advisory Committee of the Association of Railway Executives, and Col. D. B. Wentz, president of the National Coal Association, held a conference on this subject on August 18 with representatives of the Commission on Car Service, the National Coal Association, the tidewater coal-carrying lines serving the ports Hampton Roads and north, representatives of the tidewater coal exchanges, and the president of the American Wholesale Coal Association, to consider what more efffective means could be adopted to reduce the accumulation of cars to a minimum.

According to a statement issued by the Commission on Car Service, the conference considered particularly a report of the special committee of the National Coal Association in the matter of shipment of tidewater bituminous coal,

and unanimously reached the conclusion that such changes should be made in the regulations of the Tidewater Coal Exchange which handles shipments through New York, Philadelphia and Baltimore, as would result in penalizing the holding of bituminous coal by individual members of the exchange beyond the free time permitted in established tidewater coal demurrage tariffs. Further than this, the meeting unanimously agreed that, as the only effective means of adequately controlling the situation, all tidewater coal-carrying lines should immediately embargo the movement of tidewater coal and simultaneously provide for the acceptance of such traffic only upon permits to be issued by the tidewater bituminous coal terminal railroads. It was recognized that the issue of the permits must depend in the first instance upon transportation conditions upon the railroads concerned, but beyond this it was unanimously agreed that no permits should be granted except upon a definite showing that the coal upon arrival at the pier at tidewater would be unloaded into vessels with reasonable promptness, this ability on the part of the committee to be ascertained by his showing as to vessels under charter and his record in meeting the conditions of permits heretofore issued. The meeting also agreed, without dissent, that the issue of permits should be to the loading mines with provision made that if the amount to be loaded was exceeded, the mine so violating the permit would be penalized in its car supply so long as the coal so billed without permit remained unconsigned elsewhere and undisposed of.

The purpose of the arrangement is to prevent unnecessary delay to equipment and to promote transportation, and these recommendations are to be utilized with that in mind.

Officials of the National Coal Association issued a statement that representatives of the coal industry have joined the railways in formulating these changes "in the conviction that such action will be instrumental in checking harmful speculation in tidewater bituminous coal," and because, in their belief, it will prevent the misuse of railway equipment for speculative purposes. At the same time they are confident that these restrictions upon the shipment of coal to tidewater will not interfere with the efficient conduct of the tidewater coal business, but will facilitate it through an improvement in transportation conditions.

I. C. C. to Investigate State Rates

WASHINGTON, D. C.

THE QUESTION as to whether state railroad commissions and state passenger fare laws are to be allowed to nullify in part the effect of the Interstate Commerce Commission's order allowing increases in interstate freight and passenger rates has been brought to a head by the Illinois situation. The Illinois roads have filed with the Interstate Commerce Commission a petition asking it to institute an investigation of the situation arising from the order of the Illinois Public Utilities Commission which prohibits the roads from increasing intrastate passenger fares but limits them to the two-cent state statutory fare, and allows an increase of only 33⅓ per cent in freight rates. The Interstate Commerce Commission on August 24 made public an order, dated August 18, which referred to the receipt of the Illinois petition, and ordered an investigation "to determine whether the rates, fares and charges required to be established by said orders made by the Public Utilities Commission of the State of Illinois, cause or will cause any undue or unreasonable advantage, preference or prejudice as between persons or localities in intrastate commerce on the one hand and interstate or foreign commerce on the other hand, or any undue, unreasonable or unjust discrimination against interstate or foreign commerce; and as to what rates, fares and charges, if any, or what maximum or minimum, or maximum and minimum shall be prescribed to be charged by the petitioners, in order to remove such advantage, preference, prejudice or discrimination, if any, as may be found to exist." The proceeding was assigned for a hearing before Commissioner McChord at Chicago on September 8 and the governor and the public utilities commission of the state were notified. This will bring about a test of the new powers conferred upon the federal commission by new transportation act.

The Illinois roads in their petition asked the commission, after an investigaion, to enter an order declaring discriminatory, unjust and unlawful any rate or rates required to be applied by any state authority to the transportation of freight and passengers within Illinois less than the percentages provided by the commission in its order in the general rate advance case, and requiring the establishment of the same level of rates on Illinois traffic as on interstate traffic.

The petition says that the Interstate Commerce Commission in its order did not determine merely that the increases prescribed should apply only to interstate traffic but that the increases allowed, if applied both to interstate and intrastate traffic, would yield no more than was necessary to permit the carriers to earn 6 per cent upon the value of their property.

As a practical matter, the petition asserts, it is desirable that intrastate rates in Illinois should be on the same basis in all parts of the state and it is necessary for the carriers to have the stated percentages in order that their net income may equal the amount provided in the transportation act. If they are not permitted to increase intrastate freight and passenger rates in Illinois by the amounts permitted as to interstate traffic the railroads in the groups in which Illinois is situated will fail to earn the amount of net income provided in the transportation act.

The Illinois commission allowed the freight rates to be increased by 33 1/3 per cent but had held that all passenger rates, including the surcharge for travel in Pullman cars, and commutation rates, may not be increased in any amount, having gone on record as being of the opinion that after September 1 the lawful rates in Illinois will not be greater than the two cents a mile rate prescribed by the Illinois law. Therefore, the carriers assert, no relief can be obtained from the Illinois commission and the result will be that unreasonable discriminations will be created as against interstate traffic, resulting in unreasonable preferences between persons and localities in intrastate traffic in Illinois on the one hand and interstate or foreign commerce on the other hand, which is forbidden by the interstate commerce act. Under the Illinois laws, the petition asserts, heavy penalties are imposed on any railroad company failing to comply with any order of the Illinois commission and unless prompt action is taken by the Interstate Commerce Commission the carriers will not be able to secure the revenue required by law and will be forced to collect and impose illegal and discriminatory charges.

THE ORGANIZATION OF THE PITTSBURGH SECTION of the American Welding Society was completed at a meeting held in the Chamber of Commerce auditorium at Pittsburgh, Pa., on August 12. Officers of the section elected at the meeting are: chairman, J. D. Conway, secretary and treasurer Railway Supply Manufacturers' Association; first vice-chairman, Dr. R. H. Brownlee, Brownlee Consulting Laboratories; second vice-chairman, H. H. Maxfield, general superintendent motive power, central region Pennsylvania System; temporary secretary, F. W. Tupper, American Welding Society; treasurer, F. O. Gardner, Pittsburgh Testing Laboratory.

Railroads Handling Larger Freight Tonnage

Review of Transportation Conditions—Accumulations Being Reduced and General Improvement Noted

MORE NEW FREIGHT was handled by the railroads during the week ending August 7 than during any previous week this year. The weekly report compiled by the Commission on Car Service shows a total of 942,150 cars of revenue freight loaded, as compared with 872,073 for the corresponding week of 1919 and 947,955 for 1918. The record for the week is therefore only about 5,000 cars below 1918, and three districts, the Southern, Central Western and the Southwestern, show records better than the corresponding week of 1918. The Southern has been doing better than 1918 for the past four weeks. The complete figures are reported in their present form only from the period since June 1 during which time the revenue freight loaded has ranged from 757,000 to 923,000 cars. The latter figure was attained during the week of July 17 and the next two weeks showed a slight falling off which is more than made up, however, by the increase for August 7. The table showing the freight loaded and received from connections is as follows:

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS: COMPARISON OF TOTALS

This Year, Last Year, Two Years Ago. For Week Ended Saturday, August 7, 1920

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C.L.	Miscellaneous	Total revenue freight loaded: This year. 1920	Corresponding year. 1919	Corresponding year. 1918	Received from connections: This year. 1920	Corresponding year. 1919	Corresponding year. 1918
Eastern	1920	6,706	2,594	52,331	3,919	8,489	10,136	35,280	105,445	224,900	....	....	265,187	....	....
	*1919	7,814	1,907	48,751	3,254	8,074	6,998	16,201	113,375	....	219,150	226,217	....	222,367	243,711
Allegheny	1920	2,812	2,975	61,092	5,380	3,880	11,611	37,211	68,737	193,698	....	....	140,559	....	....
	1919	3,928	2,658	56,120	3,106	4,112	14,634	41,358	70,418	....	169,334	210,162	....	138,303	179,332
Pocahontas	1920	213	214	25,121	653	1,923	193	2,813	7,057	38,187	....	....	20,862	....	....
	1919	332	151	18,476	553	1,752	183	107	8,055	....	29,609	39,601	....	15,486	14,773
Southern	1920	3,341	2,214	26,253	1,455	19,509	2,877	33,403	50,012	139,064	....	....	74,763	....	....
	1919	4,050	1,658	20,329	270	20,238	2,114	14,358	59,961	....	122,978	122,737	....	58,962	70,346
Northwestern	1920	7,883	6,809	10,351	1,437	17,255	45,678	28,363	39,097	156,878	....	....	55,302	....	....
	1919	9,807	5,243	6,851	988	17,304	23,408	19,774	40,465	....	123,840	164,964	....	49,311	68,651
Central Western	1920	11,128	9,056	17,184	452	6,009	3,259	31,855	48,669	127,612	....	....	68,910	....	....
	1919	13,141	9,471	18,545	305	6,054	3,585	23,071	50,461	....	124,663	124,655	....	65,479	64,624
Southwestern	1920	4,194	3,090	4,771	141	8,086	295	16,818	2,441	61,811	....	....	50,011	....	....
	1919	6,579	2,507	5,506	91	6,880	411	11,401	22,154	....	55,529	59,619	....	47,009	42,184
Total all roads	1920	36,277	26,952	197,103	13,437	65,151	74,049	185,748	343,433	942,150	....	....	675,594	....	....
	1919	45,651	23,595	174,578	8,567	64,414	51,333	128,270	364,889	....	872,073	....	....	596,917	....
	1918	....	....	....	....	....	....	....	....	....	....	947,955	....	....	683,621
Increase Compared	1919	....	3,357	22,525	4,870	737	22,716	57,478	....	70 077	....	....	78,677	....	...
Decrease Compared	1919	9,374	....	....	....	....	....	....	21,456	....	....	....	....	....	....
Increase Compared	1918	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Decrease Compared	1918	....	....	....	....	....	....	....	....	5,805	....	....	8,027	....	....

* Detail figures for 1919 for Michigan Central not given.

The freight car accumulations also continue to show reductions. For the week ending August 13 the total was 79,213, which is the lowest recorded this year. For the preceding week it was 84,949. The reduction includes a reduction of 2,100 in the number of cars held on account of the disability of consignees and also a considerable reduction in the cars held on account of embargoes.

The deferred car requisitions also show a reduction during the week ending August 6, after a slight increase during the preceding week. For the week ending August 1 the average daily shortage of cars was 132,000. For the week of August 6 it was 125,219 for the United States and Canada. For the United States alone it was 119,359, of which 38,564 were coal cars and 66,115 were box cars.

Per Cent of Home Cars on Home Roads

Some progress is being made although not of a very rapid rate, in "unscrambling" the freight cars that were so badly scattered during the period of federal control when cars were routed without regard to ownership. One of the items in the program recently undertaken by the railroad executives for improving the quantity and quality of transportation service was "more effective efforts to bring about the return of cars to the owner roads," and this has also been one of the objectives of the Commission on Car Service since the roads were relinquished on March 1. Regular reports on this point are received by the commission which indicates that on March 1, 1920, the percentage of home cars on home roads was less than ever before, or 21.9. On August 1 the percentage had been increased to 26.7. On May 1, 1917, the percentage of home cars on home roads was 52.8, which would indicate that on the average most cars spent most of their time on the rails of the home road or its direct connections. On January 1, 1918, when the roads were taken over by the government, 44 per cent of the cars were at home. The percentage kept decreasing during federal control and on January 1, 1919 was 26.6. It was further reduced during 1919, in spite of the fact that some efforts were made to increase it before the roads were returned. Since the return of the roads there has been a gradual increase except for a slight decrease during May. These percentages refer to all cars.

The box cars have been more widely scattered. On January 1, 1918, 24.8 per cent of the box cars were on home roads and on March 1, 1920 only 11.5 per cent were at home. On August 1 this had been increased, largely as a result of the relocation orders issued by the Interstate Commerce Commission and the Commission on Car Service, to 15.4 per cent. Of the gondola cars, 60.3 per cent were at home on January 1, 1918. This percentage also decreased during federal control, but was particularly reduced after the coal strike of last year, until on March 1, 1920, it was only 28.6. On August 1 it had been increased to 32.7. Of the stock cars, 53.6 were on home roads when the roads were taken over and only 27.2 per cent when they were returned. On August 1 this had been increased to 35.5 per cent. On January 1, 1918, 53.9 per cent of the flat cars were on home

roads. On March 1 31.9 were at home and on August 1 this had been increased to 34.9, although this represented a decrease as compared with July 1, when the percentage was 35.5.

A compilation of the reports for all cars from May 1, 1917, to August 1, 1920, by districts is as follows:

PERCENTAGE OF HOME CARS ON HOME ROADS BY DISTRICTS FOR CLASS I ROADS

Date	East-ern	Alle-gheny	Poca-hontas	South-ern	North West-ern	Central West-ern	South West-ern	Total
May 1, 1917.....	47 3	57.4	48.3	46.4	64.6	53.1	32.1	52.8
January 1, 1918....	36.4	51.6	49.7	38.7	53.8	45.5	32.2	44.0
January 1, 1919....	13.2	26.0	31.4	32.9	34.5	37.9	24.5	26.6
July 1, 1919.....	19.8	32.3	36.0	37.3	37.5	41.2	29.7	31.7
August 1, 1919....	20.3	33.0	33.5	34.4	37.4	39.9	28.6	31.2
September 1, 1919..	19.2	32.1	32.9	31.1	37.0	38.0	24.7	29.7
October 1, 1919....	18.7	29.7	28.3	27.4	35.8	36.0	24.4	27.9
November 1, 1919..	17.3	28.0	27.4	26.0	34.2	33.7	23.5	26.3
December 1, 1919...	16.3	25.8	21.4	26.7	33.4	33.7	23.8	25.3
January 1, 1920....	15.7	23.4	16.6	23.8	31.4	29.6	21.5	23.0
February 1, 1920...	15.3	23.1	18.9	21.7	30.5	28.0	20.6	28.3
March 1, 1920.....	14.6	23.8	17.7	19.6	29.8	28.8	20.5	21.9
April 1, 1920.....	16.9	26.9	20.0	21.5	30.5	30.7	23.4	24.1
May 1, 1920.....	18.1	29.7	26.2	22.2	32.2	32.3	23.5	25.9
June 1, 1920.....	17.8	28.2	25.1	22.8	35.8	30.4	23.7	25.7
July 1, 1920.....	17.7	27.4	28.8	21.2	37.7	32.2	23.1	26.0
July 15, 1920.....	18.1	27.6	27.5	21.2	38.4	30.9	23.1	26.0
August 1, 1920.....	18.1	27.8	29.4	22.1	39.7	32.8	23.5	26.7

Reports received by the Commission on Car Service from its local committees in 35 cities for last week reflect many instances of improvement in transportation conditions. Many of the committees report a normal situation as to switching service and labor conditions, although some of them say that the efficiency of labor is not yet up to normal. They also report vigorous efforts to reduce the number of bad order cars, which are showing results, and that facilities are being used to capacity, but in many sections there is a scarcity of labor for car repairs and in some places also of materials.

The various committees also report great activity and vigilance in the efforts to induce shippers and consignees to utilize cars to capacity and to load and unload promptly to avoid detention of cars. Regular daily checks are made and many of the committees take up each instance where cars are being detained with the shippers or consignees to ask them to release the car. They report a general spirit of co-operation in this campaign. The Kansas City committee handled 124 of such instances last week. The Cleveland committee devoted itself especially to the unloading of potatoes and other foodstuffs. It found 140 cars of potatoes being held on one road with little effort being made on the part of shippers to unload. This was taken up with the local commission merchants' organization with a statement that unless the cars were unloaded it would be necessary to embargo the consignees and most of the 140 cars were promptly disposed of. Officials of one railroad made a trip over a division interviewing the agents at each station and taking up each case of detention with the shippers. Those who had held inbound shipments an unreasonable time were embargoed. Shippers were asked not to ship for a time to consignees that already had on hand more material than they could unload. The Pennsylvania and Baltimore & Ohio have inaugurated a campaign to induce consignees to release equipment by working their unloading forces Saturday afternoons, nights and Sundays, pointing out that the railroads work 24 hours a day and 7 days a week. Consignees as a rule will not do this because of labor conditions and the expense involved. At Philadelphia 38 cars were unloaded by the Baltimore & Ohio and 186 by the Pennsylvania by railroad employees. At Columbus, Ohio, each road has designated one person to follow up the release of equipment on its rails within the terminal and reports are furnished to the local committee on car service and to the terminal traffic committee covering all cars held beyond the free time. Delays are handled by the committee direct with the consignees or consignors to secure prompt release. At New York 17 cars of l.c.l. freight were placed in public storage due to slow acceptance by consignees.

As the car supply improves greater opportunity is being afforded to carry out the recommendations of the Commission on Car Service as to the making up of solid train loads. Many committees report that it is no longer necessary to reroute freight but several instances are reported where freight that would be embargoed by one route has been diverted.

The Southern Railway car works at Gadsden, Ala., is repairing an average of 42 cars per week day. At Kansas City, 10,644 cars were repaired as compared with 11,956 the week before. The lines reporting to the Cleveland committee repaired 4,610 bad order loads and 7,105 empties, with only 78 per cent of the authorized repair forces working. At Louisville the bad order car situation showed a decrease during the week of 18 per cent in heavy repair cars and of 16 per cent in light repair cars. At Norfolk, 3,322 bad order cars were repaired during the week. At Columbus an average of 463 cars were repaired daily. At New York 757 bad order cars were repaired on Sunday.

Most of the committees report that it has not been necessary to place new embargoes during the week and good progress has been made in clearing terminals of cars held on account of embargoes elsewhere. In most cases it is reported that the car supply is short of the requirements, but some committees reported an adequate supply. At Cleveland, on August 20, there were on hand 17,356 cars of coal for lake ports and 3,856 cars were dumped the previous day. Efforts are being made to have more boats assigned to reduce the number of cars held at the ports. The reports showing stocks of railroad fuel coal on hand at various points showed that the supply is very low and in a few instances railroads have had to confiscate coal, in some cases to make up for coal that they had previously let industries have to keep them going.

The Interstate Commerce Commission has issued a partial advance summary of traffic statistics for the Class 1 roads for June and the first six months of 1920, which shows that roads operating 157,000 miles of line in June handled 24,819,695,000 ton-miles of freight as compared with 20,456,012,000 in June, 1919. For six months the total net ton-miles aggregated 136,194,000,000 as compared with 114,465,000,000 in the first half of 1919.

The Interstate Commerce Commission on August 19 issued a notice to the railroads saying that many roads have not complied with that part of Service Order 9 which requires a report of the number of cars placed at coal mines for public utility coal. The purpose of the notice is to request the railroads affected by Service Order 9 to furnish the commission with a statement of the cars heretofore assigned to coal mines for public utility coal, if they have not already done so and hereafter and during the life of Order 9 to see to it that a report of this character is sent to the commission each Saturday for the preceding week. The report should show the name and location of the mine to which the cars are assigned, how many cars were placed at such mine or mines and the name of the public utility to which the coal was consigned.

Because of a shortage of equipment and accumulation of cars at Galveston, the Interstate Commerce Commission on August 24 issued Service Order No. 13, authorizing the lines serving that city to remove from cars and place in storage at the cost of the owner so much of the grain now in cars upon tracks at Galveston as has not been removed within the free time and the cars so released are ordered restored to transportation service.

The commission on August 24 announced a hearing at Washington on August 30 on the application of the chambers of Commerce of Cleveland and Akron, Ohio, for a modification of Service Order No. 10, the order giving priority in the movement of lake coal to the northwest. Telegrams announcing the hearing were sent to the governors of Minnesota, and North and South Dakota.

General News Department

Shopmen on the Pennsylvania Railroad are taking a strike vote because of a report that the road intends to put piecework scales into effect on September 1.

Baggage transfer service to and from the railroad and steamship terminals in New York City ceased early this week because of a strike of the employees of the Westcott Express Company and the New York Transfer Company.

Two men held up the Missouri Pacific passenger train No. 5 running from St. Louis, Mo., to Little Rock, Ark., on the outskirts of St. Louis on the night of August 18, and escaped with four mail pouches believed to have contained registered mail.

Outlaw strikers are again causing trouble—this time at the Mott Haven and Oak Point yards of the New York, New Haven & Hartford in New York City. On the afternoon of August 22 several attacks were made on men leaving the yard and one man was seriously hurt. The assailants are believed to be former employees who quit their jobs during the outlaw strike.

The Texas Sectional Committee of the Signal Division of the American Railroad Association will hold a meeting at the Hotel Galvez, Galveston, Tex., on September 4. B. F. Hines of the Thomas A. Edison Company, Inc., will present a paper on electric lighting of signals from primary batteries and a motion picture showing the process of manufacturing rubber-covered insulated wire will be presented by the Central Electric Company.

The Civil Service Commission announces competitive examinations on September 22 and October 20 for the positions of tariff examiner for the Interstate Commerce Commission. The positions pay $1,620 a year and applicants must have had three years' employment in such railroad or steamship positions as would make them thoroughly "conversant with the intricacies of the various railroad freight classifications, tariffs," etc.

At the One Hundred and Eleventh street station (Chicago) of the Illinois Central, robbers seized a registered mail sack from two boys who were in the act of placing it in a cart for transfer to the mail wagon. The sack contained $100,000 in bills of small denomination and represented the bi-weekly payroll of the Pullman Company and the Sherwin-Williams Paint Company. Upon leaving the station the robbers threw the mail sack into a waiting automobile and made their escape.

Constructive recommendations looking to an improvement in the handling of freight in the terminals are expected to be made soon by the Railroad Committee of the Chamber of Commerce of the United States. The suggestions are under preparation following a meeting of the committee at which a report on the terminal situation was made by Richard Waterman, secretary of the committee who made investigations in several of the largest cities. Heavier loading and quicker handling, the committee will point out, would add considerably to the number of freight cars in use.

The United States Railroad Labor Board has reached a decision on the demand of employees of the Bangor & Aroostook and members of the Lighter Captains' Union of New York. Hearings in both cases were held on August 13 and reported in the *Railway Age* of August 20, page 329. The decision in these cases will not, however, be made public until August 27 or 28, when the completed report of the Board will be available in printed form. Insofar as the decision in the Bangor and Aroostook case is concerned, it is believed that the award will be a duplicate of that handed down by the Board on July 20. A separate hearing for the employees of this road was necessary because it was not represented by the Conference Committee of Managers of the Association of Railway Executives, which presented the railroad's side of the wage hearing which terminated with the award of July 20. No advance information is obtainable as to the contents of the award to members of the Lighterage Captains' Union of New York.

Supplement to A. R. A. Rules of Interchange

The mechanical section of the American Railroad Association has issued Supplement 3 to the Interchange Rules of 1919, effective September 1. This supplement contains modifications of rules 3, 93, 98, 101, 106, 107, 108, 109, 110 and 111 and of rules 21 and 22 of the code for passenger cars. The changes in the prices of labor and material as adopted at the convention of the association are included in the supplement.

Coal Companies Sue Railroads for Awards

Four coal companies filed suits in the United States District Court at Philadelphia on August 21 against the Lehigh Valley and the Central of New Jersey to compel them to pay awards granted by the Interstate Commerce Commission for reparation on unreasonable rates on anthracite coal.

The plaintiffs are the G. B. Markle Company, which is suing the Lehigh Valley to compel payment of an award of $140,656.98; Pardee Brothers & Company, Inc., filing a suit against the same road for $41,289.17; the Red Ash Coal Company against the Central of New Jersey for $21,544.26, and Fenton Dodson Company, Inc., coal brokers, who sued the Jersey Central for $49.33 excessive freight charges on a shipment of coal.

The railroads claim that the damages allowed by the Interstate Commerce Commission were excessive.

Partial Summary of June Earnings and Expenses

The Interstate Commerce Commission on August 19 issued a partial summary of railway revenues, expenses and net income, covering 230,000 miles, with 14 roads, operating 5,120 miles, not included. The roads included in the report had a deficit for the month of $15,616,328, after $25,371,765 of retroactive wages for May and June had been charged into the June accounts by some roads. For the first six months of the year the same roads show a net operating income of $13,664,120, as compared with $145,930,908 in the first six months of 1919. The commission says in a foot-note that to compare the earning power of roads in 1920 and 1919 it should be noted that corporate war taxes, amounting to $11,554,321, are included in the 1920 returns but not in those for 1919; that the revenues for 1920 include approximately $50,000,000 back mail pay, and that the increased wage accruals are incomplete.

Exhibitors at the Master Blacksmiths' Convention

About 50 representatives of railway supply companies registered at the annual convention of the International Railway Master Blacksmiths' Association, which was held at the Hotel Statler, Detroit, Mich., August 17, 18 and 19. The following companies had exhibits:

Air Reduction Sales Company, New York.—Welding and cutting torches and portable welding equipment. Represented by R. T. Peabody, A. B. Brown, A. W. Brown and H. H. Melville.

Ajax Manufacturing Company, Cleveland, Ohio.—Sample forgings. Represented by J. R. Blakeslee, A. L. Guilford, R. W. Bannerman, W. J. Criley, H. D. Heman and J. A. Murray.

American Drop Forger Represented by E. C. Cook and F. C. Andersen.

Anti-Borax Compound Company, Fort Wayne, Ind.—Literature describing welding, brazing and tempering compounds.

Mahr Manufacturing Company, Minneapolis, Minn.—Model of heat treating furnace, torches, safety valves and burners. Represented by H. H. Keeler and J. R. Mathews.

National Machinery Company, Tiffin, Ohio.—Five-inch, heavy pattern, steel bed forging machine and sample forgings. Represented by E. R. Frost, F. W. Klenk, H. E. Lott, Chas. Harmon and K. L. Ernst.

Railway Journal, Chicago. Represented by E. C. Cook.

Railway Mechanical Engineer, New York. Represented by C. B. Peck.

REVENUES AND EXPENSES OF RAILWAYS

SIX MONTHS OF CALENDAR YEAR 1920

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Bingham & Garfield	36	$885,814	$10,014	$909,056	$190,259	$219,962	$10,309	$208,328	$24,591	$660,226	72.62	$248,830	$44,550	$204,273	$343,016
Birmingham Southern	31	207,903	.....	291,709	26,183	44,344	5,530	180,604	20,950	277,612	95.16	14,097	10,525	3,554	—63,240
Boston & Maine	2,289	23,582,832	10,397,445	38,402,714	5,959,047	8,697,890	258,066	22,623,108	1,272,536	38,989,595	101.52	—586,881	1,401,822	—2,036,374	—2,212,968
Brooklyn Eastern District Terminal	9	425,359	.....	471,623	114,523	197,280	960	336,018	24,961	673,742	142.86	—202,119	37,273	—239,392	2,369
Buffalo & Susquehanna Corp.	296	1,273,806	41,248	1,343,873	284,253	592,253	13,593	503,986	58,116	1,452,200	108.06	—108,328	19,500	—127,828	56,980
Buffalo, Rochester & Pittsburgh	589	7,602,649	809,361	8,773,541	1,447,471	3,260,099	88,509	4,251,781	235,380	9,297,473	105.97	—523,932	190,000	—714,584	199,487
Canadian Pacific (Lines in Maine)	233	1,156,613	337,803	1,571,377	317,418	397,875	17,613	1,029,359	20,960	1,783,225	113.48	—211,847	73,200	—285,047	—65,671
Central New England	301	2,552,413	140,328	2,860,559	923,251	797,544	17,539	1,832,781	92,785	3,676,887	128.53	—816,327	107,388	—923,773	—886,109
Central of Georgia	1,924	7,551,719	3,096,579	12,239,723	2,161,639	2,681,817	274,241	5,517,201	434,063	11,097,059	90.66	1,142,664	471,157	671,190	73,555
Central of New Jersey	686	15,129,799	3,937,542	20,876,340	2,592,678	6,333,860	157,116	11,478,935	557,231	21,256,419	101.82	—380,079	1,504,515	—1,884,726	—2,680,975
Central Vermont	413	2,135,682	524,345	3,020,173	496,899	885,941	55,635	2,177,868	113,724	3,743,449	123.94	—723,276	104,400	—827,731	—283,767
Charleston & Western Carolina	342	1,296,278	307,343	1,699,616	347,868	371,958	28,114	904,913	23,307	1,676,159	98.61	23,457	69,750	—46,293	—139,980
Chesapeake & Ohio	2,518	30,837,214	4,939,962	38,885,264	5,349,361	10,743,976	325,224	15,861,444	814,868	33,276,812	85.57	5,609,452	1,298,860	4,309,519	—1,454,821
Chicago & Alton	1,050	8,762,473	3,064,112	13,174,469	1,881,676	3,566,863	127,953	6,019,377	359,759	12,082,397	91.71	1,092,072	389,094	701,942	124,199
Chicago & Eastern Illinois	1,131	9,409,473	2,401,725	13,642,876	1,609,675	4,455,858	124,975	5,797,564	372,379	12,414,095	90.99	1,228,781	570,000	656,433	1,544,216
Chicago & Erie	269	4,395,563	388,940	5,358,902	582,924	963,760	82,113	2,863,393	174,336	4,687,663	87.47	671,238	239,545	431,313	—42,924
Chicago & North Western	8,196	46,648,578	16,803,643	72,139,706	11,560,145	16,993,462	556,453	35,588,817	1,817,874	67,191,268	93.14	4,948,438	4,025,630	917,478	—3,324,657
Chicago, Burlington & Quincy	9,371	57,755,056	16,046,696	83,918,675	14,672,633	17,978,147	728,236	36,968,848	2,112,456	73,414,322	87.48	10,504,353	3,997,822	6,489,548	—3,415,193
Chicago Great Western	1,496	7,999,744	2,589,893	10,971,401	2,419,211	2,832,608	176,219	5,234,224	309,166	11,072,362	100.92	—100,961	388,265	—490,052	—834,819
Chicago, Indiana & Louisville	654	4,653,966	1,496,450	6,984,956	837,566	2,208,543	145,932	3,101,984	179,711	6,562,401	93.95	422,555	292,018	130,222	—587,294
Chicago, Detroit & Can. Grand Trunk Jct.	62	539,913	83,121	745,782	102,507	160,970	7,959	427,346	20,955	719,706	96.50	26,076	26,531	—473	—332,653
Chicago Junction	12	.....	.....	1,500,458	317,354	365,234	1,496	1,594,472	56,695	2,335,252	155.63	—834,794	17,727	—852,521	—357,861
Chicago, Milwaukee & St. Paul	10,628	51,773,696	14,095,473	76,001,059	12,386,517	19,181,820	645,510	36,950,529	2,254,377	71,914,872	94.62	4,086,187	3,914,787	138,981	—507,299
Chicago, Rock Island & Gulf	461	2,279,419	580,439	3,154,464	473,157	470,566	46,422	1,252,671	76,842	2,328,957	73.83	825,506	99,367	725,973	622,561
Chicago, Rock Island & Pacific	7,620	40,717,983	15,230,579	62,120,995	10,957,267	15,619,563	676,320	28,036,229	1,406,585	56,995,818	91.75	5,125,177	2,609,451	2,510,920	—323,370
Chicago, St. Paul, Minn. & Omaha	1,749	9,499,314	3,842,750	14,754,295	1,786,274	2,721,872	145,333	6,825,187	432,097	11,992,366	81.28	2,761,930	782,291	1,976,564	835,664
Chicago, Terre Haute & South Eastern	374	2,257,809	140,567	2,470,562	354,230	847,654	23,927	1,041,479	64,420	2,342,806	94.82	127,756	114,000	13,756	285,065
Cincinnati, Indiana & Western	321	1,512,648	314,241	2,036,037	314,147	755,019	46,331	936,814	101,341	2,159,862	106.08	—123,826	78,256	—202,087	78,851
Cincinnati Northern	249	1,362,658	111,736	1,567,513	320,029	373,999	19,587	599,719	33,309	1,346,622	85.91	220,891	61,090	159,794	—102,267
Cleveland, Cincinnati, Chicago & St. Louis	2,408	26,949,509	8,653,106	40,152,511	5,010,776	9,206,722	565,921	17,030,733	810,542	32,927,834	82.00	7,224,677	1,295,326	5,925,434	594,639
Colorado & Southern	1,099	4,919,664	1,209,743	6,754,983	1,131,380	1,708,696	61,353	2,407,326	248,381	5,605,698	82.99	1,149,285	341,146	806,360	20,292
Colorado & Wyoming	43	114,892	5,457	451,867	75,042	110,362	1,264	220,197	24,625	431,490	95.49	20,377	35	—9,623	—105,753
Delaware & Hudson	858	15,524,085	1,459,730	18,114,947	2,177,877	5,732,231	154,012	9,565,905	824,370	18,591,506	102.63	—476,559	481,144	—958,139	—1,534,864
Delaware, Lackawanna & Western	956	22,698,323	5,780,567	33,162,830	3,997,863	8,037,160	435,936	16,875,340	817,415	30,665,269	92.46	2,497,561	2,133,333	363,057	—5,260,637
Denver & Rio Grande	2,585	18,320,168	3,104,729	16,848,888	2,343,977	4,174,313	195,588	6,045,302	455,947	13,526,807	80.64	3,322,089	762,000	2,544,713	1,018,630
Denver & Salt Lake	255	925,469	165,866	1,157,709	379,108	470,903	5,016	698,488	46,085	1,599,600	138.17	—441,891	60,332	—502,293	64,748
Detroit & Mackinac	376	594,890	201,015	881,434	159,107	250,490	15,388	459,405	42,781	926,727	105.14	—45,293	83,768	—129,061	30,173
Detroit, Toledo & Ironton	454	2,005,195	83,226	2,241,886	477,198	498,113	31,719	1,143,706	130,721	2,279,441	101.67	37,555	53,114	—91,463	322,924
Duluth & Iron Range	298	3,153,213	134,874	3,574,600	616,411	670,281	4,474	1,064,865	101,439	2,460,716	68.83	1,113,883	187,959	925,412	—181,936
Duluth, Missabe & Northern	406	5,112,176	292,814	5,967,174	1,094,940	924,665	16,162	1,551,628	125,152	3,783,185	62.39	2,243,989	315,539	1,928,417	—2,730,891
Duluth, South Shore & Atlantic	614	1,576,094	561,439	2,453,812	511,745	471,084	31,174	1,259,883	64,755	2,378,162	96.67	81,649	141,000	—59,452	—5,890
Duluth, Winnipeg & Pacific	178	1,000,268	162,936	1,185,212	184,490	231,768	20,397	556,883	51,239	1,044,784	85.15	140,428	64,239	76,188	25,205
East St. Louis Connecting	3	.....	.....	607,607	79,420	180,637	1,660	470,790	22,431	754,938	124.24	—147,332	15,200	—162,532	—62,517
Elgin, Joliet & Eastern	832	6,471,361	27	7,362,844	772,947	1,836,271	29,185	2,871,582	148,870	5,657,956	76.84	1,704,888	191,192	1,153,286	—711,344
Erie	1,989	34,440,443	6,098,614	45,695,796	6,389,221	16,107,475	509,199	24,524,405	1,336,285	49,258,125	107.79	—3,562,329	1,481,818	—5,065,772	—2,704,540
Detroit, Grand Haven & Milwaukee	195	1,392,441	254,261	1,924,021	340,963	493,269	30,741	1,354,396	73,064	2,292,566	119.14	—368,544	19,936	—388,807	—598,177
Florida East Coast	764	3,980,423	2,265,137	7,249,706	792,670	1,039,023	54,084	2,529,494	148,289	4,639,412	63.99	2,610,295	237,339	2,372,614	1,774,917
Fonda, Johnstown & Gloversville	57	227,483	409,549	669,053	77,520	63,695	2,675	241,314	44,596	429,801	64.24	239,252	30,100	209,152	29,128
Ft. Smith & Western	253	621,177	174,494	858,097	216,732	215,803	25,450	368,127	45,318	878,680	102.39	—20,583	30,000	—51,143	—74,498
Ft. Worth & Denver City	454	3,661,828	1,892,001	5,900,623	974,357	1,422,558	39,677	2,688,555	186,331	5,336,098	90.43	564,525	136,200	427,434	—850,930
Galveston, Harrisburg & San Antonio	1,383	7,865,098	2,662,539	11,487,498	3,601,737	2,922,979	181,230	4,424,411	366,909	11,625,896	101.20	—138,397	513,341	—662,234	—2,184,221
Galveston Wharf	13	.....	.....	649,342	163,801	17,160	2,125	215,832	14,249	512,918	78.99	136,424	92,200	44,224	45,479
Georgia	328	2,106,959	806,563	3,165,021	390,836	683,651	73,353	1,752,914	114,375	3,016,382	95.30	148,639	35,700	112,919	—422,666
Georgia & Florida	405	449,975	138,721	661,828	360,882	139,524	28,975	470,249	48,521	1,048,151	158.37	—386,323	37,498	—424,065	—235,076
Grand Trunk Western	350	5,099,058	1,215,255	6,960,378	785,402	2,114,257	104,601	3,531,611	250,477	6,828,426	98.10	131,952	284,611	—152,553	—1,451,859
Great Northern	8,175	37,020,721	8,985,661	54,240,435	11,840,483	11,094,837	494,661	22,955,801	1,182,609	48,331,047	89.11	5,909,387	4,595,702	1,302,576	—1,523,120
Green Bay & Western	252	431,421	109,465	585,231	132,804	142,658	6,522	267,970	16,519	566,434	96.79	18,797	41,169	—22,371	—34,053
Gulf & Ship Island	307	977,148	270,643	1,379,493	373,686	326,239	30,654	566,882	70,676	1,370,871	99.37	8,622	93,861	—85,412	11,177
Gulf, Colorado & Santa Fe	1,917	8,059,460	2,890,535	12,080,907	3,136,357	2,555,452	139,509	5,231,855	316,187	11,355,186	93.99	725,721	516,602	207,952	225,586
Gulf, Mobile & Northern	469	1,335,920	321,445	1,806,652	549,634	414,864	58,050	786,620	80,348	1,889,517	104.58	—82,865	79,701	—163,006	—41,171
Hocking Valley	350	5,466,253	593,671	6,449,518	806,496	2,336,264	56,321	2,536,722	182,144	5,917,861	91.75	531,657	408,228	123,429	157,177
Houston & Texas Central	885	3,439,992	1,341,961	5,295,045	1,411,497	1,100,151	77,515	2,201,078	149,491	4,939,028	93.27	356,018	263,759	87,648	—262,540
Houston, East & West Texas	190	1,019,804	305,503	1,430,049	634,720	206,560	15,897	649,969	33,867	1,541,015	107,75	—110,965	58,354	—170,959	—324,887
Illinois Central	4,799	46,992,290	12,340,365	65,780,014	11,453,967	17,755,412	585,769	27,910,919	1,479,246	59,706,935	90.77	6,073,078	3,481,890	2,575,919	616,166
Indiana Harbor Belt	120	.....	.....	3,665,566	754,211	754,899	14,615	2,767,434	116,472	4,407,631	120.24	—742,065	64,242	—806,453	—527,902
International & Great Northern	1,159	5,847,454	1,585,901	8,261,699	1,871,537	2,092,877	112,156	4,459,583	280,365	8,841,751	107.02	—580,052	195,003	—778,925	—100,198
Kanawha & Michigan	176	1,860,733	295,299	2,268,486	415,955	951,283	16,449	939,285	79,556	2,402,528	105.90	—134,041	150,000	2,284,045	—259,976
Kansas City, Mexico & Orient	272	581,827	103,450	742,328	264,160	251,162	19,374	397,478	55,489	987,663	133.04	—245,335	46,215	—291,598	79,783
Kansas City, Mexico & Orient of Texas	465	619,095	127,503	821,117	369,438	267,548	18,885	463,715	56,759	1,176,345	143.26	—355,228	38,344	—393,900	44,402
Kansas City Southern	779	6,546,357	1,395,592	8,703,292	1,332,322	1,907,646	173,820	3,331,484	338,832	7,080,323	81.35	1,622,969	397,016	1,224,563	861,418

REVENUES AND EXPENSES OF RAILWAYS.

SIX MONTHS OF CALENDAR YEAR 1920—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of—Way and structures.	Maintenance of—Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Lake Erie & Western	741	$4,274,161	$373,726	$4,982,984	$754,735	$1,750,759	$90,668	$2,251,217	$152,791	$4,998,463	100.31	—$15,478	$240,250	—$256,183	—$14,201
Lake Terminal	12	.....	1,310	610,485	94,272	167,466	.....	424,255	359	686,353	112.43	—75,868	35,211	—111,079	—71,488
Illinois Terminal	24	430,886	.....	455,844	23,341	52,837	4,383	111,103	28,868	220,533	48.38	235,311	6,865	228,436	—30,688
Lehigh & Hudson River	96	1,079,977	21,241	1,187,020	160,503	260,807	19,015	607,564	43,228	1,082,118	91.16	104,902	51,951	52,923	—85,975
Lehigh & New England	229	1,977,868	12,952	2,076,171	266,229	463,920	33,795	770,943	76,578	1,609,298	77.51	466,873	80,932	385,941	126,832
Lehigh Valley	1,435	24,910,411	3,276,567	30,969,441	5,066,419	9,624,620	359,449	18,981,266	719,776	34,887,559	112.65	—3,918,118	1,176,000	—5,095,252	—5,813,143
Long Island	398	2,917,362	6,544,119	10,666,610	1,660,966	2,398,284	83,086	6,443,352	327,131	10,994,340	103.07	—327,730	617,366	—947,250	—2,270,793
Los Angeles & Salt Lake	1,168	5,652,946	2,659,139	9,223,090	1,274,750	1,718,197	136,705	3,259,438	211,520	6,886,414	74.66	2,336,677	465,935	1,869,911	420,603
Louisiana & Arkansas	302	1,623,402	297,680	2,020,588	381,517	274,674	26,788	664,041	46,249	1,391,899	68.88	628,708	101,975	526,619	614,811
Louisiana Ry. & Navigation Co	343	1,597,877	250,018	1,965,815	497,968	347,537	32,619	880,608	67,602	1,826,333	92.90	139,482	84,000	55,400	183,117
Louisiana Western	207	1,705,650	633,206	2,516,632	558,757	454,677	38,627	622,948	79,896	1,770,442	70.34	746,190	120,871	624,700	7,735
Louisville & Nashville	5,040	41,496,634	11,751,668	58,323,051	10,162,515	15,898,948	1,000,021	26,485,891	1,399,842	55,254,348	94.73	3,068,702	1,758,883	1,306,738	—2,419,575
Louisville, Henderson & St. Louis	199	649,889	224,383	955,642	265,898	120,632	18,797	317,092	34,114	756,533	79.16	199,109	28,860	170,205	—74,506
Maine Central	1,216	6,141,388	2,175,138	9,154,932	1,852,988	2,257,071	68,734	5,188,196	255,977	9,630,080	105.19	—475,149	548,449	—1,023,758	—184,442
Maryland, Delaware & Virginia	82	330,416	140,002	500,816	54,269	210,112	3,681	400,226	14,626	682,916	136.36	—182,100	12,000	—194,100	156,597
Michigan Central	1,862	23,917,390	9,844,067	38,384,005	5,259,095	9,922,721	418,856	17,639,418	790,886	34,684,377	90.36	3,699,627	1,486,000	2,209,848	—4,345,994
Mineral Range	101	304,889	1,801	318,789	87,349	112,983	1,768	177,686	6,812	386,598	121.27	—67,809	22,100	—89,909	—39,690
Minneapolis & St. Louis	1,646	5,782,355	1,305,453	7,680,948	1,272,544	2,045,458	100,580	3,922,134	214,106	7,556,934	98.38	124,013	344,679	—221,687	157,678
Minneapolis, St. Paul & SS. Marie	4,243	14,162,787	3,838,952	20,194,488	3,667,661	4,050,824	217,742	9,437,277	553,514	18,058,979	89.42	2,135,509	1,669,959	463,373	1,099,865
Minnesota & International	194	419,355	176,255	642,189	151,994	112,902	3,014	309,073	21,904	598,888	93.25	43,300	31,344	11,953	47,566
Mississippi Central	164	298,365	120,969	459,631	179,516	220,296	11,892	251,001	48,607	711,314	154.75	—251,682	24,615	—276,459	—187,720
Missouri & North Arkansas	364	568,668	250,493	904,346	342,871	203,583	17,198	429,299	48,495	1,041,446	115.16	—137,101	36,053	—173,187	231,732
Missouri, Kansas & Texas	1,715	12,265,609	3,938,187	17,981,947	3,411,700	5,174,353	216,590	6,549,658	602,416	16,055,316	89.29	1,926,631	649,433	1,274,801	236,064
Missouri, Kansas & Texas of Texas	1,758	7,678,888	4,334,753	13,383,548	3,378,649	2,844,600	169,164	7,685,556	518,710	14,743,074	110.16	—1,359,526	357,394	—1,719,495	—2,017,982
Kansas, Oklahoma & Gulf	329	937,807	133,872	1,132,964	269,794	314,760	13,236	599,771	54,821	1,253,560	110.64	—120,596	69,566	—190,327	270,992
Missouri Pacific	7,299	38,101,597	9,789,753	53,575,506	10,463,011	11,862,541	773,708	21,961,940	1,442,638	46,783,118	87.32	6,792,388	1,551,948	5,225,128	3,736,482
Mobile & Ohio	1,091	6,933,708	1,085,926	8,756,786	1,656,586	2,844,587	178,464	4,222,725	284,031	9,191,728	104.96	—434,942	361,608	—796,858	107,574
Monongahela Connecting	7	.....	.....	1,513,167	166,156	217,287	3,360	682,370	38,343	1,107,517	73.19	405,650	107,355	298,294	420,046
Monongahela	108	1,447,826	145,743	1,638,637	657,722	364,003	4,300	640,889	44,845	1,711,762	104.46	—73,124	35,172	—108,296	—462,885
Montour	56	522,397	7,811	551,272	147,156	276,998	6,804	208,734	43,458	696,741	126.38	—145,468	14,332	—159,800	—6,326
Morgan's La. & Texas R. R. & S. S. Co.	400	3,636,982	1,043,937	5,089,137	1,189,118	915,952	65,163	1,613,832	146,894	3,947,046	77.55	1,142,091	244,847	895,228	570,735
Nashville, Chattanooga & St. Louis	1,247	8,196,228	2,485,812	11,795,216	1,785,684	3,112,386	306,362	4,929,073	301,789	10,483,831	88.88	1,311,386	262,000	1,048,033	1,197,470
Nevada Northern	166	845,378	58,822	939,559	163,965	160,119	5,245	247,731	28,361	606,174	64.52	333,384	49,604	283,780	95,536
New Jersey & New York	47	78,120	467,768	592,856	63,374	104,576	8,154	373,041	13,956	563,101	94.97	29,755	13,436	16,306	33,076
New Orleans Great Northern	284	902,286	272,762	1,231,718	261,372	259,996	23,258	504,153	56,135	1,127,555	91.54	124,162	70,697	53,403	99,825
New Orleans, Texas & Mexico	191	893,853	238,697	1,194,901	319,458	227,106	25,020	388,309	47,861	1,007,618	84.32	187,283	70,667	116,532	113,649
New York Central	6,069	91,106,447	41,601,122	159,367,030	24,731,497	42,348,838	1,540,250	80,552,890	4,252,928	156,278,849	98.06	3,088,181	5,894,963	—2,827,711	—18,493,145
New York, Chicago & St. Louis	574	11,219,226	524,532	12,240,636	1,351,625	2,223,785	229,213	5,137,213	393,957	9,367,058	76.48	2,673,578	330,000	2,541,609	30,378
New York, New Haven & Hartford	1,965	24,104,335	22,665,923	55,404,938	8,335,396	13,002,412	297,780	29,074,586	1,872,970	53,639,143	96.81	1,765,795	1,990,000	—233,276	—1,868,909
New York, Ontario & Western	569	3,200,649	938,146	5,095,937	958,830	1,362,532	58,430	2,734,227	155,198	5,269,220	103.40	—173,283	156,382	—329,669	—384,390
New York, Susquehanna & Western	135	1,402,568	360,109	2,017,013	262,151	462,964	15,926	1,521,381	55,135	2,317,552	114.89	—300,539	127,957	—431,498	—348,761
Newburgh & South Shore	7	.....	.....	774,826	85,185	195,802	.....	502,423	26,021	809,431	104.47	—34,605	46,820	—81,425	—176,519
Norfolk & Western	2,201	30,095,207	4,266,449	36,696,998	5,953,976	13,465,702	318,159	16,294,338	893,796	37,086,031	101.06	—389,033	2,270,000	—2,661,541	—7,224,691
Norfolk Southern	911	2,676,427	878,321	3,864,602	804,782	716,874	67,616	1,834,234	161,167	3,585,513	92.77	279,089	98,664	179,680	296,472
Northern Pacific	6,651	35,223,428	9,527,687	50,273,974	11,094,719	9,736,516	447,154	19,709,010	1,255,622	43,042,122	85.61	7,231,853	4,162,999	3,061,772	—2,391,159
Northwestern Pacific	538	1,718,191	1,207,620	3,361,255	676,918	453,987	31,977	1,468,183	91,524	2,737,214	81.43	624,040	153,548	470,033	277,911
Oregon Short Line	2,350	15,150,570	3,525,883	20,758,848	2,232,811	3,260,850	171,562	6,541,032	713,298	13,947,930	67.19	6,810,919	1,557,696	5,252,491	2,158,457
Oregon Washington R. R. & Nav. Co.	2,222	10,682,525	3,465,117	15,793,822	2,479,811	2,752,085	210,714	6,577,977	715,009	12,938,664	81.92	2,855,159	1,052,304	1,802,490	590,456
Panhandle & Santa Fe	773	2,874,772	807,818	3,992,826	923,783	1,370,265	24,443	1,729,003	98,277	4,144,097	103.78	—151,271	122,116	—273,319	392,705
Peoria & Pekin Union	19	163,038	24,007	737,403	96,559	198,954	1,333	474,215	26,893	797,954	85.12	60,551	57,000	117,551	190,675
Pere Marquette	2,230	12,315,070	2,936,784	17,398,467	2,397,322	4,167,125	237,138	8,494,287	596,116	15,954,370	91.69	1,444,097	382,254	1,060,532	—1,562,430
Perkiomen	41	460,627	55,979	554,674	47,114	25,298	85	236,905	1,762	311,296	56.12	243,384	13,794	229,590	9,383
Philadelphia, Bethlehem & New England	10	.....	.....	615,278	97,583	101,153	2,652	446,721	9,296	657,407	106.84	—42,125	6,180	—48,308	68,707
Philadelphia & Reading	1,126	33,572,919	5,048,337	41,281,911	4,293,052	11,444,802	294,928	20,216,068	939,141	37,313,880	90.38	3,968,031	968,450	2,997,221	1,684,487
Pittsburgh & Lake Erie	224	10,380,538	1,406,456	12,855,945	2,674,965	5,859,978	105,552	5,456,828	344,311	14,452,155	112.41	—1,596,210	756,282	—2,352,953	—3,194,430
Pittsburgh & Shawmut	103	727,279	30,956	764,356	149,066	193,390	8,372	292,675	30,771	674,273	88.21	90,083	98,702	89,381	234,387
Pittsburgh & West Virginia	63	751,342	54,734	908,912	265,730	320,992	9,759	383,226	54,673	1,092,959	120.24	—184,047	85,879	—271,513	161,338
Pittsburgh, Shawmut & Northern	209	619,106	38,452	675,833	160,753	323,789	10,873	341,967	50,508	887,915	131.38	—212,082	11,330	—223,920	16,054
Port Reading	21	633,697	.....	841,513	97,826	65,877	116	515,126	11,005	689,951	81.98	151,563	44,779	106,784	306,865
Quincy, Omaha & Kansas City	255	325,344	121,203	521,831	180,280	112,943	1,742	315,074	12,611	622,494	119.29	—100,663	18,762	—119,471	—86,659
Richmond, Fredericksburg & Potomac	117	2,577,787	1,823,195	5,540,288	483,400	889,327	42,086	2,229,513	148,812	3,840,667	69.32	1,691,622	176,270	1,515,178	1,146,180
Rutland R. R.	415	1,435,136	655,734	2,595,251	550,596	759,029	30,141	1,390,350	84,745	2,825,139	108.86	—229,888	111,223	—341,176	266,424
St. Joseph & Grand Island	258	1,169,842	220,246	1,521,147	476,638	253,702	12,383	819,613	76,493	1,651,181	108.54	130,034	69,363	199,434	178,244
St. Louis, Brownsville & Mexico	548	2,178,999	1,041,370	3,496,252	775,994	613,553	59,003	1,289,610	138,566	2,872,225	82.15	624,026	68,890	555,825	306,865
St. Louis Merchants Bridge Terminal	9	.....	2,892	1,778,683	279,099	360,758	4,836	1,315,330	46,101	2,006,125	112.79	227,442	55,881	283,446	196,115
St. Louis San Francisco	4,759	28,633,468	11,245,634	42,523,274	6,380,937	9,459,367	358,274	17,158,138	1,247,667	34,533,082	81.21	7,990,192	1,380,180	6,604,236	1,295,119
St. Louis Southwestern	947	8,149,736	1,019,203	9,704,167	1,318,519	1,760,586	225,871	2,595,996	270,692	6,200,745	63.89	3,503,423	320,489	3,182,793	2,158,120
St. Louis Southwestern of Texas	807	3,169,797	702,711	4,290,893	1,308,803	1,440,320	85,936	2,389,374	184,040	5,406,603	126.00	—1,115,710	146,468	1,262,543	—455,192
St. Louis Transfer	6	.....	.....	648,282	50,782	102,495	1,141	319,884	14,332	488,633	75.37	159,649	1,310	153,339	99,328
San Antonio & Aransas Pass	736	1,346,890	538,500	2,134,900	675,052	584,241	39,559	1,272,748	111,373	2,681,553	125.61	546,652	88,750	635,692	—15,573

Convention of Chief Interchange Car Inspectors and Car Foremen

The annual convention of Chief Interchange Car Inspectors' and Car Foremen's Association will be held at the Windsor Hotel, Montreal, Que., September 14, 15 and 16. In addition to a thorough discussion of the A. R. A. rules and recent changes therein, numerous topics of importance to car men will be treated, among which are the following: Transfer and adjustment of lading under A. R. A. rules for mechanical defects; lubrication of freight and passenger equipment to secure maximum mileage and the elimination of trouble on the road on account of setting the cars out; best methods of repairing cars in train yard to avoid delay in switching cars to the repair track, freight claim prevention and standard methods of examining car inspectors and safety appliance men. The Supply Men's Association will hold an exhibit in connection with the convention. The secretary of the Chief Interchange Car Inspectors' and Car Foremen's Association is J. C. Keene, Wabash Railway, Decatur, Ill., and of the Supply Men's Association, D. B. Wright Paul Dickinson, Inc., Chicago.

Accounting for Pullman Surcharge

The committee on passenger accounts of the Railway Accounting Officers Association held a conference with the accounting representatives of the Pullman Company, at Chicago, August 18-19, 1920, and made the following arrangements for reporting to rail carriers by the Pullman Company of surcharge collections made on and after August 26, 1920:

The Pullman Company will report monthly to each individual rail line its proportion of surcharge collections on a mileage prorate based on the actual mileage traveled by Pullman passengers, this allocation to be made from trip reports (diagrams) received from Pullman conductors covering tickets lifted and cash collections.

The report will be rendered by the Pullman Company and forwarded to rail carriers within sixty days after close of month and settlement for each month's account will be made at the time the monthly reports are rendered.

The accumulation of unrefunded and undistributed surcharge collections (on Pullman tickets which were sold but not honored or redeemed) will, at the close of each year's business, be apportioned to all rail carriers pro rata on the basis of surcharge collections reported during the same year.

Master Blacksmiths Elect Officers

Following the presentation and discussion of technical papers, the International Railroad Master Blacksmiths' Association, in convention at the Hotel Statler, Detroit, Mich., August 17 to 19, inclusive, took up several matters of association business which were not touched on in the report of the convention in the *Railway Age* of August 20, page 330.

The Committee on Amalgamation with the American Railway Association, Section III-Mechanical, appointed subsequent to last year's convention, presented a brief report outlining the probable status of the association should it amalgamate with Section III-Mechanical, and received authorization to conduct the necessary negotiations, with a view to this amalgamation subject to approval at the next convention.

The secretary-treasurer reported a total membership of 245 at the close of the year and 21 new members were received during the convention. The balance in the treasury showed an increase from $141.58 last year to $227.82 this year. In order to continue to meet the increased cost of conducting the affairs of the association, however, the dues for the coming year were increased from $4 to $5 a year.

The following are the officers elected for the coming year: President, Joseph Grine, New York City; first vice-president, George Hutton, New York City, and second vice-president, S. Lewis, Canadian National. W. J. Mayer, Michigan Central, was elected secretary-treasurer to succeed A. L. Woodworth, who asked to be retired following 22 years of continuous service.

Montreal, Que., was unanimously chosen as the place for the next convention, with the provision that the Executive Committee be empowered to make other arrangements should best interests of the association so require.

Traffic News

Applications of the American Railway Express Company and twelve electric and short line railroads operating in Minnesota, for increased freight rates, will come before the Minnesota Railroad and Warehouse Commission for hearing on August 26 and 27.

Representatives of 24 of the largest finishing plants in New England cotton freight claim bureau of the Arkwright Club Piece Goods Traffic Association of New England. Quarters for the new association have been obtained at Providence, R. I. and Henry M. Tarr, for many years agent of the New England cotton freight claim burea uof the Arkwright Club of Boston, has assumed charge as traffic manager.

Assistance of the Interstate Commerce Commission to enable it to secure bunker coal for government merchant craft at reasonable prices was asked on August 20 by Chairman Benson of the Shipping Board, who conferred with Commissioners Clark, Aitchison and Potter. He said the government is now paying $18 to $20 a ton for coal at Atlantic and Gulf ports and that assignment of cars for bunker coal would enable the board to reduce its fuel bill greatly.

The number of revenue ton-miles of freight handled by the railroads during March, 1920, was 32,989,096,000, as compared with 25,706,187,000 in March, 1919, according to a summary of traffic statistics issued by the Interstate Commerce Commission. The average haul of freight per railroad was 193.38 miles, as compared with 185.48. The revenue per ton mile was .981 cents, as compared with .991 cents in March, 1919. The number of revenue passengers carried one mile was 3,529,902,000, as compared with 3,443,856,000 in March, 1919. The average miles per revenue passenger per railroad was 33.60, as compared with 36.12, and the average revenue per passenger mile was 2.612 cents, as compared with 2.562.

The Southern Pacific has reinstated the rule cancelled by the United States Railroad Administration regarding the refunding of fares of caretakers sent out to return with shipments of live stock. The reinstated rule is applicable only to the Pacific Coast lines. Middle western and eastern lines allow free transportation only on caretakers accompanying live stock and returning to points of origin. In the Middle West and East livestock is shipped to stock yards or market points and there sold, the caretakers returning to shipping points. In the absence of such stock yards on the Pacific Coast, except at Portland, Ore., it is necessary for dealers to send buyers to the country and take delivery either on the spot or at the railroad point of shipment and then return as caretakers with their livestock. The refunding of fares of caretakers sent out after livestock will place livestock dealers on the Pacific Coast in a position to buy stock in competition with the movement to middle western and eastern territories.

As briefly noted in last week's issue, the Interstate Commerce Commission on August 18 suspended provisions in a tariff, filed on behalf of the roads generally, by J. E. Fairbanks, which proposed to impose a penalty storage charge of $10 per day on all cars loaded with coal or coke not released within the free time. The tariff was filed by the roads in accordance with a special permission order issued by the commission, after a conference with representatives of the railroads and of the shippers, but the item referred to was suspended at the request of a committee of the National Industrial Traffic League, on the ground that it would apply to all open-top cars. The committee had first taken up the matter with Daniel Willard, chairman of the Advisory Committee of the Association of Railway Executives, who is understood to have co-operated with the shippers in getting the suspension, and a further meeting of the two committees was to be held in New York on August 26 to arrange for a substitute for the suspended provision.

A temporary injunction preventing the attorney general of the state of Illinois from enforcing the two cent a mile passenger rate

law, when the roads emerge from government rule on September 1, was granted by the federal court at Chicago on August 24. The attorneys for the railroads operating in the State argued that the act of Congress placing the roads under government control invalidated the law fixing the passenger rates within the state at not more than two cents a mile. The attorneys for the State held that the law was not repealed by the railroad acts of Congress and that even though 18 states had not opposed the increase, none of these states had an intrastate rate law such as in Illinois.

The contest will come up for further hearing on September 8, the date set by the Interstate Commerce Commission for the hearing of the applications of Illinois roads to increase their freight and passenger rates in accordance with the rate recently allowed by the commission. In the meantime passenger rates in Illinois will advance to 3.6 cents a mile on September 1.

No Increase in Passenger Fares in New York

The Public Service Commission (second district), of New York, on August 19 announced its decision approving an increase of 40 per cent in freight rates in New York state, but denying the applications of the carriers for an increase of 20 per cent in passenger fares, or of 20 per cent on milk. As to passenger fares the commission decided that it would have to be governed by the statutes limiting the passenger fares to 3 cents a mile on the railroads in New York except between Albany and Buffalo, on the New York Central, where the statutes require a rate of 2 cents a mile.

"There is no express authority given to the commission," says the decision, "to grant rates in excess of those authorized by statute except under Section 49, which has to do only with rates insufficient in themselves. We should not in the absence of legislative authority arrogate to the commission power to authorize a rate in excess of the statutory maximum merely to enforce a recent act of Congress which contains within itself a special remedy."

As to rates on milk and cream, the decision reads as follows:

"In so far as the petition asks an increase of 20 per cent in rates on fluid milk, cream, and articles taking the same rates, the Interstate Commerce Commission treated this traffic on the same basis as it treated the passenger rate, because milk and cream are usually carried in passenger trains. It may be that in this State the great bulk of milk and cream is carried in a special milk train, but their equipment and movement harmonize more closely with passenger operation than with freight operation. Fluid milk, cream and articles taking the same rates, should therefore be excepted from the operation of this order."

The Public Service Commission for the First District on August 20 announced a decision giving the same results.

Coal Production

Production of soft coal during the week of August 4 rose to the highest point attained in any week since last January, according to the weekly bulletin of the Geological Survey. Preliminary estimates place the total output at 11,728,000 net tons, an increase over the last week before the strike of 848,000 tons, or 8 per cent. Whether this rate can be long sustained, remains to be seen, the bulletin says, because one element in the improvement was undoubtedly the accumulation of empty cars during the strike. Telegraphic reports from the principal coal-carrying roads indicate that loadings on Monday and Tuesday of the following week were slightly less than on the corresponding days of the week before. Production during the first 193 days of the year show a decrease of 16½ million tons, as compared with 1917, and of 38 million tons as compared with 1918, but an increase of 48¼ million tons as compared with 1919.

For the week ending August 7, when many mines were still closed by the strike, the loss of full-time output attributed to labor was 19.5 per cent, and that attributed to transportation was only 18.8 per cent. The week was marked by a widespread improvement in car supply in districts remote from the strike area, which, the bulletin says, must have been in part attributable to the accumulation of empty cars, but the reports indicate also that the carriers had made progress in clearing up the congestion of transportation which has been the primary cause of the reduced production of coal in recent months.

Dumpings at Lake Erie ports for the week of August 14 were the largest of the present season. The total lake movement since the opening of navigation now stands at 8,641,000 tons, as against 14,300,000 in 1918 and 15,000,000 in 1919. Loadings for lake destinations during the third week of the Interstate Commerce Commission's service order exceeded the quota, but the cumulative movement was still 8,171 cars, or 12 per cent, behind schedule. Tidewater shipments declined slightly. Dumpings at Hampton Roads indicate a decline in the tonnage handled for New England account and a slight increase in the quantity exported. Shipments to New England under the commission's service order were 84 per cent of the program for the first two weeks of the order. Rail shipments to New England declined.

Express Company Asks Further Increases in Rates

The American Railway Express Company has filed with the Interstate Commerce Commission a supplementary application alleging that the increased express rates authorized by the commission on August 11 are insufficient by reason of the increases in wages made necessary by reason of the recent awards of the United States Railroad Labor Board. The commission's finding in that decision did not take into consideration increases in operating expenses due to the wage award. The application was assigned for further hearing concerning the propriety and the lawfulness of the rates now proposed on August 27, at Washington, before Examiner Barclay. The commission in the original case allowed an increase of 12.5 per cent, estimated at about $36,000,000 a year, and the company states that an additional increase of 15 per cent is necessary to pay the wage increases.

Rates Readjusted to Promote Lake Movement of Grain

A readjustment of the ex-lake grain rates to promote the movement of grain from the northwest via the lakes and thus relieve the rail lines, which has been the subject of conferences between the Interstate Commerce Commission, the railroads and the grain shippers, was announced by the commission on August 25 as follows:

"In the hope of stimulating a movement of bulk grain from Lake Superior and Lake Michigan ports to Lake Erie ports for movement by rail beyond to the Atlantic seaboard territory, both for export and for domestic use, and thus relieving congestion on the all-rail lines between Chicago and the Atlantic seaboard, releasing cars at the western lake ports for return to the grain fields, and reducing the long haul of empty cars from the seaboard to the west, the commission suggested to the trunk line carriers from the Lake Erie ports to the seaboard the advisability of promptly readjusting the ex-lake rates on grain in bulk from Buffalo, Erie and Fairport by applying to those rates lower percentages of increase than were authorized by the commission in Ex Parte No. 74, *Increased Rates*, 1920. This suggestion was cheerfully accepted by these carriers and the commission has issued special permission authorizing the adjustment of those rates on one day's notice. These rates will be readjusted on the bases of 30 per cent increase in the domestic rates and 25 per cent in the export rates instead of the 40 per cent authorized in Ex Parte 74. The increases will be computed by deducting the elevation charge which is included in the rate, increasing the net rate by the percentage named, and adding back the elevation charge. These rates will be made effective not later than September 1 and will be published to expire at midnight February 28, 1921.

"It should be understood that these concessions are made by these carriers solely for the reasons which prompted the commission to make the suggestion, and are not to be considered as a precedent in or as prejudicing any future adjustment of these rates. Under this readjustment the lake-and-rail rates will be about 3 cents per 100 pounds lower than the all-rail rates based upon the present costs of lake transportation, marine insurance, etc. It is to be hoped that this readjustment will induce a large movement of grain over these routes. If that result is attained, it will effect a substantial contribution to the number of cars available for moving grain in the grain belt states."

Commission and Court News

Interstate Commerce Commission

The Interstate Commerce Commission has made public the tentative report of Examiner F. H. Barclay in the express classification case recommending with certain modifications the proposed changes in the official express classification proposed by the American Railway Express Company.

The Interstate Commerce Commission has suspended, from August 25 to December 23, a proposed rule providing that rates to and from Galveston, Tex., will include absorption of terminal charges only to the extent authorized in Texas Lines Tariff 21-C, and that any terminal charges, lawfully on file with the Interstate Commerce Commission in excess thereof, will be in addition to the rates.

Increased Minimum Weights on Grain and Grain Products

On March 17, the Interstate Commerce Commission issued Special Permission No. 49801 authorizing carriers generally throughout the United States to file with the commission special supplements establishing certain increased carload minimum weights on grain and grain products, and rules and regulations applicable thereto, to expire with August 31. Information in the possession of the commission indicates that the emergency that justified the establishment of the increased minimum weights still exists, but that certain changes and modifications should be made to meet present conditions. It has therefore issued a new order, authorizing all carriers to publish and file on one day's notice special supplements to their tariffs establishing increased minimum weights on grain and grain products, and rules and regulations applicable thereto, in part as follows:

Grain, all kinds, minimum weight marked capacity of car, except where marked capacity is less than 40,000 pounds, in which case minimum weight will be 40,000 pounds per car.

Note: When grain is loaded at point of origin to within 24 inches of roof, at side walls of car, for the purpose of federal or state inspection, or for inspection by grain exchange at points where federal inspection is maintained (notation to that effect being inserted in the bill of lading by shippers) or when grain is loaded to proper grain line of cars so marked, actual weight will apply.

Grain Products in straight or mixed carloads, or in mixed carloads with other articles when tariffs provide that the grain, grain product or grain by-product (flour, meal, etc.) commodity rates apply on such mixtures: Minimum weight 48,000 pounds per car (see notes 1, 2, 3 and 4.)

Note 1: When marked capacity of car is less than 48,000 pounds, the marked capacity, but not less than 40,000 pounds per car, will apply.

Note 2: When the car is loaded to full space capacity, actual weight will apply.

Note 3: Actual weight will apply upon molasses feeds or other stock feeds having liquid sweetening ingredients (not medicated or condimental) when cars are loaded at point of origin to within 24 inches of the roof at the side walls.

Note 4: On grain and grain products handled under transit arrangements the minimum weight from transit point will be the same as the minimum weight into the transit point, except, when a car of less capacity is furnished at transit point, in which case the minimum weight as applicable to such car of less capacity, will apply, or where the shipment from transit point consists of grain products, the minimum weight on such grain products from transit point will be the same as provided on grain products into the transit point.

The order provides that the minimum weights, rules and regulations authorized shall expire with close of business December 31, 1920, and that effective January 1, 1921, there shall be restored the minimum weights and rules and regulations applicable thereto in effect November 2, 1919.

Foreign Railway News

Major Viscount Stopford of Ireland and formerly of the South African Government Office, and E. H. Bellman, office manager of Baldwin Locomotive Works, London, are sailing from England on September 16 for a two months' visit to America on the invitation of S. M. Vauclain, president of the Baldwin Locomotive Works. These gentlemen are coming to the United States for the purpose of studying the conditions prevailing here.

English Freight Rates to Be Increased

Sir Eric Geddes, Minister of Transport for Great Britain, has announced that the increase for the rates on English roads will be in operation on September 1.

Superheaters for Belgian Locomotives

The Locomotive Superheater Company has received orders for 92 superheater equipments to be applied to seventy-five 4-6-0 locomotives and seventeen 2-10-0 locomotives to be built by twelve different locomotive builders in Belgium.

German Railway Men Ask for Increases

The latest demand for increase in wages by the railway officers and workers in general in Germany is calculated to create an additional expense of from 2,500,000,000 Mks. to 3,000,000,000 Mks, or from $600,000,000 to $750,000,000 at the normal rate of exchange.

Russian Soviets in Market for Locomotives

LONDON, Eng.

The Russian Soviet Government has sent Messrs. Krassin and Ivitsky to London to negotiate for the purchase of locomotives. Mr. Krassin is a representative of the Soviet Government and Mr. Ivitsky is the engineer in charge of design. It is reported that Russia needs 5,000 locomotives, but these gentlemen are negotiating for the purchase of from 200 to 300. As this is written the Poland crisis has held up all negotiations.

English Excursion Trains

AUGUST 12, 1920.

The Great Eastern Railway was the first to inaugurate special excursion trains since the increase in passenger fares. These special trains leave in the morning and return in the evening at rates of approximately one way 3rd class fare for the round trip. The London, Brighton & South Coast and the South Eastern & Chatham are arranging to run excursion trains in the near future. These trains will run during the middle of the week only.

Strike of Mechanics on Great Western Railway

LONDON.

The London Times of August 6 reports a strike on the Great Western Railway of over 360 skilled mechanics, the centers affected being Gloucester, Exeter, South Wales, Swindon, Bristol, Birkenhead, Chester, Shrewsbury, Worcester and Wolverhampton The trouble arose in South Wales, where the men refused to work overtime. A demand was made of £5, or approximately $25, a week, which was increased to £6, or approximately $30, when it went to arbitration before an Industrial Court. The average rate of pay at present is stated to average £4 and 15 shillings (approximately $23.75). The Industrial Court decided that the demand for the increase had not been made out, and, dissatisfied with this decision, the men struck.

The coal traffic in South Wales has been affected through the large number of locomotives being held up in the "running" shed for small repairs, the work on which the strikers are employed, and it is believed that if the stoppage continues passenger service also will be interrupted.

Trade Commissioner to China

Frank Rhea, who as trade commissioner for the Bureau of Foreign and Domestic Commerce investigated the markets for American railway supplies in Australia and New Zealand and in China, Japan, etc., is about to return to China in the capacity of industrial trade commissioner. His purpose will be to study and follow industrial development, transportation, and especially to investigate the feasibility of the investment of American capital in public and semi-public enterprises in China.

Mr. Rhea's nominal headquarters will be in Peking, but he expects to spend undoubtedly the better share of his time in Shanghai because of the importance of the latter city as a trade and commercial center. His address in China will be in care of the American Consulate at Shanghai, which will enable communications to be sent him through the American post office at Shanghai to which domestic mail rates apply.

Exports of Locomotives in June

The exports of steam locomotives in June totaled 163, valued at $4,284,348. The larger portion of these was shipped to Belgium. The detailed figures compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

EXPORTS OF STEAM LOCOMOTIVES

Countries	Number	Dollars
Belgium	49	2,653,500
France	61	858,000
Sweden	1	18,992
Canada	12	114,417
Honduras	5	14,056
Mexico	15	204,550
Newfoundland and Labrador	1	19,290
Cuba	8	186,535
Dominican Republic	2	36,800
Colombia	4	56,442
British Guiana	1	22,700
Dutch East Indies	2	16,466
Australia	2	82,600
Total	163	4,284,348

Exports of Railway Track Material in June

Exports of steel rails in June totaled 49,260 tons, valued at $3,080,619. Exports of spikes totaled 3,651,759 lb., valued at $165,649, and of switches, frogs, splice bars, etc., $556,959. The detailed figures compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

EXPORTS OF RAILWAY TRACK MATERIAL

Countries	Spikes		Steel Rails		Switches, Frogs, Splice Bars, etc.
	Pounds	Dollars	Tons	Dollars	Dollars
Bulgaria	.....	.....	.....	.....	892
France	.....	.....	400	32,437	.....
Netherlands	.....	.....	28	1,600	.....
Norway	.....	.....	.....	.....	1,158
Portugal	.....	.....	212	14,424	.....
Spain	.....	.....	.....	.....	232
England	.....	.....	.....	.....	11,738
Scotland	.....	.....	150	5,812	.....
Ireland	.....	.....	179	11,449	.....
Canada	59,901	3,558	2,360	126,694	40,332
Costa Rica	10,000	480	294	18,425	2,549
Guatemala	10,000	535	.....	.....	602
Honduras	158,200	7,265	1,347	75,783	1,448
Nicaragua	1,000	70	91	5,400	3,088
Panama	33,744	1,366	.....	.....	1,806
Salvador	30,600	1,759	.....	.....	.....
Mexico	56,494	4,363	491	31,447	13,170
Newfoundland and Labrador	.....	.....	.....	.....	36
Jamaica	160	15	138	6,742	1,886
Cuba	1,060,087	40,453	11,036	590,077	132,160
Dominican Republic	82,350	5,558	228	15,081	20,263
Argentina	76,750	4,295	475	29,352	1,338
Brazil	151,323	7,871	524	33,113	8,806
Chile	.....	.....	1,814	123,440	151
Colombia	2,800	220	22	1,010	173
Ecuador	7,218	517	137	9,406	59
British Guiana	21,800	970	304	19,380	901
Dutch Guiana	20,000	1,125	252	16,065	901
Paraguay	.....	.....	128	7,900	1,500
Peru	199,512	8,597	894	52,534	8,240
Uruguay	25,600	978	265	19,848	.....
Venezuela	4,300	232	65	3,645	207
China	114,028	5,127	237	16,349	5,276
British India	.....	.....	100	4,891	180
Straits Settlements	.....	.....	.....	.....	42
Dutch East Indies	.....	.....	1,479	80,040	82,623
Japan	1,349,676	61,916	22,498	1,539,242	149,058
Australia	.....	.....	.....	.....	11,994
New Zealand	.....	.....	.....	.....	500
Philippine Islands	169,016	7,987	2,206	112,346	9,654
British South Africa	.....	.....	1,266	76,678	43,996
Portuguese Africa	7,200	392	.....	.....	.....
Total	3,651,759	165,649	49,620	3,080,619	556,959

Equipment and Supplies

Locomotives

THE PARIS ORLEANS is inquiring for 50, 2-8-2 type locomotives.

THE NEW ZEALAND GOVERNMENT RAILWAYS are in the market for 25, 4-6-2 type locomotives.

THE UNITED FRUIT COMPANY has ordered 5, 4-wheel plantation locomotives from the Bell Locomotive Works, Inc.

THE PAMPANGA SUGAR MILLS, Philippine Islands, has ordered 1 plantation locomotive from the Bell Locomotive Works, Inc.

THE FAJARDO SUGAR COMPANY, Porto Rico, has ordered 1 plantation locomotive from the Bell Locomotive Works, Inc.

THE PAMPANGA SUGAR DEVELOPMENT COMPANY, Philippine Islands, has ordered 4, 4-wheel plantation locomotives from the Bell Locomotive Works, Inc.

THE ERIE RAILROAD, reported in the *Railway Age* of July 23 as about to enter the market for 75 locomotievs, is now inquiring for 35 Mikado type locomotives.

THE NATIONAL RAILWAYS OF MEXICO, Mexican Government Administration, Woolworth building, New York, are in the market for 10 or more Consolidation type locomotives.

THE NEW YORK, CHICAGO & ST. LOUIS, reported in the *Railway Age* of July 16, as being in the market for 5 Mikado type locomotives has given an order to the Lima Locomotive Works for 6 Mikado type locomotives.

MITSUI & CO., 65 Broadway, New York, is in the market for 3 Consolidation type locomotives for the Shantung Railway, China. This firm has also been in the market for some time for 3 Pacific type locomotives for the same road.

Freight Cars

THE SEABOARD LINE is inquiring for 300 phosphate cars.

THE ILLINOIS STEEL COMPANY, Chicago, is inquiring for 20 tank cars.

THE SEABOARD AIR LINE is inquiring for 350 flat cars of 40 tons capacity.

THE FLORIDA EAST COAST is inquiring for 10 tank cars of about 50 tons capacity.

THE GULF COAST LINE is inquiring for 500 box, 400 gondola and 50 tank cars.

THE ARMS PALACE HORSE CAR COMPANY, Chicago, is inquiring for 25 horse cars.

THE LIBERTY STEEL PRODUCTS COMPANY, New York, is inquiring for 10 tank cars.

THE BROWN COMPANY, Berlin, N. H., is inquiring for 200 rack cars of 40 tons capacity.

FOX BROTHERS & COMPANY, 126 Lafayette street, New York, is inquiring for 200 cane cars.

THE MCMYLER INTERSTATE COMPANY, Cleveland, Ohio, is inquiring for 50 trucks of 50 tons capacity.

THE AMERICAN TRADING COMPANY, New York, is inquiring for 40 flat cars of 30 tons capacity for export to Cuba.

THE EASTERN CAR COMPANY, LTD., New Glasgow, N. S., is preparing estimates on 2,500 cars for export to New Zealand.

THE GREY STEEL PRODUCTS COMPANY, 111 Broadway, New York, is inquiring for 250 tanks cars of from 6,000 to 8,000-gal. capacity.

The Denver & Rio Grande is inquiring for from 250 to 500 general service gondola cars, also for 250 to 500, 40-ton double sheathed box cars.

The World Wide Trading Company, Inc., 212 Fulton street, New York, is in the market for 30 cane cars, with iron frames, of 20 tons' capacity.

The National Tube Company, reported in the *Railway Age* of July 9 as inquiring for 300, 70-ton hopper cars, has withdrawn its inquiry for these cars.

The Egyptian State Railways, reported in the *Railway Age* of July 2 as being in the market for 50 tank cars, have ordered this equipment from British builders.

The National Railways of Mexico, Mexican Government Administration, Woolworth building, New York, are in the market for 50 tank cars of 12,000-gal. capacity and 100 box cars of 50-tons capacity.

Passenger Cars

The Chicago & North Western is inquiring for 2, 60 ft. postal cars.

The North Western Railway of Brazil is inquiring for 10 first-class passenger coaches.

Takata & Company, 50 Church street, New York, are inquirfor 20 passenger cars for the Shantung Railway.

Mitsui & Co., 65 Broadway, New York, is in the market for 20 bogie trucks for passenger car equipment to be used on the Tokyo Municipal Railways.

The National Railways of Mexico, Mexican Government Administration, Woolworth building, New York, are in the market for 25 first-class coaches.

The Pennsylvania Equipment Company, 1420 Chestnut street, Philadelphia, Pa., is in the market for a second-hand steel underframe palace stock car, for shipping show horses.

The Pennsylvania Equipment Company, 1420 Chestnut street, Philadelphia, Pa., is in the market for a combination passenger and baggage car about 70 feet long, with steel underframe.

The W. E. Stewart Land Company, 2049 Main street, Kansas City, Mo., wants 15 or 20 Pullman-kitchen or straight sleeping cars, of 12 to 16 sections, 60 or 70 ft. in length, of approximately 80,000 lb. capacity and with 6-wheel trucks.

Iron and Steel

The Industrial Materials Company, 132 Nassau street, New York, is in the market for 8,000 tons of 70 lb. rail for export to Scandinavia.

Signaling

The Canadian Pacific has ordered from the Union Switch & Signal Company a Saxby & Farmer interlocking machine, 24 working levers, for installation at Donan, Manitoba.

Miscellaneous

Dutilh-Smith, McMillan & Co., Inc., New York, export agents of the Chicago Railway Equipment Company, has ordered 100 brake beams for the South Manchuria Railway.

Dutilh-Smith, McMillan & Co., Inc., New York, has ordered from the National Malleable Castings Company 180 pairs of Sharon couplers and 24 pairs of Tower couplers for shipment to the Central Railroad of Brazil. This company has also been getting prices on a large number of machine tools for shipment to South America.

Supply Trade News

R. E. Hollowell has been elected treasurer of the **Arms Palace Horse Car Company,** Chicago.

The National Industrial Conference Board announces that on and after August 23, 1920, its headquarters (now in Boston), will be located at 10 East 39th street, New York.

William S. Noble has been appointed manager of the railroad department of the **Standard Paint Company,** with offices in the Woolworth building, New York, and Plymouth building, Chicago.

The Mono Corporation of America announces the removal of its main office from Buffalo, N. Y., to 25 West Broadway, New York City, where a complete line of the automatic continuously recording gas analyzing instruments manufactured by this corporation will be displayed.

Captain George B. Malone, who formerly served with the United States Army Engineers and later was general manager of the **K-G Welding & Cutting Company,** 556 West Thirty-fourth street, New York, has recently been placed in charge of its Philadelphia (Pa.) office at 929 Chestnut street.

The Rogatchoff Company, 205 Water street, Baltimore, Md., has recently been incorporated under the laws of Maryland, with a capital of $50,000, to manufacture adjustable crossheads for locomotives. **A. E. Davis** is president, **Theodore Rogatchoff** is vice-president and **H. V. Baker,** secretary and treasurer.

William N. Thornburgh, Incorporated, and the Drexel Sash & Door Company, Chicago, have been consolidated and are now known as the W. N. Thornburgh Manufacturing Company, manufacturers of Thornburgh dust guards. The new plant and offices are located at Fiftieth avenue and Thirty-second street, Cicero, Ill.

W. Woodward Williams, vice-president of the Reading Iron Company, Reading, Pa., has resigned, effective September 1, to become assistant to the president of the **Pittsburgh Gage & Supply Company,** Pittsburgh, Pa. This company is a large jobber of mill, mine and railway supplies. A portrait of Mr. Williams and a sketch of his career were published in the *Railway Age* of October 13, 1919 (page 899).

Walter Rautenstrauch, professor of mechanical engineering at Columbia University for the past 14 years, has been elected vice-president of the **J. G. White Management Corporation** in charge of its industrial department, with office at New York, and in addition will continue to hold his professorship at Columbia. He was formerly assistant professor of machine design at Cornell University, and during his residence in New York has acted as consulting engineer for a number of corporations and designed a large number of machines for improving manufacturing processes. He reorganized methods of operation in a number of plants in this territory and also acted as general manager and director in manufacturing corporations, having supervision of finance, operation, manufacturing methods and general business procedure. His appointment as vice-president of the J. G. White Management Corporation places him in charge of all the industrial problems handled by this concern. This corporation is an extensive operator of properties in the United States and also in foreign countries and is closely associated with the J. G. White Engineering Corporation, which has carried on extensive construction work in railways, power plants, industrial properties, water works, hydro-electric development of all sorts in this country and abroad. Professor Rautenstrauch is the author of a number of books and of articles published in technical journals; he is a member of the National Research Council, American Society of Mechanical Engineers, American Society of Refrigerating Engineers, American Academy of Political and Social Science, Franklin Institute, etc.

Railway Financial News

Boston & Maine.—Judge Edgar Aldrich, of the United States District Court at Concord, N. H., has denied the petition of Edward F. Brown and other minority stockholders for an injunction against this railroad and the appointment of a temporary receiver. The petition for a permanent receiver is left pending.

Chicago, St. Paul, Minneapolis & Omaha.—This company has applied to the Interstate Commerce Commission for authority to sell or pledge as collateral $770,000 of its equipment trust certificates, Series A, of 1917, now in its treasury, and to issue additional certificates, Series B, under the same trust as amended June 1, 1920, to the amount of $950,000, for the purchase of 6 Mikado freight locomotives, 4 switching locomotives, and 125 stock cars, having a total estimated value of $962,800.

Detroit, Toledo & Ironton.—Leon Tanenbaum and Benjamin M. Strauss, minority stockholders of this company, have brought suit in the Supreme Court against Henry Ford, Edsel Ford and the directors of this railroad to prevent the execution of the lease of the line to a holding company for 75 years. The plaintiffs allege that the diversion of profits through the terms of the lease would render the stock worthless to the minority stockholders.

Louisiana & Arkansas.—The Interstate Commerce Commission has authorized this company to issue equipment trust notes to the amount of $220,000, maturing serially in from six months to five years, at 6 per cent, for the purpose of purchasing four 10-wheel locomotives, one 100-ton steam wrecking crane, one Jordan spreader, one 6-ton locomotive crane and two steel passenger coaches.

New York Central.—The Interstate Commerce Commission has ordered a hearing, before Director W. A. Colston, of its Bureau of Finance, at Washington, D. C., on August 30, on this company's application for authority to issue the $25,000,000 10-year 7 per cent collateral trust gold bonds, and $25,000,000 6 per cent refunding and improvement mortgage bonds to be deposited as collateral for the 7 per cent bonds. The company's application was dated August 19, the day before the bonds were sold subject to the commission's approval. Notice of the filing of the application and of the hearing has been given to the governors of the states traversed by the company's lines, in accordance with the provisions of the transportation act.

Pittsburgh & Lake Erie.—The Interstate Commerce Commission has granted this company's application for authority to issue promissory notes to the amount of $2,125,000. These consist of one for $625,000 to the Western Transit Company; seven notes for $100,000 and one for $50,000 to the Union Trust Company of Pittsburgh; and five notes for $100,000, four for $50,000, and two for $25,000 to the Union Trust Company of Pittsburgh.

The Pittsburgh & Lake Erie has also been authorized to issue a promissory note for $500,000, payable to the Farmers' Loan & Trust Company, secured by $500,000 of Liberty Loan bonds, in order to renew for the seventh time a note issued by the applicant October 24, 1918, and also a promissory note for $425,000, payable to the Union Trust Company of Pittsburgh, secured by $500,000 Liberty Loan bonds, in order to renew with curtailment for the seventh time note for $500,000 issued October 24, 1918.

Terminal Railroad Association of St. Louis.—The Missouri Pacific, the Missouri, Kansas & Texas, the St. Louis-San Francisco, and the Chicago, Rock Island & Pacific filed a request in the United States District Court at St. Louis, Mo., on August 12, for the appointment of a receiver for the Terminal Railroad Association of St. Louis, alleging that the reorganization of the terminal company, ordered by the United States Supreme Court on April 22, 1912, had not been carried out.

It is not too much to say that the state commissions are about to disappear from the field of rate-making.—*The Wall Street Journal.*

Railway Officers

Executive

John A. Fenno, treasurer and superintendent of the Boston, Revere Beach & Lynn, has been elected president, succeeding M. O. Adams, deceased, and **Karl Adams** has been appointed to succeed Mr. Fenno.

Financial, Legal and Accounting

G. W. McElwain has been appointed assistant auditor of passenger accounts on the Southern Pacific and **A. L. Wilson** has been appointed assistant auditor of disbursement accounts, effective July 1.

William O'Brien, assistant auditor of the Indiana Harbor Belt, with headquarters at Gibson, Ind., has been appointed auditor, succeeding W. E. Osborn, resigned; **F. G. Middleton** has been appointed to succeed Mr. O'Brien as assistant auditor.

Operating

E. W. Morrison, formerly superintendent of the Beloit division of the Chicago, Milwaukee & St. Paul, has resigned from railroad service.

E. B. Rock, Jr., has been appointed assistant to the general manager of the Gulf & Ship Island, with headquarters at Gulfport, Miss., effective September 1.

Andrew J. Farrell, who has been appointed superintendent of the Shamokin division of the Philadelphia & Reading, with headquarters at Tamaqua, Pa., as noted in the *Railway Age* of July 30 (page 209), served as trainmaster previous to this promotion. Mr. Farrell was born on September 5, 1870, at Ashland, Pa. He was educated in public schools and began railroad work in October, 1883, as a messenger for the Philadelphia & Reading, to which road he has given his entire railroad service. In 1884 he became a telegraph operator and served in that capacity until February 1, 1889, when he was appointed train despatcher. He was promoted to assistant trainmaster on December 23, 1897, and retained that position until January 28, 1918, when he was appointed trainmaster.



A. J. Farrell

H. A. Connett, chief train despatcher on the Union Pacific, with headquarters at Evanston, Wyo., has been appointed trainmaster of the first sub-division branches, with headquarters at Omaha, Neb., effective August 15.

E. L. Magers, superintendent of terminals of the St. Louis-San Francisco, with headquarters at Birmingham, Ala., has been transferred to Springfield, Mo., effective August 20, succeeding **J. T. L. Brooks,** who has been assigned to other duties. **E. M. Mohler** succeeds Mr. Magers.

S. A. Covington, acting general superintendent of the Fort Worth & Denver City and the Wichita Valley, with headquarters at Fort Worth, Tex., has been appointed general superintendent, with the same headquarters; **T. F. Durkin,**

assistant superintendent of the 3rd division of the Denver & Rio Grande, with headquarters at Gunnison, Col., has been appointed inspector of transportation, with headquarters at Fort Worth. Both appointments became effective August 16.

J. H. Aydelott, superintendent of the Casper division on the Chicago, Burlington & Quincy, with headquarters at Casper, Wyo., has been promoted to assistant superintendent of transportation, with headquarters at Chicago, effective August 12. **J. C. Grisinger,** superintendent of the Sterling division, with headquarters at Sterling, Colo., has been transferred to succeed Mr. Aydelott and **C. C. Holtorf,** superintendent of the Wymore division, with headquarters at Wymore, Neb., succeeds Mr. Grisinger. **M. F. McLaren** succeeds Mr. Holtorf.

H. B. Grimshaw, general superintendent of the southern district of the Seaboard Air Line, with headquarters at Savannah, Ga., has been appointed assistant general manager in charge of fuel efficiency, with headquarters at Portsmouth, Va.; **H. W. Purvis,** superintendent of the South Carolina division, with headquarters at Jacksonville, Fla., has been appointed general superintendent, succeeding Mr. Grimshaw; **G. L. Hurley,** superintendent of the Alabama division, with headquarters at Savannah, Ga., has been transferred to succeed Mr. Purvis; **E. C. Bagwell,** superintendent of the East Carolina division, with headquarters at Charleston, S. C., has been transferred to succeed Mr. Hurley; **E. T. Gibson,** assistant superintendent of the North Carolina division, with headquarters at Hamlet, N. C., has been appointed to succeed Mr. Bagwell; **W. G. Jones,** trainmaster of the North Carolina division, with headquarters at Raleigh, N. C., has been appointed to succeed Mr. Gibson; **C. L. Sauls,** trainmaster of the Georgia division, with headquarters at Abbeville, S. C., has been transferred, succeeding Mr. Jones; **M. H. Gold,** trainmaster of the East Carolina division, with headquarters at Andrews, S. C., has been transferred to succeed Mr. Sauls; **J. P. Carter** has been appointed trainmaster to succeed Mr. Gold; **T. A. Norris,** chief despatcher of the Virginia division, with headquarters at Raleigh, N. C., has been appointed trainmaster, succeeding B. G. Roberts, assigned to other duties; **W. G. Guess,** assistant chief despatcher at Raleigh, has been appointed Mr. Norris's successor, and **W. C. Kirby** has been appointed terminal trainmaster at Jacksonville, Fla., succeeding R. A. Champlin, assigned to other duties. These changes became effective August 15.

Traffic

P. Mooney, assistant general freight agent of the Canadian National with headquarters at Quebec, Can., will act as general agent in the freight department of the Grand Trunk, effective August 10.

Mechanical

C. G. Juneau, acting master car builder of the Chicago, Milwaukee & St. Paul, has been appointed master car builder, with headquarters at Milwaukee, Wis., effective August 1.

C. M. Jacobson, shop superintendent of the Seaboard Air Line, with headquarters at Jacksonville, Fla., has been transferred to Portsmouth, Va., succeeding B. E. Greenwood, assigned to other duties; **F. W. Knott,** master mechanic of the Alabama division, with headquarters at Savannah, Ga., has been appointed shop superintendent to succeed Mr. Jacobson; **J. B. Brown,** master mechanic of the East Carolina division, with headquarters at Andrews, S. C., has been transferred to succeed Mr. Knott; and **H. McLendon,** general locomotive foreman at Savannah, has been promoted to master mechanic, to succeed Mr. Brown. All changes were effective August 15.

H. M. Curry, mechanical superintendent of the Northern Pacific, with headquarters at St. Paul, Minn., has been appointed general mechanical superintendent, with the same headquarters, effective August 14. Other appointments of the Northern Pacific effective the same date are: **W. J. Bohan,** assistant mechanical superintendent at St. Paul, appointed assistant general mechanical superintendent, with the same headquarters; **R. M. Crosby,** general master mechanic at Tacoma, Wash., promoted to mechanical superintendent, lines west of Paradise, Mont., with the same headquarters; **Silas Zwight,** assistant mechanical superintendent at St. Paul, promoted to superintendent lines east of Paradise, with the same headquarters.

Charles H. Hogan, who has been appointed manager, department of shop labor of the New York Central, with headquarters at Buffalo, N. Y., as noted in the *Railway Age* of August 6 (page 260), served as assistant superintendent motive power of the first district, with headquarters at Albany, N. Y., previous to this promotion. Mr. Hogan was born in Cleveland, Ohio, on January 9, 1850. He received a public school education and began railroad work as a track worker for the New York Central on April 1, 1865. From 1867 to 1871 he served the Union Pacific, first as fireman and later as engineer. He then returned to the New York Central as locomotive engineer and filled that position until 1893, when he was appointed traveling engineer. In 1900 he was promoted to master mechanic and in May, 1904, he became division superintendent motive power, with headquarters at Depew, N. Y. On August 1, 1910, he was appointed assistant superintendent motive power at Albany, as mentioned above.



C. H. Hogan

Engineering, Maintenance of Way and Signaling

L. V. Bean has been appointed chief engineer in charge of the roadway department of the Georgia, Florida & Alabama, with headquarters at Bainbridge, Ga., effective August 1.

M. F. Steinberger has been appointed special engineer on the staff of the vice-president in charge of operation and maintenance, on the Baltimore & Ohio, with headquarters at Baltimore.

C. M. Cannon, division engineer of the East Carolina division of the Seaboard Air Line, with headquarters at Charleston, S. C., has been transferred to the Alabama division, with headquarters at Savannah, Ga., succeeding **W. A. Greenleaf,** appointed assistant division engineer of the North Carolina division, with headquarters at Hamlet, N. C.; **W. J. Gooding,** division engineer of the South Carolina division, with headquarters at Jacksonville, Fla., has been transferred to the East Carolina division to succeed Mr. Cannon, and **O. F. McNairy** has been appointed to succeed Mr. Gooding, effective August 15.

Railroad Administration

Swagar Sherley has resigned as director of the Division of Finance of the Railroad Administration, effective on September 1, to engage in the private practice of law. **D. C. Porteous,** assistant director, has been appointed acting director of the division.

Obituary

C. C. Wilson, vice-president of the Ringling, Eastland & Gulf, died suddenly on August 9 at Eastland, Texas.

John C. Gleason, formerly superintendent of the Detroit Southern with headquarters at Springfield, Mo., died at New Rochelle, N. Y. on August 16.

EDITORIAL
Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Railroads Breaking All Records

THE MOST RECENT available statistics support the view expressed by the *Railway Age* in its last issue that the railways of the United States are now breaking all records regarding the amount of freight moved at this time of year. When we expressed this view the latest statistics available were those for the week ended August 7, when the number of cars loaded was only about one-half of one per cent less than in the record year, 1918. The statistics for the week ended August 14 are now available. They show that in that week the number of cars loaded was 962,352, which was an increase of 129,913 cars over the corresponding week of 1919, and an increase of 13,556 cars over the corresponding week of 1918. The freight moved in 1918 was a trifle more than in 1917 and these two years have heretofore held the record for the amount of business moved.

Not only are the railways now moving more freight than they ever moved at this time of year, but if they can maintain the rate of progress they are now making they will soon be moving more freight than they ever did at any season in any year. In the years 1918 and 1919 the railways were operated under the government's "unified" system. When a few months ago, owing to strikes, the amount of business handled by them was reduced, former Director General McAdoo and other defenders of government control immediately began to say that the efficiency of the railways under government control was greatly increased and that they again "broke down" immediately after they were returned to private operation. Most railway officers believe in the superiority of private over government operation and it must be intensely gratifying to them to know that they have been able so speedily to overcome the effects of the strike and to begin to move more business than was handled under "unified" operation.

However, the railways are not as yet doing all they can do or that the welfare of the country demands that they shall do. By continuing the efforts they are now making they can increase the amount of business moved to an extent which will conclusively demonstrate to any man whose mind is open to conviction, the complete superiority of private operation, with its initiative and "punch," over unified government operation with its excessive centralization and red tape. Having begun to break the record of 1918, let them break it so completely that a wayfaring man, though a fool, may not err as to the significance of their achievement!

Contest on Increasing Car Mileage

Since it is evident that the roads can expect no relief from the present shortage of transportation facilities through the completion of new cars, the only means left is to increase the service secured from the cars now in operation. This can be done best and most readily by handling them more quickly and thereby increasing the number of miles made per car per day. The railway executives' Advisory Committee has set a goal before the roads of the country of an average of 30 miles per car per day. This is an increase of approximately 25 per cent over the average for 1919 and, if attained, will be equivalent to placing in service approximately 700,000 additional cars. That this goal is not impossible of attainment is shown by the fact that some roads have already increased their mileages in even greater proportion than this, although the average for the entire country is still far short of the mark. Believing that this subject is the most important one now confronting operating officers and that there is a greater need for information concerning methods contributing to this result now than ever before, the *Railway Age* announces a contest on Means of Increasing the Average Miles Per Car Per Day. Discussions of this subject are solicited. Papers must be concisely written, should preferably not exceed 1,200 words in length and should be confined to the presentation of practical measures within the power of the roads to put into effect. Prizes of $50 and $35 will be awarded the two best papers received, while we will pay our regular space rates for others accepted and published. The award of the prizes will be based on the practicability of the ideas presented, the extent of the improvements they will create and the readiness with which they may be placed in effect. All papers must be mailed to the editor of the *Railway Age*, Transportation Building, Chicago, on or before September 30, 1920.

The Third Fuel Commandment: Incentive

Fuel conservation is often a thankless job. You can *organize* for fuel efficiency in accordance with the first fuel commandment, but your organization may fall short of its mark unless you provide an incentive and the best incentive you can offer is a fair analysis of the results obtained. Do not make it necessary for the organization constantly to defend itself with statistics of its own making. Give it a chance to play ball and see that your statistical department umpires the game fairly, bearing in mind that the average speed and tonnage of trains, as well as the character of coal, may influence the result. The same thing applies to the individual engine crew. Your organization may *supervise* the use of fuel as prescribed in the second fuel commandment, but all their directions may fail unless an incentive can be provided. Some acknowledgment of the effort to save fuel is all the incentive that many men expect, but how many enginemen ever receive any recognition whatever of the fact that they are making a conscientious effort to save fuel? The superintendent likes Jones because he always gets over the road on time

and the master mechanic favors Smith because he keeps the best engine, but what credit do you give Brown for the fact that he usually comes in with a little more coal on the tender and a little less coal in the firebox than do others on the same run? Incentive is so fundamental to success whereever human effort counts that to provide this incentive must be regarded as the third fuel commandment.

Cost of Cars and Locomotives

Details concerning the cost of cars and locomotives are naturally always of interest, but of late, in view of the new conditions under which the railways are operating, they have assumed something of a new importance. The article on another page of this issue on "Determining the Cost of Locomotives for Valuation Purposes" explains a method worked out by the equipment committees of the Presidents' Conference Committee on Valuation to determine the cost of reproduction new of locomotives for any of the years 1910 to 1919. Emphasis should be placed on the fact that the method is in no case the result of supposition or surmise but is worked out only on the basis of a careful study of the prices of nearly 12,000 locomotives built in the years 1910 to 1916. The difficulty of determining the cost of a locomotive has proved a bugbear to more than one mechanical officer. A report made up with such thoroughness as this one is should prove of almost immeasurable value. The chart showing the relation of prices year by year from 1910 to 1919 will also prove of interest. This chart shows that by taking the average of prices in the years 1910 to 1914 inclusive as 100, the price in 1918 would be as 206 or in 1919 as 212. The equipment committees are now at work on similar reports on methods for determining the cost of freight and passenger cars.

Manufacturing in Railway Shops

Much can be accomplished in speeding up both locomotive and car repair work by a more general introduction of manufacturing methods in railway shops. Repair work of any kind is necessarily more or less non-standard and not adaptable to the refinements used in securing high production on new work. There is no reason, however, why new and repair work should not be separated. Many small parts used in repairing locomotives and cars must be renewed at each shopping. These parts should be standardized as far as possible, and made in a central shop equipped with the most modern production machinery and methods. Supply parts for a whole system can thus be made in a shop equipped with special automatic machines, the installation of which would not be warranted in small shops. Efficient tooling equipment and methods can be maintained and various parts produced at a minimum expense. The increased cost of automatic machines in most cases will be offset by the shorter time required to produce parts. In addition, one man can operate from two to four machines and the resultant labor saving will represent a net gain. Standardized parts in a finished or semi-finished state can be shipped to all shops or roundhouses and be kept in stock, a particular advantage in the latter case where the lack of even a small part may hold a locomotive out of service. Centralized production shops for railway repair work have already proved their value. Records show that the machines are not difficult to operate; they are big producers of accurate work; and there is little delay or expense due to breakdowns. Besides the advantages indicated, a group of production machines in a single plant reduces the idle investment in auxiliary parts. Experience and training enable the men to devise the best possible tooling arrangements, a complete record of which can be preserved for future work. The result is more work done at less cost, thus indirectly increasing repair shop output and efficiency.

Why Throw Money Away?

It is conservatively estimated that over one and one quarter million dollars is spent annually by the railroads for the renewal of fiber insulations in insulated track joints. Of this amount a considerable part is now wasted because of the general practice of discarding certain parts of the insulations that are still fit for further service. As an instance, a signal engineer recently found eight good fiber bushings and one good top fiber in the scrap pile at one location; he picked up an unused base fiber at the next place, with the result that a check is now being made over the system to recover similar wasted material. In the first instance cited above, material to the value of about $1.50 was discarded, while in the second case it amounted to $1. When it is considered that a complete renewal for an insulated joint now costs approximately $4, the importance of saving all usable materials of this kind is self-evident. With proper supervision and checking, which can be secured in connection with the routine duties at little additional expense, a saving of a quarter of a million dollars a year could be made in this one item. Is it worth attention?

Redesigning to Reduce Maintenance

The cost of maintaining different designs of locomotives of the same type and of equal weight often varies considerably. One class of power may be notable for freedom from mechanical troubles, while another order of similar engines is repeatedly needing repairs. Human inertia and the red tape involved in making a change combine to perpetuate many a poor design. Trouble with broken frames is almost unknown on heavy modern engines due to the use of cast steel frames, yet how many roads are still welding and rewelding inadequate wrought iron frames on lighter power? The Stephenson valve motion on heavy engines is a prolific source of trouble. The bearings wear rapidly, causing poor steam distribution and wasting coal. Furthermore, the space required for the parts makes proper bracing of the frames difficult and contributes to frame breakage. Similar conditions are found in many of the minor parts, each one adding its share to inefficient operation. Sometimes the opportunities for improvement are realized, but the saving in maintenance seems too small to justify the change. The direct saving, however, is often far less important than the indirect results in reducing operating costs and decreasing the time the locomotive is out of service. Motive power conditions are improving, but a further reduction in unserviceable locomotives is needed. This will not be secured by doing work that must soon be done over again. The way to better conditions is to make improvements that will be permanent.

Marking Time Around the Terminal

Have you ever studied the movement of locomotives from the cinder pit to the house and timed each operation? Where a large number of locomotives are being handled through an engine terminal, it is highly important that the facilities for cleaning fires, for taking coal, water and sand be so proportioned that the time consumed for each operation be the same. The length of the cinder pit and the number of men em-

ployed to clean fires determine in advance the time required for this operation. These facilities should be such that engines can be despatched from the cinder pit at intervals equal to the time required by each locomotive to undergo each subsequent operation. There can be no object in rushing engines over the cinder pit only to be delayed by waiting their turn at the water crane or coal chute. On the other hand, the capacity of the terminal equipment cannot be fully utilized if locomotives are delayed for cleaning fires because of inadequate facilities. The same thing applies to the outgoing movement of locomotives, the important point being that there must be a perfect balance between all facilities affecting the movement of engines about a terminal or these locomotives will be marking time, and that is a costly occurrence at a time when it is essential to keep all cars moving at least 30 miles a day. If you want to know what terminal facilities are most in need of improvement, analyze the delays to locomotives handled through the terminal, and make your improvements at the point where locomotives encounter the greatest delay.

The Object of an Inventory

Many executives who are under the impression that their road is being operated with the lowest stock of material consistent with safety would be surprised if a statement of the actual facts comparing their property with other railroads were available. Every dollar's worth of material over and above actual requirements represents an unnecessary drain on the resources of a railroad, and it is the function of the supply department to reduce this source of waste to a minimum. This cannot be accomplished without an accurate knowledge of the material on hand and, consequently, the inventory must be regarded as one of the most important operations in the conduct of the supply department. An inventory is of no value unless it is an actual statement of the number of units of each item of material in stock, nor does it represent the money tied up in unapplied material unless it takes into consideration the large quantity of material that may have been charged out but is not in actual use. The inability of many railroads to state with any degree of accuracy the total quantity of unapplied material relinquished to the government at the outset of federal control has served to illustrate just how costly lax inventory methods may be, and it is pertinent to state that generally speaking those railroads having a strongly organized and highly centralized supply organization were able to present the most complete statement of the material turned over to the government at the commencement of federal control.

You Must Not Neglect Your Housing Problems

The railroad executive of today must realize that the men composing his track forces are no different from the general run of people; that as the desire for better living has grown throughout the country so has the same desire in his men increased. The result is that the day of the "hashed-over" box car, the so-called bunk car, is rapidly passing as a major source of living quarters for track men. The future will no doubt show a well-planned and organized housing system on a par with the projects developed and fostered by the large industries. There is no reason why existing methods and arrangements cannot be bettered. The expense of improving living conditions in box cars or in present-day camps is comparatively small, for the necessary improvements cover in reality only a limited range. The elements of comfort in any place include cleanliness, plenty of room, good beds or bunks, and in the winter provision for heat and enclosed toilet facilities, all contained in a well-lighted, ventilated and weather-proof structure. Certainly none of these are expensive items nor are any of the conditions difficult to attain, yet in a very large number of instances they have become conspicuous by their absence. Though there are plenty of men who do not show any marked dislike or even none at all for their more or less crowded and unsanitary quarters, the fact remains that even the most careless and slovenly of them will, if given a choice, invariably choose the cleaner and more comfortable quarters. It is a natural instinct that can be made to serve the railroads. This was clearly demonstrated in the army cantonments and in instance after instance men with slovenly habits developed a sense of order and cleanliness through enforced observance of army standards that greatly influenced their mode of life not only in the army but after entrance into civilian life. A man, to be a man, must be given every opportunity to live as a man.

The Railways "On Their Own"

After having had their net return guaranteed by the government for 32 months the railway companies of the United States went "on their own" on September 1, 1920. In other words, the government guarantees ceased at that time and henceforth the net operating income which each company will receive will be the amount that it earns.

The situation of the railways as a whole is different from and better than it was before government control was adopted and the returns of the companies were guaranteed. Under the system of regulation which formerly prevailed the Interstate Commerce Commission was merely required to fix maximum reasonable rates. It had no mandate to do anything to promote the prosperity and development of the railroads. Under the present law it is required to fix rates which, under efficient and economical management, will enable the railways to earn enough adequately to increase the facilities; this average return to be for two years not less for each group of railroads than 5½ per cent or more than 6 per cent. Considering the railways as a whole, therefore, it is reasonably certain that they will be allowed in future to earn what would have been in the past regarded as an entirely reasonable average return. If the rates which have been fixed by the commission yield either more or less for the railways as a whole than the law provides, they can be changed.

The situation of the individual railway is the same as it was before government control was adopted, except that under the provisions of the new law it will be given opportunity to earn a larger return than it was given opportunity to earn under the old system of regulation. While this opportunity will be afforded, the extent to which advantage will be taken of it by each road, and in consequence the operating and financial results which will be obtained by each road, will depend entirely upon the way in which the individual road is managed. Some railways under the new legislation may do much worse financially than they did prior to government control. Some may do much better. Therefore, the incentive to the management of each individual road to increase its earnings and reduce its operating expenses to the utmost will be as great as it ever was in the past.

With the withdrawal of the government guarantees there may be a tendency on the part of some railway managements to strive for competitive advantages, which might result temporarily to the benefit of their own roads, but which would have the effect of reducing the amount of business handled by the railways as a whole. The point cannot be too strongly emphasized that while the financial future of each road will be determined by the efficiency of its management as an individual property, the future of the railways as a whole, in their relationship to the government and the public will be determined chiefly by the way in which, taken together, they can serve the public. Therefore, while the financial

success of each property under the new conditions will depend upon the efficiency of its management as an individual property, the success of private management of the railways as a whole will be dependent also upon how they co-operate with each other, in order to give the public the most and the best service possible. The financial breakdown of the railroads would be ruinous to them; failure on their part to render to the public the most and the best service they can would be as speedily and irretrievably ruinous.

The Time Is Not Ripe for Substitute Cross Ties

SOME DAY THE PEOPLE of the United States will come to a sad realization of the ruthless despoliation of one of the nation's greatest gifts—its forests. How soon this will happen is subject to wide differences of opinion. It is a matter closely related to the use of wooden cross ties by the railroads and many alarming statements have been made in recent years forecasting dire consequences for the railroads and the country as a whole if the use of the wooden cross tie was not summarily discontinued. As a consequence of repeated alarms of this character, the American Railroad Association directed the Tie Committee of Section II-Engineering, also representing the American Railway Engineering Association, to make a study and present a report on the relative merits of metal and wooden cross ties with the result that the committee has recently presented a report covering the entire scope of this subject including an analysis of its relation to the available lumber supply. This report, which was presented on page 275 of last week's issue, is unquestionably one of the most valuable discussions of this subject ever presented. Its findings are well summarized in Conclusion 3 which is as follows: "Any statements made to urge the introduction of a substitute tie on the claim that safe track can not be maintained with wooden ties such as will be available for some time to come are without foundation and are contrary to the fact."

The report is specific on the subject of available timber supply, namely, that if the use and waste of lumber were to continue *at the present rate,* the timber now standing and growing would be exhausted in 30 years. However, as pointed out by the committee, the increasing value of the remaining supply will automatically decrease both consumption and waste and eventually encourage reforestation so that the end of the supply will be extended for many years. This, of course, will mean that the use of lumber in the future will involve a penalty for the wastage of the past in the form of prices far higher than those which we now consider to be exorbitant.

In the face of this prospect the question arises as to what action the railroads should take. Obviously, they cannot be expected to undertake any altruistic campaign of lumber conservation while the rest of the country is influenced only by the normal operation of economic laws. Such a course will be seen to be particularly unwarranted if it be considered that the consumption of cross ties by the roads represents less than four per cent of the current total use and waste of lumber and timber in this country. Consequently, the railroads can be called upon to reduce their use of lumber only insofar as such a reduction in use will result in definite monetary gain to the roads.

A study of the committee's report in the light of these considerations offers scant encouragement of any immediate material gain to the railroads through the use of the substitute ties. Thus, the committee's first conclusion is that "No substitute tie has yet been developed which can be recommended for general use on high speed, insulated tracks." Moreover, service records and cost estimates indicate no immediate opportunity for economy in the use of the substitute, even in those places where the service requirements would not preclude its use. The committee's conclusion, therefore, is that the field of the substitute is one of experimentation and service tests with a view to the development of thoroughly effective substitutes for general application at a time when the economic considerations will require it.

The one great lesson to be learned from this report is the opportunity for conservation in the use of timber along lines that will result in an actual saving to the user, namely, the introduction of practices that will bring about a longer service life of the timber used. In the case of the railroad cross tie, this will require the application of processes and methods designed to delay decay and mechanical destruction, a consideration so obvious that it seems almost unworthy of mention here. Yet, the fact remains that in spite of the demonstrated advantages of timber preservation, only 35 per cent of the ties purchased in this country during 1919 were subjected to any form of treatment. As regards mechanical destruction the situation is even worse. Tie plates are being applied to but a small proportion of all of the ties used, with the result that even ties that are treated are being crushed to a state of uselessness in but a small part of the time that they could have been made to last if they had been properly protected. Even on roads that are committed to the preservation of timber, the prevailing practices are not all that they should be. The rough and ready methods which have grown up in this land of abundant natural resources are not readily replaced by the finer technique which must be applied if real economy is to be practised. There is reason for real concern as to the supply of timber in this country, but the first remedy is to use lumber wisely rather than to dispense with it entirely.

New York Central

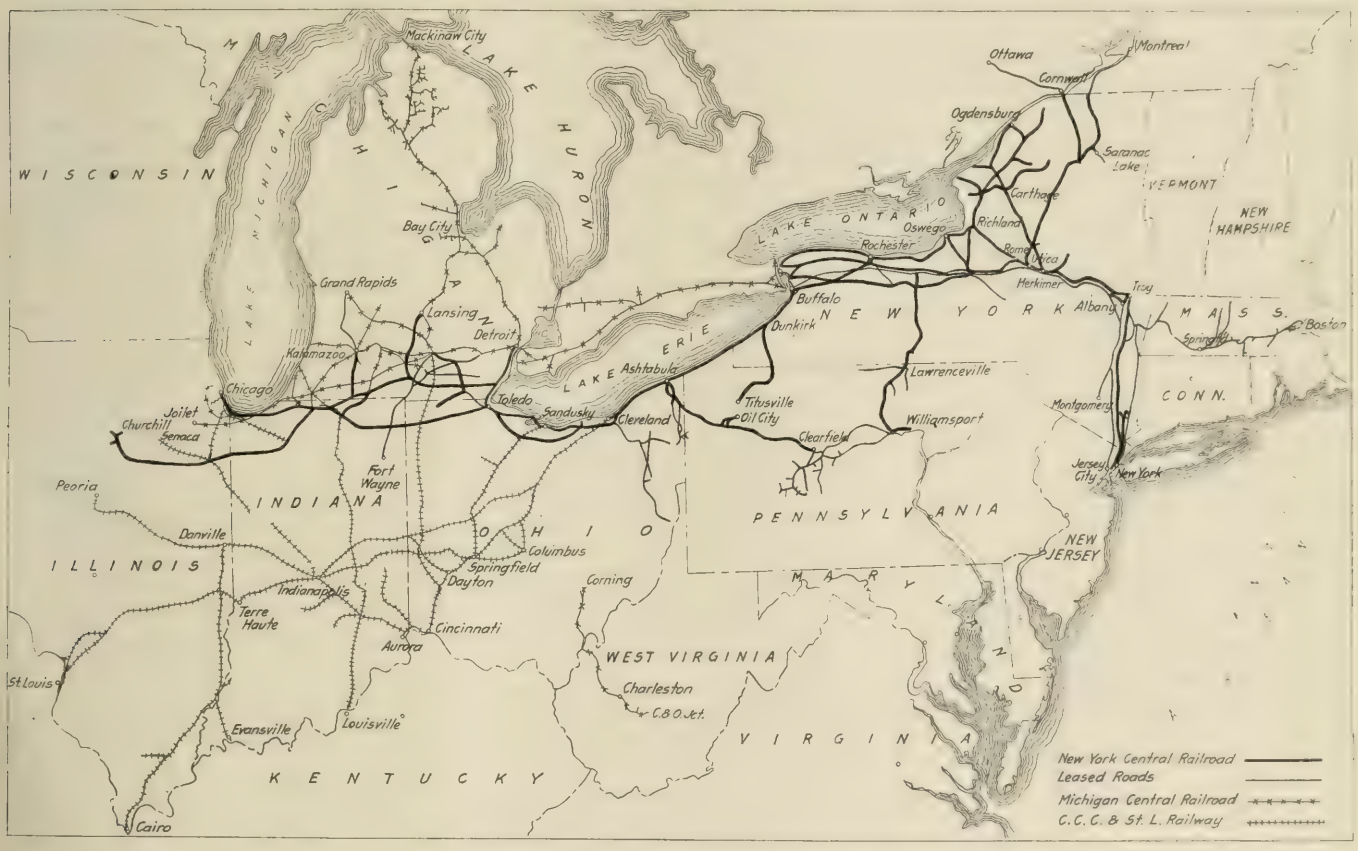
THE NEW YORK CENTRAL has made arrangements for the sale of $25,000,000, 7-per cent, 10-year collateral bonds. The bonds are being sold at par through a very strong syndicate of bankers headed by J. P. Morgan & Company. This means that the New York Central got its money at 7 per cent plus the banker's commission. While this is 1 per cent higher than the 6 per cent fixed by the Transportation Act as a fair return on the property investment of railroads generally, it is a comparatively low rate of interest when we take into consideration the rate of interest which the United States Government itself would have to pay if it were to try to sell additional taxable bonds and the rate of interest which foreign governments and the very strongest of our industrial companies are being forced to pay. If the sale is entirely satisfactory, it will reflect a high credit position for the New York Central among the strong railroads of the country.

This sale of $25,000,000 bonds does not complete the permanent financing which the New York Central will have to do before it has entirely wiped out its floating debt and cleared up its financial dealings with the United States Government, but such of this indebtedness to the United States as is not offset by the balance of compensation still unpaid will under the provisions of the new transportation law, be funded by the government. Success, however, with this first step should mean that the hardest part of the problem has been solved. The New York Central and its bankers are pioneers in testing out the feeling among investors in regard to the chances of the railroads under the new Transportation Act.

Since the merger with the Lake Shore & Michigan Southern in 1914, the showing of the New York Central in regard to its economical operation has very greatly im-

proved and the operation of the property was noticeably good during the period of government operation. This phase of the subject, however, will be discussed in more detail later.

The New York Central had, before the new issue of 7 per cent bonds, approximately $250,000,000 outstanding stock and $672,000,000 long term debt with approximately $50,000,000 loans and bills payable. This does not take into consideration the deferred liabilities against which there are offsetting deferred assets in the transactions growing out of government operation. The investment in road and equipment of the New York Central is carried on the balance sheet at $748,000,000 and in addition there are $103,000,000 of improvements to leased property. To this figure must be added the property investment of the leased lines which include the Boston & Albany, West Shore and a considerable number of other smaller roads. These total $146,000,000 roughly, bringing the total value of the property used in railroad service up to about $1,000,000,000, as shown by the assets side of the companies' balance sheets. This is the figure which it is presumed the Interstate Commerce Commission is using in its estimates of value until a final valuation can be completed.



The New York Central Lines

The capitalization, by which is meant the par value of securities issued against the property, appears to be top heavy in that it has an unduly large proportion of bonds. It is only fair to remember that before the war, when New York Central stock was selling at above par, the directors attempted to sell $25,000,000 additional stock at par to stockholders but were unable to do so because railroad stocks at that time and ever since have not been in general at all attractive to investors. In the last analysis, however, the safety back of funded debt of a railroad is represented by the margin between the par value of the bonds and the assets value of the property on the one hand, and the margin between the interest charges and the net earning capacity of the property on the other.

It is important. To make an appraisal of the first of these necessitates going back to the time of the merger of the Lake Shore & Michigan Southern with the New York Central & Hudson River in 1914. Besides the Lake Shore there was taken into the new company nine other roads of which the Geneva, Corning & Southern and the Chicago, Indiana & Southern might be mentioned. It is a well-known and generally conceded fact that for a great many years the Lake Shore & Michigan Southern had put into its property large sums of money which were derived from earnings and against which no new securities were issued. More important, however, than this in an understanding of the present situation is the fact that not only did the Lake Shore refrain from issuing stocks or bonds to represent new capital investment, but it did not write up its roads and equipment to correspond with the new money invested. It simply charged the amounts, which were under the Interstate Commerce Commission's present accounting rules additional capital, to expenses or to income. They did not appear, therefore, on either the assets or the liabilities side of the Lake Shore's balance sheet. A disinterested audit of the Lake Shore's books places the amount so invested at between $60,000,000 and $70,000,000 at the time of the merger with the New York Central.

That this great investment, uncapitalized either as to property account or capital liabilities, was both real and fully reflected in net earnings is proved pretty conclusively by the price of Lake Shore stock in the hands of the public just prior to the merger. At that time the stock was held at about 500. The total stock of the Lake Shore & Michigan Southern was $50,000,000 and of this something over $45,000,000 of stock was held by the New York Central & Hudson River as collateral for an issue of $90,578,000 3½ per

cent bonds. In other words $50 of stock was the security for $100 of bonds, but in the open market this $50 of stock was worth approximately $250.

In the indenture securing the bonds, there was no provision under which holders of the bonds could get at the collateral itself except in case of a default by the New York Central in the interest on the bonds. On the other hand, the New York Central, if it secured the consent of the holders of 75 per cent of the bonds, could change the security of the bond from a lien on the stock of the Lake Shore to a lien on the road itself—that is from a mortgage on stock to a mortgage on the rails. When the merger took place, the New York Central succeeded in persuading over 75 per cent of the holders of these bonds to consent to this change by offering a 4 per cent bond to them in place of their 3½ per cent bond. The stock of the Lake Shore in the hands of the public amounting to between $4,000,000 and $5,000,000 was exchanged for stock of the consolidated company in the ratio of five shares of the consolidated company's stock for one share of Lake Shore stock. Thus the $50,000,000 Lake Shore stock was extinguished through the cancellation of the $45,000,000 collateral under the bonds and through the exchange and cancellation of the remaining $5,000,000. When the balance sheets of the Lake Shore & Michigan Southern and the New York Central & Hudson River were combined there appeared, therefore, $25,000,000 New York Central stock in place of $5,000,000 Lake Shore stock and $90,000,000 of New York Central long term bonds bearing interest averaging under 4 per cent in place of the other $45,000,000 Lake Shore stock. Assuming, however, that the Lake Shore stock was actually worth $500 a share, this left $300 a share on the 450,000 shares ($135,000,000) not represented by stock or bonds in the new company—the New York Central Railroad Company. As regards the liabilities sides, therefore, it is fair to point out that at the time of the merger additional New York Central stock could have been issued against a real equity in the value of the Lake Shore which would have made the apparent preponderance of debt to stock of the company less.

Turning now to the assets side of the balance sheet. The balance sheet of the new company showed simply the sum of the road and equipment book value of the companies which were merged. Even assuming that the road and equipment account of some of the nine small roads was higher than a physical valuation at that time would have shown, although there is no evidence to support such an assumption, it would have represented but a very small sum indeed compared to the $60,000,000 to $70,000,000 of Lake Shore assets which were put into the merger but which were not shown on the combined balance sheet of the new company. These facts should be fully considered in forming any judgment of the New York Central's financial position and especially in any discussion of the relative amount of bonds and stocks outstanding.

In the bond circular offering the new 7 per cent bonds, the management estimates that the New York Central can earn under the new rates approximately $80,000,000. If the company were to earn 6 per cent on its book value, including leased roads but leaving out of account entirely the $60,000,000 to $70,000,000 representing under-valuation of the Lake Shore, it would earn $60,000,000, which, added to its other income, would total between $70,000,000 and $80,000,000. Interest requirements of the New Yortk Central are approximately $48,000,000 including the interest on the new issue of bonds. Five per cent dividends on its stock amount to $12,500,000.

Even with the great falling off in business in 1919 as compared with 1918 the New York Central was able to hold its own in net from operation. The corporation, of course, continued to receive a guaranteed rental of $55,803,000 plus $1,888,000 as interest on completed additions and betterments, so that it had a very substantial margin over and above its 5 per cent dividend requirements. But, the actual operating results of the property left the government with $53,000,000 net income (including the Boston & Albany) or within $3,000,000 of the amount necessary to meet the rental. The fact that this was less than in 1918 was due entirely to the fact that most of the lap-over items of revenues and expenses with a debit balance against the corporation were paid in 1918, resulting in a decrease of $3,380,000 in the amount received by the government on this account in 1919 as compared with 1918.

Freight business on the New York Central fell off in 1919 to what might have proved a dangerous extent had not expenses been held down and had there not been a very considerable increase in average receipts per ton per mile. Passenger business on the other hand increased and there was also an increase in the average fare per mile. This resulted in large increases in revenue from passengers, sufficient in fact to off-set $1,943,000 loss in freight revenue and to produce total operating revenues of $272,346,000, or $14,213,000 more than the total operating revenues in 1918. Notwithstanding all the wage increases, expenses increased only $14,327,000. The operating ratio in 1919 was 79.31 per cent as against 78.23 per cent in 1918. The average revenue per ton mile in 1919 was 8.62 mills and in 1918 7.32 mills, an increase of approximately 17 per cent. The average revenue per passenger per mile was 2.561 cents in 1919, an increase of approximately 7 per cent. Changes in the character of traffic probably had something to do with the higher average freight rate.

Freight train miles amounted to only 22,670,000 in 1919, a decrease as compared with 1918 of 3,920,000. Loaded freight car miles totaled 833,466,000, a decrease of 71,227,000, and empty car mileage totaled 397,940,000 in 1919, a decrease of 85,122,000 as compared with the previous year. Notwithstanding the better balanced traffic and consequent smaller proportion of empty car movement, the average freight train load was a little less in 1919 than in 1918. The average for 1919 was 881 tons and for 1918 891 tons. One obvious explanation of this fact lies in the change in the character of traffic. The only general class of traffic of which there was an increase in tonnage was products of animals, and here the increase came in poultry, game and fish, and in live stock. These, of course, are light loading commodities.

The tonnage of bituminous coal fell off 9,878,000 tons, and of ores 3,958,000 tons. The total tonnage of products of mines amounted to 51,524,000, or 15,532,000 less than in 1918. The tonnage of lumber fell off by 621,000. The tonnage of iron under the general heading "manufactures," fell off 1,394,000, and of bar and sheet metal, 887,000 tons, while the tonnage of wagons and carriages which would include automobiles increased by 237,000. It is not difficult to understand why the ton mile rate was higher and average train load less. The surprising thing is that with a loss of more than 15,000,000 tons in coal and ores, and gains in poultry and automobiles, the average train load was held up to the remarkably high figure of 881 tons. Even without the increase in rates the management of the New York Central had made very effective progress in offsetting increased costs by more effective and economical operation. There may have been a somewhat greater margin for improvement in this respect on the New York Central than on some of the other trunk lines, but the important thing is that the improvement has been made and it is great.

One reason that the New York Central was able to perform the indispensable service that it did perform for the government during the war, and one reason why the service was performed so economically as compared with many other eastern trunk lines, is that ever since about 1914 the New

York Central has been farsighted and liberal in its policy in regard to the purchase of new equipment. It is continuing that policy. Under the Railroad Administration the New York Central was allotted 4,500 freight cars and 120 locomotives. The company has now on order 196 locomotives, 265 passenger train cars and 9,244 freight train cars, and delivery is expected, it is said, in the fall of 1920. Some, however, of this equipment may be transferred to the Michigan Central or Cleveland, Cincinnati, Chicago & St. Louis, but, even so, the provisions made for the New York Central appear to be generous.

The following table shows the principal figures for operation in 1919 as compared with 1918. This is not the corporation income account:

	1919	1918
Mileage operated	5,675	5,682
Freight revenue	$173,926,744	$175,869,945
Passenger revenue	75,652,262	60,370,139
Total operating revenues	283,659,331	269,270,957
Maintenance of way and structures	34,520,855	31,867,769
Maintenance of equipment	62,171,461	57,312,738
Traffic expenses	2,483,979	2,572,460
Transportation expenses	114,767,234	109,405,171
General Expenses	6,929,211	6,239,315
Total operating expenses	224,964,912	210,637,849
Taxes	10,601,745	11,273,156
Operating income	48,077,077	47,342,357
Government net	51,016,807	52,530,408

Corporation Income Account

	1919	1918
Rental	$57,690,588	$56,324,508
Gross income	71,308,505	69,270,921
Interest and other corporate deductions	48,194,885	44,805,576
Dividends	12,479,611	12,479,610
Surplus*	7,433,063	5,321,948

* After having deducted, besides interest, etc., lap-over items chargeable to 1917 or previous years.

Michigan Central

The Michigan Central in 1919 earned a net profit for the government, over and above the rental paid the corporation, of over $10,000,000. This in itself would be ample justification for paying a 4 per cent dividend on the company's stock out of accumulated surplus. With a rental of $8,700,000, the company had $2,495,000 remaining after the payment of interest and corporate expenses. There were, however, $2,428,000 of debit lap-over items which the government paid on account of the corporation expenses prior to January 1, 1918. This left the corporation with but a few thousand dollars from the year's income and the 4 per cent dividend calling for $749,000 was paid out of the surplus. Had the road been operated by the corporation, it would have earned this dividend fourteen times over. It is a rather interesting fact, however, that the company preferred to continue the government guarantee of rental for the current six months and the showing in the current six months shows the wisdom of this decision.

It will be recalled that the Pere Marquette, serving in part the same territory as the Michigan Central, made a remarkably good showing in 1919. The Michigan Central carried less freight tonnage in 1919 than in 1918, but the falling off in tonnage was in coal and there was a gain in manufactures and in lumber. The tonnage of wagons, carriages, etc. (under which classification automobiles come), carried in 1918 was 768,000; in 1919 it was 1,147,000—an increase of 378,000 tons. This change in the character of traffic—a decrease in coal tonnage and an increase in automobiles and other manufactures—combined with increased rates effective for an entire year in 1919 resulted in a large increase in the average rate per ton per mile. The ton mile rate received in 1918 averaged 8.83 mills; in 1919 it averaged 10.95 mills—an increase of 2.12 mills, or 24 per cent.

The most remarkable feature about the operation of the Michigan Central in 1919 was the fact that, notwithstanding the change in the character of traffic, the train load already high for a road operating with the comparatively small proportion of coal carried, even in 1918, was further increased in 1919. The average revenue train load in 1919 amounted to 736 tons—an increase of 38 tons over 1918, and the total train load, including company freight averaged 767 tons in 1919—an increase of 48 tons over the previous year. Loading per loaded car was naturally less in 1919 than in 1918, but not as much less as would have been expected. In 1919 it averaged 21.42 tons as against 23.39 tons in 1918. Whereas, however, in 1918 there were on an average a little less than 44 cars in a train, in 1919 there was an average of over 47 cars per train, and almost the entire gain was in loaded cars, the empties averaging slightly less than 13 in 1919 and about 12-½ in 1918.

The Michigan Central made a good gain in passenger business, the total number of passengers carried in 1919 amounting to 6,425,000—an increase over 1918 of 468,000.

Partly as a result of the increase in train load, operating expenses were held down well. The total operating expenses in 1919 amounted to $57,842,000—an increase of $6,772,000, but of this increase only $1,293 was in transportation expenses. The total transportation expenses in 1919 amounted to $29,507,000. Quite a number of the primary accounts under transportation expenses showed decreases, notably the cost of fuel for train locomotives. This item amounted to $4,599,000 in 1919—a decrease of $499,000 as compared with 1918. The ratio of transportation expenses to total operating revenues in 1919 was 37.42; in 1918 it was 41.18. The ratio of all expenses to operating revenue was 73.36 in 1919 and 74.53 in 1918.

While the operating results, therefore, of the Michigan Central amply justify the payment of a dividend from surplus, the situation of a corporation as regards liquid assets and floating debt would have suggested the wisdom of not making a cash disbursement under present circumstances were it not for the fact that of the total disbursements eight-ninths went to the New York Central.

What is said elsewhere in this issue in regard to the New York Central's financial problem applies also to the Michigan Central.

The Michigan Central had on hand at the end of 1919 $1,050,000 cash, and the government owed it for unpaid rental $3,969,000. On the other hand, it had loans and bills payable amounting to $14,450.00. Its debts to the government include $9,197,000 for additions and betterments, and, while presumably arrangements will be made for funding this debt as provided for in the Transportation Act, the company will also have to fund, sometime in the future, its loans and bills payable. Except for $3,906,000 equipment trust certificates due in 1922, there are no maturing obligations of the Michigan Central for a number of years. The two largest issues of the Michigan Central bonds outstanding are the first 3½s due 1952 and the refunding and improvement 4-½s due in 1947.

	1919	1918
Mileage operated	1,862	1,862
Freight revenue	$51,653,910	$45,949,560
Passenger revenue	20,070,337	15,901,585
Total operating revenues	78,844,386	68,520,087
Maintenance of way and structures	9,617,080	7,705,080
Maintenance of equipment	15,674,511	12,382,137
Traffic expenses	780,810	738,990
Transportation expenses	29,506,855	28,214,019
General expenses	1,347,849	1,149,799
Total operating expenses	57,841,814	51,070,072
Taxes	2,650,000	1,899,790
Operating income	18,347,075	15,542,761
Government net	19,397,213	15,711,942

Corporation Income Account

	1919	1918
Rental	$8,699,813	$8,248,956
Gross income	9,558,000	8,955,107
Interest and other corporate deductions	7,062,567	6,385,544
Dividends*	.....	749,456
Surplus	67,230	†201,598

*Dividends in 1919, aggregating 4 per cent, charged to accumulated surplus.
†Deficit.

Cleveland, Cincinnati, Chicago & St. Louis

The Cleveland, Cincinnati, Chicago & St. Louis, at one time the weak member of the New York Central Lines, was the first of the three principal lines to get its floating debt funded. In June, 1919, an issue of $20,000,000 refunding and improved mortgage ten-year 6 per cent bonds was authorizd and of these $15,000,000 were sold. The company, however, was not able to sell the remaining $5,000,000 at a satisfactory price. The total proceeds of the bonds was $14,325,000, so that the money cost the Big Four approximately 6.62 per cent. The proceeds of this bond sale provided for paying off its small issue of $2,000,000 of Indianapolis & St. Louis first mortgage bonds which fell due July 1, and the remainder was used to pay $6,950,000, which had been advanced to the company for additions and betterments by the director general, and $5,367,000 to pay off the New York Central loan which had previously been made to the Big Four. Of this latter amount $2,267,000 was for coal lands for which the Lake Shore had advanced the money before it was merged with the New York Central.

At the end of the year the Big Four had $1,225,000 cash on hand, and $3,194,000 special deposits. It had $3,300,000 loans and bills payable and still had approximately $3,000,000 owing the government for additions and betterments. The balance sheet shows $10,155,000 under deferred liabilities for additions and betterments made by the government, but shows as an offsetting account $6,960,000 "partial settlement account additions and betterments." No mention is made in the report of negotiations looking to the funding by the government of the entire $10,000,000 for additions and betterments, so that, so far as any information that has been given out goes, the approximately $7,000,000 paid to the government from the proceeds of the bond sale is a completed transaction. It will be seen that if the Big Four could have sold the additional $5,000,000 of bonds it would have had its financial house in good order.

The company accepted the continuation of the guarantee of rentals from the government for the current six months notwithstanding the fact that the property was earning net over $14,000,000 a year, whereas the rental paid by the government was only $10,427,000 a year. After paying interest charges and corporation expenses the company had, in 1919, $4,158,000 remaining. From this there was deducted $3,580,000 for expenses prior to January 1, 1918, which the government had paid for the corporation. This left a net corporate income of $578,000, and from this the company paid $500,000 in dividends (5 per cent) on its preferred stock.

The operation of the road was remarkably good compared with other roads in its territory, although the results were not as good as those of 1918. The operating ratio in 1919 was 77.76 per cent, as compared with 72.68 per cent in 1918. Railway operating income in 1919 amounted to $14,166,000, which was less by $1,796,000 than the 1918 operating income. The payment by the corporation of $3,581,000 expenses pertaining to 1918, mentioned above, as compared with a payment of $1,616,000 on this account in 1918 left the government with $16,562,000 net income from which to pay rentals in 1919, as against $16,368,000 in 1918.

Total operating expenses in 1919 amounted to $57,427,000—an increase over 1918 of $5,532,000. Nearly half of this increase was in transportation expenses, notwithstanding the fact that a considerable saving was made in the cost of fuel, both for train locomotives and yard locomotives. The saving in yard expenses is particularly noticeable. The wages of yard conductors and trackmen amounted to $1,833,000 in 1919, as against $2,175,000 in 1918—a saving of $342,000. The cost of fuel for yard locomotives was $1,189,000 in 1919, against $1,456,000 in 1918—a saving of $268,000. On the other hand, charges for loss and damage to freight were extraordinarily heavy. They totalled $2,944,000 in 1919, or more than double what they were in 1918. The ratio of transportation expense to total operating expense was 41.61 per cent in 1919, as against 39.53 per cent in 1918.

The total tonnage of freight carried last year was 33,264,000—a decrease as compared with the year before of 5,952,000 tons. The average length of haul, however, was about 3 miles longer, being 181.6 miles in 1919. Train loading was not quite so good, the freight tonnage of revenue freight being 768 tons in 1919, as against 779 tons in 1918. Car loading averaged 27.3 tons per loaded car in 1919, as against 28.9 tons in 1918. There were 29.8 loaded cars per train in 1919 and 28.5 in 1918; the number of empty cars per train remained nearly the same—about 13.6. The revenue per ton per mile was 8.39 mills in 1919, as against 7.12 mills in 1918.

The Big Four has a larger proportion of coal tonnage than either the New York Central or Michigan Central, but with the Big Four not only did the coal tonnage fall off—the total in 1919 being 15,421,000 tons, or 4,241,000 tons less than in 1918; but also the tonnage of manufactures and lumber fell off. The tonnage of iron was but 575,000—a loss of 303,000 tons, and the tonnage of bar and sheet metal was 388,000 tons—a loss of 185,000 tons. The grain tonnage also was much smaller, amounting in 1919 to 1,268,000 tons, or 647,000 tons less than in 1918.

The Big Four, like the New York Central, the parent company, has been forehanded in buying equipment. In the six years, 1914-1919, the company has bought 124 new locomotives, 65 passenger train cars and 11,436 freight cars. The cost of this equipment has been $20,586,000, and the management estimates that the cost of this equipment today would be $42,091,000.

	1918	1919
Mileage operated	2,409	2,396
Freight revenue	$50,700,076	$49,934,633
Passenger revenue	17,267,397	15,359,128
Total operating revenues	73,856,456	71,403,970
Maintenance of way and structures	9,222,574	7,298,040
Maintenance of equipment	14,675,763	13,894,337
Traffic expenses	917,766	882,576
Transportation expenses	30,735,156	28,229,455
General expenses	1,311,001	1,201,871
Total operating expenses	57,427,452	51,895,289
Taxes	2,252,592	3,538,918
Operating income	14,165,664	15,962,011
Government net	16,562,182	16,367,655

Corporation Income Account

	1919	1918
Rental	$10,427,351	$10,011,994
Gross income	11,190,574	10,772,278
Interest and other corporate deductions	7,032,604	6,035,571
Dividends	499,925	499,925
Surplus	35,005	2,493,014

New Books

Railroad Curves and Earthwork. By C. Frank Allen, sixth edition, revised by author. Four in. by 6½ in. 517 pages, illustrated, bound in flexible leather. Published by the McGraw-Hill Book Company, New York.

This book is the sixth edition of the text matter and includes the third edition of the field and office tables arranged especially for railway work by the author. While the original work was prepared for students, the book has proved to be well adapted to the requirements of the practical railroad engineer and subsequent revisions of the original text have kept it abreast of the progress in railroad work. The chapters on circular arcs, the computation of earthwork, the subject of overhaul, have been extended and several new methods have been added. In the tables, those on "Offsets from Tangent for a Ten-Degree Curve" have been again inserted with the addition of a new table of corrections for these offsets.

The Cost of Locomotives for Valuation Purposes

Review of Important Studies by the Presidents' Conference Committee on Federal Valuation

THE STUDIES which have been made by the Equipment committee of the Presidents' Conference Committee on Federal Valuation have recently been completed as far as the cost of locomotives is concerned and the committee is now at work on similar figures for freight and passenger cars. The object of the work in question was to make a study of the different classes of equipment with the view of working out a proper method for determining the cost of reproduction new for valuation purposes. This work has recently assumed added importance in view of the provisions of the Transportation Act. This data is intended for the use of the carriers as a statement of facts placed in a most convenient form to be used as a *guide* in determining the cost of reproduction new of locomotives, and indicates the most careful and painstaking effort to arrive at a correct solution of the problem.

The report on locomotives is contained in four parts, the original report and three supplements. The first report, entitled Method of Determining Cost of Reproduction New of Locomotives for Valuation Purposes, was issued on February 1, 1918. It dealt with locomotives of average character—that is it excepted (a) all locomotives sold to foreign countries, (b) tank engines, (c) Mallet locomotives, (d) all locomotives with cylinders under 17 inches in diameter and (e) all locomotives with light weight of locomotive and tender less than 130,000 lbs. Supplement No. 1, issued March 1, 1919, covered additional information on prices of eight specialty items included in the original report. Supplement No. 2, issued on January 7, 1920, covered the light and Mallet locomotives. Both of these reports were for the years 1910 to 1916. The Equipment Committee has now issued Supplement No. 3, dated July 1, 1920, which brings the figures up to date and covers the years 1917, 1918 and 1919.*

Outline of the Work

The studies were carried out with the co-operation of the locomotive builders and involved the detailed tabulation and study of the prices of no less than 11,781 locomotives of a total weight of 3,250,326,802 lbs. for the first report. For its studies on the light and Mallet locomotives the committee had to be satisfied with data on 68 of the light locomotives and 801 Mallet engines. *The studies made indicated that the price per pound was influenced by the total weight of the locomotive, but not by the type of the locomotive and that one course would serve for all types* (except light and Mallet locomotives).

The first step undertaken was to determine for any of the types under consideration what constituted a "Plain Locomotive." In a general way this was defined as a locomotive without any of these specialties which are not common to all locomotives. A list of the specialties that *are* common to all locomotives and hence is included in the description of a

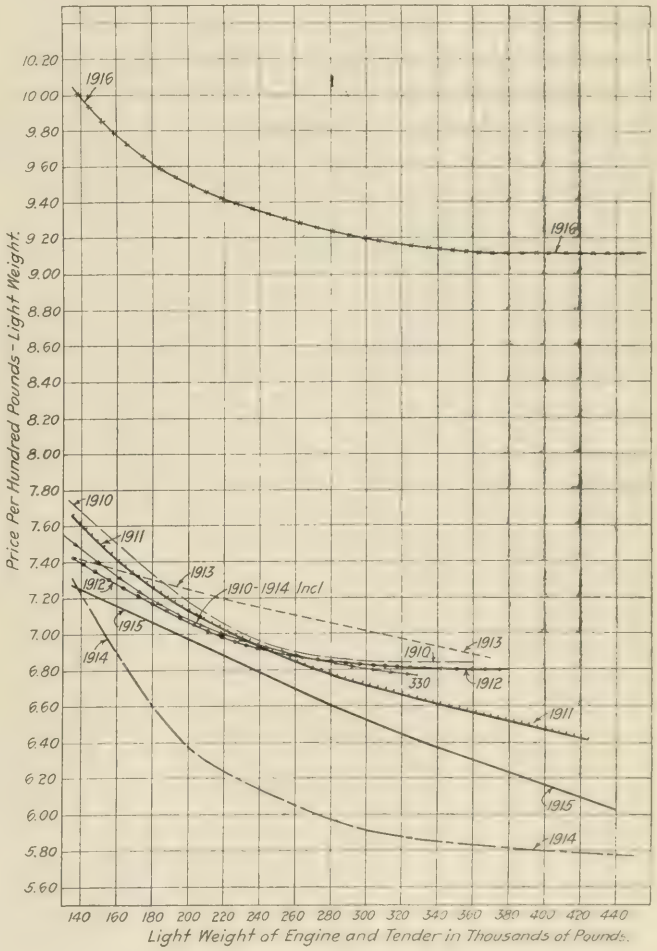


Fig. 1—Locomotive Price Curves, 1910 to 1916

"Plain Locomotive" appears in Part 3 of the original report. This includes such items as injectors (two of serviceable size for locomotive; lifting type), lubricator (hydrostatic sight feed, 3 feeds) and so on. It is stated that the material specifications of the American Society for Testing Materials where issued are to govern.

Determination of Locomotive Prices

Upon this basis price curves showing the price in dollars per one hundred pounds for the "Plain Locomotive" individually for each of the years 1910 to 1916 were plotted and are shown in Part 5 of the original report.

Fig. 1 is a reproduction of the diagram appearing in the

*The reports were prepared by:
W. L. Wilt, Special Accountant, Pennsylvania Railroad;
James Partington, Estimating Engineer, American Locomotive Co.;
A. B. Ehst, Comptroller, Baldwin Locomotive Works;
H. E. Hale, Engineer, Eastern Group, Presidents' Conference Committee on Federal Valuation of Railroads;
The reports were under the direction of

Sub-Committee

†P. F. Smith, Jr., Works Manager, Altoona Shops, Pennsylvania Railroad (chairman);
Henry Bartlett, Chief Mechanical Engineer, Boston & Maine;
F. H. Clark, General Superintendent Motive Power, Baltimore & Ohio;
C. E. Fuller, Superintendent Motive Power and Machinery, Union Pacific;
C. F. Giles, Superintendent of Machinery, Louisville & Nashville;
D. R. McBain, Assistant General Manager, New York Central, West of Buffalo;
Robert Quayle, General Superintendent Motive Power and Car Department, Chicago & North Western.
The reports were issued after approval by:

Equipment Committee

J. Howland Gardner, Vice-President, New England Steamship Co. (chairman);
†P. F. Smith, Jr., Works Manager, Altoona Shops, Pennsylvania Railroad;
W. J. Tollerton, General Mechanical Superintendent, Rock Island Lines;
F. O. Walsh, Superintendent Motive Power, Atlanta & West Point;
W. H. Wilson, Assistant to Vice-President, Northern Pacific;
H. E. Hale, Engineer, Eastern Group, Presidents' Conference Committee on Federal Valuation of Railroads (secretary).

†Mr. Smith succeeded D. F. Crawford, formerly General Manager, Pennsylvania Lines West of Pittsburgh, who resigned from the committees January, 1917.

original report showing the price curves for each year superimposed, together with an average price curve for the years 1910 to 1914 inclusive which was prepared at the request of C. A. Prouty, director of valuation, Interstate Commerce Commission.

Fig. 2 is a diagram showing this average price curve (for the years 1910 to 1914 inclusive) for convenient reference.

As the original report did not deal with locomotives weighing less than 130,000 lb., nor with Mallet type locomotives it was the purpose of Supplement No. 2 to extend this price

NET PRICES FOR SPECIALTIES

Item No.	Item	Years 1910 to 1915 inclusive. Net price	Year 1916
1	Air pump, one 11-in.	$33.60	$33.60
2	Air pump, one 8½-in. C. C.	79.00	79.00
3	Air pump, two 9½-in.	98.00	98.00
4	Air pump, two 11-in.	146.00	146.00
5	Air pump, two 8½-in. C. C.	220.00	220.00
6	Air pump, one No. 5, N. Y. Air Brake Co.	50.00	50.00
7	Air pump, two No. 5, N. Y. Air Brake Co.	170.00	170.00
8	Air pump, one No. 6, N. Y. Air Brake Co.	22.00	22.00
9	Air pump, two No. 6, N. Y. Air Brake Co.	138.00	138.00
10	Air signal	17.00	17.00
11	Arch, Gaines firebrick	(a)	(a)
12	Ash pan, air operated	21.00	21.00
13	Ash pan, Commonwealth cast steel	22.00	22.00
14	Ash pan, Talmage	125.00	125.00
15	Axles, driving, Vanadium steel, per lb.	.04	.04
16	Axles, driving, heat-treated and hollow bored, per lb.	.02½	.02½
17	Bearings, Barber rolling	18.00	18.00
18	Blow-off cock system, Talmage	150.00	150.00
19	Boxes, Markel	(a)	(a)
20	Brakes, engine truck (independent brake)	185.00	185.00
21	Brake pins and bushings, case hardened, per wheel	5.00	5.00
22	Brakes, trailer truck (independent brake)	185.00	185.00
23	Brakes, trailer truck (equalized with driver brake)	35.00	35.00
24	Buffer between engine and tender, Radial	31.00	31.00
25	Bumper arrangement, front, Gould	(a)	(a)
26	Bushings, cylinder, cast iron	(a)	(a)
27	Bushings, cylinder, gun iron	70.00	70.00
28	Bushings, piston valve, gun iron	(a)	(a)
29	Couplings, automatic steam and air	42.00	42.00
30	Cradle castings, frame, back end	(a)	(a)
31	Crossheads, Thomas	(a)	(a)
32	Cylinder cocks, pneumatically operated	27.00	27.00
33	Cylinder, Hobart Alfree	1,500.00	1,500.00
34	Driving box, lateral motion type	170.00	170.00
35	Driving box, Cole extended	140.00	140.00
36	Driving box cellars, Elvin, per box	7.00	7.00
37	Engine trucks, Economy (2-wheel) (Royalty in price of parts	100.00	100.00
38	Engine trucks, Economy (4-wheel) (Royalty in price of parts)	125.00	125.00
39	Engine trucks, Woodard	(a)	(a)
40	Firedoor, O'Connor (Royalty charge)	25.00	25.00
41	Firedoor, pneumatically operated	100.00	100.00
42	Frames, double front rail	(a)	(a)
43	Frames, H. I.	(a)	(a)
44	Frames, Vanadium cast steel, per lb.	.02	.02
45	Frames, shoes and wedges, brass, per box	50.00	50.00
46	Frame, wedges, Franklin adjustable, per box	15.00	15.00
47	Freight charges (cost f. o. b. works)	100.00	100.00
48	Front end arrangement, Downing	50.00	50.00
49	Front end arrangement, Cooke & Booth	30.00	30.00
50	Front end arrangement, Mudge Slater		
51	Grate shakers—		
	One-cylinder equipment	159.00	159.00
	Two-cylinder equipment	190.00	190.00
	Three-cylinder equipment	234.00	234.00
52	Headlights, acetylene—		
	Engine headlight equipment only with one generator	30.00	30.00
	Equipment for all engine lights with one generator	50.00	50.00
	Equipment for all engine and tender lights with two generators and a headlight on rear of tender	125.00	125.00
53	Headlights, electric	201.00	201.00
54	Hub liners, Smith adjustable (per wheel)	15.00	15.00
55	Hub liners, Smith adjustable (Royalty per engine)	100.00	100.00
56	Injector pipes, copper	(a)	(a)
57	Inspecting (during construction)	200.00	200.00
58	Joints, flexible—		
	Two flexible joints	25.00	25.00
	Three flexible joints	37.50	37.50
	Four flexible joints	50.00	50.00
59	Joints, flexible, for water connection	52.00	52.00
60	Lubricator, flange	87.00	87.00
61	Material (testing and inspecting)	90.00	90.00
62	Messenger expenses	100.00	100.00
63	Oil burning equipment— The royalty charge of $100 plus an additional net price of $100 to $400 pro rated for locomotives with a range in light weight from 130,000 to 450,000 lb.	(a)	(a)
64	Pipe clamps, Ayers	(a)	(a)
65	Piston packing rings, gun iron		
66	Piston rods, extended—		
	For extended piston rods having only a stuffing box support	5.00	5.00
	For extended piston rods having a stuffing box and a slipper block guide support	25.00	25.00
67	Pyrometer	150.00	150.00
68	Reverse gear, power	210.00	210.00
69	Reverse gear, screw	(a)	(a)
70	Rods, vanadium steel, per lb.	.04	.04
71	Seams, Diamond	(a)	(a)
72	Setting up and breaking in	40.00	40.00
73	Slack adjuster	(a)	(a)
74	Smoke consumer	30.00	30.00
75	Springs, crucible steel, per lb.	.03	.03
76	Springs, vanadium steel, per lb.	.08½	.08½
77	Sprinklers, coal	(a)	(a)
78	Staybolts, American flexible, each	.30	.30
79	Staybolts, breakless, each	.52	.52
80	Staybolts, flexible, Tate or equivalent, each	.52	.52
81	Steam heat	92.00	92.00
82	Stoker, Crawford	1,200.00	1,200.00
83	Stoker, Hanna	1,600.00	1,600.00
84	Stoker, Standard	1,750.00	1,750.00
85	Stoker, Street	1,350.00	1,350.00
86	Superheater, see curve for price (Fig. 3).		

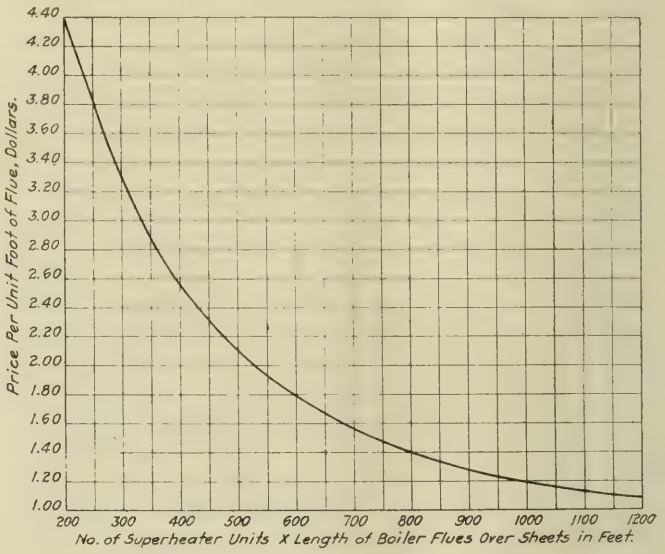


Fig. 3—Superheater Price Curve

87	Syphon, Linstrom	30.00	30.00
88	Tender coal passer	260.00	310.00
89	Tender frames, Commonwealth—		
	For switching engines with rectangular tanks	400.00	400.00
	For road engines with rectangular tanks	600.00	600.00
	For switching engines with Vanderbilt tanks	500.00	500.00
	For road engines with Vanderbilt tanks	740.00	740.00
90	Tender tanks, Acme type— The royalty charge of $40 plus an additional price of $50 to $110 for bottom flanges only pro rated for capacities from 4,000 to 10,000 gallons. The royalty charge of $40 plus a net price of $80 to $160 for top and bottom flanges pro rated for tank capacities of 4,000 to 10,000 gallons.		
91	Tender truck, Vanderbilt ($100 royalty)	100.00	100.00
92	Tender truck, Andrews or Vulcan, per tender	150.00	150.00
93	Tender truck, Bettendorf	75.00	75.00
94	Tender truck, Commonwealth, per tender	310.00	310.00
95	Tender truck, Economy	300.00	300.00
96	Tender truck, pedestal type (minus)	—50.00	—50.00
97	Tender vestibule—		
	For vestibule at rear of tank only without a diaphragm	40.00	40.00
	With vestibule at rear of tank only with a diaphragm	100.00	100.00
	For vestibule connection between front of tender and engine cab	200.00	200.00
98	Tender water scoop, hand operated	(a)	(a)
99	Tender water scoop, air operated	(a)	(a)
100	Throttle, Chambers	150.00	165.00
101	Throttle, Rushton	(a)	(a)
102	Tools	100.00	100.00
103	Trailing truck, Commonwealth	310.00	310.00
104	Trailing truck, Hodges (royalty)	100.00	100.00
105	Truck wheels, engine rolled steel, per wheel	19.00	30.00
106	Truck wheels, engine steel tired, C. I. center, per wheel	38.00	60.00
107	Truck wheels, engine steel tired, C. S. center, per wheel	50.00	78.00
108	Truck wheels, tender, rolled steel	19.00	30.00
109	Truck wheels, tender, steel tired, C. I. center, per wheel	34.00	60.00
110	Truck wheels, tender steel tired, C. S. center, per wheel	46.00	78.00
111	Valve, piston, Young (royalty $50)	100.00	100.00
112	Valve stem extended	15.00	15.00
113	Valves, Jack Wilson	100.00	100.00
114	Valve gear, Baker (royalty $250)	250.00	250.00
115	Valve gear, Southern (royalty $250)	250.00	250.00
116	Valve gear, Young (royalty $250)	250.00	250.00
117	Welding flues	60.00	60.00

(a)—Additional price of item taken care of in extra weight.

study to light and Mallet type locomotives and price curves for these locomotives similar to those appearing in the original report are given in Parts 3 and 4 of the supplement.

Following the determinations relating to a "Plain Locomotive" the specialties* not common to all locomotives were considered and the selling price and weight of 117 such specialties for the years 1910 to 1915 inclusive (average) and year 1916 was determined from the records available. From this a statement of the net price of each of these specialties* was compiled and is given in Part 4 of the original report. The *net price* of each specialty was obtained by deducting from the price of the specialty its weight, multiplied by 8 cents per pound. The prices used are f. o. b. the locomotive builders' works. The date of contract was used in classifying the data by years. Due to the considerable variation in the size and weight of superheaters applied to different locomotives a price curve as shown in Fig. 3 is included in the report to indicate the net price of this specialty. The net prices determined in the manner above outlined are given herewith.

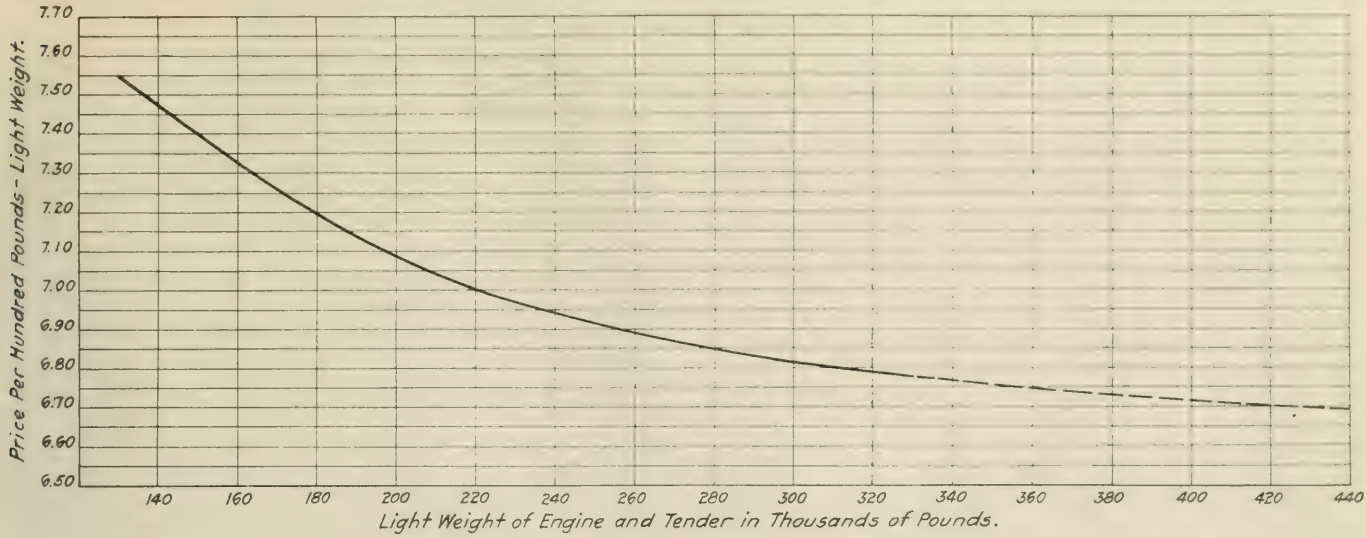


Fig. 2—Average Price Curve for Period 1910 to 1914 Inclusive

Cost of Reproduction New

With these price curves available and data relating to the net price of the individual specialties the determination of the cost of reproduction new of any locomotive for any year 1910 to 1916 becomes a comparatively simple matter. Knowing the light weight of the locomtive and tender (the light weight is exclusive of the weight of water, coal, tools, supplies and crew) the basic cost per hundred pounds can be ascertained directly from the curves. To this cost must be added the total net cost of such specialties as are found on the locomotive and listed in the foregoing.

However, as all of the data contained in the original report

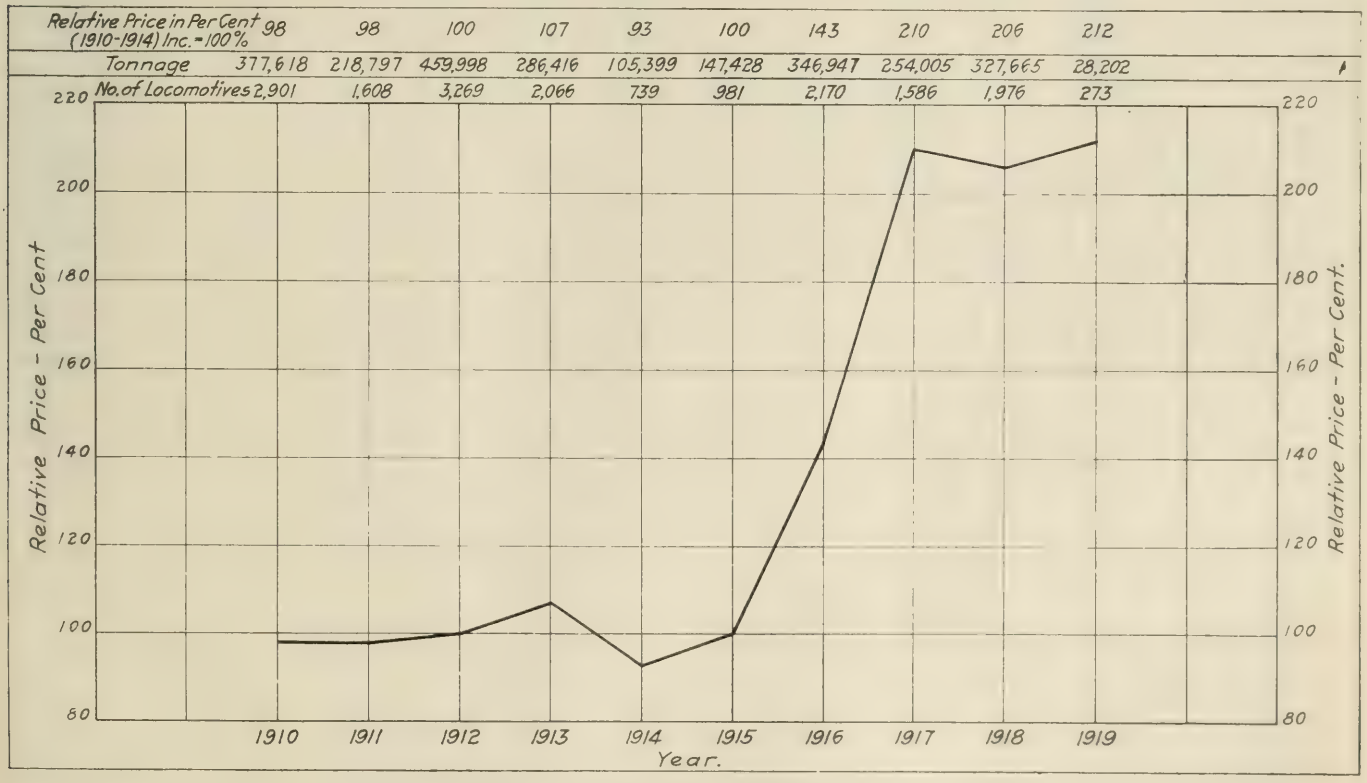


Fig. 4—Relative Price Curve of Locomotives, 1910 to 1914

*It has been suggested that as further explanation a "Specialty" item might properly be called an "Accessory," similar to the term commonly used in the automobile trade but not up to the present time generally applied to railroad equipment.—(EDITOR.)

However, as all of the data contained in the original report

and Supplement No. 2 relates to prices prior to 1917, it has been necessary to supplement these reports with a study of the relative prices for the years 1917, 1918 and 1919 compared with previous years. This data is contained in supplement No. 3 which is issued as a guide to assist the carriers in determining the cost of reproduction new of steam locotives for the years 1917, 1918 and 1919.

Range in Locomotive Prices 1910-1919

The data for Supplement No. 3 was furnished by the American Locomotive Company and Baldwin Locomotive Works and is based on information relating to the total weight of all steam lcoomotives sold during the years 1910 to 1919 inclusive and the total price of each of these locomotives. From this information the weighted average price per pound of locomotive as sold for the period of 1910 to 1914 inclusive was taken as base, 100 per cent. The per cent of the price of locomotives for the other years compared with the 1910-1914 base period was found to vary as follows in percentages of the 1910-1914 average:

Year	Per cent of price 1910-1914 inc.
1910-1914 inc. (base price)	100
1917	210
1918	206
1919	212

These data were plotted on the chart illustrated in Fig. 4. It will be noted that the most precipitous rise in locomotive costs occurred in the years 1916 and 1917.

For use of this report in establishing the 1910 to 1914 period as the base, 100 per cent, the Equipment Committee has extended the curve (shown in Fig. 2) following the general trend of curves of other years shown in the report, and feels that this is a close approximation of what the average price for various weights would have been if a sufficient number of locomotives ranging in light weight from 330,000 to 440,000 pounds, had been sold in each of the years of the period to "make the market."

The period of 1910 to 1914 inclusive was selected as the base period for determining the range of prices in other years, largely due to the fact that there was available a large amount of information for that period on which to establish a base. Other base periods for index numbers have been used by the government, such as 1890 to 1899, inclusive, or the year 1913, etc., and it should be clearly understood that nothing in this supplement is intended to suggest that the 1910 to 1914 inclusive period should be a pricing period for valuation purposes.

How to Determine the Cost

The following example illustrates the method of arriving at the cost of reproduction new of a locomotive, 4-6-2 type; light weight 342,000 lbs., for the year 1918:

(a) Locomotive and tender, light weight, 342,000 lbs., at 6.75 cents per lb. (1910 to 1914 inclusive price curve, Fig. 2) $23,119

(b) Specialties as follows:

Item No.	Item	Net price
3	Air pumps, two 9½-in.	$98
10	Air signal	17
16	Heat-treated axles, 6,000 lb. at .02½	150
20	Brake on engine truck	185
24	Radial buffer	31
41	Automatic fire door	100
57	Inspecting during construction	200
59	Flexible joints	52
61	Material (testing and inspecting)	90
68	Power reverse gear	210
72	Setting up and breaking in	40
74	Smoke consumer	30
80	Flexible staybolts (250 bolts)	130
81	Steam heat	92
85	Stoker	1,350
86	Superheater (see Note A)	1,107
96	Pedestal type tender trucks	50
99	Water scoop, air operated	00
102	Tools	100
105	Engine trucks, wheels, rolled steel	76
108	Tender wheels, rolled steel	152

(c) Total specialties (excluding freight) $4,160

$27,279

(d) Engineering at approximately 1½ per cent 409

Total $27,688

(e) For 1918 apply 206 per cent $57,037

(f) Add freight from builder's works to carrier's line, using 1918 tariff rates 300

(g) Total "Cost of Reproduction New" of locomotive in 1918 .... $57,337

Note A.—To determine price of a superheater with 36 units, 20 ft. 6 in. long, example as follows:
36 by 20 ft. 6 in. = 738 ft. @ $1.50 (taken from superheater curve, Fig. 3) = $1,107.

Intrastate Advanced Rate Proceedings

WASHINGTON, D. C.

JOHN E. BENTON, solicitor of the National Association of Railway and Utilities Commissioners, has issued another bulletin giving the status of advanced rate cases before the state commissions. The commissions which have thus far rendered decisions in the applications of carriers to advance their intrastate rates are as follows: California, Colorado, Florida, Georgia, Idaho, Illinois, Iowa, Maryland, Massachusetts, Michigan, Minnesota, Montana, Nebraska, New Hampshire, New Jersey, New York (1st District), New York (2nd District), Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Texas, Vermont, Virginia, Washington, West Virginia, Wisconsin and Wyoming.

Following is a summary of reports received from states which were not covered by previous bulletins,* and also giving additional information with reference to the action taken in several of the states which were covered by previous bulletins.

Arizona. Hearing set for September 15.

California. Commission on August 17 authorized increase of 25 per cent in freight rates and 20 per cent in passenger fares on all steam and electric railroads and boat lines. In its opinion the commission said: "We realize that without requiring more evidence than is now before us in this proceeding to impose on intrastate business the identical percentages authorized by the Interstate Commerce Commission would in effect be the fixing through us of state rates by the Interstate Commerce Commission. On the other hand, to proceed in the usual manner as though this were entirely an independent proceeding would result in serious delay. * * * This, however, is not the most serious result of independent action by this state. If this commission fixes state rates regardless of the order of the I. C. C., and if such rate fixing resulted in a return to the railroads of the Mountain Pacific group less than 6 per cent authorized by the I. C. C., either the I. C. C. must further burden interstate commerce with rates high enough to make up the deficit * * * or if legally possible the I. C. C. would be compelled to overrule this commission. * * * It appears to us that if each state in a given group insists upon wholly independent action and judgment, that the whole spirit and purpose of the Esch-Cummins act is in danger of nullification. * * * We will, therefore, authorize all carriers applicant herein to increase freight charges 25 per cent and passenger fares 20 per cent with a surcharge on Pullman fares of 50 per cent * * * and we will further order that this proceeding be kept open for the purpose of considering adjustments of rates and all further appropriate matters which properly may come before us herein."

Colorado. Effective as of September 1, on one day's notice, commission on August 27 authorized increases in rates in harmony with those authorized by the I. C. C., except as to milk and cream rates, which were denied. Commission indicates its action is in the nature of temporary relief and subject to readjustment or modification with reference to commodity rates or passenger fares.

Florida. Commission on August 18 authorized carriers to increase their freight and passenger rates, fares and charges in harmony with those authorized by the I. C. C., to remain in effect to October 1, 1920, without publication of any tariffs covering such increases. Effective October 1,

*See *Railway Age*, August 20, p. 312, and August 27, p. 351.

1920, carriers must file tariffs making rates applying on Florida traffic based upon an increase of 25 per cent in the rates effective June 24, 1918, and a further increase of 25 per cent upon the rates so arrived at. All such rates are to be subject to Florida Classification No. 4 and the rules and regulations of the Florida Commission which were in effect June 24, 1918. Passenger surcharge, excess baggage and milk and cream rates in harmony with those fixed by the I. C. C., may also be published on that date, subject to the rules and regulations of the Florida Commission which were in effect June 24, 1918,

Georgia. Commission on August 24 authorized increase of 25 per cent on all freight rates, except as to brick, cotton and cotton linters, upon which present rates are continued in effect, 20 per cent on all passenger fares, except lines already authorized to charge a fare based on 5 cents per mile, 20 per cent on excess baggage, a surcharge of 50 per cent in Pullman rates, and 20 per cent on milk and cream rates, effective September 1, by the filing of blanket supplements not less than three days in advance of effective date. The proceeding is held open to permit making of necessary adjustments.

Idaho. Commission on August 20 authorized increases in freight and passenger rates in conformity with increases authorized by the I. C. C., effective on one day's notice, except that no passenger fare as increased shall exceed 3.6 cents per mile. The following provision of the order is an interesting limitation: "In the event that the increase hereby authorized to any rate, fare or charge is hereafter attacked on the ground that same is unreasonable or discriminatory, or on any other ground, it shall then be incumbent upon the carrier affected to justify the rate attacked in the same manner as if such carrier were making application for authority to file same. The filing of any schedule or tariff carrying any rate, fare or charge under authority of this order shall be an acceptance of the provisions of this order by the carrier filing same."

Iowa. Commission on August 17 permitted increase of 35 per cent on freight rates, with specific increases on sand, gravel, stone, etc., and soft coal, based on the Iowa classification schedules, 20 per cent increase on excess baggage and 20 per cent increase on milk and cream. The order provides for the application of the Iowa classification to all schedules and fixes a minimum class scale applicable after September 1. Commission denies jurisdiction over passenger fares and surcharges. The case is to be kept open and hearings continued pending a complete revision of the Iowa rate scales and classification, it being understood that the order is temporary. A hearing on the Express Company's application for rate increases similar to those granted by the Interstate Commerce Commission in Docket 1136 will be held August 31.

Massachusetts. Commission on August 12 ordered increases in harmony with those authorized by I. C. C., effective not less than five days after filing. These increases are but temporarily effective pending final determination by commission upon the entire situation.

Minnesota. Effective as of September 1 commission on August 30 authorized advanced freight rates based upon the Minnesota schedules of class and commodity rates fixed December 10, 1913, increased 25 per cent, plus a further increase of 35 per cent on the base so arrived at. Coarse grain rates are advanced to the wheat rate basis, and coal rates are increased 15 cents per ton as of September, 1917, before making the general increases. Increases on milk and cream rates of 20 per cent and the surcharge of 50 per cent on Pullman rates is authorized, but the commission finds itself without authority to increase statutory passenger fares and denies any increase in excess baggage rates which are fixed on a percentage of the passenger fare. The commission holds that excess baggage rates should continue on the present relationship to passenger fares and fluctuate with such fares.

Nebraska. The commission finds itself without power to increase statutory passenger fares, but holds that it may lawfully permit the surcharge on Pullman fares and a special increase of 20 per cent on excess fares assessed on certain trains, all of which are authorized. The increased excess baggage and milk and cream rates are allowed. Increases of 25 pr cent in freight and miscellaneous rates are found to be sufficient to provide earnings of 6 per cent on the fair value of railroad property in Nebraska, based on the I. C. C. valuation in Ex Parte 74, without any increase in passenger fares and allowing for modifications in the order with reference to stone, sand and gravel and brick and tile, rates upon which are limited to 160 per cent of rates in effect June 24 as a maximum. The commission finds that in many cases General Order 28 increased rates on these commodities 70 per cent and that a further increase would be unjust. The order provides for hearings on October 21 to consider further revision of rates on these building and road making materials. An equalization of the I. C. C. class rate scale prescribed in the Missouri River-Nebraska case to apply intrastate from 17 Nebraska jobbing centers and the slate rates fixed by General Order 19 applying on all other traffic is urged, but considered impossible of accomplishment in view of the present emergency. All increases are effective on or before August 26, or as soon thereafter as possible.

New York (1st District). Commission on August 20 authorized carriers under its jurisdiction to put in effect the same freight rates as promulgated by the I. C. C. Increased rates on milk and cream and advanced passenger fares are denied. We also understand the carriers' application as to restriction of reconsignment privileges was granted.

Oregon. Increased freight rates and passenger fares in harmony with those allowed by I. C. C., became effective August 26 in tariffs filed by the carriers. No formal order was entered by the commission. Increased minima on grain and grain products were also permitted to become effective.

South Carolina. Commission on August 20 authorized increases in harmony with those fixed by the I. C. C., except as to passenger fares, which will not at this time be increased in excess of three cents per mile, due to statutory limitation. Increased rates are effective August 26.

South Dakota. Commission on August 19 authorized increases in harmony with those authorized by the I. C. C. upon all intrastate rates which are substantially the same as interstate rates. The commission denied application for increases in commodity rates on grain and grain products, live stock, lignite, emigrant movables, hay, fuel, wood, sand, gravel and stone. It also denied increases in class rates applying locally west of the Missouri river and between points east and west of the Missouri. A hearing is ordered for September 10 to fix state rates in South Dakota on such commodities, upon a substantial parity with interstate rates then in effect. It should be noted that South Dakota authorities are earnestly seeking to avoid discrimination between interstate and intrastate commerce by an equalization which rate increases identical with those granted by the I. C. C. would not have accomplished.

Tennessee. The commission holds that it would be unfair to the traveling and shipping public in Tennessee to permit increases in freight and passenger rates on less than 30 days' notice to the commission and the public, and the petition for permission to make such increases effective on five days' notice is denied, without any expression of opinion as to the merits of the application.

Texas. Commission on August 21 authorized increase of 33 1/3 per cent in freight rates and 20 per cent increase in excess baggage rates. It denied increase as to passenger rates for lack of jurisdiction. New rates effective August

26. Chairman Mayfield is understood to have urged granting the full 35 per cent increase in freight rates.

Vermont. Commission authorized filing of tariffs containing same increases as those authorized by the I. C. C. on less than statutory notice, but did not deal with the merits of the increases effected.

Washington. Commission on August 25 authorized increases in harmony with those authorized by the I. C. C., except that no passenger increase allowed where present passenger fare is in excess of 3.6 cents per mile. It denied increase on milk and cream carried on passenger trains. It has suspended proposed increase on pulp logs for 90 days, pending further investigation on account of apparent unjust discrimination in rates.

West Virginia. Commission on August 10 authorized same increases as authorized by the I. C. C., effective August 26, but not earlier than the effective date of increases allowed by the I. C. C.

Wyoming. Commission authorized increases in harmony with those authorized by the I. C. C.

Material Accounting on The Canadian Pacific

By A. A. Goodchild,
General Storekeeper, Canadian Pacific

In 1905 the Canadian Pacific organized the department of auditor of stores and mechanical accounts as a branch of the accounting department to take over all duties pertaining to the accounting for the material, receipts and issues. The staff employed by the stores department in this connection was transferred, and while the actual figures are not now available, it is a fact that a considerable reduction in the number of employees was made due to this centralization of forces. Some of the saving, however, was offset by a certain amount of duplication of records in connection with material purchased, as it was considered necessary for the auditor to carry a material order record to enable him properly to certify invoices for payment from his own records after they had received the approval and signature of the general storekeeper as to the receipt of material. Apart from this, however, no additional records were required, and the auditor was able as a result of previous training and experience to simplify many of the records hitherto in use.

The auditor, as the title implies, reports directly to the comptroller, and assumes all responsibility for the accounts. The storekeeper signs all the merchants' invoices, thus vouching for the proper receipt of material and authorizing a charge to the stores department. It is recognized that charges cannot be made against the stores department without first obtaining an approval of the official of that department for such charge. On the same principle no charges are made against the mechanical or other department accounts without proper authority, this authority being represented by the signature of an official or foreman who has been specially authorized to sign requisitions. All advices of shipments, also shop requisitions which have been filled, are turned over to the auditor daily so that there is no delay in making charges to the proper accounts.

There is necessarily a certain amount of flexibility in the arrangement of staff at outside points, and it is sometimes found desirable for the storekeeper to handle the shop time cards by collecting and checking against clock slips and forwarding to the accounting department. Such arrangements only apply to points where there is not sufficient shop staff to justify the appointment of a local timekeeper, but where it is necessary to maintain a storekeeper. At all the larger points a representative of the auditor is maintained to handle all stores accounting and shop timekeeping.

Results on Canadian Pacific

During the year ending June 30, 1920, the receipts and issues of material, exclusive of rails, ties, fuel, stationery and commissary, which are handled in a special manner or by a separate department, amounted to $53,750,000 on the Canadian Pacific. The total payroll inclusive of purchasing department salaries and road and mechanical department assistance amounted to $712,000, which represents a payroll cost for handling material, in and out, of $1.32 per $100. Accounting charges alone represent 16 per cent of this amount, or 21 cents per $100, which will be found to compare very favorably with other railroads.

It is now over 15 years since the Canadian Pacific transferred all stores accounting from the stores department to a special division of the auditing department, whose duties pertain to stores and mechanical accounts. The mechanical accounts are interwoven with those of the stores department to a very considerable extent, and the practice of making one accounting officer responsible for keeping all stores and mechanical accounts has resulted in keeping this work in a more satisfactory condition. Moreover, disputes as to charges for material or labor to any new equipment or maintenance account very seldom occur, owing to the fact that the accounting department has "no axe to grind" in compiling its accounts and is concerned only in the accuracy of its charges as developed from vouchers in its possession.

The separation of the stores accounting from the stores department has relieved that department so that it can now devote itself entirely to duties pertaining to the ordering, receiving, storing and issuing of material. It is true that, unless specially called for, very few statistics are ordinarily furnished from month to month except the totals of the receipts, issues and balances with the necessary detailed balance sheet of each stores account. But is it not generally a fact that there are altogether too many statistics compiled in this as in many other branches of railroad work?

Reasons for Separate Accounting

The reason why, in the opinion of the writer, the accounting department should take entire charge of this work, may be briefly outlined as follows:

First—It is the department best qualified to handle accounting work by virtue of its training and organization. Material accounts lend themselves to distribution and classification in the same manner as do all other classes of accounts.

Second—It is desirable that questions and disputes relating to charges against the various accounts should be disposed of independently of either of the interested parties to such disputes.

Third—It is an economical proposition, avoiding duplication of work and records. When this work is handled by the stores department it is always necessary for the auditing department to check over the records in such a manner that very little extra labor would be involved in the compilation of these records in their entirety.

Fourth—A storekeeper is not, generally speaking, an accountant. His training has qualified him for other duties more particularly pertaining to the material itself, and it is generally a fact that his supervision of the accounting feature is more or less superficial. The claim is generally made for the maintenance of the present practice that storekeepers are able to get desired information more quickly from records which they maintain themselves, than could be done when these records are maintained in a separate department. But any information which a general storekeeper may requires should be as readily obtainable from the accounting department as from an accounting branch of the stores department, and in a proper organization of the accounting department this feature of the work would naturally be taken care of.

Cleveland and Akron Object to Lake Priority

Lake Cities Protest on Ground That Order Will Prevent Accumulation of Adequate Coal Supply.

WASHINGTON, D. C.

REPRESENTATIVES of the Cleveland and Akron, Ohio, chambers of commerce at a hearing before the Interstate Commerce Commission on August 30 urged the commission to rescind or modify its Service Order No. 10, the order giving priority in the transportation of lake coal for the Northwest, on the ground that the order discriminates against those cities and operates to prevent them from accumulating an adequate supply of coal for the winter. The witnesses were somewhat hazy as to what they wished the commission to do about it and even as to the actual operation of the order, although they declared that an emergency exists and that domestic consumers find it practically impossible to get coal, whereas they assumed that the consumers of the Northwest would get 100 per cent of the tonnage required by the order. It was finally agreed that they should appoint a committee to confer with committees of coal operators and railroad officials at Cleveland on Thursday for the purpose of ascertaining whether there is a real emergency and if so whether some plan cannot be devised for affording relief without any modification of the order.

The Cleveland and Akron representatives had a good deal to say about the amount of coal going to Canada under the order, a large part of which they thought must be going to Montreal and Quebec for export, but Commissioner Aitchison said the Canadian Railroad Commission, which is also the fuel administration for Canada, has prohibited exports. Commissioner Potter asked the witnesses whether they took the position that the commission had no power to issue an order which has the practical effect of requiring coal operators to disregard contracts and ship to some other destination. Some of the witnesses started to take that position but when reminded that if the commission had no power to issue an order for the relief of the Northwest it could not issue orders for Cleveland and Akron they offered to file briefs on the subject. Chairman Clark requested that the briefs also discuss the power of the commission to issue priority orders for the relief of public utilities.

The burden of the complaint was that cities located near the coal fields are not receiving enough coal while coal is being shipped beyond across the lakes. Commissioner Aitchison and Chairman Clark kept reminding them that the Northwest must receive a large part of its supply before the lakes freeze up and that while only one-third of Cleveland's coal year has gone three-fifths of the year for lake coal is gone and the shipments are still behind the requirements. They also expressed the opinion that it is very unlikely that the Northwest will receive 100 per cent of its requirements and that if an attempt were made to supply the Northwest with coal by rail during the winter the gateways would be so clogged that nothing else could get through.

Commissioner Aitchison said that this was the first time he had heard it suggested that Canada should not be treated on a parity with the United States as far as the order is concerned, because Canada is in a position to retaliate by shutting off products that the United States wants. He said the commission had received many letters from newspapers in Ohio asking that coal be furnished to paper-mills in Canada. J. F. McGee, fuel administrator for Minnesota, said that Canadian buyers had obtained large quantities of coal by bidding "up to the sky" for all the free coal, and that the Canadian government was assisting them. The complainants finally summed up their case with a request that domestic consumers in their cities should at least be placed on a parity with industrial consumers elsewhere. D. B. Wentz, president of the National Coal Association, said that the present lake order should be maintained but he made the suggestion that the operators and the dealers appoint committees to consider the situation, and that Daniel Willard, chairman of the Advisory Committee of the Association of Railway Executives, had offered to appoint a railroad committee to co-operate. Chairman Clark approved this plan and suggested that arrangements be made at once for the conference.

Chairman Clark said that the commission had merely tried to take care of two sections of the country, the Northwest and New England, that are largely dependent upon water transportation for coal and therefore must get in a large part of their supply before winter sets in; and that it had done what had seemed best to it in the public interest. Commissioner Aitchison also pointed out that it is hardly possible to give every one a full coal supply for the winter by August, and while he expressed considerable doubt as to whether the northwest would get a sufficient supply he thought the rest of the country would get along very well, as up to date the country as a whole has had practically 100 per cent of a normal coal supply. Chairman Clark also pointed out that for the first 199 days of this year the output has been 48½ million tons ahead of 1919.

E. T. Butler, representing the Trumbull Steel Company, said that his company had not been able to get the output of its own mines, because it had to ship a percentage to the lakes for the pool, and that as a result it had had to shut down most of its plants and pay high prices in the open market for enough coal to keep running at all.

H. M. Griggs, manager of the Coal & Ore Exchange, the lake pool, gave the figures for the lake coal movement to show the proportion going to Canada and also to show that only a comparatively small part of the coal produced in the districts affected by the priority order is shipped to the lakes. In 1918, he said, of 28,153,317 tons shipped in the lake trade 77.1 per cent went to American destinations and 22.9 per cent to Canadian destinations. In 1919, 17,180,279 tons went to American destinations, or 79.1 per cent, and 4,533,062 tons, or 20.9 per cent, to Canada. In 1920, up to July 31, of a total of 6,253,736 tons, 71.5 per cent had gone to American destinations and 28.5 per cent to Canada, while from August 1 to 25, 28.6 per cent had gone to Canada. For the week ending July 31, the first week after the order became effective, the railroads had loaded in the territory to which the order applies a total of 81,180 cars, of which 17,859 went to the lakes, 20,160 were assigned cars and 43,161 cars were commercial coal. For the second week, of a total of 82,280 cars, 19,354 went to the lakes; for the third week, of a total of 84,678 cars, 23,101 went to the lakes, and for the fourth week, of a total of 82,719 cars, 21,349 went to the lakes. In reply to questions by Chairman Clark Mr. Griggs said that there had been no substantial accumulation at the lake ports nor delay on the part of vessels, and there has been no shortage of boats because the down lakes ore traffic exceeds the coal tonnage northbound.

A. G. Gutheim, of the Commission on Car Service, said that while the Northwest had asked for 28,000,000 tons of coal it would be lucky to get 23,000,000 and that it would be better for the rest of the country if the northwest should get a million or two tons more than that it should be short.

In conclusion Chairman Clark said he was sorry that any

order of the commission should work a hardship on any one but that it is a little difficult to act for tthe best interest of the public as a whole without affecting some of the individuals.

The Interstate Commerce Commission on August 26 issued Service Order No. 14, dated August 25, providing that upon any day when a common carrier by railroad is unable to supply any mine upon its line with the required open-top cars, open-top cars shall not be furnished or supplied by it to wagon mines which are not in a position to load such cars upon private tracks and from a tipple or other arrangement which permits the coal to be dumped from an elevation into the car, until all other mines have been fully supplied with open top cars. This is in response to protests by the National Coal Association, which has also been supported to some extent by railroad officials, that the loading of coal is delayed by furnishing the wagon mines their quota of cars because the standard mines which could load the cars in a short time are thus given a reduced supply while the wagon mines hold the equipment for a considerable time.

The commission says in its order that the existing rules, regulations and practices of the railroads as to the supply and distribution of open-top cars to wagon mines adversely affect car conservation and the ability of the carriers properly and completely to serve the public, in so far as they conflict with the regulation prescribed in the order, which is to be effective until April 1, 1921. Open-top cars supplied wagon mines upon private tracks and equipped with a tipple or other arrangement for dumping coal from an elevation into a car, must be counted against such wagon mines under uniform mine ratings and car distribution rules, the same as are applied to established tipple mines.

A delegation headed by R. H. Sykes of Durham, N. C., called on the Interstate Commerce Commission on August 26 to ask that the order giving priority to the shipment of coal to the lakes for the northwest be modified and that some limitation be placed on the export of coal. Mr. Sykes stated that only 18 per cent of the normal coal supply had been received in North Carolina by August 24 and that unless something is done to remedy the situation the South will be short of coal this winter.

The Interstate Commerce Commission on August 31 issued an amendment to Service Order No. 11, the priority order for New England coal, suspending its operation for five days. The amendment says that by reason of the operation of Service Order No. 11 of the commission entered July 26, 1920, "a large quantity of bituminous coal has been transported to the various North Atlantic ports enumerated in said order, which has not been transported by water to New England, and now remains and is held in railroad cars at such ports, and that undue delay to the rail equipment is caused by the continuing transportation of coal under Service Order No. 11 to such ports, and that sufficient water bottoms are not at such ports or expected to arrive, so that the coal in cars now at such ports can be discharged without undue delay."

It is therefore ordered, that the operation of Service Order No. 11 be suspended, and shall not be in force or effect for the period of five consecutive days from September 2 to September 6, 1920, both inclusive, and that thereafter said order shall be in force and effect unless otherwise ordered.

State vs. Federal Control.—That the opposition to a rate adjustment should originate in this state seems deplorable, especially in view of the grounds that are assigned in the decision. If the evidence of the inadequate character of present rates and fares on railways already available to every man in the land is not sufficient, there should be the gravest of doubt regarding the possibility of ever convincing a human being on the subject.—*N. Y. Journal of Commerce.*

Southern Pacific Makes Enviable Passenger Traffic Record

Three factors combined to bring about the heaviest volume of passenger traffic ever experienced on the Pacific system of the Southern Pacific during the period from June 19 to July 10. These were an exceptionally heavy vacation and tourist movement, the Mystic Shrine convention and Rose Carnival at Portland, and the National Democratic convention at San Francisco. In order to meet the situation a definite plan of handling this concentration of travel was mapped out in advance. Staff meetings were called on the Portland, Shasta, Western and Coast divisions for this purpose. Each division had its own peculiar problems to solve.

The Shasta division is a single track mountain division with a 3.3 grade over the Siskiyous, where the roadbed is hewn out of the solid mountain side. This division handled over 50 special trains, in addition to the regular movement, in a period of a little over two days' time. The northward movement required a total of 128 engine movements to handle the trains between Ashland and Dunsmuir, involving a total of 35 trains of 377 cars. On this division there were but 116 locomotives, including all classes of power, and it was necessary to assemble every possible engine and work in conjunction with the Portland division in an interchange of power. By spacing trains 25 minutes apart out of Ashland, moving helpers without delay, meeting a train at each siding and similarly handling southbound trains, the situation was met.

As a result of the light snowfall of last winter, there was a water shortage at various points. Further, regular water stations could not supply the large number of trains running closely together without the necessity of delays to replenish the tanks. Therefore a special chart was prepared showing where each train would stop for water, alternating at the various tanks, and each engineman was advised where to take water.

An incident occurred on one of the westward trains which is of interest. The reverse lever on the locomotive broke off below the quadrant latch. The assistant road foreman of engines, who was on the engine at the time, held the reverse lever in place with a monkey wrench and alternated with the engineman in this maneuver until the train had been brought into Dunsmuir exactly on time.

On the Portland, Western and Coast divisions fell the duty of providing terminal accommodations for the long trains which pulled in from every section of the United States. At Portland, a total of 64 special trains arrived on all roads during the period first mentioned. The trains comprised 525 Pullman standard and tourist sleepers. It was necessary to construct temporary track facilities and also use industrial tracks in the wholesale district for parking trains.

Trains arriving in the San Francisco bay region, and handled by the Western and Coast divisions, were provided terminal accommodations at Oakland pier and at Third street where the movement was heavy at all times. Between the hours of 5 a. m., June 26, and 3 a. m., June 27 the Western division handled a total of 49 passenger trains consisting of 468 cars on the Benicia ferry, an average of a train every 26 min., 40 sec., for the 22 hours. Similarly, during the hours of 5 a. m., June 26, and 4 a. m., June 27, 393 passenger cars moved out of Oakland pier and 533 entered, a total of 926 cars. An incidental problem was encountered between Oakland pier and San Francisco where in the 24 hours on June 26, 1,370 trucks of baggage, mail and express were transported, with most of the movement concentrated at rush hours.

For the Coast division and the Third street station.

figures show that on June 15 to 30, for the Mystic Shrine movement alone, 2,046 passengers arrived at San Francisco in 168 cars. The train movement out of San Francisco consisted of 21 special trains, with 4,084 passengers, which were handled between June 19 and 30, of the same month. From June 1 to June 5, more than 577,000 passengers entered and departed from San Francisco via the Third street station. Comparing this movement with the same period of 1915, when the Panama Pacific Exposition gave the Southern Pacific a large increase in traffic, only 347,090 passengers arrived and left San Francisco through this station.

The Coast division faced its heaviest movement between June 14, and July 6, when, to its 593 regular outbound trains from the Third street terminal, 55 additional sections were added. Of these, 20 were special Shriner trains, 18 equipment trains and 5 Democratic special trains; also special tourist movement trains and other traffic. All together for the 23-day period, June 14 to July 6, the Coast division handled into San Francisco 683 trains, with a complement of 4,980 passenger cars. The heaviest single day's movement of outbound occurred on June 26, when 37 trains, with 296 passenger cars, entered San Francisco via Third street and on the same day 39 trains with 325 passenger cars departed.

Railroads Operating on Own Resources

WASHINGTON, D. C.

WITH THE ARRIVAL of September 1 the railroads have entered upon a new stage of their turbulent careers and are now operating upon their own resources, without the assistance of a government guaranty, but under a new level of rates intended to give them an opportunity to earn a net operating income equal to 6 per cent, in the aggregate, on the sum which the Interstate Commerce Commission has held for temporary purposes to be their value.

It is roughly estimated that the amount which the government now owes the railroads, under its guaranty of one-half of a year's standard return for the period from March 1 to September 1, is approximately $600,000,000, less about $234,000,000 of advances made on account of the guaranty. The Interstate Commerce Commission has issued certificates for approximately that sum to about 175 railroads for advances from the Treasury, some of which probably have not been actually made as yet as the commission has received a large number of applications during the past few days and the Treasury has probably not had time to act upon all of them, as the roads are required to execute contracts and furnish security. Some roads have received four or five certificates for advances on applications filed from time to time to meet current requirements, such as interest and dividends and the large sums that are being paid out in retroactive wage increases under the recent award of the Railroad Labor Board.

The period in which advances may be received on account of the guaranty expired with the termination of the guaranty period and the commission was rather swamped with application during the last week. However, as many roads will continue to need cash during the time that must elapse before the exact amount due under the guaranty can be determined, efforts are now being made by the Treasury Department and the commission to work out a plan by which partial payments on account may be made in advance of the final settlement, which will serve practically the same purpose as the advances provided for in the transportation act. The railroads will hardly know for another month what they have earned during the month of August and many adjustments will be required before the final settlement can be made, such as those in the maintenance accounts as to which the commission is to determine how much can be charged for the purpose of calculating the guaranty. The commission is also expected to scrutinize all the operating expense accounts for any abnormal items.

Very few roads have earned any excess of net operating income to be turned into the Treasury for the guaranty period in accordance with the contract which they entered into when they accepted the guaranty, and some of the roads that thought they could get along without assistance are finding that they have lost money by it, particularly as the result of the retroactive wage increase. Many roads have had to ask advances to meet ordinary operating expenses.

Great interest will naturally attach to the first reports of earnings under the new rates, which went into effect on August 26, but it will be nearly three months before the statistics for the roads as a whole for September will be available. For the last days of August the government will get the benefit of the increases in rates in the form of a reduction of the amounts it will have to pay under its guaranty.

Inquiries have been received by the commission as to whether the commission will require an inventory to be taken of material and supplies on hand as of August 31, 1920, in connection with the determination of the amounts payable under Section 209 of the Transportation Act, 1920.

In view of the fact that reliable information with respect to the operating expenses of the guaranty period, as affected by material and supply issues, can be obtained in no other way, the commission will require carriers accepting the provisions of Section 209 of the Transportation Act, 1920, to take an inventory of materials and supplies as of the close of business August 31, 1920, and adjust their accounts for the period, March 1 to August 31, both inclusive, in the manner provided for in Case 2, Accounting Bulletin No. 15.

With respect to carriers which were not under federal control and which did not take inventories as of February 29, 1920, the amount of any discrepancy disclosed by the inventory as of August 21, 1920, should be apportioned between the guaranty period and the period prior thereto on basis of the material issues applicable to each period since the previous inventory was taken.

GEORGE B. MCGINTY,
Secretary.

The Interstate Commerce Commission has issued a notice saying that the attention of the commission has been drawn to the fact that a number of smaller carriers which were not under federal control and which expect to derive benefits under the provisions of Sections 204 and 209 of the Transportation Act, 1920, maintain their accounts and records in what may be described as a very unsatisfactory condition with respect both to the sufficiency of details and compliance with the uniform system of accounts promulgated by the commission. This condition causes the expenditure of an unwarranted amount of time on the part of the commission's examiners in conducting investigations necessary to determine amounts payable to carriers under Sections 204 and 209 of the Transportation Act, 1920.

To the end that the work of the commission in this connection may progress as expeditiously as possible, carriers are advised in the event their accounts have not been kept in accordance with the commission's accounting regulations, that they will be expected to restate their accounts and bring them into harmony with the classification provisions. Pending proper restatement of such accounts, the commission's examiners will be withdrawn and the verification of claims submitted by the carriers for the reimbursement of deficits under Section 204 and for guaranty payments under Section 209 of the Transportation Act, 1920, will be suspended. During the period of such suspension the commission will feel at liberty to withhold certificates for advances either under Section 204 or under Section 209 (h) of the Transportation Act, 1920.

Office Efficiency

By C. C. Henkel

CONSIDERING the present widespread labor shortage and the low average of efficiency of what labor is obtainable, the present would seem a most opportune time to eliminate duplication of work and some of the many reports of no real value which are required by every railroad. Another opportunity for effecting considerable saving is in the more general use of labor-saving office machinery, such as adding machines, modern filing cabinets, etc.

On roads where the departmental organization is in effect the likelihood of duplication of reports is much greater than where the divisional system is used, possibly because no department wants to take the word of another. The railroads have spent a vast amount of money on valuation work and yet instances have come to the writer's attention where the maintenance of way and other departments are keeping up to date certain maps, etc., which information is given in better shape by the excellent maps made up by the valuation forces.

Of course we know that a large percentage of the great increase in clerical work which has taken place on the railroads during recent years is due to Interstate Commerce Commission requirements and the requirements of the various state railroad commissions. The fact remains, however, that it is a very simple matter for a general officer to order the preparation of a new report, and that even if the labor involved in its preparation in the subordinate offices is away out of proportion to the value of the report, it seems to be an utter impossibility ever to get it stopped again.

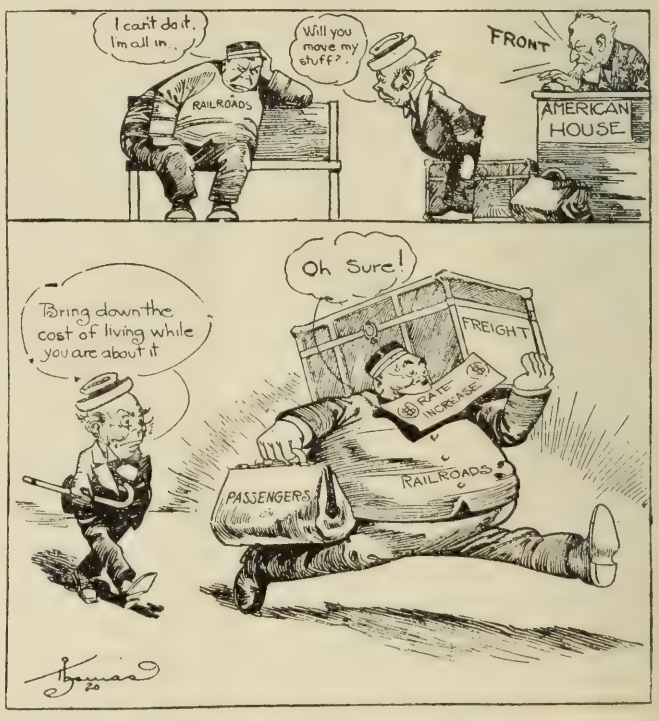
Many of the reports required by general officers, especially in the maintenance of way department, presuppose the existence of an elaborate and accurate cost system in the offices of the supervisors of track, master carpenters, etc. Such systems are actually in effect on few if any railroads, and it is a debatable question whether the expense involved in putting them into operation would be warranted, especially when one takes into account the fact that the primary sources of the figures are the section foremen's labor and material distribution sheets, which, on account of the necessity of employing for the position of foremen, men of foreign birth with very limited education, frequently do not represent the exact facts. The writer has in mind a certain rather elaborate tie plate report which on its face has many points of merit; it has columns showing the unmber of plates used of the various types, to be separated by branches or valuation sections, total cost of labor, cost of work train service, and material cost, from which the unit costs are supposed to be arrived at. As a matter of fact, as the total costs are not actually available, most supervisors probably assume or estimate the unit costs asked for and figure the total costs backwards from them, so that a report involving a great deal of labor to prepare is in reality misleading and hardly worth the paper it is written on.

Very little has been done in the way of supplying subordinate railway offices with the various labor-saving devices which are commonly found in the offices of every well-managed manufacturing concern. On some of the larger Eastern roads the track supervisor's office writes the payrolls and works up many of the reports which on the majority of railroads are handled in the office of the division engineer. The writer has knowledge of an instance where it was necessary to put on a temporary clerk in each supervisor's office for a period of three months and at a salary of $110 a month in order to catch up with reports which were behind. It is highly probable that if supplied with an adding machine at a cost considerably less than this expenditure for extra clerk hire the present office force of three or four persons could do the work, and even when the three months' period was up the saving would not stop, as they would continue to have the machine for use.

Many of the smaller offices have very poor facilities for taking care of their files. While modern file cabinets are somewhat expensive, the fact remains that they are cheaper in the end, as much time is lost in filing correspondence and locating it again in the makeshift tin and paper boxes commonly used, to say nothing of the greater likelihood of losing correspondence where they are in use.

The Railroad Administration so juggled the rates of pay of clerks that the chief clerks in the smaller offices, who have to assume most of the responsibility, receive but little more than their subordinates; the former receiving from $100 to $115 a month, while the latter get about $90 as beginners, ranging up to about $105. The result is that as soon as a clerk has become somewhat proficient he leaves to accept a more remunerative position with some outside industry, as there is nothing about his prospects with the railroad which tempt him to stay in the service. Putting it in another way, the railroads go to considerable expense to educate clerks, only to have outside industries reap the benefit of this education. The net result is that the chief clerk, if he remains in the service, has to assume personally, a great deal of the work which his inexperienced helpers are unable to handle. The supervisor and his assistant, who are supposed to be highly trained technical specialists, are thereby compelled to spend a large part of their time in handling the routine correspondence and reports which should be taken care of by the chief clerk, although they would be of far greater value to the corporation if they were outside, supervising the actual work of bridge building or track maintenance.

Criticism of this sort is distasteful to the writer and he trusts the reader will take it for granted that his reason for preparing this article is to point out a few of the things which will help us to get back to old-time efficient railroading, and which may have escaped the attention of our higher officers.



From the Detroit News

You Have to Tip 'Em to Get Service

Maintenance Allowance During Guaranty Period

Railroads in Briefs Filed with Commission Ask for Full Allowance Based on Physical Units

WASHINGTON, D. C.

ALFRED P. THOM, S. T. Bledsoe, and J. P. Blair, as a committee of counsel for the Association of Railway Executives, have filed with the Interstate Commerce Commission a brief as to the interpretation and application of Paragraph 3 of Section 209 of the Transportation Act relating to the allowance for maintenance to be made during the six months' guaranty period from March 1 to September 1 in computing the net operating income guaranteed to the carriers. They contend that the carriers should be allowed to include in operating expenses or deduct from operating revenues, for the purposes of the guaranty, the full amount of the maintenance allowance, regardless of whether the full amount was actually expended or not and also that in basing the maintenance allowance on the expenditures of the test period equated, the test should be the same quantum and character of physical maintenance rather than the amount of the expenditures. A brief on the same subject has also been filed with the commission by Samuel W. Moore for the Kansas City Southern. An abstract of the brief for tthe Association of Railway Executives follows:

Paragraph (3) of Section 209 (*f*) of the Transportation Act, 1920, is as follows:

"There shall not be included in operating expenses, for maintenance of way and structures, or for maintenance of equipment, more than an amount fixed by the commission. In fixing such amount the commission shall so far as practicable apply the rule set forth in the proviso in paragraph (*a*) of Section 5 of the 'standard contract' between the United States and the carriers (whether or not such contract has been entered into with the carrier whose railway operating income is being computed."

The entire paragraph (*a*) of Section 5 of the "standard contract," referred to in the above-quoted provision of the statute, is as follows, the proviso, which it is especially important in this connection to consider, being included in full in the quotation:

"During the period of federal control the director general shall, annually, as nearly as practicable, expend and charge to railway operating expenses, either in payments for labor and materials or by payments into funds, such sums for the maintenance, repair, renewal, retirement, and depreciation of the property described in paragraph (*a*) of Section 2 hereof as may be requisite in order that such property may be returned to the company at the end of federal control in substantially as good repair and in substantially as complete equipment as it was on January 1, 1918.

"Provided, however, That the annual expenditure and charges for such purposes during the period of federal control on such property and the fair distribution thereof over the same, or the payment into funds, of an amount equal in the aggregate (subject to the adjustments provided in paragraph (c) and to the provisions of paragraph (e) of this section) to the average annual expenditure and charges for such purposes included under the accounting rules of the commission in railway operating expenses during the test period, less the cost of fire insurance included therein, shall be taken as a full compliance with the foregoing covenant." (Italics ours.)

It will be noted that this section of the contract provides for the expenditure, or for the payment into funds, of the amounts necessary to meet the contract requirements as to maintenance.

It was realized that the requirement as to maintenance was an obligation, not of the owner, but of a tenant of the property, and the tenant was not a responsible individual and not a responsible private corporation, but a sovereign government, against which no suit could be entered and no execution could be issued or levied without its consent. In order to protect the just rights of the owners, it accordingly became necessary either that the contract quantum of maintenance should actually be put currently on the property, or that an actual fund should be currently created to meet the charge for maintenance on an accrual basis sufficient to make good the contract standard of maintenance. If an actual fund had not been created to meet this charge for deferred maintenance, the owners, at the end of federal control, would have had a claim against the government with chances in favor of there being no money to liquidate it, and with the consequent necessity that the owner must go to Congress as a supplicant for an appropriation.

Again, the carriers insisted in the negotiations that such maintenance should be either currently done or currently provided for, so as to avoid complications with the government which would probably arise in case of unduly postponed maintenance.

The measure of the contract obligation under the direct covenant is a quantum of maintenance necessary in order that the property might be returned to its owners at the end of federal control in a specified condition.

The method of securing the performance of that obligation was the requirement of the actual expenditure on the property for maintenance purposes of the amount necessary to produce that result, or, as to any part of the amount not actually expended, the payment of the same into a fund impressed with the trust that it should be expended for the prescribed maintenance purpose or properly accounted for at the end of federal control.

The proviso merely creates a limitation on the amount involved in the primary obligation and an agreed method of establishing a compliance with the obligation. It in no sense alters the relationship to the maintenance obligation of the unexpended balance which stands for the deferred maintenance—the maintenance due to but not actually put upon the property. That unexpended balance, which under the contract must be represented by actual money in a fund, is still a security for the performance of the maintenance obligation, a measure of permissable discharge of which is established by the proviso.

It will be thus observed that the requirement that deferred maintenance should be represented by actual money paid into a fund, in no way affects the operating results.

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From the foregoing statement, and in fact from the express terms of the proviso itself, it appears that the proviso does not limit the allowance for maintenance to the expenditures actually made therefor, but, on the contrary, expressly provides for an allowance, in addition to actual expenditures, to be represented by "charges" in the shape of *secured reserves,* which must, on account of the conditions, be represented by actual money paid into funds.

Manifestly the same interpretation should be given to this proviso, in its application to the guaranty period, as it undoubtedly bore in its application to the period of federal control, except as the conditions may be different between the

two periods and may, to the extent of such difference, require that the interpretation be modified.

When the situation of the parties during the guaranty period, as contrasted with their situation during the period of federal control, is considered, it will at once be observed that during the guaranty period there no longer exists a necessity to provide security to the owner for the proper maintenance which is deferred and not actually put upon the property.

Being the owner of the property and in the possession and enjoyment of it, he receives under the guaranty the benefit of an allowance for deferred maintenance, if it is represented by a charge in the operating expenses, to the same extent as if the amount had been actually put as an expenditure on his property.

On the other hand, if the amount necessary to provide the contract quantum of maintenance is neither put upon the property as an actual expenditure nor included as an accrual reserve in the operating expenses, it is manifest that the owner does not receive the benefit of it at all. He is simply deprived, to the extent that the amount unexpended is not so included, of the contract quantum of maintenance.

The guaranty section of the statute expressly provides against such a result. It creates a contract between the government and the carrier, by which the government obligated itself to make good to the carrier a railway operating income of a specified amount.

In order to arrive at a conclusion as to whether the carriers' railway operating income is equal to the amount guaranteed, it is necessary to ascertain the operating expenses, and the statute provides that, in ascertaining the amount of these operating expenses, the commission shall permit the inclusion therein of an amount for maintenance which it shall fix under the rule set forth in the proviso to paragraph (*a*) of Section 5 of the standard contract, and this rule, as above stated, provides for accruals of any part of such amount not actually expended.

It is immaterial under the standard contract, as between the carrier and the government, whether the agreed quantum of maintenance is actually put upon the property or represented by accrual reserves.

So, under the statute, it is likewise immaterial, in ascertaining the amount of the government's obligation as guarantor, whether the agreed quantum of maintenance is actually expended or is allowed for in proper reserves.

It is respectfully submitted that the average annual amount of the aggregate of the actual expenditures and of these charges to maintenance must be ascertained, and paragraph (3) of Section 209 (*f*) of the Transportation Act expressly requires that the proportion not only of these expenditures but also of the charges appropriate to be assigned to the six months' guaranty period shall be properly adjusted, as required by the contract, and that amount thus adjusted shall be allowed.

It seems to us clear that it is not within the discretion of the commission to allow these charges of unexpended amounts or not to allow them, but that, on the contrary, it is made by statute the duty of the commission to ascertain the average annual aggregate amount of the expenditures and charges for maintenance purposes during the test period, to properly equate them to the time and to the conditions of the guaranty period, and to permit the amount thus arrived at to be included in the operating expenses of the guaranty period, without reference to whether the actual expenditure is made or not.

The commission will not overlook the fact that if actual expenditure is to be made the test of allowance, a premium is at once set upon extravagant expenditures for maintenance purposes. Such a result could not have been intended by Congress.

If, however, the commission has any discretion in the matter, and is entitled under the law to view the matter in any degree as a question of regulation, we respectfully submit that that discretion should, in the interest of the public, be most liberally exercised.

The commission is administering a statute which, on its face, declares the policy of Congress to be to "foster and preserve in full vigor" rail transportation and to provide transportation facilities adequate to the needs of the public.

This declared policy of the act cannot be carried out, but must to a substantial extent be defeated, by depriving the carriers of the means to provide adequate maintenance for the six months immediately following the end of federal control.

Their properties, which they must make adequate to the needs of the public came back to them in a disorganized condition, with their rolling stock scattered, under-maintained, and so limited in quantity as to throw especially heavy requirements as to service on what was returned to them, and with their fixed properties also under-maintained to a very substantial extent.

Their labor was restless and disorganized and the cost of maintenance, both in the wages of labor and in the prices of materials, was on a higher level than ever before.

These conditions necessitated the making of arrangements and the letting of contracts for maintenance which could not be immediately applied and which would lap over for a considerable time after the expiration of the guaranty period, although a substantial portion of these overlaps would be properly chargeable to that period. That the maintenance should be done or arranged for was absolutely necessary in the public interests.

This question is a very serious one for the railroads. By reason of the shortage of the necessary materials and supplies and the scarcity of labor, and we may add the peculiar psychology of labor, during the guaranty period, many of them will be unable actually to expend the full amount of their maintenance allowance. The result wil be under-maintenance or deferred maintenance and a corresponding apparent but fictitious increase of operating income. Only by the payment of extravagant prices for labor and materials could such result be avoided. The carriers knew that Congress knew at the time the Transportation Act was drafted and passed that for the reasons above indicated inability in the case of many carriers to use up the entire maintenance allowance during the guaranty period, however necessary to avoid under-maintenance, was to be expected. They reasonably believed that Congress did not contemplate or desire that the maintenance allowance should be wastefully or extravagantly expended simply in order to exhaust it before September 1, 1920. They found no express provision in the statute requiring actual expenditure as a condition to the right to deduct the maintenance allowance from the gross revenues of the period to which it was attributable. They found nothing in the nature of operating income or in the purposes of the guaranty or in the provisions of the standard contract respecting maintenace or in the analogy between the guaranty and the just compensation of the Federal Control Act to suggest that Congress intended to base the deficit in operating income to be paid out of the Treasury or the excess to be paid into the Treasury on an apparent operating income deceptively increased by involuntary failure currently to maintain the property up to the proper normal standard of maintenance. That the maintenance allowance fixed as required by the statute must be presumed to be the proper normal amount to expend upon the property will be shown below. To refuse to allow the carriers to account for the maintenance allowance on an accrual basis, and to limit the amount deductible from the gross revenues to so much of the maintenance allowance as was actually ex-

pended during the guaranty period, will be a serious disappointment of just expectations. It will tend largely to defeat the purposes of the guaranty.

If Congress had intended that there should be included in operating expenses only so much of the maintenance allowance as the carriers succeeded in actually expending during the guaranty period, it would have so provided. There is no justification from the nature of the subject matter or otherwise for reading such a provision into the statute. There are abundant reasons for not doing so, as we shall now endeavor to show.

1. To imply such a provision is not required by the nature of railway operating income. Railway operating income for any given period means what is left of railway operating revenues after railway operating expenses properly attributable to that period have been paid or provided for. There can be no operating income until the expenses of operation have been so deducted. The cost of repairs and other maintenance necessary to restore or keep the property in the condition it was at the beginning of the period must be paid or provided for before the operating income for that period can be correctly stated. The operating income of a railroad company for a given period cannot properly be increased by deferred maintenance or by deferring the payment of a part of the current operating expenses. Otherwise a strike of the maintenance forces, inability to obtain the necessary materials and supplies, or any other misfortune preventing current maintenance, preventing the stitch in time, would tend to swell the income and profits. Efforts to create an apparent operating income by improperly deferring maintenance have been heretofore regarded as utterly without justification and the apparent increase of income as purely fictitious. In recognition of the foregoing the accounting rules of the commission permit and encourage, if they do not require, the railroads to account for operating expenses on an accrual basis.

The ordinary accounting period of a railroad company is the 12-month calendar year. It so happens that the guaranty period is six months taken from the middle of the year, thus excluding the first three and the last three months of the calendar. The operating revenues of the guaranty period are determined by the actual results of operation. So are the operating expenses (other than maintenance), subject to the provisions of paragraph (5) of Section 209 (*f*). But the maintenance expenses deductible are one-half the average annual maintenance expenses and charges of the test period, ascertained as provided in the standard contract. For the purpose of the guaranty the amount of maintenance thus fixed must be presumed to be the proper normal amount for the carrier to spend or charge during the guaranty period. For such purposes this amount of maintenance must be presumed to be the proper amount of maintenance expenses or charges attributable to that period, and, hence, the amount properly deductible from the operating revenues before the operating income for that period can be correctly stated. To charge more against the operating revenues is forbidden as presumptively excessive maintenance, and logically, to charge less should be regarded as under-maintenance and should not be required.

2. A consideration of the nature and purposes of the guaranty provisions and the conditions under which the federal control terminated will lead to the same conclusion. In obedience to an almost universal demand for a return of the railroads to their owners, rightly to be construed as a mandate not only to provide for a resumption of private operation but to do what was proper and necessary to give private operation a fair chance, Congress included in the transportation act a guaranty to the railroads of a reasonable operating income for the transition period succeeding federal control. To confine maintenance expenses deductible from operating revenues to so much of the maintenance allowance as the carrier was able actually to expend during the guaranty period would be inconsistent with the benevolent design of the law and tend to defeat the purpose of the guaranty. Considering the scarcity of labor, the shortage of materials and supplies, and the abnormal transportation and other conditions which have characterized the guaranty period, it will be impossible for many carriers, probably for any carrier, actually to expend the entire maintenance allowance during the guaranty period. To consider its operating income as increased by the amount of this involuntary under-maintenance would be in disregard of the facts and would operate unjustly and oppressively. Such a construction of the law, treating as net income what the carrier owes to the property, might cause the carrier to become indebted to the United States because of a fictitious excess of operating income and require it to pay into the Treasury a sum representing not actual earnings but deferred maintenance.

3. Considering the manner in which the guaranty was provided for in the Transportation Act it was evidently the intention of Congress to make it correspond in amount generally with the just compensation contemplated in the federal control act. In other words, it was the intention to extend for a period of six months the compensation the railroads were receiving during the period of federal control. Such compensation was that authorized by the federal control act. The guaranteed operating income was to be the substantial equivalent of the just compensation of the earlier act. Hence it is pertinent to inquire how maintenance was provided for in the federal control act. If we find that just compensation meant an annual income over and above the proper normal maintenance of the properties, then we have support for the contention that the operating income guaranteed was an income over and above the maintenance of the properties up to a proper normal standard of maintenance as determined by the experience of the test period, and strong reason for believing that Congress did not intend to make the guaranteed income less than the just compensation of the federal control act by an amount equal to so much of the maintenance allowance as was not actually expended during the guaranty period.

It is necessary only to read the provisions of Section 1 of the federal control act, in connection with the public utterances of the President preceding the passage of the act, to become convinced that the just compensation which the carrier was deemed entitled to receive was the average annual railway operating income of the test period *in addition to* the maintenance of its property up to the standard of the test period.

The provisions of Section 1 of the federal control act are too long to quote. They authorized an agreement for an annual compensation equal to the average annual railway operating income, with the undertaking in addition to return the property in substantially as good repair and in substantially as complete equipment as it was at the beginning of federal control, the same to be accomplished by the creation of reserves if necessary.

The intended equivalency of the guaranty with the just compensation of the federal control act or with the standard return of the standard contract is destroyed, if the guaranty means the average annual railway operating income of the test period plus not the entire maintenance allowance, which is equivalent to the return of the property in substantially as good condition as at the beginning of the period, but plus only so much of the maintenance allowance as the carrier may succeed in actually expending under abnormally unfavorable conditions.

4. Congress expressly referred in the provisions of the Transportation Act in question to the arrangement in re-

spect to maintenance expenses during federal control contained in the standard contract. It thereby showed its knowledge and approval of the way in which maintenance was taken care of in the standard contract and it is a fair, if not a necessary, inference that it intended that so far as practicable that arrangement in respect to maintenance expenses should be the rule during the guaranty period. The same factors were present in the two periods. The guaranteed operating income corresponded with the standard return or annual compensation. The maintenance allowance was to be calculated in the same way. In both cases the income or compensation was to be something over and above the maintenance allowance. Now under the standard contract the carrier was entitled, in addition to the standard return, to the benefit of the full maintenance allowance, the proviso requiring the director general to set up in reserves or pay into funds so much thereof as was not actually expended. Why is the carrier not entitled during the guaranty period to the benefit of the full amount of its maintenance allowance, and so permitted to accrue or set up in reserves so much thereof as is not actually expended?

In concluding the argument on this branch of the case we submit that there is nothing in the text of the law that requires or justifies the commission in denying to the carrier the full benefit of its maintenance allowance by refusing to permit it to accrue or set up in reserves, and so include in is deductible operating expenses so much thereof as it may not be able actually to expend.

Having ascertained the amount of the average annual expenditures *and charges* for maintenance during the test period, it becomes necessary, under the requirements of the proviso to paragraph (*a*) of Section 5 of the standard contract, for the commission to make the adjustments thereof provided for in paragraph (*c*) of that section.

Paragraph (*c*) is as follows:

"In comparing the amounts expended and charged under the provisions of paragraphs (*a*) and (*b*) of this section with the amounts expended and charged during the test period, due allowance shall be made for any difference that may exist between the cost of labor and materials and between the amount of the property taken over and the average for the test period, and, as to paragraph (*a*), for any difference in use between that of the test period and during federal control which in the opinion of the commission is substantial enough to be considered, so that the result shall be, as nearly as practicable, the same relative amount, character, and durability of physical reparation."

Manifestly it is unimportant for the purposes of this guaranty that there should be a fair distribution over the carriers' property of the expenditures and charges for maintenance purposes. That was a provision put into the standard contract for the carriers' protection and is a matter in which the guarantor is in no way interested. The interest of the guarantor is confined to interest in the amount of the guaranty and does not extend to interest in the disposition of the amount.

It seems to us beyond question that, under a proper construction of the Transportation Act, the period with which, for the purposes of the guaranty, the comparison is to be made is the guaranty period.

Manifestly the purpose of the statute was to permit a proper, and to prevent an excessive, allowance, for maintenance during the guaranty period and under the conditions then existing. The government, in the matter of this guaranty, is not interested in the relation between thte test period and the period of federal control. If the costs during the guaranty period are lower than during federal control, the government as guarantor would be entitled to the benefit of the lower costs. If the cost level should now be higher than during federal control, the carrier is entitled to have such higher level of costs applied, for it is the proper amount for maintenance during the guaranty period that is to be arrived at. Congress doubtless intended to provide for this by qualifying the obligation to apply the rule of the contract by using the words "so far as practicable."

These same considerations would lead to the conclusion that the comparison must likewise be made between the quantum of property to be maintained during the test period and the quantum of such property during the guaranty period, and between the use in the test period and the use in the guaranty period, instead of making such comparison with the quantum and use, respectively, of the property during federal control.

The proposition hereinbefore stated, that the main and controlling purpose of Section 5 is to secure the return of the properties to their owners at the end of federal control "in substantially as good repair and in substantially as complete equipment" as when received, and that the proviso to paragraph (*a*) does not, and was not intended to, diminish this obligation, but only to furnish a means of determining whether the obligation has been performed, is strengthened by the provisions of paragraph (*c*) which require that the adjustment for differences in costs between the test period and the period with which it is to be compared, must be so made that "the result shall be, as nearly as practicable, the same relative amount, character, and durability of physical reparation."

Bearing in mind the purpose thus plainly declared of the adjustment, it becomes manifest that paragraph (*c*)—the paragraph controlling the method of adjustment of differences in cost—requires that the same relative quantum of maintenance, of the same relative character and durability, as that of the test period, shall be put upon the property during the contract period, and that it is not the amount of money expended, but the relative cost of the prescribed quantum and character of maintenance, which is, as far as found to be practicable, to govern in the adjustment.

That it is the cost of labor to do the prescribed quantum of maintenance, and not the wages or the price of labor, which is to govern, is manifest from the course of the negotiations, when the standard contract was formulated, in respect to this paragraph. The word "price" was in the government's first draft, known as the Matthews draft of April 4, 1918, and in the drafts of April 15, 16, 17 and 23, and May 4, 1918. As a result of continuous objections on the part of the carriers, in the draft of May 8, 1918, the word "cost" was substituted for the word "price" and appeared thereafter in all subsequent drafts and in the final form.

In the first draft there also appeared, *"so that the comparison may be reduced to a basis of relative physical reparation,"* and this, through the process of negotiation of the standard clauses, was changed to, *"so the result shall be, as nearly as practicable, the same relative amount, character and durability of physical reparation."*

Thus it will be seen that the use of the term "price of labor" was considered and discarded in favor of the term now in the contract, "the cost of labor."

This is likewise true as to materials. Manifestly it is not the price of a different character of materials, but the cost of the same character of materials, which is to govern.

The price of Bessemer rails might be, and was, during the contract period, as high as, or higher than, the price of open-hearth rail during the test period, but did not afford the same quantum and character of maintenance.

It is manifest from the express terms of paragraph (*c*) of Section 5 of the standard contract that, in making the adjustments, neither the money test alone nor the physical test alone must be applied. It is equally manifest, however, from the terms of that paragraph, that wherever the phys-

ical test of the same relative amount, character, and durability of physical reparation can be applied, it must be applied, for the contract adopted by the statute requires this to be done "as nearly as practicable."

The effort of the commission will therefore be to ascertain how much maintenance, expressed in quantity and character, was put upon the property on the average annually during the test period—how many ties, how many tons of rail, how many cubic yards of ballast, etc.,—and also the average annual expenditures for maintenance so as to include matters of maintenance not ascertainable in units. These must be adjusted to a period of time corresponding to the six months' guaranty period.

The cost of this quantum of maintenance under the conditions of the guaranty period must then be ascertained, so far as the quantum is ascertainable, and the expenditures for maintenance work, not ascertainable in quantity or units, must be adjusted to the guaranty period level of prices, the sum of these two being the adjusted allowance for maintenance during the guaranty period.

Adjustment should be made, however, so as to secure as nearly as practicable the same relative amount, character and durability of physical reparation for all items of maintenance as for the average of the test period.

It is submitted that, for the purpose of ascertaining the government's obligation under its guaranty, this aggregate is, under the statute, the amount which the carrier may include in its operating expenses for maintenance during the guaranty period.

We respectfully suggest that the practical work of making the necessary adjustments in figures be taken up between representatives of the commission and accounting and engineering officials of the carriers (the personnel of which latter we will, at the request of the commission, be glad to designate), so that a well considered report may be made to the commission for its action.

While realizing that the commission has already ruled that one half the year, instead of the corresponding six months, of the test period, shall be used as a basis of comparison for adjusted to a period of time corresponding to the six months' government's obligation under its guaranty, this aggregate the ascertainment of maintenance expenses for purposes of the guaranty, we trust we may, without impropriety, invite the attention of the commission to the importance of the question to a substantial number of carriers.

It is well known that in certain sections of the country, the quantity of maintenance it is possible and necessary to do during the six months from March 1 to September 1, is substantially greater than can be done during the remaining six months.

To restrict such carriers to an allowance of one half of the maintenance charges for the year, would be to ignore practical conditions and to deprive them of a substantial amount legitimately applicable to maintenance charges for the seasonal period.

We respectfully request that the commission will permit a re-opening and re-argument of this question.

The Kansas City Southern brief is in support of the following propositions:

1. The requirement that due allowance shall be made for any differences that may exist between the cost of labor and materials is not satisfied by merely taking into consideration increase in wages and increase in the cost of materials.

2. The relation of the cost of labor, during the test period, to the cost of labor during the guaranty period, is to be determined by comparing the cost of securing the performance of the same labor tasks or jobs, during the two periods, respectively.

3. The physical reparation resulting from the economical expenditure of the entire maintenance allowance of each carrier for the guaranty period is in the nature of a debt which the government owes to the properties of such carrier, and this debt will not be discharged until the entire maintenance allowance has been expended on such properties. If for any good reason, the full maintenance allowance cannot be economically expended during the guaranty period, the carrier should be permitted to expend the residue thereof after its expiration.

Railroad Administration Brief

Denies Carriers' Contentions

The Railroad Administration, at the request of the Interstate Commerce Commission has also filed a brief expressing its views on the same subject, signed by Director General John Barton Payne, James C. Davis, general counsel and LaRue Brown, general solicitor. An abstract of the brief is as follows:

It is said by the carriers that in making the comparison contemplated by the proviso "due allowance" must be made not only for differences between the cost of materials and the cost of labor, i. e., the wage scales, as between the periods compared, but also for an alleged lowering of the efficiency of labor.

In the opinion of the Railroad Administration this construction of the proviso and its related section is not correct. We think that it disregards the plain meaning of the words used, that it is not justified by the ordinary and familiar rules of construction of contracts, and that it would defeat the very purpose of the proviso by bringing about the evils which the proviso was intended specifically to avoid.

In the present instance consideration of the extraordinary circumstances under which the proviso was drawn is unusually helpful in determining the intention of its framers and the meaning of the language used.

The President, in the emergency of a great war, had very suddenly taken over all the railroads of the country. By his proclamation there had been brought into his possession and control 260,000 miles of main track, 2,500,000 freight cars, 66,000 locomotives, 55,000 passenger cars, and all of the varied and complex machinery of accessories and equipment, large and small, which accompany the operation of this vast transportation machine. All this was divided among 188 separate large organizations and some, six or eight hundred smaller organizations. No comprehensive or detailed survey of its physical condition had been or could be made but it was known that much of it was not in good condition and some of it was in very bad condition. It was known also that this property, which together constituted the greatest temporary taking which the world had ever seen, presented problems of maintenance of the utmost variety to be accomplished with resources equally uneven in character and distribution. To take a single example, track labor was known to vary widely in character and efficiency in different parts of the country.

The President, then, had taken over this great and varied property with an announced purpose to make provision for its return at the end of his control in substantially as good condition as when taken. That expression of purpose had been indorsed by Congress in the federal control act. When the standard contract between the director general and the carriers came to be framed one of the tasks with which the conferees were confronted was to agree upon a form of undertaking which should *in a practicable way* give effect to that purpose. Section 5 was the result of their agreement.

Section 5, then, represents the final agreement of men familiar with the great difficulties of the problem, as to the best practical method of stating the obligation which the government had indicated its willingness to assume. Once the contract was accepted by the director general and by the carriers, the language theretofore used by the President or by

Congress ceased to be of importance except as a very general indication of the authority possessed by those representing the government. Nor is what either side may secretly have intended, in giving its assent to the language adopted, important. The contract sums up the whole obligation and rights of the parties. It speaks for itself and its meaning is to be found by reading it as a whole in the light of the existing circumstances.

It is never an easy thing to determine by how much the condition in which property which has been used for a considerable period varies from the condition in which it was at the beginning of that use; and this is especially difficult when during the period of the use alterations, improvements, or repairs have been made.

As, however, the property used increases in size, and especially in complexity of character, organization, and use, any such process becomes increasingly impossible of satisfactory application. In the case of the railroads no such inspection was made at or near the beginning of federal control, and this fact in itself constituted a bar to any possibility of satisfactory physical comparison. Moreover, there were all the circumstances of size and of complex variety of kinds and condition of property which made such a process with regard to any given railroad an impossibility. This impossibility was, of course, multiplied as many times as there were substantial railroad systems taken under government control. Added to all this was the very important circumstance that even if it were possible for the officers of any individual railroad from their acquaintance with the property to be able to produce some kind of a guess as to the comparison of its condition at the beginning and at the end of federal control, it was easily foreseen that any adequate checking of such a guess on the part of the Railroad Administration would be absolutely impossible. It was, therefore, perfectly apparent to both parties as they came to write a clause into the contract which should effectuate the general purpose with respect to maintenance to which reference has been made, that some method must be devised which would be workable in practice, and that no method which depended upon the gathering of opinions with respect to the physical condition of the property could be relied upon either to produce a just and satisfactory result or to offer the prospect of reaching a final settlement of accounts without interminable controversy of infinite complexity of detail.

To meet these difficulties the proviso of section 5 (*a*) was adopted. It provided for a purely mathematical comparison in which no element of opinion was involved.

It is noteworthy that the obligation upon the director general is not to produce a result in physical reparation, but is either *to expend money* for labor and materials, *or to create funds* to an amount equal in the aggregate to the carrier's *average* annual *expenditures* during the test period. The language regarding fair distribution of expenditures equal in the aggregate to the average annual expenditures of the carriers is inconsistent alike with a physical test or a physical comparison. What is provided is an accounting comparison, pure and simple—what counsel call a "money test" and no more.

The plan adopted was admirably designed to meet the purpose which its framers had in mind; namely, to provide a simple mathematical yardstick for the measuring of the director general's performance of his obligation, and to avoid the necessity of resort to opinions which might and would vary widely with respect to each of the great number of factors which are necessary to a comparison of the physical condition of a railroad at the beginning and at the end of a period of intensive use during which constant and material changes in the details of its physical aspect were continually going on. It took care of the inevitable fact that some portions of a railroad property are always in very much better condition at the end of a given period than at the beginning, because they had been reached in the carrying out of an orderly program of maintenance, renewal and improvement, while other items would necessarily be in a somewhat worse condition because in their turn they had not been reached. It had the merits of simplicity and certainty, and its obvious purpose was to remove the uncertainty and disputes which were bound to arise from any method of attempting to deal with the problem which involved considering the details of maintenance as distinguished from the total expenditure of money.

Section 5 (c) Construed in Connection with Section 5 (a)

The period of government possession and control of the railroad properties was well known to be one of constantly rising costs of labor and materials. In working out the comparison of expenditures provided it was deemed just to make some allowance for these factors so far as that could be done without sacrificing the end of simplicity and certainty sought in adopting that comparison as the measure of the government's obligation. Paragraph (*c*) of section 5 was therefore agreed to. No construction can be placed upon 5 (*c*) which fails to give full effect to the meaning and intention of 5 (*a*) or which renders nugatory the success which the parties had had in devising a plan not open to the insuperable practical objections to any method of physical comparison. When, therefore, the parties wrote in paragraph (*c*) that due allowance should be made for increases in the cost of labor and materials, they must be taken to refer to factors which are as certain, as simple, and as capable of mathematical appraisal and application as those involved in the comparison stated by the proviso to 5 (*a*). That comparison, it may be repeated, is a comparison of the aggregate amounts of money expended as shown by the books. It is not a comparison of amounts of physical reparation, except in the sense that the parties have agreed that for the purpose of adjusting their accounts the latter comparison is sufficiently reflected in the former.

Now it is not disputed that the words "cost of materials" as used in section 5 (*c*) are to be given their natural and normal meaning, and that all that is required is an inquiry as to how much the price of given materials during the period of federal control exceeds the price of the same materials during the test period, and the application to the director general's expenditure for such materials of an equation factor obtained by a process of mathematics. The quantum—to use a phrase of railroad counsel—of such materials received by the director general for his money is not contended to be important nor are variations in quality of the same kind of material. The situation as to the cost of labor is exactly similar. Wage scales are no less definite than price lists. Here again an equation factor can be worked out and applied without resort to estimation, to guess, or to opinion. If, however, it is attempted to modify the comparison by any effort to take into account alleged differences in the efficiency or quality of labor of a given kind; that is to say, in the amount of work performed in the period for which a given wage is paid, all the advantages of the plan of the proviso at once disappear.

It is unnecessary to comment upon the approximate nature of the results of the most elaborate cost-keeping systems, even in industrial processes of a relatively simple character. Counsel for the Association of Railway Executives admit in their brief in substance that what they call "the physical test" can not consistently be applied. The facts are that it can never be satisfactorily applied to a situation like that now in question and that it was not the intention of the framers of the contract that it should ever be applied.

One comes then again to this controlling proposition: That the construction contended for by the carriers ignores and eliminates from the contract the plain, definite, and unequivocal language of the proviso of paragraph (*a*) ending with the language, "shall be taken as a full compliance with the

foregoing covenant," and is in direct violation of those elementary rules of construction laid down by the courts, namely, that "the meaning (of the contract) is sought from the whole instrument, viewed in the light of the subject with which it deals," and that "to its words we at first resort, but not to one or a few of them, but to all of them as associated, and as well to the conditions to which they were addressed and intended to provide for."

Reading the contract as a whole, there can be no doubt, as already has been said, what counsel call the "money test" is to be applied consistently, not only with respect to the principal comparison of the proviso itself, but also in the adjustment referred to in paragraph (*c*). In this contract there is no distinction in intention, in meaning, or in manner of application between the proviso itself and the language referring to the adjustment now in question.

The Director General Specifically Refused to Contract Upon the Basis Now Insisted Upon

That it was the intention of the draftsmen of the contract to deal only with wage scales and price lists and not to confuse the issue by entering the troubled field of opinion as to the relative efficiency of labor is shown beyond the slightest question by the course of negotiations between the parties which led to the adoption of the language finally accepted by both sides. These are not things which generally ought to be taken into account in determining the meaning of a written instrument. Since, however, counsel for the Railroad Executives invite the inquiry, the director general is glad to accept the invitation because it conclusively establishes the correctness of the position which he has taken. Dealing first, however, with what counsel say of these negotiations, it will be noticed that their entire argument is based on the fact that at one time the word "price" was used in connection with labor and materials and that in the final draft the word "cost" was substituted.

The point attempted, even if otherwise well founded, is without legal significance. But it is not otherwise well founded, for it is based upon a supposed distinction in meaning between the word "price" and the word "cost," and it is only by assigning arbitrary definitions to these words that any distinction helpful to counsel can be come at. Reference to the standard dictionaries will disclose that "*cost*" is uniformly defined as the "*price*" of a thing. The only distinction possible between the words is that "price" is what is asked for an article for sale and becomes "cost" when, though only when, it has been paid. Once the transaction has been consummated, "price" and "cost" become, as to it, synonymous. It is true that since the contract was speaking of the matter from the point of view of the party who pays, "cost" is the more accurate word. Its substitution for "price" was therefore in the interest of good English. That is all that can be inferred from its final choice, and the argument which is predicated upon this development would seem to be without substance in fact as well as significance in law.

Examination of the various stages in the negotiation of the contract does, however, disclose one circumstance of the most direct and convincing significance. Mr. Thom's original draft of the contract, dated March 22, 1918, provided that the government's obligation should be affected by "increases in the cost of material, increases in the price of labor, *decreases in the efficiency of labor.*" His second draft on April 17, 1918, referred to "difference in the efficiency of labor." If this language, or equivalent language, referring to the efficiency of labor had been left in the contract, it would, of course, have given clear ground for the contention which is now made. *But the government refused to agree.* The members of the commission who participated in the drafting of the contract will recall the definite announcement of the then general counsel of the Railroad Administration that the relative efficiency of labor would not be considered and that the administration from the beginning insisted upon language which appeared in the final draft of the contract almost unchanged with the single exception of the substitution of the word "cost" for the word "price," which has already been discussed. The result of these circumstances is to make clear beyond a possibility of dispute that the precise position now urged by the carriers was attempted to be put by them into the contract when it was drawn; that it was rejected by the director general and its rejection accepted by the representatives of the carriers. In view of these circumstances it is surprising that the question should again be opened.

The Construction Suggested by the Carriers Declared Unworkable in Fact and Unsound in Law

Had the parties intended the result which the carriers now say they intended, the matter would have been so phrased that there would have been no need for construction. The intention of the parties that such an adjustment should be made would have been expressed in the clear and precise language which had been suggested by counsel for the carriers. In that event the impossibility, under the existing conditions, of making such an adjustment and the fact that to attempt to do so would destroy the whole plan of the proviso would not affect the *meaning* of the unequivocal language used. But where, as here, an adjustment on account of the relative efficiency of labor was proposed to the director general and specifically rejected by him, but an attempt is made by the carriers now to read into the contract that which, with their assent, was specifically excluded therefrom, the impossibility in practice of satisfactorily making such an adjustment is of very great significance.

In one of the briefs filed with the commission an attempt is made to avoid the effect of the great practical difficulties by asserting their nonexistence. But this assertion is sought to be proved merely by offering figures which are themselves pure assertions as to the time required for certain selected operations at a particular shop of a single railroad at some time during the test period and at some time during federal control. Counsel does not try to show even as to these figures by what method they were produced or how the comparison attempted is proposed to be justified. The verification of the comparatively few figures presented would in itself be a task of very considerable magnitude and they do not purport to represent more than a small fraction of the thousands of separate maintenance operations performed in the conduct of a great system of transportation.

The chief difficulty with the figures offered is, however, that they can not be verified. Were they to be presented as proof in litigation the Railroad Administration would be prepared to demonstrate that they are wholly unreliable.

In the first place, neither the Kansas City Southern nor any other railroad has, except in sporadic instances, records from which computations like these can be made with even approximate accuracy or from which helpful deductions can, with confidence, be drawn. The figures offered as to the number of man hours required for the enumerated pieces of work during federal control rest purely upon estimate long after the fact. Those which are given as the experience during the test period represent nothing whatever except an arbitrary deduction of some 40 per cent from those estimates. Prices given for materials during the 26 months of federal control appear principally to be prices as of March, 1920, a very different thing. How the prices given for the test period were made up it is impossible to discover.

Now, it happens that there are at the shops in question a few instances of jobs done on what are called "store orders" as to which there are some real records. While far too few to support positive general conclusions, these do throw a most revealing light upon the value of the figures submitted to the commission. For example, there are four such orders covering the subject matter of Exhibit B. Of these, two relate to

the year 1917 and two to 1919. Their comparison shows an actual total increase in the cost of the operation of 12.4 per cent. The exhibit pretends to show conclusively an increase of 142.2 per cent. There are also a few actual figures as to the labor cost in 1915 and 1916 of the operations dealt with. As far as they go they show that the cost during the test period was over twice that taken as a basis for the comparison made in the exhibit.

As a matter of fact, it is the opinion of the Railroad Administration that so far at least as its operations are concerned the widespread talk about the decrease in the efficiency of labor is grossly exaggerated, and that if it were possible to make a thorough and careful study of the matter based upon reliable observations and records it would be found that in very many instances there had been an actual increase in efficiency over previous experience in the railroad world.

But even if it be assumed that in the fullness of time reliable figures could be assembled and verified for all the multitudinous operations of any one railroad, and that eventually a basis of comparison of labor efficiency at a particular time with some other particular time could be obtained, there would remain the difficulty arising from the variations in efficiency at different shops or on different sections at any given time or in the same shops or on the same sections at different times. All these things are affected by the constant interference of passing factors of one sort or another, whose influence it is equally difficult to identify or estimate. When it is remembered that these conditions of difficulty are to be multiplied substantially by the number of railroads in the United States, it is unavoidable that in the end any effort at mathematical demonstration would have to be abandoned and the widest conceivable resort made to the processes of estimation and opinion, which it was the very purpose of the proviso to avoid.

In the operation of the entire railroad facilities of the country as a single system—the plan of federal control—the variety of circumstances under which a given amount of labor was performed was almost endless. Because the parties knew that such would be the case, they knew also that they must agree upon a simple rule of measurement of the federal obligation in respect to maintenance, which was capable of universal application, or there would be at least as many rules as there were systems. The language of 5 (*a*) was designed to provide a uniform and easily applied rule which the situation demanded. Given the normal and practical construction here stated, it produces that result. Construed as the carriers now contend, it would produce only hopeless confusion.

Considering, then, the manifest purpose of the proviso, and, for that matter, of the contract itself, in the light of the defeat of that purpose which would result from the acceptance of the artificial construction of the words "cost of labor" proposed by the carriers, it is apparent that the construction urged by the railroads is unsound. When to these fundamental considerations is added the circumstance that the carriers tendered insistently to the director general language which would have clearly expressed this result and that the director general refused to accept it, the matter is not open to doubt.

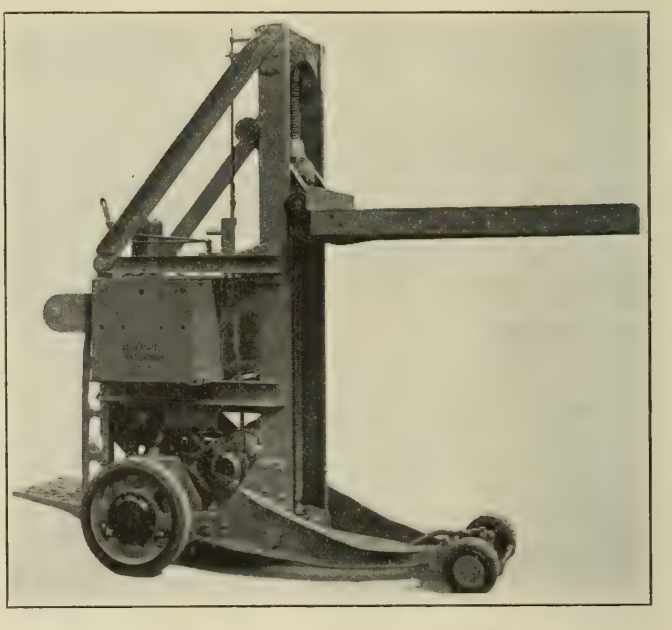
The adjustment committee of the Association of Railway Executives, of which S. T. Bledsoe, general counsel of the Atchison, Topeka & Santa Fe, is chairman, has compiled a memorandum of interpretations made by the committee of the various provisions of the compensation contract, in which particular attention is paid to the provisions relating to maintenance.

EXTENDING A POLICY.—"It is becoming more expensive every day to run an automobile." "Yes," replied Mr. Chuggins. "Some of us motorists won't be able to keep going unless the government comes to the rescue the same as it did for the railroads."—*Washington Star.*

High-Lift Elevating Platform Truck

A HIGH-LIFT ELEVATING PLATFORM truck known as "The Tiering-Lifting Truck," is being placed on the market by the Transportation Engineering Corporation, 200 Fifth Avenue, New York. The truck is essentially an electric elevating platform truck with the added feature of lifting or tiering the load from one inch to six feet. Platforms in standard heights used with electric lifting platform trucks may be used with this machine. The truck has a guaranteed capacity of 4,000 lb. and is furnished in various heights up to a maximum height of 95 in. The truck frame is built of hot riveted structural steel and is supported on the rear axle by two steel coil springs, each encased in a box. The frame carrying the supporting columns is of cast steel. The truck is guided by a four-wheel steering arrangement.

The load platform is carried on cantilever type supports and is hinged to prevent damage in case the platform is lowered on some obstacle. It is raised and lowered by a steel screw, revolving in a large bronze nut carried in a trunnion, which is provided with an oil magazine for lubrication. The



Tiering-Lifting Truck of 4,000 Lb. Capacity

fully loaded platform elevates at a speed of one inch per second. The movement of the platform is controlled by a simple reversing switch working in conjunction with a brake on the elevating motor shaft, and cutouts are provided for stopping the platform automatically when the load reaches the highest or lowest position.

Power from the driving motor to the driving wheels is transmitted by a single reduction steel-to-bronze worm and wheel running in a bath of oil and a full floating axle. The working parts, wherever possible, are carried on ball and roller bearings and are mounted in oil tight, dust proof housings. Both the elevating and traction motors are series wound, 24 volt, 45 ampere motors, running at 1,700 r. p. m.

The driving controller is of the drum type and permits three speeds forward and three reverse. Current cannot be applied to the motor without first releasing the brake. The brake is of the external contracting type with asbestos fabric lining and is operated by a foot pedal.

The driving wheels are 20 in. in diameter with 3½ in. face, the front wheels are 9 in. by 5 in. and all are equipped with pressed on rubber tires.

Freight Service Continues to Show Improvement

Reports Received by Commission on Car Service Reflect General Improvement in Conditions

WASHINGTON, D. C.

THE RAILROADS during the week ending August 14 loaded 962,352 cars of revenue freight, as compared with 832,439 during the corresponding week of 1919 and 948,796 during the corresponding week of 1918. This is not only an increase of 20,000 cars over the previous week, which was the largest for this year, but it represents the first week of this year that has shown a greater volume of traffic handled than during the corresponding period of 1918 except the week in which comparison was made with the week in 1918 which did not include the Fourth of July holiday while the holiday was included in the corresponding week this year. The figures are reported for the week ending Saturday. The reports for this year have been regularly showing greater totals than for the corresponding period of 1919. For the week ending August 14 the roads in the eastern, southern, central western and southwestern districts show gains as compared with the year 1918.

The table, complied by the Commission on Car Service, is as follows:

The reports of car accumulations also continue to show gratifying decreases which indicate a gradual clearing up of the congestion which was started during the winter and made serious by the switchmen's strikes in April. For the week ending August 20 the total was 74,945, as compared with 79,213 the week before.

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

Summary—All Districts: Comparison of Totals This Year, Last Year, Two Years Ago. For Week Ended Saturday, August 14, 1920

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year, 1920	Total revenue freight loaded: Corresponding year, 1919	Total revenue freight loaded: Corresponding year, 1918	Received from connections: This year, 1920	Received from connections: Corresponding year, 1919	Received from connections: Corresponding year, 1918
Eastern	1920	7,027	2,696	56,147	3,606	8,640	11,154	50,960	90,084	230,314	....	....	363,636	....	....
	1919	7,995	2,621	46,910	3,233	8,240	3,799	19,268	122,236	....	214,302	225,412	....	228,120	248,295
Allegheny	1920	2,681	3,505	69,042	6,162	4,125	13,063	36,024	69,231	203,833	....	....	133,606	....	....
	1919	3,846	2,864	58,854	3,642	4,358	9,230	42,405	70,760	....	195,959	214,958	....	132,516	187,320
Pocahontas	1920	213	182	25,325	728	1,774	185	2,981	6,735	38,123	....	....	20,228	....	....
	1919	391	296	14,672	573	1,623	179	128	7,199	....	25,061	40,118	....	13,703	23,773
Southern	1920	3,192	1,947	28,872	1,375	20,621	2,720	35,764	47,446	139,937	....	....	74,615	....	....
	1919	4,222	2,379	20,581	380	18,748	2,424	19,447	51,955	....	120,136	122,528	....	61,117	67,493
Northwestern	1920	8,891	6,557	12,276	1,298	18,125	36,754	28,226	38,886	151,098	....	....	55,009	....	....
	1919	9,204	6,567	5,722	951	15,015	1,612	19,396	40,022	....	98,489	165,962	....	46,530	72,062
Central Western	1920	11,250	9,403	25,156	939	6,307	3,109	31,694	46,248	134,106	....	....	70,803	....	....
	1919	14,169	11,209	15,365	669	5,960	3,340	23,364	50,697	....	124,773	120,871	....	61,471	64,580
Southwestern	1920	4,263	2,582	6,174	128	8,207	295	17,457	25,838	64,944	....	....	53,044	....	....
	1919	5,824	2,661	5,562	86	5,425	377	12,332	21,452	....	53,719	58,947	....	44,674	43,706
Total all roads	1920	37,517	26,972	222,992	14,236	67,799	67,260	201,108	324,468	962,352	....	....	770,941	....	....
	1919	45,651	28,597	167,666	9,534	59,369	20,961	136,340	364,321	....	832,439	....	....	588,131	....
	1918	....	....	....	....	....	....	....	....	....	....	948,796	....	....	707,229
Increase compared	1919	....	....	55,326	4,702	8,430	46,299	64,768	....	129,913	....	....	182,810	....	....
Decrease compared	1919	8,134	1,625	....	....	....	....	....	39,853	....	....	....	....	....	....
Increase compared	1918	....	....	....	....	....	....	....	....	13,556	....	....	63,712	....	....
Decrease compared	1918	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Reports received by the Commission on Car Service from its local committees throughout the country reflect the improvement in transportation conditions generally that is shown in the general figures. The committees report a gradual lifting of embargoes, and a restoration of normal switching service and generally no further necessity for rerouting freight to avoid places of congestion. Especial efforts are being made to reduce the number of bad order cars, which on August 1 were 6.9 per cent of the total, and the facilities are being worked to capacity but there is still some shortage of labor.

The committee at Seattle reports a saving of approximately 150 cars a month by revision of merchandise schedules at Seattle and Tacoma. No embargoes were in effect against Seattle industries. There was no shortage of switching power and increased efficiency on the part of crews is in evidence. The Chicago, Milwaukee & St. Paul has arranged to have 500 cars repaired at an outside shop in Seattle.

The St. Louis committee has arranged to receive a daily yard check on the Terminal Railroad Association properties, showing all cars on hand over 48 hours in various yards and inspectors were assigned to visit various points, ascertain the causes of delay and call on consignees to hurry the unloading and release of equipment. During the week of August 19, 19,737 bad order cars were repaired, with 2,172 men working, or 92 per cent of normal repair force. The normal switching force should have been 2,232 men, working 17,918 hours. On August 19 there were 2,194 men, working 18,434 hours.

The New Orleans committee reports that bananas, molasses, oil and asphaltum are being run in solid train lots. There is no necessity for any rerouting and no embargoed cars at the terminal. Normal switching service is being performed in general. All lines are amply provided with switching power and able to expand with the business. During the week of August 13, 1,012 cars were repaired.

The Denver committee reports no rerouting necessary. All lines report sufficient power to meet requirements and switching is being performed promptly. There were 712 bad order cars on hand and 88 per cent of authorized force working. Ninety cars of automobiles have been placed in storage to release equipment since the organization of the committee. A check of the loading of 13 coal and cement companies revealed that but from 58 to 80 per cent of car capacity had been utilized and the committee has written each company requesting it to give the matter special attention.

No complaints have been received from shippers or receivers of freight during the week relating to service, car supply or other matters.

At Atlanta the committee reports that the general situation shows considerable improvement and conditions are about normal, with no delay to the switching of trains and interchange being handled currently by all lines. The bad order car situation is now about normal on all lines, about 500 cars being repaired a day. About 85 per cent of the number of employees required in the mechanical and car departments are

employed and about 80 per cent working. All lines report an adequate supply of switching and road power.

The Des Moines committee reports no embargoes in effect and no cars being held on account of embargoes at outside points. Switching is being performed satisfactorily. The labor situation is practically normal.

The Chicago committee reports that all trunk lines are making up solid trains where possible by additional switching in their outer yards. A total of 476 cars of embargoed freight were rerouted during the week ending August 14 through the efforts of the Chicago Traffic Committee. During the previous week 399 cars were diverted. About 80 per cent of the normal switching forces are working. No roads report a shortage of switching power. The bad order car situation continues improving. Through the efforts of various associations of shippers and the traffic committee of the railroads a noticeable improvement in the unloading of cars has been brought about. The committee is making efforts to induce consignees to work their unloading gangs on Saturday afternoons and Sundays and wherever a consignee shows a willingness to comply with this request arrangements have been made for the extra switching service necessary.

The Dallas committee reports that business is moving currently and no rerouting necessary. 1,034 bad order cars were repaired during the week.

At Milwaukee 6,632 bad order cars were repaired. The Chicago, Milwaukee & St. Paul is sending 270 cars to other shops for repairs.

The number of cars held at ports for export has been showing an improvement each week recently. For the week ended August 20 the number of cars held at all ports was 12,489, as compared with 13,219 for the preceding week. Of these 1,476 had been held for 15 days or more.

The percentage of home cars on home lines had been increased on August 15 to 27.3.

The attention of the Commission on Car Service has been called to the fact that some railroads are ordering shipments of company material in less carload lots when it is practicable and economical to secure such shipments in carload lots. This is not economical use of equipment, it says in a circular issued to the railroads, and the railroads should put forth the same efforts to secure capacity loading that is expected of other shippers and to that end orders should, so far as possible, be so placed that they will insure full carload shipments.

In a circular to the railroads the Commission on Car Service says the demand for cars in New England and Canada for potato shipments will be very active about September 1, and necessitates immediate action in returning potato cars to New England and Canadian roads, either loaded or empty, for delivery to owners. The roads are asked to have a check made of their records at once and direct that such cars as are now on line be handled in accordance with these instructions, maintaining check twice a month until November 1 to see that any cars that show up are promptly and properly handled.

The reports of deferred car requisitions for the week ending August 15 show little change as compared with the previous week. The average was 126,397 cars for the United States and Canada and 121,227 for the United States alone, of which 65,508 were box cars.

The supply of box cars on the western roads has now been built up, as a result of the relocation orders for the movement of empty cars from the eastern to the western roads, to a point where it is no longer considered necessary to keep in effect the general orders such as that issued by the Interstate Commerce Commission in May, which has been renewed each month since by the Commission on Car Service. Instead individual orders to individual roads are being issued from time to time as occasion warrants for the purpose of maintaining the equalization as between eastern and western roads, just as individual orders have been issued from time to time to meet conditions on particular roads. Since May 1 about 100,000 empty box cars have been ordered from eastern to western roads under the general orders. The semi-monthly bulletin of percentages of freight cars on line to ownership as of August 15 shows that the Eastern district had 104.3 per cent of its ownership of all cars; the Allegheny district, 101.9 per cent; the Southern district, 83.9 per cent; the Northwestern district, 97.1 per cent; the Central Western district, 96 per cent; and the Southwestern district, 97.2 per cent.

Report on South Chicago Collision

The Interstate Commerce Commission has issued a report dated July 20 and signed by W. P. Borland, chief of the Bureau of Safety, on the butting collision which occured on the Baltimore & Ohio, two miles east of South Chicago, Ill., on June 14, resulting in the death of one employee and the injury of eleven persons.

This collision was reported in the *Railway Age* of June 18, page 1934. The cause was the issuance of conflicting orders by which an eastbound freight was permitted to proceed from Rock Island Junction while the track was occupied by a westbound passenger train, admitted to the eastbound track because of an obstruction on its normal track. All of the movements of both trains were within a section designated as yard. Orders were given by telephone, and not always in writing. The passenger train, running against the current of traffic, should have been proceeding with caution and, in fact, both trains were moving at low speed. The freight train had a brief warning by an automatic block signal, but not enough to allow for much reduction of speed.

The report shows that there was negligence on the part of six men. On learning that the westbound track was blocked by unexpected delay to a freight train, Despatcher Hontz at 6:22 a. m. notified trainsmaster Huggins at Wolf Lake Yard to get passenger train 51 by the freight. The trainmaster was not there, the night yardmaster had gone home and the day yardmaster had not arrived; so, acting on instructions from the despatcher, Operator Carter, at the Yard office, telephoned the message to Yardmaster Mann,



*Point of collision.

at Ninetieth street. Mr. Mann called Whiting (about 3 miles east) to make the necessary arrangements. About this time Yard Clerk Berg arrived and arranged with Whiting to move train 51. Berg says that Mann was on the telephone and overheard the conversation; and agreed to hold eastbound trains at Rock Island Junction until westbound 51 and 15 passed.

After this there appears to have been a good deal of informal conversation over the telephone regarding train 51, train 15 and train 61, the latter being the one which collided with the freight. Some of the orders were issued by the despatcher, although in this territory he could act only in conjunction with, or as assistant to, the yardmaster. He accepted a statement from an operator referring to the westbound trains as "them," leaving an uncertainty as to whether two trains or three trains were meant.

Following five pages of testimony of this kind, from which it appears that west bound train 61 was allowed to follow 51 and 15 from Whiting, while the men making the eastbound movement understood that only two trains were being thus detoured. The report decides that the collision was caused by the despatcher directing the westbound movement without taking measures to insure that opposing trains were being held; and by the yard clerk permitting opposing trains to proceed without first ascer-

taining that other trains were not being diverted and run against the current of traffic. The despatcher was at fault for acting on a statement by an operator which did not specify any trains by number. Yard clerk Berg assumed the authority of the yardmaster, notwithstanding he knew that the yardmaster at another yard (90th street) was also engaged in making arrangements to the same end. Operator Carter was at fault for giving the despatcher information regarding arrangements of which he had very incomplete knowledge; also for failure to make proper transfer to the operator relieving him. The night yardmaster was at fault for going off duty before the day yardmaster arrived, leaving the yard office without anyone in authority for nearly an hour. (The two yardmasters had arranged to vary their hours because of differences between railroad clocks and city clocks and this arangement had not worked out as they intended.) Yardmaster Mann is criticized for not assuming full charge and finding out what was being done by others. The rules of the Baltimore & Ohio concerning detours within yards require action according to "special instructions," which special instructions were never issued. All of the loose practices referred to appear to have been of long standing. The despatcher had been in the service thirteen years and a despatcher six years; Berg had been in that yard seven years; Operator Carter, although new in the service, had 25 years' experience as operator. The yardmasters were men of long experience and thoroughly familiar with the operating practices.

Reports of Accident Investigations

COLLISIONS AND DERAILMENTS investigated by the Interstate Commerce Commission in the three months ending with March 31, 1920, numbered 29, and a summary of the investigations appears in Report No. 3, just issued by the Bureau of Safety. The dates of these accidents, together with the name of the road and the location, were as follows (all in the year 1920 except the first two):

St. Louis-San Francisco, Keighley, Kans., Dec. 26, 1918	Derailment
Chesapeake & Ohio, Hardware, Va., Jan. 7, 1919	Derailment
St. Louis-San Francisco, O'Hara, Okla., Jan. 1	Butting collision
Oregon Short Line, Medbury, Idaho, Jan. 11	Rear collision
Detroit, Toledo & Ironton, Hamler, Ohio, Jan. 16	Butting collision
Pennsylvania, New Waterford, Ohio, Jan. 20	Derailment
Denver & Rio Grande, Midvale, Utah, Jan. 23	Rear collision
Missouri Pacific, Clayton, La., Feb. 3	Derailment
Mobile & Ohio, Pinson, Tenn., Feb. 6	Derailment
Texas & Pacific, Ranger, Tex., Feb. 8	Derailment
Louisville & Nashville, Pleasant View, Ky., Feb. 13	Derailment
Alabama Great Southern, Trussville, Ala., Feb. 15	Butting collision
Missouri, Kansas & Texas, Muskogee, Okla., Feb. 16	Rear collision
Vicksb'g, S. & P. and L. & N. W., Gibbsland, La., Feb. 18	Side collision
Chicago, St. Paul, M. & O., Eau Claire, Wis., Feb. 26	Rear collision
Philadelphia & Reading, Milton tower, Pa., March 2	Rear collision
Central of New Jersey, Elizabethport, N. J., March 3	Side collision
Chicago, M. & St. Paul, Farmington, Minn., March 4	Rear collision
Michigan Central, Clarendon, Mich., March 5	Derailment
Atlantic Coast Line, Lucama, N. C., March 5	Derailment
Pennsylvania, Quarryville, Pa., March 6	Rear collision
Rutland Railroad, Riverside, Vt., March 14	Butting collision
Southern Michigan, Leeper's, Ind., March 14	Rear collision
Missouri, Kansas & Texas, Lewis, Mo., March 17	Derailment
Missouri Pacific, Texarkana, Ark., March 18	Butting collision
Min'apolis, St. P. & S. S. M., Honey Cr'k, Wis., Mar. 19	Butting collision
Philadelphia & Reading, Tremont Junction, Pa., March 23	Rear collision
Missouri Pacific, Cypress Junction, Ark., March 23	Butting collision
Southern Railway, Adam's Park, Ga., March 26	Derailment

Four of the collisions noticed in this pamphlet and one derailment have been reported already in the *Railway Age*, namely: Trussville, June 11, 1920, page 1662; Gibbsland, June 11, page 1667; Elizabethport, June 25, 1920, page 1982; Riverside, June 4, 1920, page 1572; Hardware, May 21, 1920, page 1466. Limitations of space compel the omission of many useful lessons which are to be found in these documents, but full copies of the report are, no doubt, obtainable from the Superintendent of Documents at the Government Printing Office, Washington, at a nominal price. The first issue, which was of the same size as the present one, was priced at five cents a copy.

Barnes Cotton Loading Machine

A NEW COTTON LOADING MACHINE to expedite and reduce the cost of loading uncompressed or "flat" cotton at railway stations, and designed to double-deck cotton in box cars and still enable the cotton-carrying railroads to load cars promptly to capacity at minimum cost, is now being placed on the market by E. L. Barnes & Co., Ft. Worth, Texas.

Under the present method of loading uncompressed cotton four to six men are required to load a car. Only two men are required with the Barnes machine, one of whom trucks the cotton to the car, while the other operates the cotton-loading machine. In loading the average box car 28 bales are placed upright on the floor; 14 bales are placed above these bales in a 36-ft. standard car.



Barnes Cotton Loading Machine in Three Positions

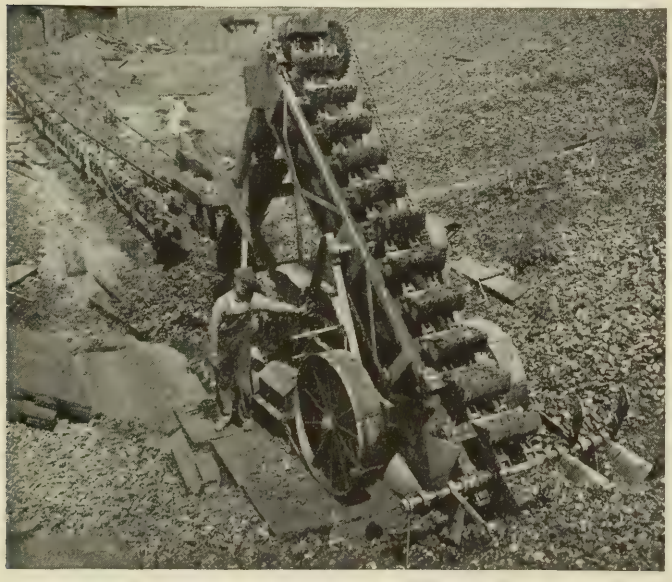
Lifting a bale, requiring about 20 seconds, is accomplished

by turning the crank on the right-hand side of the machine. When the carrier upon which the bale is placed reaches the top, the apron which is attached to the carrier rests on the bale standing upright on the floor. The bale to be "topped" is shoved off the carrier by means of the rollers on both the carrier and apron. When the carrier is dropped after the bale has been removed, it pulls the apron from between the bales. The device is constructed entirely of steel and weighs approximately 570 lb.

Handling Bulk Materials With Less Labor

RAILWAY OFFICERS concerned with the handling of cinders, stone, gravel, engine sand and other bulk materials in storage piles are interested in devices for reclaiming or reloading these materials with a minimum expenditure of labor. The more troublesome problems at the present time concern the small volumes of materials which do not ordinarily justify the installation of permanent material handling plants or large material handling units. It is for such situations that the Haiss wagon loader has been designed.

This equipment, which is available in a number of sizes, comprises an endless chain elevating bucket system mounted on a four-wheel truck that is backed or pushed into the pile as the material at the foot or receiving end of the conveyor is picked up. The conveyor is driven by either an electric motor or a gasoline engine, these power units varying in size from 2 or 3 hp. to 10 hp., depending upon the size of the machine. In the simpler forms of this equipment, the



One of the Larger Sizes of Path Digging Loaders with an Auxiliary Conveyor

machine is moved about by laborers and in some cases is provided with a hand crank arrangement for pushing the machine into the pile while the elevator is in motion, but the models of more specific application to railway service have been designed to be self-propelling. In other words, they move under their own power with suitable low gear drive on the wheels for pushing the machine slowly into the material pile. This feature is combined with an ingenious side feed for the conveyor whereby the machine automatically cuts a path into the pile while the process of excavation is in progress, as is shown in the photograph. The sprocket shaft at the foot of the conveyor projects to either side for a width somewhat greater than the overall width of the machine. On this shaft are mounted paddles set with rake-like propeller blades, so that, as the propeller shaft turns, these paddles push the material from each side towards the conveyor. The pitch of the paddles, the speed of the conveyor and the low gear speed of the wheel drive have been carefully adjusted relative to each other so that the machine will gradually cut a path for itself through the material pile as the excavation is in progress.

Normally the machines are provided with suitable spouts for dumping into wagons, trucks, etc., and in the larger sizes, for dumping into railroad hopper cars. One class has an auxiliary 10-ft. belt conveyor which may be inserted under a hopper car for the purpose of dragging the material



A "Close-up" of the Side-Feed Paddles

from under the car, as it is being dumped, to a point where it is conveniently picked up by the regular elevating conveyor.

The machines are designed to handle practically any material that can be picked up with a hand shovel. Lumps of hard substances up to 8-in. in diameter and of soft substances up to 12-in. in size are readily handled when combined with reasonable proportions of smaller particles. The manufacturers state that the cost of handling material with this equipment, for power and investment, maintenance and depreciation charges on the equipment may be roughly given as "one cent per cubic yard—in one minute's time." These machines are made by the George Haiss Manufacturing Company, Inc., New York City.

IT IS PERFECTLY WELL KNOWN that the greatest difficulty in our present business situation is the lack of transportation facilities. There is only one way to obtain these facilities permanently and on a sound basis—to so arrange rates that replacement, improvement and extension may be provided either out of operating revenue or from funds secured on the basis of earnings.—*N. Y. Journal of Commerce.*

THE SHIPPERS AND THE RECEIVERS can help the roads enormously if they will. It is of the utmost importance that the shipper should load the cars as quickly as is economically possible and that he should furnish prompt and definite billing instructions which, if possible, should take the car to its ultimate destination. At the same time, the consignee can save much valuable time by a prompt unloading of the cars as soon as they have reached their terminal.—*Philadelphia Public Ledger.*

General News Department

The War Finance Corporation reports that advances made by it to railroads, amounting to $204,700,000, had by repayments been reduced on August 21 to $64,600,000.

Columbia University, New York City, announces a special course of instruction, under Dr. T. W. Van Metre, in railway traffic management, the aim being to educate men for service with large shippers.

Near Camden, N. J., on August 22, ten persons were killed by the wrecking of a motor omnibus in which they were riding, when it was struck by a train of the Pennsylvania Railroad at a crossing.

The city of Oakland, Cal., through a complaint filed against the Southern Pacific, has asked the railroad commission of the state of California for a new passenger station. The city claims that the present building at Franklin and Thirteenth streets is totally unfit for the use of passengers.

The governor of the state of Texas has appointed a committee to draft a public utilities law, to be submitted at the January session of the legislature in 1921, that will meet the support or endorsement of the various interests concerned. This movement to create a public utilities commission is backed by the League of Texas Municipalities, which is composed of the mayors and other officers of the cities and towns of the state.

The National Executive Committee of the American Association of Engineers changed the requirements of applicants on August 14, when it ruled that those who are members of the four technical societies need not furnish the five references required, heretofore, of all applicants. Such applicant may substitute, for the five references, the name of the national technical society to which he belongs or the name of the secretary of that society.

An automobile and an aeroplane were recently pressed into emergency service by a dining car conductor. W. Shields, on train No. 49 of the Southern Pacific, running from Los Angeles, Cal., to San Francisco, when his train left him at Fresno. A chase of two miles in an automobile was a failure and Mr. Shields, seeing an aeroplane preparing to ascend from a nearby field, hurried over and explained his predicament to the pilot. The race ended at Chowehilla, where the train stopped, and Mr. Shields boarded the diner in time to attend the breakfast service.

The controversy over the relation between intrastate and interstate passenger fares now being conducted in many states where state regulatory commissions have declined to grant intrastate passenger fares to conform with interstate rates recently granted by the Interstate Commerce Commission held a prominent place in the deliberations of the thirteenth annual meeting of the National Association of Attorneys, held at St. Louis, Mo., on August 23 and 24. The association, however, made no recommendation concerning the issue.

Employees of the Bangor & Aroostook receive by the decision of the Railroad Labor Board, August 26, the same rates of wages as those which were awarded to the men on other principal roads in the decision handed down on July 20. The wages of captains of railroad lighters in New York harbor, also decided on August 26, are advanced $25 a month over the rates which were in effect on March 1, 1920. In both of these decisions the Government Board deferred the consideration of working conditions and all questions except rates of wages.

The Automatic Train Control Committee, Commissioner G. R. Van Namee, chairman, recently appointed by the New York State Public Service Commission (*Railway Age,* August 13, page 291), was organized at Albany on August 31, with C. R. Vanneman, secretary. The committee will utilize the work of the recent Railroad Administration Committee, and also, until September 15, will receive plans of any useful devices in this field which have been invented or perfected since the federal committee made its report. Such plans should be filed with Mr. Vanneman, at Albany. The committee will meet again on October 6, at 10 a. m.

The New York Central announces that for the whole N. Y. C. system the record for the month of July shows an average daily movement of freight cars of 26.8 miles as compared with 25.7 miles last year and 25.9 miles in June of this year. Of the eight roads in the New York Central system, the Cincinnati Northern reported for July 37.2 miles average; the Boston & Albany 32.0 miles; the C. C. C. & St. Louis 27.7 miles; the New York Central 24.9; the Lake Erie & Western 24.9; the Kanawha & Michigan 23.3; the Michigan Central 22.7 and the Toledo & Ohio Central 21.5. For the six months ending with June, the number of loaded freight cars moved on the New York Central system was 4,693,146, an increase over the same period of 1919 of 10.64 per cent.

Baggage transfer men of New York City—about 550 employees of the New York Transfer Company and the Westcott Express Company—who struck last week, returned to work on Monday, August 30, following a decision of A. M. Barrett, acting public service commissioner, who had been asked to mediate between the companies and the men. For a whole week, passengers passing through the city had to pay exorbitant prices for the transfer of baggage and are said to be now paying cheerfully an increase of 25 cents apiece on such baggage. Mr. Barrett says that the strikers are granted about 22 per cent increase in pay. The principal employees will receive $32 a week, with overtime payments of 90 cents an hour ordinary days and $1.20 an hour on Sundays and holidays. The length of the work day, now 10 hours, with an hour for dinner, is to be the subject of further negotiation.

Express Employees' Wages

A hearing on the supplemental application of the American Railway Express Company for authority to make additional increases in rates to meet the additional expense created by the award of the Railroad Labor Board increasing the wages of its employees, was held before Examiner Barclay of the Interstate Commerce Commission at Washington on August 27. L. R. Gwyn, chairman of the company's committee on wages and working conditions, testified that while it was estimated that the increased wages would amount to $30,000,000, the award would result in increasing expenses by $42,296,340, because it would be necessary to make a readjustment of the pay of supervising officers.

Southern Pacific Conducts Loading Campaign

The management of the Southern Pacific is conducting a cash prize contest on loading cars which began on August 1. The competition is to cover a period of three months at stations handling at least 40 carloads of outbound revenue freight during the period. Only certain commodities enter into the competition. Five credits are to be allowed at each station for each ton per car increase over the system average for the corresponding period of 1918, and two credits for each per cent of increase in loading capacity. Lesser increases will be made in proportion. The awards will be made to agents at stations earning the highest number of credits for each commodity considered. There will be a cash prize of $50 for first place for each item and a prize of $25 for second place. An additional prize

of $15 will be awarded the agent at the station which makes the greatest improvement over its own record during the corresponding period of 1918.

Operating Statistics for April and May

The Interstate Commerce Commission has issued its compilation of operating statistics for the month of April, which reflect the effect of the switchmen's strikes which broke out in that month. While for other months of this year the volume of freight handled has been showing large increases over 1919 the net ton miles for April, 28,208,000,000, show a decrease of 1.3 per cent as compared with April, 1919. The tons per train also show a decrease, from 705 to 666, and the miles per car per day decreased from 21.1 to 195. The report also includes for the cost per freight train mile in selected accounts, which show a total of $1.874 per train mile as compared with $1.637 in April, 1919. The average cost of coal was $3.76 per net ton as compared with $3.36.

For the month of May the net ton miles were 37,569,000,000, an increase of 16.4 per cent over May, 1919. The tons per train increased from 742 in May, 1919, to 746 in May, 1920, and the miles per car per day increased from 22 9 to 24.3. The cost per freight train mile for the selected accounts showed an increase from $1.597 in May, 1919, to $1.780. The average cost of coal was $3.91, as compared with $3.25.

Bribe-Takers Followed Up

The management of the Pennsylvania Railroad has undertaken an aggressive campaign to break up the wrongful practice of paying bribes or giving inducements to railroad employees for the purpose of obtaining more than their pro rata allotment of freight cars. "Wagon mines" in the bituminous coal region of Pennsylvania have furnished a majority of the cases hitherto uncovered, but the practice has also extended in some measure to other lines of production. In all instances where guilt has been proved, the railroad employees implicated have been at once dismissed from the service. In one case the superintendent of a coal company's store in western Pennsylvania was found to have corrupted the railroad company's car distributer in his district and to have entered into collusion with him to purchase the output of a "wagon mine," at low prices, in consideration of furnishing a full car supply. Upon unquestionable proof of the facts, the car distributer was at once discharged. Similar action has been taken in a number of other cases.

Operating and traffic officers throughout the Pennsylvania System have been instructed to ask the co-operation of shippers for the purpose of arousing public sentiment against attempts of any kind to corrupt railroad employees in the performance of their duty, or countenance those willing to be corrupted. Shippers are urged to report to the railroad company, without delay, any cases of employees indicating willingness to accept pay for unfair car distribution.

Some Railroad Problems for Solution

J. A. Peabody, signal engineer of the Chicago & North Western, in a talk before the Railroad Section of the American Association of Engineers on August 27, outlined some of the engineering problems confronting the railroads today. He pointed out that money, labor and material cannot now be obtained for handling work as it was handled in the past and that the present situation would lead to a new service—that of Transportation or Operating Engineering. An engineer in this branch will be one who can arrange for conveying two cars, or two people, where others could convey but one. Such a branch of railroad service would involve a close study of operating problems. "Plans should be made to cover a period of 10, 15, 20 or more years in the future," Mr. Peabody said, "and the expenditures should be arranged accordingly; thus when one addition was completed money would not be wasted in tearing out work done previously when the next addition was begun."

Among the problems requiring attention were mentioned signaling; co-operation of forces; highway crossing protection; cost of stopping trains; handling of increased passenger traffic in congested suburban territory; location of passing tracks; water and fuel station location arrangements and capacities; the present method of train despatching; communication system and yard layouts. Mr. Peabody emphasized particularly the problem presented in highway crossing protection and its need for careful study. In referring to the location of passing tracks, he said, in general they were placed where the first cost would be the least, irrespective of future requirements, but that the capacity of an entire engine division is only as great as the block between the passing tracks requiring the most time to traverse it. After determining the proper location of sidings from a theoretical standpoint, then the practical questions, such as profile, alinement and highway crossings must be considered.

In planning a yard layout such questions arise as, When should a hump yard be built instead of a surface yard? What provision should be made for supplying yards with air, fire protection, rest rooms, etc.? These and many other problems, Mr. Peabody said, present a fertile field for a new branch of engineering.

Wages of Anthracite Miners Increased

President Wilson on August 30 made public the report of the Anthracite Coal Commission awarding increases in wages for anthracite miners estimated at $85,000,000 a year. The rates of the contract miners are increased 65 per cent above the rates of 1916, or 20 per cent over present rates. The rates of company men are increased 17 per cent above present rates, with a minimum of 52½ cents an hour. This makes an increase to the low paid men of a little over 22 per cent. The rates paid "consideration" miners are increased 17 per cent over present rates. Contract miners' laborers and consideration miners' laborers are advanced 17 per cent, and monthly men 17 per cent above present wages.

Senator Harding Addresses Erie Employees

Senator Warren G. Harding, republican presidential nominee, in a speech to a group of Erie employees at Marion, Ohio, on August 27, voiced the belief that all railway workers will realize in the near future that the Transportation Act was "the greatest forward step in all the history of railway legislation." Senator Harding in speaking of the efficacy of the Transportation Act said in part:

"I believe railway workers ought to know the best conditions and be as abundantly compensated as any wage-earners in our modern activities.

"Transportation is the great necessity of modern life. We could not have our present-day methods without it. The sustenance of the cities and their millions depends upon it, the good fortunes of the agricultural world are inseparable therefrom. There is nothing else on which we are so reliant.

"I may speak of congress from intimate association. I know what the members were thinking. We enacted the Esch-Cummins law. Some of you did not approve and do not approve now. Some of you wished the Plumb plan. Let me look you in the face—many of you are friends and neighbors—and let me tell you I think the Esch-Cummins act is the expression of the conscience of a congress which sought to give highest service to the country in an hour of imperiled transportation and at the same time to assure to the American railway worker a just consideration never assured him before. Some day, maybe not this year, you railway workers will hail that law as the greatest forward step in all the history of railway legislation.

"Let me ask what the great force of railway workers must wish—wish for themselves and are willing to concede to others. Justice, is it not? And the Cummins-Esch act has aimed at justice, full, complete and instant justice for the railway wage earner, justice on appeal and hearing without having to fight or measure strength, justice without inconveniencing the American people or hindering their transportation or suspending railway activities.

"Your service is not that of workmen in a private and competitive enterprise. No matter what old abuses prevail, no matter what crimes were once committed, capital and its issues and compensations are under government control rates of charges are also under government regulation, and I want continuity of service, a government guaranty, assured because your government and the people's government makes your just treatment its first concern.

"You wouldn't wish your government to do more, because you want just government for all people, not a government yielding to class."

Maintenance of Way Association on the K. C. S.

The Kansas City Southern now has an individual maintenance of way association, composed of approximately 225 members, all employees in the engineering, maintenance of way, telegraph, signal and bridge building departments of that road. The first meetings of the new association have been very successful, as they have dealt with and will continue to deal with the promotion of good fellowship and co-operation amongst employees and departments; the securing of greater efficiency and economy and the discussion and study of better maintenance of way methods.

Railroad Earnings for May and Five Months

A deficit of $13,455,871 is reported by the Interstate Commerce Commission in its summary of railroad revenues and expenses for the month of May. In May, 1919, the roads earned a net operating income of $39,340,216. For the first five months of 1920 the net operating income was $23,607,082, as compared with $103,947,969 in 1919. This figure is reached, however, after about $50,000,000 of back mail pay had been included in the accounts for January and $8,363,573 of war taxes, together with organization expenses not included in last year's figures, had been included for this year. For the five months period the Eastern roads had a deficit of $60,553,000, the roads in the Pocahontas district had a net of $9,227,000, the Southern roads had a net of $23,615,000 and the Western roads had a net of $51,317,000. The roads in the Southern district alone showed a gain as compared with 1919. The summary for the United States for May and the five months is shown in the large table.

RAILWAY REVENUES AND EXPENSES FOR MAY AND FOR FIVE MONTHS ENDING MAY 31

		May		Five months	
		1920	1919	1920	1919
1	Average miles operated	235,326.51	234,148.53	234,904.84	234.116.32
	Revenues—				
2	Freight	$312,814,413	$286,709,568	$1,516,482,987	$1,328,098,214
3	Passenger	98.832,693	92,742,679	459,186 092	438,076,489
4	Mail	7,783,723	4,379,044	93,145,135	21,499,781
5	Express	13,137,383	9,213,958	62,054,312	42,777,186
6	All other transportation	11,392,136	10,288,569	54,766,572	46,636,147
7	Incidental	11,625,564	10,240,756	55,425,626	50,301,777
8	Joint faciliyt—Cr.	551,040	530,916	2,908,769	2,724,829
9	Joint facility—Dr.	130,409	160,041	881,235	813,892
10	Railway operating revenues	$456,006,543	$413,945,449	$2,243,088,258	$1,929,300,531
	Expenses—				
11	Maint. of way and structures	$90,162,481	$68,932,323	$356,389,349	$304,705,969
12	Maint. of equipment	118,532,301	95,417,392	583,416,974	476,390,843
13	Traffic	5,429,311	3,835,912	25,497,963	18,616,420
14	Transportation	209,155,900	173,589,633	1,048,507,854	866,702,083
15	Miscellaneous operations	4,995,559	3,978,970	22.907,182	18.283.325
16	General	12,978,635	10,356,723	60,654,769	51,465,906
17	Transportation for investment—Cr.	222,877	419,142	1,331,957	2,470,525
18	Railway operating expenses	$441,031,310	$355,691,811	$2,096,042,134	$1,733,694,021
19	Net revenue from railway operations	$14,975,233	$58,253.638	$147,046,124	$195,606.510
20	Railway tax accruals	26,692,156	15,892,505	105,955,673	77,578,800
21	Uncollectible railway revenues	86,100	54,480	445,121	293,042
22	Ry. operating income	d11,803,023	42,306,653	40,645,330	117,734,668
23	Equip. rents (Dr. balance)	290,811	1,787,601	9,247,818	7,856,027
24	Joint facility rent (Dr. balance)	1,362,037	1,178,836	7,790,430	5,930,672
25	Net of items 22, 23 and 24	d13,455,871	39,340,216	23,607,082	103,947,969
26	Expenses, per cent	96.72	85.93	93.44	89.80

d—Deficit.

Federal lap-over items settled during the month are included in this compilation for those roads that have indicated that estimates were not included for substantially all unaudited corporate items.

The Southern district as heretofore defined is in this monthly statement divided in order that the returns may be combined approximately in the groups adopted for the purpose of the commission's Ex Parte order No. 74 without destroying comparisons with prior years. The roads segregated from the Southern district constitute the "Pocahontas district," being the Chesapeake & Ohio, Norfolk & Western, Virginian and Richmond, Fredericksburg & Potomac. These roads in Ex Parte 74, were included in the Eastern group and were excluded from the Southern group. No attempt has been made to exclude any part of the Illinois Central from the Southern district.

The Detroit & Toledo Shore Line report is not included in the present table.

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—F. M. Nellis, Room 3014, 163 Broadway, New York City.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—S. W. Derr, Philadelphia & Reading, Philadelphia, Pa.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, Illinois Central, Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, C. & E. I. R. R., 332 South Michigan Ave., Chicago. Next meeting, November 16-18, 1920, St. Louis, Mo.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Next annual meeting, October 14-15, Chicago.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Union Station, St. Louis, Mo. Next meeting, October 13-15, 1920, Chicago, Ill.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 8 W. 40th St., New York.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOCIATION.—C. F. J. Dell, 50 E. 42nd St., New York.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—Otto E. Schlinck, 185 W. 5th St., Peru, Ind.

AMERICAN RAILROAD ASSOCIATION.—J. E. Fairbanks, 75 Church St., New York. Next regular meeting November 17, 1920, Chicago.

Section I, Operating (including former activities of Association of Railway Telegraph Superintendents).—W. J. Fripp (chairman), N. Y. C. R. R., New York, N. Y.

Telegraph and Telephone Division.—J. F. Caskey (chairman), Supt. of Telegraph, Lehigh Valley. Annual meeting, September 22-24, 1920, Fort Garry Hotel, Winnipeg, Manitoba, Canada.

Section II, Engineering.—E. H. Fritch, 431 South Dearborn St., Chicago.

Signal Division.—H. S. Balliet, 75 Church St., New York.

Section III, Mechanical (including former activities of Master Car Builders' and Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago. Next convention, June 15-22, Atlantic City, N. J. Equipment Painting Division—V. R. Hawthorne, Secretary.

Section IV, Traffic.—Robert C. Wright (chairman), General Traffic manager, P. R. R., Philadelphia, Pa.

Section V, Transportation (including former activities of Association of Transportation and Car Accounting Official.—E. J. Pearson (chairman), President, N. Y., N. H. & H. R. R., New Haven, Conn.

Section VI, Purchases and Stores (including former activities of Railway Storekeepers' Association).—J. P. Murphy, N. Y. C. R. R., Collinwood, Ohio.

Section VII, Freight Claims (including former activities of the Freight Claim Association).—Lewis Pilcher, 431 South Dearborn St., Chicago. Next meeting, November 17, 1920.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Austin Station, Chicago. Next convention, October 26-28, 1920, Atlanta, Ga.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railroad Association, Section II.) E. H. Fritch, 431 South Dearborn St., Chicago.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railroad Association, Section III, Mechanical.)

AMERICAN RAILWAY PERISHABLE FREIGHT ASSOCIATION.—E. F. McPike, 135 E. 11th Place, Chicago. Regular meetings, 2nd Wednesday in March and September.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 1145 East Marquette Road, Chicago. Next convention, September 1-3, 1920, Hotel Sherman, Chicago.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Col. H. S. Crocker (acting secretary), Engineering Societies Building, 33 W. 39th St., New York. Annual convention, August 10-12, Multnomah Hotel, Portland, Oregon. Regular meetings, 1st and 3d Wednesday in month, except July and August, 33 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

AMERICAN STEEL TREATERS' SOCIETY.—W. H. Eisenman, 154 East Erie St., Chicago.

AMERICAN TRAIN DESPATCHERS' ASSOCIATION.—C. L. Darling, Northern Pacific Ry., Spokane, Wash. Next convention, June 20, 1921, Kansas City, Mo.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Mt. Royal Sta, Baltimore, Md. Next annual meeting, January 25-27, 1921, San Francisco.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—Willis H. Failing, C. R. R. of N. J., Jersey City, N. J.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago.

ASSOCIATION OF RAILWAY EXECUTIVES.—Thomas De Witt Cuyler (chairman), 61 Broadway, New York, N. Y.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railroad Association, Section I, Operating.)

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railroad Association, Section V, Transportation.)

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—G. R. McVay, Barrett Company, Chicago. Meeting with convention of American Railway Bridge and Building Association, October 26-28, 1920, Atlanta, Ga.

CANADIAN RAILWAY CLUB.—W. A. Booth, 131 Charron St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS.—Thomas B. Koeneke, Federal Reserve Bank Bldg., St. Louis, Mo. Meetings first Tuesday in month at the American Hotel Annex, St. Louis.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 2d Thursday in November and 2d Friday in January, March, May and September, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—J. C. Keene, General Car Inspector, Wabash R. R., Decatur, Ill. Annual convention, September 14-16, Windsor Hotel, Montreal, Que., Canada.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—D. B. Wright, Lehon Company, 45th and Oakley Sts., Chicago.

CINCINNATI RAILWAY CLUB.—H. Boutet, 101 Carew Bldg., Cincinnati, Ohio.

EASTERN RAILROAD ASSOCIATION.—D. G. Stuart, Washington, D. C.

FREIGHT CLAIM ASSOCIATION.—(See American Railroad Association, Section VII, Freight Claims.)

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Sta., Chicago. Regular meetings, Wednesday preceding 3d Friday in month, Room 856, Insurance Exchange Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 702 E. 51st St., Chicago. Next annual meeting, May, 1921, Hotel Sherman, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn. Next convention, September 7-10, Hotel Sherman, Chicago.

MAINTENANCE OF WAY MASTER PRINTERS' ASSOCIATION.—E. E. Martin, Union Pacific R. R., Room No. 19, Union Pacific Bldg., Kansas City, Mo. Next convention, October 5-7, 1920, Detroit, Mich.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—(See American Railroad Association, Section III, Equipment Painting Division.)

MASTER CAR BUILDERS' ASSOCIATION.—(See American Railroad Association, Section III, Mechanical.)

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—J. J. Schafly, Potosi Tie & Lumber Company, St. Louis, Mo. Next annual convention, January 27-28, 1921, San Francisco.

NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Next convention, November 9, 1920, Washington, D. C.

NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, Kelly-Derby Co., Peoples Gas Bldg., Chicago.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting months of June, July, August and September.

NEW YORK RAILROAD CLUB.—Harry D. Vought 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meeting 2d Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Bldg., Washington, D. C.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 30 Church St., New York.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, Americus Club House, Pittsburgh, Pa.

RAILWAY DEVELOPMENT ASSOCIATION.—D. C. Welty, Missouri Pacific R. R., Little Rock, Ark.

RAILWAY ELECTRIC SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—D. L. Eubank, Galena Signal Oil Company, Richmond, Va.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.

RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, C. & O. Ry., Richmond, Va.

RAILWAY SIGNAL ASSOCIATION.—(See American Railroad Association, Section II, Signal Division.)

RAILWAY STOREKEEPERS' ASSOCIATION.—(See American Railroad Association, Section VI, Purchases and Stores.)

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Co., 30 Church St., New York.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Next annual convention, September 21-23, Hotel Statler, St. Louis, Mo.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, Schroeder Headlight & Generator Co., New York City.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.

SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—C. N. Thulin, Duff Manufacturing Company, 935 Peoples Gas Bldg., Chicago.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meets with Roadmasters' Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. R. R., Cleveland, O. Next convention, September 14-17, Hotel Sherman, Chicago.

WESTERN ASSOCIATION OF SHORT LINE RAILROADS.—Clarence M. Oddie, Mills Bldg., San Francisco.

WESTERN RAILWAY CLUB.—J. M. Byrne, 916 W. 78th St., Chicago. Regular meetings, 3d Monday in month, except June, July and August.

REVENUES AND EXPENSES OF RAILWAYS.

SIX MONTHS OF CALENDAR YEAR 1920

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses					Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.					
Alabama Great Southern	313	$3,662,281	$1,079,474	$5,179,696	$553,069	$1,191,606	$104,972	$1,933,633	$127,531	$3,949,229	76.24	—$230,466	$186,342	$1,043,120	$487,076
Cincinnati, New Orleans & Texas Pac.	338	6,694,976	1,861,673	9,348,442	1,104,858	2,466,687	155,254	3,508,740	216,716	7,523,087	80.47	1,825,355	318,986	1,509,331	407,049
Georgia Southern & Florida	402	1,596,212	761,469	2,628,094	374,349	600,501	43,659	1,283,832	70,301	2,386,284	90.79	241,809	112,000	128,158	95,767
New Orleans and North Eastern	207	2,597,649	608,047	3,627,225	546,969	787,785	62,407	1,483,978	101,514	3,008,964	82.95	618,261	241,381	376,472	358,316
Northern Alabama	110	620,143	82,621	745,862	165,664	43,149	9,446	354,960	14,370	587,589	78.77	158,273	25,704	132,517	141,706
San Antonio, Uvalde & Gulf	317	450,187	235,532	726,694	218,975	128,729	12,998	376,386	32,649	769,736	105.92	—43,042	13,200	—56,337	15,490
Seaboard Air Line	3,563	16,492,089	4,911,556	24,677,065	4,510,173	6,144,457	521,490	12,566,374	810,030	24,832,427	100.62	—155,362	900,000	—1,060,146	—2,187,428
Southern Buffalo Ry.	11	291,395	.....	657,638	41,747	85,675	3,270	415,021	9,690	555,403	84.45	102,234	21,480	80,754	—3,338
Southern Railway	6,975	47,956,900	16,441,267	72,749,681	9,811,220	13,788,793	952,634	32,549,875	1,905,679	59,742,675	82.12	13,007	2,394,139	10,604,038	7,837,568
Southern in Mississippi	278	527,019	285,194	908,376	308,839	153,760	17,700	534,602	34,820	1,049,721	115.56	—141,346	58,800	—200,163	—107,126
Southern Pacific S. S. Lines	.....	2,517,741	118,903	2,741,986	107,747	2,131,930	66,290	2,760,774	149,919	5,216,659	190.25	—2,474,673	59,993	—2,534,667	—2,323,406
Southern Pacific	7,093	54,328,950	25,185,258	89,813,231	13,966,446	18,376,996	816,030	34,116,112	2,107,164	71,436,312	79.53	18,371,919	5,548,938	12,814,554	3,887,841
Spokane International	158	614,548	104,450	741,047	111,615	64,986	14,279	235,124	30,602	459,687	62.03	281,360	30,369	250,680	154,590
Spokane, Portland & Seattle	649	2,738,854	946,942	4,029,976	708,096	519,707	40,556	1,374,677	136,163	2,823,616	70.06	1,206,360	506,813	699,205	258,409
Staten Island Rapid Transit	23	451,621	490,200	1,038,609	186,854	212,751	7,537	621,867	57,156	1,086,166	104.57	—47,557	90,000	—137,728	—184,568
Tennessee Central	292	1,006,851	273,869	1,401,772	255,947	306,931	27,915	672,457	61,471	1,324,658	94.50	77,114	32,972	43,502	292,603
Terminal R. R. Association of St. Louis	36	.....	8,482	2,113,151	312,342	386,998	5,922	233,278	49,767	1,782,627	84.33	331,123	212,250	118,843	235,334
Texarkana & Ft. Smith	93	740,952	131,116	962,675	124,132	97,410	10,354	291,490	29,193	554,429	57.59	408,246	71,940	336,283	254,599
Texas & New Orleans	469	2,999,279	955,765	4,461,967	1,169,232	1,307,991	47,827	1,561,766	116,139	4,427,145	99.21	34,822	154,132	—125,047	—248,208
Texas & Pacific	1,946	11,662,606	5,783,757	19,147,572	3,521,119	4,145,378	220,095	8,219,507	532,021	16,916,986	88.35	2,230,586	707,400	1,518,285	196,986
Toledo & Ohio Central	481	4,465,186	384,124	5,132,613	752,338	1,614,213	57,993	2,600,590	129,197	5,173,314	100.79	—40,701	302,113	—342,840	—222,002
Toledo, Peoria & Western	247	533,376	296,522	921,502	146,467	210,803	13,052	478,553	37,486	886,301	96.18	35,202	51,000	—15,798	105,711
Toledo, St. Louis & Western	454	4,584,470	191,628	5,068,017	971,613	1,015,647	57,849	2,067,681	84,838	4,197,249	82.81	870,767	186,000	684,472	385,851
Trinity & Brazos Valley	368	687,794	118,950	865,253	392,416	280,834	12,128	409,416	51,640	1,146,435	132.49	—281,182	48,399	—329,689	5,446
Ulster & Delaware	128	299,488	106,078	571,397	99,253	123,397	14,093	390,155	39,966	670,035	117.26	—98,639	30,000	—128,637	32,317
Union of Pennsylvania	40	.....	.....	4,440,957	504,736	1,201,093	1,657	2,855,062	48,460	4,611,007	103.82	—170,050	49,373	—219,424	—351,041
Union Pacific	3,614	38,976,310	9,934,706	56,329,591	8,888,425	11,045,619	421,716	17,300,914	1,724,883	40,845,922	72.51	15,483,669	2,515,899	12,960,082	—969,087
Utah	98	872,279	879,410	96,699	179,440	1,084	206,222	15,791	499,236	56.76	380,175	27,356	352,818	173,114
Vicksburg, Shreveport & Pacific	171	1,352,017	562,378	2,103,888	285,744	365,433	37,957	788,950	64,551	1,564,839	74.38	539,049	78,595	460,301	—285,364
Virginian	523	6,115,014	369,323	7,225,443	868,614	1,519,844	39,782	2,875,668	159,433	5,458,975	75.55	1,766,468	342,286	1,424,174	852,337

Traffic News

The steamship "Santa Isabel" sailed from Toledo, Ohio, on August 28, direct for a port in South America, carrying 492 automobiles.

The Pennsylvania Railroad, modifying its original notice, announced on August 24 that commutation tickets bought before the close of business on August 25 would be accepted for passage without additional payment, until the expiration of their regular time limit. This was done for the purpose of insuring impartial treatment to all holders of commutation tickets. This change includes 180-trip tickets good for three months, and 50-trip tickets good for six months.

The Railway Association of Canada recently promulgated the following rules to govern the furnishing of equipment for loading on Canadian lines performing switching service:

1. (a) When cars are to be loaded to destinations within the same switching limits in which the shipment originates, the obligation of supplying equipment ordered rests with the road upon which the car is to be loaded.
(b) When cars are to be loaded on a switching line to destinations beyond the switching limits, primary obligation for equipment ordered rests with the carrier road which is to receive the loaded car for road haul, subject to paragraph 2.
2. A road haul line or terminal switching line loading cars in switching service destined to points beyond the switching limits on a carrier road shall furnish the equipment for such supply as may be available on its rails, and when equipment required is not available, will call upon the carrier road to furnish necessary cars under paragraph 1 (b).
3. The use of equipment as above is subject to car service rules.
4. Shippers will be required to place order for equipment desired with proper representatives of the road on which cars are to be loaded.

The present code of car service rules of the American Railroad Association does not specifically deal with this subject.

Intrastate Rate Cases

On another page of this issue will be found an article giving a brief summary of the status of the intrastate rate cases and of the action that has been taken by the various state regulating commissions.

Further details follow:

KENTUCKY.—The railroad commission has decided that it has no power to forbid the increase of intrastate rates on the basis which the Interstate Commerce Commission has ordered for interstate transportation, freight and passenger. The application of the American Railway Express Company for authority to advance rates 12½ per cent has not been granted, the law forbidding action in such cases until after 30 days' notice.

LOUISIANA.—The Railroad Commission defers action on the application of the railroads, many protests having been filed, but "in order to dispose of the matter with as little delay as possible," a hearing will be held at Baton Rouge on Tuesday, September 21.

NORTH CAROLINA.—The Corporation Commission approved the 25 per cent increase in freight rates on August 28, to go into effect 15 days after the filing of new tariffs.

Creating Good Will for the Railroads

In an effort to create good will for the railways among those with whom its employees come in contact, George Hull Porter, manager of the railroad department of the Western Electric Company, has addressed a letter to a number of railway executives calling attention to those steps which his company has undertaken to promote the interests of the roads.

In this letter Mr. Porter states: "Business cannot grow in excess of the possible capacity of the public utilities to handle it. This is particularly true of the railroads, which for five years have been unable to attract capital in volume sufficient to keep ahead of industry. Moreover, the return of the roads to private ownership will not of itself bring the relief necessary for a thoroughly adequate transportation system.

"It is with this conviction that the Western Electric Company is undertaking some advertising to promote good will for public utilities. As an organization of national scope, serving practically every form of utility, we deem it a privilege to stimulate consciousness to a sense of fairness which should mark the relationship between the individual and the railroads.

"To give added effect to our position, we are encouraging every employee by personal conversation, to guide wherever possible the judgment of others by presenting unprejudiced facts to his attention.

"In the enclosed proof of an advertisement now running in the national magazine, together with a copy of a memorandum to employees, we hope will be found a sentiment that will render a real service to your company."

Increased Rate Tariffs Filed

Blanket supplements to existing tariffs putting into effect the percentages of increase in freight and passenger rates authorized by the Interstate Commerce Commission in the general rate advance case, Ex Parte 74, were filed with the commission on August 21 to become effective on August 26, on five days' notice, as authorized by the commission in its decision. Many of the traffic officials took the tariffs personally to Washington, not caring to take any chance of delay in the mails or otherwise, which would delay the taking effect of the new rates. The roads are given two years to effect the complete revision of their freight tariffs and until October 1, 1921, for the passenger tariffs.

Freight Rates Still Lower Than Prices of Commodities

It will take fewer pounds of cotton to pay the freight on a bale of cotton, fewer pounds of beef to pay the freight on a carload of live cattle, fewer pounds of sugar to pay the freight on a barrel of sugar, and fewer bushels of wheat to pay the freight on a carload of wheat in spite of the advanced freight rates, than it took in October, 1916, according to a comparison of rates and prices issued by the Southern Railway. The prices for October, 1916, are taken from the July issue of the "Commerce Monthly" published by the National Bank of Commerce of New York, and the rates quoted are between representative points in the South between which there is an actual movement of the commodities named.

In October, 1916, when middling cotton was selling on the New Orleans market at 16.81 cents per pound, the freight rate from Selma, Ala., to New Orleans was 45 cents per hundred pounds or $2.25, the equivalent of 13.4 pounds of cotton, for a 500-pound bale. The new freight rate from Selma to New Orleans will be 75 cents per hundred pounds or $3.75 for a 500 pound bale but with cotton of the same grade selling for 35.25 cents per pound it will take only 10.6 pounds to pay the freight on the bale.

In October, 1916, the rate on live cattle from Meridian, Miss., to East St. Louis was $72.00 per car of 20,000 pounds and choice steers were selling at $9.80 per hundred pounds, requiring 734 pounds to pay the freight on a car; the new rate will be $109.00 per car but with choice steers selling at $15.90 per hundred pounds it will require only 685 pounds to pay the freight on a carload.

In October, 1916, when sugar was selling at 6.15 cents per pound, the freight rate from Savannah to Chattanooga per 100 pounds was 28 cents, the equivalent of 4.55 pounds of sugar. The new rate from Savannah to Chattanooga will be 44 cents but with sugar selling at 19.56 cents per pound, it will require only 2.25 pounds to pay the freight on 100 pounds.

In October, 1916, wheat, No. 2 red winter, sold for $1.57½ per bushel and the freight rate from Morristown, Tenn., to Dalton, Ga., was 13.5 cents per hundred pounds, making the freight charge for a car of 60,000 pounds or 1,000 bushels $81.00, the equivalent of 51.4 bushels of wheat. The new rate will be 21.5 cents per 100 pounds or for a car of 60,000 pounds or 1,000 bushels, $109.00, the equivalent of 50.8 bushels of wheat of the same grade at $2.54 per bushel.

Coal Production

Production of soft coal fell off during the week of August 21 to 10,981,000, a decrease of 833,000 tons as compared with the preceding week, according to the weekly bulletin of the Geological Survey. The decline was due in part to a fresh outbreak of the daymen's strike in Indiana and in part to the using up of the accumulation of cars resulting from the previous strike. Production during the first 199 working days of the year has been 335,967,000 net tons, which is 16 million

tons behind 1917 and about 39½ million tons behind 1918, but 48⅔ million tons ahead of 1919. In this connection, the bulletin says, it should be remembered that production during 1918 exceeded consumption and provided for a net addition to consumers' stock by the end of the year of approximately 30,000,000 tons. In 1919 the condition was reversed; consumption exceeded production and there was a net draft on stocks of perhaps 40,000,000 tons for the year. The rail movement to New England recovered again during the week, increasing by 509 cars as compared with the preceding week and by 1,597 cars as compared with the corresponding week of 1919. For the week ending August 14 the percentage of time lost on account of transportation disability was 22.7.

Dumpings of bituminous coal at Lake Erie ports during the fourth week of operation of the amended lake order passed the million-ton mark for the first time this season. The total for the week ended August 21 was 1,090,237 net tons, which was greater than the tonnage handled in the corresponding weeks of 1917 and 1919. The cumulative lake movement from the beginning of navigation now stands at 9,731,000 tons, as against 15,727,000 and 15,505,000 tons at the end of the corresponding weeks of 1918 and 1919. The cumulative shortage in shipments from the mines to lake destinations under Service Order No. 10 was 10,742 cars, but shipments on August 23 and 24 exceeded the quota. So heavy is the movement that difficulty is now reported in unloading promptly all the cars shipped to the lakes. On August 25, according to reports furnished the American Railroad Association, there were on hand at lower lake ports 10,404 cars of coal.

The total quantity of coal dumped at tide during the month of July was 4,915,000 net tons, an increase over June, hitherto the maximum month, of 216,000 tons. Shipments to New England were 1,006,000 net tons, as compared with 772,000 tons in June. Considerable quantities of coal consigned to New England have not been dumped for lack of vessels at the ports.

Increases in Water Rates Allowed

The United States Shipping Board on August 24 issued an order authorizing increases in freight and passenger rates for boat lines on the Great Lakes and in coastwise service, approximating the increases in rates allowed the railroads which were the subject of a hearing before the board last week. The rates, fares and charges of the water carriers operating in the sections involved may be increased as follows:

	Freight, per cent	Passenger, per cent
Between Norfolk, Va., and ports on the Atlantic Coast north	40	20
Between Norfolk and New Orleans	25	20
Between New Orleans and the Mexican border	35	20
Between ports on the Great Lakes	40	20
Between New York and the Canal Zone	10	33⅓
Between New York and the Virgin Islands	..	33⅓
Between New York and Porto Rico	20	20

The increases authorized on freight traffic may be made applicable to weighing, lighterage, storage, floating, transfer, diversion, reconsignment, switching and transmit services, and the passenger fares increases authorized may be applied also to excess baggage.

On the Atlantic and Gulf coasts the through rates between ports located in different coastal sections, which are made on a combination basis, are to be increased by applying to each factor of the through rates its respective percentage.

Local or joint through rates between ports in one coastal section and ports in any other coastal sections are to be increased 33⅓ per cent.

For rate-making purposes, Norfolk, Va., will be considered in the Norfolk-New Orleans section to and from ports within the latter section; New Orleans, La., will be considered in the Norfolk-New Orleans section to and from ports within said section and within the New Orleans-Mexican border section to and from ports within the latter section.

With regard to increases in terminal charges, Norfolk will be considered in the Norfolk-North Atlantic section, and New Orleans will be considered in the New Orleans-Mexico border section.

The increases may be made effective not later than January 1, 1921, on one day's notice to the public and the board.

Commission and Court News

Interstate Commerce Commission

The Interstate Commerce Commission has suspended, from September 1 to December 13, cancellation of rates to points on the Gulf, Mobile & Northern, as published in Southern Railway tariff.

The Interstate Commerce Commission has suspended, from September 1 to December 30, increased fares between points in Ohio and West Virginia as published in a Wheeling Traction Company passenger tariff.

The commission has suspended from August 31 to December 29 proposed increased rates on forest products from points in North Carolina and Virginia to Norfolk, Portsmouth, Pinners Point and Port Norfolk, Va.

The Interstate Commerce Commission has suspended from August 28 to December 26, proposed increased rates on petroleum and its products from points in Kansas, Oklahoma and Missouri to Chicago, Ill., Milwaukee, Wis., and related territory.

The Commission has suspended from August 26 to December 24 the proposed rule for the construction of combination rates on petroleum and its products as published by E. B. Boyd, agent; F. A. Leland, agent, and all similar rules published by any carrier.

The Interstate Commerce Commission has suspended, from September 1 to December 30, the proposed cancellation of the existing provisions for the absorption of handling charges on rice and rice products at New Orleans, Gretna, Harvey and Westwego, La., for export and coastwise traffic.

The commission has suspended from August 31 to December 29 the operation of rules governing the payment of freight charges in United States currency as published in I. C. C. No. 444 and Supplement No. 11 to I. C. C. No. 428, issued by Agent P. W. Gomph, except insofar as the said rules affect traffic originating at or destined to points in the United States.

The Interstate Commerce Commission has further suspended from September 5 until October 5 the operation of certain schedules appearing in the tariffs filed by F. A. Leland, agent, which seek to increase rates on coffee from Galveston, Tex., and gulf ports to various points, the operation of which was suspended from May 8 to September 5th by an order previously entered.

Upon petition of certain defendants and the State Corporation Commission of Virginia, the Interstate Commerce Commission has reopened for purpose of reargument case No. 10,500, Corporation Commission of North Carolina v. Atlantic Coast Line Railway Company, et al., and No. 10,515, Raleigh Chamber of Commerce, et al., v. Director General, et al., both of which were decided in 57 I. C. C., 523. These cases are reopened chiefly because of the change in conditions which will be effected by the advances in rates authorized by Ex Parte 74. While the scope of the reargument will not be restricted, the commission is particularly desirous that two matters should be discussed: (1) the reasonableness of the North Carolina rates in issue, in the light of the advances under Ex Parte 74, and (2) the amount of the differentials, North Carolina points under Richmond or Norfolk, which should be prescribed in the southern adjustment, and the amount of the differentials, North Carolina points over Richmond or Norfolk, which should be prescribed in the northern adjustment.

In a case instituted by complaint of the National Industrial Traffic League against the director general and the American Railway Express Company, et al., the Interstate Commerce Commission has held that the last clause of rule 7 of the terms and conditions in the uniform express receipt, providing that suits for loss, damage or delay shall be instituted only within two years

and one day after delivery of the property or, in case of failure to make delivery, then within two years and one day after a reasonable time for delivery has elapsed, was unreasonable and prejudicial in that it did not conform substantially to the provisions heretofore found reasonable in Decker & Sons v. Director General. As to claims arising on and after the effective date of the applicable provisions of the interstate commerce act the time within which suits may be instituted against the carrier is prescribed, the decision says, in paragraph (11) section 20. The defendant companies will be expected to incorporate in their tariffs and uniform express receipts the terms and conditions of that statute.

In California Citrus League v. Director General, Aberdeen & Rockfish Railroad Company, et al., the Interstate Commerce Commission holds that the rate on oranges to points in blanket territory between the Rocky Mountains and the Atlantic seaboard, north of the Ohio and Potomac rivers, in effect prior to June 25, 1918, and as increased under the provisions of General Order No. 28 of the director general, was not, and is not, unreasonable, unjustly discriminatory, or unduly prejudicial; that the rate on lemons to said blanket territory in effect prior to June 25, 1918, and as increased under the provisions of General Order No. 28 of the director general, was not, and is not, unreasonable, unjustly discriminatory, or unduly prejudicial. The record affords no basis for a finding as to the propriety of the rates to points located elsewhere than in the blanket territory mentioned. The rule which related to refrigeration charges on shipments of oranges and lemons pre-cooled and pre-iced by the shippers was unreasonable. Reparation awarded on basis of rule found reasonable in *Perishable Freight Investigation,* 56 I. C. C., 449.

State Commissions

The Ocean Shore Railroad, which extends from San Francisco, southward, 38 miles, to Tunitas, has applied to the California Railroad Commission for an order permitting the discontinuance of service and removal of tracks.

The cities of Albany, Oakland and Berkeley, California, have applied to the State Railroad Commission for a rehearing of the recent decision in the railroad rate case affecting the transbay ferry rates, and for an order suspending the order as to ferry rates, until a final determination by the State Supreme Court of the matters involved. The application holds that the commission erred in denying the cities the opportunity to present evidence showing that the proposed increase of ferry rates was unwarranted; that the commission granted the increase of ferry rates solely upon the authority of the Interstate Commerce Commission; that the commission erred in requiring the commuter to pay a return upon property owned by the Southern Pacific and the San Francisco-Oakland Terminal, but not devoted to the use of the commuter and not used or useful in the service rendered him. Objection is also made by the commuters on the ground that they will be called on, through the increase, to rehabilitate other properties of the Southern Pacific and terminal railways not devoted to the public using the transbay ferries.

Court News

Limitation of Action on Bill of Lading

Under the Georgia law a bill of lading for an intrastate shipment is not effective as a written contract without the signature or assent of the shipper. Even in the case of a valid bill of lading an action for damages for breach of the contract made thereby appears to be barred in four years by the Georgia statute of limitations.—Old Colony Trust Co. v. Atlanta, B. & A., District Court, N. D. Georgia, 264 Fed. 355.

Injunction Under Federal Control

The Circuit Court of Appeals, Eighth Circuit, holds that an injunction granted to a complainant solely by virtue of his office as general manager of a railroad under the United States Railroad Administration ought to have been limited in duration to the period of United States control. The federal courts take judicial notice that government control of the railroads ceased on March 1, 1920.—Crawshaw v. Corbett, 264 Fed. 962.

Foreign Railway News

Subsidiary Business of Railways Losses and Gains

London.

Sir Eric Geddes, England's Minister of Transport, states that the subsidiary businesses of the railway companies had during the recent financial year the following losses and gains:

	Losses	Profit
Omnibuses	£40,242 or $200,000	
Steamboats	£62,119 or $310,000	
Canals	£417,159 or $2,080,000	
Docks, harbors and wharfs	£559,605 or $2,990,000	
Hotels, refreshment rooms and restaurant cars		£770,028 or $3,850,000
Other businesses	£77,350 or $386,000	

English Railway Car Builders Claim Refused

London.

The claim made by the railway car builders and repairers of Great Britain for an increase of 6 pence (12 cents) per hour on time rates with an equivalent increase on piece rates and of 3 pence (6 cents) per hour for apprentices has been refused by the Industrial Court. The employers contended that the increases already granted were sufficient to meet the increased cost of living and added that the high charges in connection with the car building trade were already causing a serious fall in the demand.

England Benefits by Increased Demurrage Charges

London.

Last January the charges for demurrage for the railways of Great Britain were increased from 1 shilling 6 pence (36 cents) per day to 3 shillings (72 cents) for each of the first two days and 5 shillings ($1.20) per day thereafter. This has resulted in making a reduction in the number of cars detained under loading as indicated in the following table, showing the average number of cars per day held on demurrage:

December, 1919	14,621		
January, 1920	10,665	27 per cent decrease	Compared with December, 1919.
February, 1920	8,851	39 per cent decrease	
March, 1920	9,179	37 per cent decrease	
April, 1920	9,721	34 per cent decrease	
May, 1920	10,430	29 per cent decrease	
June, 1920	11,504	21 per cent decrease	

Rates of Pay for Men Employed at Railway Docks

London.

An agreement has been come to between the dock owning railway companies and the men employed at these docks on the subject of wages whereby the workers are to be divided into nine sections and the rates of pay now agreed upon range from 75 shillings ($18) a week for porters and laborers to 85 shillings (approximately $21) a week for leading dockgate men. These rates of pay will be continued as long as the cost of living is 150 per cent above the pre-war standard but will fluctuate by 1 shilling (24 cents) for every 5 points change in the cost of living as published by the Board of Trade, but shall not in any event fall below 50 shillings (approximately $12) per week for the lowest paid class of labor. Special provision is made for piece work and over time and the new rates are to be operative from July 1, last.

Projected New Railway in Nicaragua

London.

The Board of Trade Journal says that construction will shortly be started on a railway from Chinandega to Plaza Grande, Peninsula of Cosiguina, in the Gulf of Fonseca, a distance of some 30 miles. A branch line will be constructed from it, at a point beyond El Tempisque to the Honduras frontier in the Department of Choluteca. The length of this branch will be 20 miles. The undertaking is to be completed by September 15, 1922.

This line will form part of the system known as the "International Railways of Central America" and will be connected later with the section which will be constructed by Honduras in the departments of Valle and Choluteca, between

the Salvadorean and Nicaraguan frontiers, or the Pan-American Railway.

Although the completion of the Pan-American Railway is a long way off, the railway to Plaza Grande and its branches will considerably facilitate intercourse between the three republics bordering on the Gulf of Fonseca.

Receipts and Expenditures on English Railways

LONDON.

The Ministry of Transport has issued a statement regarding the financial results of the working of the railways during the three months ending June 30, 1920. The total revenue earned is £57,950,182. The total expenditure was £57,199,302, giving a balance of revenue earned over expenditure of £750,880 (1.3 per cent). The standard year proportion of net receipts under the given guarantee was £11,021,000, to which is added for interest on Capital Works brought into use £264,000. Thus the net government liability for the three months ending June 30, 1920, is £10,926,760, or approximately $54,600,000.

The traffic revenue earned was distributed roughly, as follows:

Passenger train traffic	£27,174,626	45%
Freight train traffic	33,321,686	55%

The report also shows a charge of £8,519,854 ($41,500,000) for maintenance and renewal of Way and Works, and a charge of £11,358,542 ($45,000,000) for maintenance and renewal of Rolling Stock.

Holland Commission Studying Electrification

The commission of railway experts sent by the government of Netherlands to this country to study American electrification methods has discussed with the engineers of the Westinghouse Electric & Manufacturing Company at East Pittsburgh questions which will involve the selection of equipment for Holland railways. The commission discussed the electrification of railways in general and in particular the Holland railway problems. The commission is studying both alternating current and direct current systems and has made a thorough inspection of the shops in which such locomotives were built.

The president of the commission is L. M. Barnet Lyon, member of the board of control of the Netherland Railways and J. H. W. Van Loenen Martinet, chief of electric traction of the Netherland Railways, is secretary. The other members are H. J. Van Lessen, chief of electrical development of Holland, H. Doyer, consulting engineer and W. J. Burgersdijh.

It is said that electrification will be started shortly on the railway connecting Amsterdam, The Hague and Rotterdam, which is about 50 miles in length. The equipment will be largely multiple unit but some locomotievs will be used.

Belgium Orders German Freight Cars

Belgium has placed its first order for material in Germany since the armistice, writes Consul General Henry H. Morgan in Commerce Reports. It is destined for the state railways, but was ordered by the Ministère de Ravitaillement; this is explained by the fact that at the time of the liquidation of the Comité National de Secours et d'Alimentation, which looked after the provisioning of Belgium, there remained a large stock of food supplies for which a buyer was sought. Germany offered to buy it, and thus became indebted to Belgium for about 60,000,000 francs. It offered to pay the debt in merchandise and proposed machines and other things. The railroad department then intervened and suggested to the service of Ravitaillement that an order for material be placed up to the amount of the debt. It was proposed to buy 3,000 freight cars at 20,500 francs ($4,100 at normal rates of exchange), each, but German manufacturers demanded 21,000 francs ($4,200), per car. The railroad department declined the conditions. The Ministère de Ravitaillement, however, accepted, and it was understood that the difference of 500 francs would be charged to the Ministère.

Negotiations are under way with German manufacturers for the supply of 2,000 to 3,000 additional freight cars, which are to be furnished along with the others at the end of next March.

Belgian manufacturers demanded 27,000 francs ($5,400), a car, which might still be increased in case of a further augmentation of wages; and this price did not include wheels. Nevertheless, the railroad administration, desirous of satisfying the national industry, proposes to order 3,000 to 4,000 cars in case its conditions are not too rigid.

A Dortmund firm has already furnished Belgium with 300 freight cars at about 16,000 francs ($3,200), each.

Reconstruction of more light railways in Belgium is announced by La Société Nationale des Chemins de Fer Vicinaux.

Glasgow Considering Ordering Rails Here

A contract for 10,000 tons of steel rails and fish plates is expected to be awarded very shortly by the Glasgow city government to the United States Steel Products Company, writes Trade Commissioner J. Vernon McKenzie to the Weekly Bulletin of the Canadian Department of Trade and Commerce.

The corporation invited 21 firms to tender for this particular order, and out of these only two applied—one United States firm and one English firm, the home firm being $22 per ton higher in their price than their foreign competitor. The relative prices were in the neighborhood of $136 and $116.

The Glasgow Tramways Committee recommended that the offer of the United States Steel Products Co. be accepted, writes Mr. McKenzie, owing to the fact that there would be a saving of more than £40,000 on the order, but definite acceptance has not yet been given owing to the fact that, under the standing orders of the town council of Glasgow, agents acting for firms in a foreign country must send to the corporation a duly authenticated guarantee that the work will be carried through under trade union conditions. This guarantee has not yet been given, and a member of the council has alleged that in the United States the steel worker is lower paid and works longer hours than in this country, and also that the United States Steel Products Company, with another company, was responsible for the failure of a conference of employers and workers called not long ago to form some organization for the prevention of useless strikes. He objected to the steel workers in Scotland and Finland being exposed to competition from a United States firm by whom trade unions are not recognized. It is presumed that on the receipt of the guarantee the contract will be forthwith awarded.

The iron and steel works in this country, continues Mr. McKenzie, are so fully engaged at the moment that they are not in a position to accept additional work and at the same time give reasonably early delivery. It is to be noted that although 21 firms were invited to tender, 19 did not even bother to make an offer. From this it may be assumed that they refrained from doing so because their order books were already filled up. On the other hand, it has been suggested that other considerations played a part in preventing the British steel makers from tendering. It is possible that they recognized the futility of competing with foreign makers, especially those in the United States. If this is the explanation, it argues a much more serious state of affairs than that which was raised on the question as to whether or not a British public service corporation is under the moral obligation to place orders only with British firms. If a firm in the United States can manufacture, pay the freight and charges across the Atlantic and deliver steel material in Glasgow at $22 per ton cheaper than it could be supplied by, say, firms in the vicinity of the city (and taking the exchange into consideration), there can be only one explanation of this, i.e., that costs in this country are considerably in excess of those obtaining on the other side. If this is true, it is taken by business men to be a fair indication that producers in this country have raised prices to a level which places them outside the competitive markets of the world, but it would be difficult to apportion the several costs that have made the price of British steel so prohibitive, and it would be interesting to know what part wages, not merely those of ironworkers, but also those of the miners, play in the cumulative charges.

The Glasgow Herald hands out a warning thus: "This tender of the United States Steel Products Co. may be regarded as the 'writing on the wall,' and if the warning is not taken we may find our trade wrecked on the rocks of excessive profits and inflated wages."

Equipment and Supplies

Locomotives

THE ILLINOIS CENTRAL is in the market for 50 Santa Fe type locomotives and for 25 switching locomotives.

THE PRIMROSE COAL PRODUCING COMPANY, Indianapolis, Ind., has ordered from the American Locomotive Company 1, 0-4-0 type switching locomotive. This locomotive will have 14 in. by 22 in. cylinders and a total weight in working order of 79,000 lb.

THE HYDRO ELECTRIC POWER COMMISSION, Niagara Falls, Ontario, has ordered from the American Locomotive Company 2, 0-4-0 type switching locomotives. These locomotives will have 16 in. by 24 in. cylinders and a total weight in working order of 99,000 lb.

Freight Cars

THE GOVERNMENT OF THE NETHERLANDS is inquiring for 1,200 steel box cars.

THE BEAVER BOARD COMPANIES, Buffalo, N. Y., are inquiring for 300 tank cars.

ARMOUR & CO., Chicago, has ordered 300 refrigerator cars from the Bettendorf Company.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for 500 drop-bottom gondola cars.

THE U. S. NAVY DEPARTMENT is inquiring for 8 flat cars to have a capacity of 80,000 lb.

THE MISSOURI PACIFIC expects to be in the market soon for a large number of freight cars.

THE FRANKLIN QUALITY REFINING COMPANY, Franklin County, Pa., is inquiring for five 50-ton steel gondola cars.

THE OLIVER IRON MINING COMPANY, Duluth, Minn., is inquiring for from one to five 40-ft. steel frame flat cars.

THE WHEELING & LAKE ERIE is inquiring for from 500 to 1,000 box cars; also, from 500 to 2,000, 50-ton gondola cars.

THE PUBLIC SERVICE CORPORATION of northern Illinois is inquiring for three 50-ton, steel underframe, gondola cars.

THE AMERICAN TAR PRODUCTS COMPANY, Chicago, has ordered 10, 50-ton, 10,000-gal. tank cars from the Standard Tank Car Company.

THE SOUTHERN GEM COAL CORPORATION, Chicago, has ordered 25, 50-ton hopper coal cars from the Mt. Vernon Car & Mfg. Company, Mt. Vernon, Ill.

THE SEABOARD AIR LINE is in the market for 1,000 box cars. As previously reported, the company is also in the market for 300 phosphate and 350 flat cars.

J. OLLIVIER Y CIA., Mexico City, Mex., has ordered 3 tank cars from the Pennsylvania Tank Car Company. These cars will have a capacity of 10,100 gal. and will have 50-ton trucks.

THE AMERICAN SHORT LINE RAILROAD ASSOCIATION, Washington, D C., is asking prices on 1,000 flat cars, 1,000 double-sheathed box cars and 1,000 single-sheathed box cars, all to be of 80,000 lb. capacity.

THE STUDEBAKER CORPORATION, South Bend, Ind., has withdrawn its inquiry for the 100 flat cars of 40-ton capacity, mentioned in the *Railway Age* of August 20.

THE CONLEY TANK CAR COMPANY, Pittsburgh, Pa., has ordered 50 tank cars from the Pennsylvania Tank Car Company. These cars will have a capacity of 8,050 gal. and will have 40-ton trucks.

THE WEST VIRGINIA PULP & PAPER COMPANY, New York, reported in the *Railway Age* of August 13 as inquiring for 20 coal cars of 70 tons capacity, has ordered 25, 75-ton hopper cars from the Pressed Steel Car Company.

THE W. S. DICKEY, CLAY MANUFACTURING COMPANY, Kansas City, Mo., have ordered 2 tank cars from the Pennsylvania Tank Car Company. These cars will have a capacity of 10,100 gal. and will have 50-ton trucks.

THE INTERNATIONAL RAILWAY SUPPLY COMPANY, 30 Church street, New York, purchasing agents for the Trinidad Government Railways, has ordered 130 cane cars of 12 tons capacity from the National Steel Car Corporation.

Passenger Cars

THE M. C. PETERS COMPANY, Chicago, is inquiring for one horse car.

THE CHICAGO, NORTH SHORE & MILWAUKEE is inquiring for 10 baggage cars.

Signaling

THE MISSOURI PACIFIC has ordered an eight-lever Saxby & Farmer interlocking machine, with horizontal leadout, from the General Railway Signal Company, Rochester, N. Y. The machine will have five working levers and three spare spaces, and is to be installed by the railroad company's forces at Pacific, Mo.

Trade Publications

MACHINE TOOL CONTROL.—Selecting the control for motor driven machine tools is the subject of Publication No. 845, containing 48 pages, published by the Cutler Hammer Manufacturing Company, Milwaukee, Wis. Attention is called to recent changes in manufacturing conditions, making it essential to provide easier means of operating and more accurate and convenient control. The first half of the book contains suggestions for the selection of motor and control apparatus for machine tools of all kinds. The second half takes up C-H controllers more specifically, both manual and automatic, with descriptions, illustrations and horsepower ratings.

LIGHTING ENGINEERING.—Eight bulletins on the general subject of illumination engineering have been issued by the National Lamp Works of the General Electric Company, Cleveland, Ohio. The bulletin numbers and the subjects covered are as follows: 7C, Fundamentals of Illumination Design, 66 pages; 10D, Essentials of Train Lighting, 16 pages; 20A, Industrial Lighting, 96 pages; 32, Light Projection and Its Applications, 50 pages; 35, The Lighting of Offices and Drafting Rooms, 96 pages; 36, Lighting Comment, 57 pages; 39, A Turning Point in the Lighting Industry, 14 pages; 40, Maintenance of Lighting Systems, 15 pages. The bulletins are prepared for the most part by the engineers of the General Electric Company, and are well worth the attention of anyone interested in the subject of lighting.

LIGHTING DATA.—The Edison Lamp Works of the General Electric Company, Harrison, N. J., has issued a series of thirteen bulletins on the general subject of lighting. The following is a list of the bulletin numbers and the subjects covered: 101, Maintenance of the Lighting System; 102, Effect of Color of Walls and Ceilings on Resultant Illumination; 103, The Lighting of Show Windows and Show Cases; 104, Artificial Daylight for Merchandising and Industry; 105, 110- vs. 220-volt Circuits from the Standpoint of Lighting Service; 106, Illumination and Production; 108, The Lighting of Office Buildings and Drafting Rooms; 109, Lighting of Schools; 110, The Lighting of Textile Mills; 111, The Lighting of Piers and Warehouses; 112, Light and Safety; 113, Edison Miniature Mazda Lamps Standard versus Special; 114, Edison Mazda Lamps Theory and Characteristics. There are some 12 to 30 pages in each of the bulletins and each contains a comprehensive treatise of its subject.

Supply Trade News

Thomas L. Hall, formerly with the St. Louis Southwestern Railway, at Tyler, Tex., is now with the **Buda Company, Chicago,** as sales representative, with headquarters at St. Louis, Mo.

A. B. Way, until recently secretary and general manager of the Bridgeport Chain Company, Bridgeport, Conn., is now with the **Chain Products Company,** Cleveland, Ohio, in the capacity of district sales manager for New England, with headquarters at 150-152 Chambers street, New York.

Julius Janes, formerly president of the Standard Steel Castings Company, Cleveland, Ohio, has recently concluded an arrangement with the **Farrell-Cheek Steel Foundry Company,** Sandusky, Ohio, by which he will be the sales representative of this organization in Cleveland and Cuyahoga county.

Pratt & Lambert, Inc., Buffalo, N. Y., has begun the erection of a building at its Buffalo plant to house the advertising, printing and finishing departments. The new structure will be four stories high, 100 ft. by 55 ft., of reinforced concrete, face-brick veneered and set off by white stone trim. The work is expected to be finished by January, 1921.

The Mesta Machine Company, Pittsburgh, Pa., has opened an office in the Singer building, New York, from which point all its foreign business will be handled. The New York office will also be the sales office for the New York and Eastern states territory. **M. M. Moore,** the export sales manager, who has just returned from a several months' European trip, will be in charge.

E. Coleman, manager of the railroad ditcher, log loader and crane departments of the American Hoist & Derrick Company, has resigned to become sales engineer with **Landes & Co.,** manufacturers' agents at Salt Lake City, Utah. Mr. Coleman has been connected with the American Hoist & Derrick Company for 13 years, during the first three years being located at Spokane, Wash., after which he was promoted to the position which he held at the time of his resignation.

H. A. Noble, vice-president of the **Pittsburgh Spring & Steel Company,** Pittsburgh, Pa., has been elected president to succeed D. C. Noble, deceased. **S. F. Krauth,** secretary and assistant treasurer, has been elected vice-president and treasurer, with headquarters at Pittsburgh. **J. N. Brownrigg,** eastern sales agent at New York, has been elected vice-president and eastern representative at New York, and **M. F. Ryan,** western sales agent at Chicago, has been elected vice-president and western representative, with headquarters at Chicago.

Robert M. Gates has been appointed managing engineer in charge of the Philadelphia, Pa., district of the **Lakewood Engineering Company,** Cleveland, Ohio, with offices at 1034 Widener building, Philadelphia. Mr. Gates is a graduate of Purdue University. He has been active in organizing the Material Handling Section of the American Society of Mechanical Engineers, and is acting as chairman of that section during its period of organization. He has devoted the past 12 years to the design, application and engineering surveys of mechanical means of conserving labor in the construction, industrial and transportation fields.

The Association of Railroad Executives will have the moral support of the whole American people in its effort to get the most out of the present cars. It is to be hoped that the influential men and firms among the shippers and the receivers will give the physical aid to the movement which alone can make it a success.—*Philadelphia Public Ledger.*

Railway Construction

Chicago & Western Indiana.—As noted in a recent issue, the Interstate Commerce Commission has approved a loan to this company of $8,000,000, of which $2,000,000 is to be used for additions and betterments. These include improvements at its power house at Forty-eighth street, Chicago, $165,000; installation of automatic block signals between Fifteenth and Eighty-first streets, Chicago, $191,000; completion of elevated yard along Canal street, between Twenty-third and Twenty-ninth streets, Chicago, $933,000; and construction of new yard in vicinity of Chicago Drainage Canal for Belt Railway of Chicago, $300,000.

Denver & Rio Grande.—This road proposes to build an engine-house at Montrose, Colo., of frame and corrugated iron construction, to hold four engines, at a cost of about $10,000, including the necessary tracks.

Interstate Railroad.—This company has applied to the Interstate Commerce Commission for a certificate of public convenience and necessity for the construction of two branch lines, one from a point at or near Norton, Va., to a connection with the Carolina, Clinchfield & Ohio at or near the mouth of the Guest river, a distance of about 25 miles, and also a branch from a connection with the first branch at or near the mouth of Tom's Creek, for a distance of about 15 miles up the creek.

Northern Pacific.—This company has ordered the mechanical equipment for a 200-ton frame, coaling station at Logan, Mont., from the Ogle Construction Company, Chicago.

Southern Pacific.—This company has under construction in the block bounded by third, fourth, Channel and Berry streets, San Francisco, Cal., a building to be occupied by several large wholesale grocery firms and estimated to cost $1,500,000. The structure is to be a six-story building of steel and reinforced concrete of the flat slab type. It will have water, rail, and motor transportation facilities, elevators, chutes and conveyors especially designed for the wholesale grocery business.

Union Pacific.—This company has applied to the Interstate Commerce Commission for a certificate of public convenience and necessity for the construction of an extension from the end of the present track of the North Platte branch two miles west of Haig, Neb., for a distance of 29 miles in Scotts Bluff county, Neb., and Goshen county, Wyo., as part of a proposed main line from O'Fallons, Neb., to Medicine Bow, Wyo., on which the distance will be many miles shorter than the present double track main line and the summit 1,000 feet lower.

Willamina & Grande Ronde.—This company has let a contract to the Rogers Construction Company, Chicago, for building nine miles of road from Willamina, Oregon, westward to Grande Ronde. Willamina is the western terminus of a branch of the Southern Pacific.

In iron and steel the increased freight rates will probably represent an addition of $1.50 to $3 per ton to present costs, the exact amount depending on location of plant with reference to raw-material supplies. The public need not be greatly concerned about the increase in iron and steel freight rates.—*Iron Age.*

The Southern Pacific handled over 27,000,000 people and over 500,000 vehicles, besides large quantities of mail, express and baggage, in and out of San Francisco, Cal., during last year. The equipment used includes 10 of the largest passenger ferry-boats in the world, 100 miles of electric trackage, 151 steel suburban coaches, shipyard and power plant facilities, and represents an investment of over $20,000,000. The company operates 902 electric trains a day between the terminals and Oakland, Berkeley and Alameda. It is estimated that 150,000 people pass through the Ferry building daily. At the Oakland Pier terminal, during a 100-minute period, mornings and evenings, car movement exceeds one a minute. To be exact, on an ordinary week-day 116 coaches leave Oakland Pier in 100 minutes in the rush of the morning, and during a similar period in the evening 124 coaches depart. The passenger coaches used will seat 116 people.

Railway Financial News

ARKANSAS & LOUISIANA MISSOURI.—See Louisiana & Arkansas.

CENTRAL VERMONT.—The Interstate Commerce Commission has authorized this company to issue $12,000,000 refunding mortgage 5 per cent gold bonds, dated May 1, 1920, due May 1, 1930, guaranteed principal and interest by the Grand Trunk, to retire a like amount of 4 per cent first mortgge bonds, due May 1, 1920. The company had proposed an issue of $15,000,000, of which $3,000,000 should be used to pay indebtedness to the Grand Trunk. A majority of the stock of the Central Vermont is owned by the Grand Trunk, which has been taken over by the Canadian government. Prior to June 28, 1920, the Central Vermont had obtained authorization for the proposed issue from the Public Service Commission of Vermont and the Department of Public Utilities of Massachusetts. Consideration of the proposed issue of the remaining $3,000,000 was deferred by the commission.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—This company has applied to the Interstate Commerce Commission for authority to issue three notes, secured by a mortgage, to the Cincinnati, Indianapolis & Western, dated July 21, and also for authority to assume the payment of nine promissory notes for $2,000 each.

ERIE.—The Interstate Commerce Commission has approved a loan of $8,000,000 to this company for the purpose of assisting it in financing its 1920 maturities, aggregating $23,516,500; also, to enter into contracts with the holders of these bonds issued by its predecessor companies, extending the maturity dates for 10 years. The company itself is required to finance on terms and conditions prescribed by the commission the remainder of its 1920 maturities, aggregating $15,516,500.

LOUISIANA & ARKANSAS.—This company has applied to the Interstate Commerce Commission for authority to issue equipment trust notes to the amount of $220,000, to be used in the purchase of four 10-wheel freight locomotives, one steam wrecker, one Jordan ditcher, one steam bucket crane and two steel passenger coaches, at a cost of $287,703, of which $67,703 is to be paid in cash. This item was incorrectly given as the Arkansas & Louisiana Missouri in the *Railway Age* of August 20.

NEW YORK CENTRAL.—A hearing on the application of this company for authority to issue $25,000,000 7 per cent 10-year collateral trust gold bonds, which were sold on August 20, subject to the commission's approval, and $25,000,000 6 per cent refunding and improvement bonds to be deposited as collateral for the 7 per cent issue, together with some Philadelphia & Reading stock, was held before W. A. Colston, director of finance of the Interstate Commerce Commission, at Washington, on August 30. No one appeared at the hearing in opposition to the application, but a telegram was received from the chairman of the Michigan Public Utilities Commission saying that notice of the hearing had been received too late for it to make an appearance, but that it had drafted an answer to the railroad's application denying the power of the Interstate Commerce Commission to supplant the state authorities in regulating railroad security issues. The commission was requested to adjourn the hearing to allow representatives of the eight states through which the company operates an opportunity to be heard. The hearing was not postponed, but Director Colston said an opportunity would be afforded any representatives of the states to testify at a later hearing. A. H. Harris and other officials of the New York Central, and George P. Whitney, of J. P. Morgan & Co., explained the details of the proposed issue, which is principally to reimburse the treasury for expenditures financed temporarily by short-term notes.

NEW YORK, NEW HAVEN & HARTFORD.—Judge Mayer of the U. S. District Court at New York on August 26 granted an order modifying the dissolution decree of October 17, 1914, providing that if the state and federal authorities permit it may merge or consolidate with itself, the Harlem River & Port Chester and the Central New England railroads. By taking over these companies, both subsidiaries, the New Haven would get control of 400,000 shares of stock of the Connecticut Company, which operates trolley lines, and be able to vote for the executing of a mortgage of that property. The mortgage would secure $10,884,000 of debentures of the Consolidated Railway Company, which has already been merged with the New Haven.

The trustees for the trolley lines operated by the Rhode Island Company were given permission to return the trolley lines to the New Haven. They asked permission to turn over to the New Haven the equipment and securities of the Providence & Danielson and the Sea View Railroads, which came into their possession through the bankruptcy of the Rhode Island Company.

NORFOLK & PORTSMOUTH BELT.—The Interstate Commerce Commission has authorized this company to issue one promissory note for $35,000, the proceeds to be used for the purpose of bulkheading the applicant's property and dredging in front of the same at Sewalls Point, Va., and another promissory note for $15,000, the proceeds to be used in payment for rail and accessories.

PITTSBURGH & WEST VIRGINIA.—The Interstate Commerce Commission has authorized this company to acquire 21,300 shares, par value $1,065,000, of the capital stock of the West Side Belt Railroad Company by the payment of $50,000 to the Pittsburgh Terminal Railroad & Coal Company. The applicant controls the Pittsburgh Terminal Railroad & Coal Company through ownership of the entire capital stock outstanding.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—Four western roads, the Missouri Pacific, the Missouri, Kansas & Texas, the St. Louis-San Francisco, and the Chicago, Rock Island & Pacific, proprietary members of the Terminal Railroad Association of St. Louis, recently filed a motion in the United States District Court at St. Louis, Mo., asking that the other proprietary roads be cited for contempt of court and that, if they failed to show cause why they should not be so cited, the court dissolve the Terminal Railroad Association of St. Louis and appoint a receiver, pending dissolution and reorganization in accordance with the order of the Supreme Court on April 22, 1912, which held that the Terminal Association and 14 proprietary roads were a combination existing in violation of the Sherman anti-trust act for the control of railroad transportation across the Mississippi river at St. Louis. The company was at that time ordered to reorganize within 90 days in such a way that restrictions it imposed upon transportation be eliminated. No allegations regarding the solvency or financial condition of the Terminal Association were made. The complaining companies allege that the other proprietary companies have, in defiance of the Supreme Court decree, refused to use terminals of the Terminal Association as extension of their own lines by using their own engines to haul freight and passengers over them and that they have refused to ask terminals to move this business as their agent. It was further alleged that defendant roads have interposed terminal facilities as an intermediate carrier refusing to accept traffic in St. Louis by direct connecting roads. The litigation is the direct result of controversy between eastern and western lines in which western lines have endeavored to obtain the same treatment accorded to eastern lines by the Terminal Association. For instance, traffic from the west destined to eastern points under present conditions must be delivered by western lines at East St. Louis, thus using the terminal facilities from St. Louis to East St. Louis. Western lines handling this traffic have been forced to pay for this use of the terminal facilities. Vice versa, shipments from the east end destined to western lines at St. Louis were delivered at East St. Louis, and again the western lines were compelled to use and pay for terminal facilities from East St. Louis to their connections at St. Louis. Under these conditions, officers of complaining western lines state that they are put under heavy expense by discrimination of the Terminal Association. The Wiggins Ferry Company, and the Merchants' Bridge Terminal Company are also made defendants with the Terminal Railroad Association of St. Louis, which controls them.

WABASH.—This company has applied to the Interstate Commerce Commission for authority to issue $7,576,120 of 5 per cent profit-sharing preferred stock and a like amount of common stock.

The New York Central Railroad Company — Annual Report

To the Stockholders of
THE NEW YORK CENTRAL RAILROAD COMPANY:

The Board of Directors herewith submits its report for the year ended December 31, 1919, with statements showing the income account for the year and the financial condition of the company.

The operation and maintenance of the company's road were continued under Federal control during the year 1919. The mileage covered was as follows:

	1919 Miles	1918 Miles	Increase Miles	Decrease Miles
Main line and branches owned	3,699.18	3,699.14	.04	....
Leased lines	1,919.03	1,920.40	...	1.37
Lines operated under trackage rights	451.20	456.25	...	5.05
Total road operated	6,069.41	6,075.79	...	6.38

Mileage of line owned has been increased 4/100ths of a mile as follows: Beech Creek Connection, due to change of connection, 1/100th of a mile; Cleveland Short Line Branch, due to change of line at Rockport, 3/100ths of a mile.

Mileage of leased lines has been reduced 1.37 miles as follows: Boston & Albany main line, increased 1/100th of a mile due to readjustment in field measurements; Pittsfield & North Adams Railroad, decreased 5/100ths of a mile on account of readjustment in field measurements; Beech Creek Railroad, decreased 1.33 miles as follows: Dunlap Branch, 1.12 miles, abandoned; Victor No. 9 Branch shortened 4/100ths; West Branch No. 1 Branch shortened 2/100ths; Decatur Branch shortened 11/100ths; B R & P Connection Branch decreased 4/100ths account of correction.

Mileage operated under trackage rights has been decreased 5.05 miles as follows: Buffalo, Rochester & Pittsburgh Railway, Falls Creek to Clearfield, 1/100th of a mile due to correction; Cherry Tree & Dixonville Railroad, 2.03 miles due to remeasurement; New York, Chicago & St. Louis Railroad, Osborn to Hammond, 3.01 miles, used only for passenger traffic discontinued in May, 1919.

Federal control of the property of this company continued during the year 1919 under the contract of December 27, 1918, providing for the payment of an annual standard compensation. On December 24, 1919, however, the President of the United States issued a proclamation relinquishing from Federal control, effective the first day of March, 1920, at 12.01 o'clock a. m., all railroads, systems of transportation and property of whatever kind taken or held under such Federal control and not theretofore relinquished, and restoring the same to the possession and control of their respective owners.

Prior and subsequent to the President's proclamation, Congress was actively engaged in the consideration of legislation to meet the railroad situation in its various phases, including such provisions as would protect the carriers during the transition from Federal to private control. Ultimately there was passed the Transportation Act approved February 28, 1920, the essential features of which are as follows:

The provision of means and machinery for transferring the properties.
The funding of the carriers' indebtedness to the United States.
The continuance of rates in effect until September 1, 1920.
Guaranty to the carriers for six months after the termination of Federal control.
Arrangements for new loans to the railways during the transition period.
Provision for railroad boards of labor and an adjustment board as a means of settling disputes between the carriers and their employees.

The Transportation Act also includes amendments to the Interstate Commerce Act which, among other things, direct the Interstate Commerce Commission to establish rates which will be adequate to provide the carriers, as a whole or within such rate groups as the commission may fix, with an aggregate annual net railway operating income equal to a fair return upon the aggregate value of their property which for the two years beginning March 1, 1920, is fixed at a sum equal to 5½ per cent per annum on the aggregate value of their properties and in the Commission's discretion an additional one-half of one per cent per annum to make provision for improvements. The Act amends the Interstate Commerce Act by making provision for consolidations, mergers and pooling under certain limitations, for joint use of terminals, for the regulation of security issues, and, in addition, delegates to the Commission numerous other powers.

Section 209 provides, among other things, as follows:

"With respect to any carrier with which a contract (exclusive of so-called co-operative contracts or waivers) has been made fixing the amount of just compensation under the Federal Control Act, that the railway operating income of such carrier for the guaranty period as a whole shall not be less than one-half the amount named in such contract as annual compensation, or, where the contract fixed a lump sum as compensation for the whole period of Federal operation, that the railway operating income of such carrier for the guaranty period as a whole shall not be less than an amount which shall bear the same proportion to the lump sum so fixed as six months bears to the number of months during which such carrier was under Federal operation, including in both cases the increases in such compensation provided for in Section 4 of the Federal Control Act."

The Act further provides that:

"This section shall not be applicable to any carrier which does not on or before March 15, 1920, file with the Commission a written statement that it accepts all the provisions of this section."

On March 10, 1920, the Board of Directors authorized the execution and filing of the company's written statement accepting the provisions of Section 209. The effect of this will be that for the six months to September 1, 1920, the income of the company will be on the basis of the compensation paid by the government during Federal control.

In the early part of 1918, the Railroad Administration directed that an accurate separation of accounts should be made in order that those pertaining to the operation prior to Federal control and those relating to the operations by the Director General might be segregated. This entailed an exhaustive examination of the accounts in all departments. The corporate officers have kept in close touch with this situation, and have employed examiners for the purpose of verifying the separation made by the Director General. The additional expense for these examiners has been more than justified through the correction of errors which otherwise would have operated to bring about a loss to the company.

During the year, the Director of the Division of Capital Expenditures required the carriers to signify their approval, or otherwise, of projects contemplated by the Railroad Administration, and they were further requested to furnish a statement as to the position of the corporations in regard to financing. With the exception of some few projects of a strictly corporate nature or which would not be inaugurated until after the end of Federal control, the New York Central Railroad Company advised the Division of Capital Expenditures that it was not prepared to finance the projects from its own funds or to furnish collateral whereby it might assume the charges to its Capital Account required to carry out the work. The result has been that in the main the improvement projects have been financed by the Railroad Administration. In due course this company must arrange to reimburse the Director General for the amounts advanced by him in this connection, which from January 1, 1918, to the end of 1919, approximated $40,000,000.

The changes in the property investment account for the year were as follows:

Additions and betterments—road		
Expenditures by the Federal Manager	$9,508,853.07	
Expenditures by the corporation	325,158.49	$9,834,011.56
Additions and betterments—equipment		
Expenditures by the Federal Manager, less equipment retired and transferred	$364,299.14	
Equipment assigned to the N Y C R R by the United States Railroad Administration	6,883,899.00	
Expenditures by the corporation	499,082.30	7,747,280.44
Total addition to road and equipment accounts		$17,581,292.00
Improvements on leased railway property		
Expenditures by the Federal Manager	$5,767,605.57	
Less miscellaneous credits by the corporation	40,263.93	5,727,341.64
Improvements on miscellaneous physical property		
Expenditures by the Federal Manager	$26,000.07	
Expenditures by the corporation	169,005.05	
	$195,005.12	
Less credits by the corporation	50,000.00	145,005.12
The net increase in property investment accounts during the year being		$23,453,638.76

There was no change in the capital stock of the company during the year.

Since the date of the annual meeting on January 22, 1919, the number of stockholders has increased 1,752, the total number at the end of the year being 30,445, of whom 30,180 were in the United States and 265 abroad. The par value held by those in the United States was $247,825,355 and by those abroad $1,772,000, the average holdings being 82 and 67 shares respectively. In 1915 the numbers reported were 22,270 in the United States and 2,772 abroad, the general average holding being, approximately, 100 shares, while at the end of 1919 it was 82 shares.

The changes in the funded debt of the company are shown in the following statement:

Amount as reported on December 31, 1918, was		$688,285,201.45
which has been increased as follows:		
N Y C R R Equipment Trust of 1917 certificates	$7,410,000.00	
Two-year 5% promissory note—Gary Land Company	211,759.04	
Two-year 5% promissory note—Chicago, Lake Shore & Eastern Railway Company	78,567.21	7,700,326.25
		$695,985,527.70
and has been reduced as follows:		
Payments falling due during the year and on January 1, 1920, on the company's liability for certificates issued under equipment trust agreements as follows:		
N Y C Lines Trust of 1907, installment due November, 1919	$1,492,884.74	
N Y C Lines Trust of 1910, installment due January, 1919	1,406,413.74	
N Y C Lines Trust of 1910, installment due January, 1920	1,406,413.74	
N Y C Lines Trust of 1912, installment due January, 1919	688,398.90	
N Y C Lines Trust of 1912, installment due January, 1920	688,398.90	
Boston & Albany Trust of 1912, installment due October, 1919	500,000.00	
N Y C Lines Trust of 1913, installment due January, 1919	742,117.61	
N Y C Lines Trust of 1913, installment due January, 1920	742,117.61	
N Y C R R Co Trust of 1917, installment due January, 1919	547,000.00	
N Y C R R Co Trust of 1917, installment due January, 1920	1,117,000.00	
It was further reduced on September 15, 1919, by the maturity of Two-year Collateral gold notes amounting to	15,000,000.00	
(To take up these notes at maturity there was issued a like amount of one-year 6% notes, secured by pledge of $20,000,000 of 4½% New York Central refunding and improvement mortgage bonds, series A, and 75,000 shares of first preferred stock of the Reading Company, but as these notes run for but one year they are classified as bills payable)		24,330,745 24
leaving the funded debt on December 31, 1919		$671,654,782.46

In addition to the funded debt outstanding December 31, 1919, there are shown on the balance sheet loans and bills payable to the amount of $49,829,500 as hereinafter mentioned, or a total of $721,484,282.46 for the company's long and short term obligations against a total of $730,248,201.45 in 1918.

The $7,410,000 of New York Central Railroad equipment trust of 1917 certificates, shown as an increase in the funded debt, had been held in the

company's treasury, having been acquired in 1917 and 1918 but not sold by the company until the early part of 1919.

The notes to the Gary Land Company and the Chicago Lake Shore & Eastern Railway Company were given in connection with an exchange of lands at Gary, Indiana. They both mature on December 23, 1921.

In January, 1919, the company made application to the War Finance Corporation for advances for its corporate purposes under and pursuant to the provisions of Section 9 of the War Finance Corporation Act, approved April 5, 1918, and such advances were granted, during the year, to the extent of $17,500,000, on this company's 6 per cent demand notes, which are now outstanding.

On November 17, 1919, the company issued its six-months 6 per cent notes for $6,000,000 to retire a like amount of notes then outstanding.

The total amount of loans and bills payable of the company outstanding on December 31, 1919, was $49,829,500 as follows:

War Finance Corporation	$17,500,000.00
Collateral Notes	21,000,000.00
Secretary of the Treasury	6,500,000.00
Banks, trust companies and miscellaneous	4,829,500.00
Total	$49,829,500.00

Of the 4,500 freight cars and 120 locomotives allotted by the Director General of Railroads to this company there were delivered in 1919, 1,944 freight cars and 6 locomotives; these, together with the equipment delivered in 1918, completed the entire allotment. The 10 locomotives allotted to this company as lessee of the Boston & Albany Railroad were also delivered in 1919. Arrangements have been made by which the Director General is to take at par the 6 per cent equipment trust notes of the company, maturing in equal annual installments over a period of fifteen years, in payment for approximately 75 per cent of the cost of this equipment, and by which the remainder is to be paid to him by deducting that amount from the equipment depreciation and retirement credits arising in the company's favor under its standard contract with him

While throughout the country there is a general shortage of equipment, your officers feel that with its allied companies, The Michigan Central Railroad Company, The Cleveland Cincinnati Chicago & St. Louis Railway Company, The Pittsburgh & Lake Erie Railroad Company and The Pittsburgh McKeesport & Youghiogheny Railroad Company, your company has reasonably fulfilled its obligations to the public. During the years 1914-1919, inclusive, there were purchased by the five companies mentioned 925 new locomotives, 473 new passenger-train cars and 54,408 new freight-train cars, at an aggregate cost of $128,717,930. Today this equipment would cost approximately $243,468,650, or $114,750,720 more than was paid for it. There has also been closed by your company a contract known as The New York Central Railroad Equipment Trust of 1920, covering 196 locomotives, 265 passenger-train cars and 9,244 freight-train cars at a total cost of $48,318,035, delivery of which is expected in the fall of 1920. A portion of this equipment may be allocated to other system lines upon equitable terms as the need develops.

SUMMARY OF FINANCIAL OPERATIONS AFFECTING INCOME

	Year Ended Dec. 31, 1919	Year Ended Dec. 31, 1918	Increase or Decrease
Compensation accrued for the possession, use and control of the property of this company and its leased lines:			
Compensation stated in contract	$55,802,630.50	$55,802,630.50	.....
Additional compensation accrued account completed additions and betterments.	1,887,957.59	521,877.71*	$1,366,079.88
TOTAL COMPENSATION ACCRUED	$57,690,588.09	$56,324,508.21	$1,366,079.88
MISCELLANEOUS OPERATIONS			
Revenues	$2,825.69	$1,963.59	$862.10
Expenses and taxes	4,275.34	4,925.78	—650.44
NET DEFICIT	$1,449.65	$2,962.19	—$1,512.54
OTHER INCOME			
Income from lease of road	$103,725.39	$106,424.88	—$2,699.49
Miscellaneous rent income	1,046,042.62	904,841.70	141,200.92
Miscellaneous non-operating physical property	583,686.02	632,283.40	—48,597.38
Separately operated properties—profit	871,601.52	1,147,244.01	—275,642.49
Dividend income	6,018,702.75	6,379,728.57	—361,025.82
From funded securities	859,863.25	500,845.06	359,018.19
From unfunded securities and accounts	4,039,728.66	3,223,732.79*	815,995.87
From sinking and other reserve funds	45,880.52	.....	45,880.52
Miscellaneous income	50,135.47	54,274.23	—4,138.76
TOTAL OTHER INCOME	$13,619,366.20	$12,949,374.64	$669,991.56
GROSS INCOME	$71,308,504.64	$69,270,920.66	$2,037,583.98
DEDUCTIONS FROM GROSS INCOME			
Rent for leased roads	$9,288,648.35	$9,314,910.15	—$26,261.80
Miscellaneous rents	675,986.84	689,074.60	—13,087.76
War taxes accrued	1,830,550.40	2,017,501.92	—186,951.52
Miscellaneous tax accruals	193,678.10	136,341.43*	57,336.67
Separately operated properties—loss	82,015.95	62,628.25	19,387.70
Interest on funded debt	29,227,222.10	29,432,623.35	—205,401.25
Interest on unfunded debt	5,100,843.42	2,004,364.10	3,096,479.32
Amortization of discount on funded debt	552,076.06	556,975.56	—4,899.50
Corporate general expenses	915,800.46	288,667.84	627,132.62
Maintenance of investment organization	4,772.88	.....	4,772.88
Miscellaneous income charges	323,290.21	302,488.36*	20,801.85
TOTAL DEDUCTIONS FROM GROSS INCOME	$48,194,884.77	$44,805,575.56	$3,389,309.21
	$23,113,619.87	$24,465,345.10	—$1,351,725.23
Less revenues and expenses applicable to the period prior to January 1, 1918, settled for account of the corporation by the United States Railroad Administration	3,196,369.22	6,548,223.55	—3,351,854.33
NET CORPORATE INCOME	$19,917,250.65	$17,917,121.55	$2,000,129.10
DISPOSITION OF NET INCOME			
Dividends declared (5 per cent each year)	$12,479,611.25	$12,479,610.00	$1.25
Sinking funds	4,576.56	115,563.46	—110,986.90
TOTAL APPROPRIATIONS OF INCOME	$12,484,187.81	$12,595,173.46	—$110,985.65
SURPLUS FOR THE YEAR CARRIED TO PROFIT AND LOSS	$7,433,062.84	$5,321,948.09	$2,111,114.75

*Figures for 1918 restated for purposes of comparison.

PROFIT AND LOSS ACCOUNT

BALANCE TO CREDIT OF PROFIT AND LOSS DECEMBER 31, 1918	.....	$80,943,297.90
ADDITIONS:		
Surplus for the year 1919	$7,433,062.84	
Sundry deferred credits and adjustments	119,057.33	
Profit on road and equipment sold	29,400.63	
		7,581,520.80
		$88,524,818.70
DEDUCTIONS:		
Surplus appropriated for investment in miscellaneous physical property	$4,651.00	
Loss on retired road and equipment	665,363.11	
Reversing October, November and December, 1918, accruals of dividend on the capital stock of the New York & Harlem Railroad Company due to the failure of the lessee of the New York city traction line to pay the rental	66,739.00	
Advances and interest thereon to Toledo Terminal Railroad Company, for payment of interest on bonds, cancelled by judgment of the Supreme Court of Ohio	110,880.00	
Sundry deferred debits and adjustments and various uncollectible accounts	54,040.72	
		901,673.83
BALANCE TO CREDIT OF PROFIT AND LOSS DECEMBER 31, 1919	.....	$87,623,144.87

The compensation stated in the contract and accrued as income for the possession, use and control of the property of this company and its leased lines remained at $55,802,630.50 for the year 1919. There was, however, accrued additional compensation in amount $1,887,957.59 account interest on completed additions and betterments (this being mainly on cost of 1917 Trust and government allocated equipment). There had been accrued in 1918 interest amounting to $521,877.71 on owned, trust and government allocated equipment placed in service during federal control.

There was a decrease in the net deficit from miscellaneous operations of $1,512.54 as a result of a better showing for the demonstration farm of the company.

The miscellaneous rent income of the company showed an increase over the previous year of $141,200.92. This is mainly attributable to an increase in rentals charged for the company's properties and to a more complete occupancy of the same due to increased demand for premises.

The apparent decrease of $48,597.38 in the revenue from miscellaneous non-operating physical property is largely caused by a change in the method of accounting for depreciation on the buildings within the Grand Central Terminal area. In former years the accrual covering this depreciation was charged to appropriations of income for sinking fund but is now charged direct against the rentals received from these buildings.

The decrease in credits to income, account separately operated properties, is due to an adjustment of an over-accrual for revenue from these sources in 1918.

The falling off in dividend income is partly accounted for by the fact that the company received only 10 per cent instead of 14 per cent on its New York & Harlem Railroad Company stock. The Harlem Company's traction lines in New York City were leased to the New York Railways Company at a net annual rental equal to 4 per cent on the Harlem's capital stock. The lessee has made default under the lease and the property has been surrendered to and is now being operated by the New York & Harlem Railroad Company. There were no receipts of dividend from the Rutland Railroad Company and Wells Fargo Express Company which contributed income of this character in 1918.

The increase of $359,018.19 in income from funded securities is due to a change in the character of some of the obligations held by the company from the funded to the unfunded class and to interest on additional Liberty Loan bonds.

The increase of $815,995.87 in interest from unfunded securities and accounts is mainly caused by the accrual of interest on unpaid compensation due by the Director General of Railroads.

An apparent increase of $45,880.52 in income from sinking and other reserve funds is due to a change in the method of accounting.

The falling off in war taxes accrued is due to the two per cent decrease in the income tax rate.

The increase in charges for miscellaneous tax accruals of $57,336.67 is due to the adjustment in 1919 of an under-accrual for the year 1918.

Interest on funded debt shows a decrease of $205,401.25 which is almost entirely accounted for by the fact that $15,000,000 two-year notes matured in September, 1919, and the substitution of shorter term notes for them transferred the obligation from the funded to the unfunded debt class.

The large increase of $3,096,479.32 in interest on unfunded debt is almost entirely accounted for by the interest accrued on deferred payments for equipment and on other accounts due the government.

Increase in corporate general expenses, $627,132.62, is due to the fact that in 1918 the outlay for only six months was included while in 1919 not only were a full year's expenses included but the corporate organization reached its full development.

The matter of improved railroad facilities in the city of Cleveland, Ohio, has been under consideration for some time. Together with other

transportation interests the New York Central Railroad Company is making this the subject of careful investigation. Plans have been outlined for the removal of all the passenger traffic from the lake front, reserving the lake front facilities for freight and industrial purposes. The project includes a new union station.

New Pier K-4, south of the ferryhouse and yards at Weehawken, was completed in 1919 and occupied by the Cunard Steamship Company under permit. This represents the commencement of a comprehensive scheme of development for steamship purposes at the Weehawken Terminal.

In a suit by the Hocking Valley Railway Company against the Toledo Terminal Railroad Company the Supreme Court of Ohio held, that under the contract between the proprietor companies, the Terminal Company could not use its net earnings to pay advances made by such proprietor companies to pay its bond interest accruing prior to 1914 or interest on such advances. The effect of this decision was to render worthless this company's claim against the Terminal Company arising out of the advances in question and accordingly, $110,880, representing such advances by this company, and interest thereon, was during the year charged off to profit and loss.

The Lansing Manufacturers Railroad, which has a spur line at Lansing, Michigan, reaching a number of industries and connecting with the lines of both the New York Central Railroad Company and the Michigan Central Railroad Company, has been operated under a lease which expires in the near future. It being desirable to continue the operation of this line and an opportunity having presented itself to acquire the stock outstanding ($100,000), the Board of Directors, on December 10, 1919, authorized the acquisition of one-half thereof, the Michigan Central Railroad Company acquiring the remainder. The companies also acquired in equal amounts $18,000 of note indebtedness.

In 1912 the Lake Shore & Michigan Southern Railway Company advanced, on behalf of the Cleveland, Cincinnati, Chicago & St. Louis Railway Company, the necessary funds for the acquisition of certain coal lands in Christian, Montgomery, Fayette, Saline, Franklin and Williamson counties, Illinois. These advances were transferred to the books of the New York Central Railroad Company at consolidation and carried until October 27, 1919, when the indebtedness, $2,266,824.93, was paid in full by the Cleveland, Cincinnati, Chicago & St. Louis Railway Company.

The Board rescinded a resolution adopted on August 13, 1917, providing for a suspension of the rule for compulsory retirement of employees at the age of seventy years and restored in full force, effective March 1, 1919, the original rule of the Pension Board.

In the operation of the Pension Department, 423 employees were retired and placed upon the pension roll. Of these retirements, 301 were authorized because of the attainment of seventy years of age, and 122 because of total and permanent physical disability. 184 pensioners died during 1919 and at the close of the year 1,708 retired employees were carried upon the pension roll. The average monthly pension allowance of these is $27.18 and the total amount paid in pension allowances during the year was $544,941.32.

On April 9, 1919, Mr. Charles B. Seger resigned as a director and member of the finance committee and Mr. Robert S. Lovett was elected a director of the company and a member of the finance committee to fill the vacancy caused by Mr. Seger's resignation. On the same date Mr. Carl R. Gray was elected a director of the company to fill the vacancy existing since the death of Mr. William H. Newman.

On May 28, 1919, Mr. Alfred H. Smith was re-elected a director of the company to fill the vacancy caused by his resignation when he was appointed Regional Director, Eastern Region, United States Railroad Administration.

Effective June 1, 1919, Mr. William K. Vanderbilt, Jr., resigned as President of the company and, effective the same date, Mr. Alfred H. Smith was re-elected President of the company to fill the vacancy caused by the resignation of Mr. Vanderbilt.

Effective November 1, 1919, Mr. George H. Ingalls was appointed Vice-President in charge of traffic, with headquarters at New York.

On subsequent pages will be found the condensed general balance sheet of the company, as of December 31, 1919, and statements giving details of capitalization, expenditures for improvements to property, investments, equipment trusts, taxes, rentals of leased lines, equipment, description of physical property, etc.

There will also be found, as an appendix to this report, statements showing results of operations by the United States Railroad Administration during 1919 compared with similar results for 1918.

Appreciative acknowledgment is made to all officers and employees of their loyal and efficient co-operation and service.

For the Board of Directors,
ALFRED H. SMITH,
President.

APPENDIX

Included as Information from Reports Supplied by the Federal Auditors

REPORT OF OPERATIONS OF THE NEW YORK CENTRAL RAILROAD (EXCLUDING BOSTON AND ALBANY RAILROAD) BY THE UNITED STATES RAILROAD ADMINISTRATION FOR THE YEAR 1919

INCOME ACCOUNT

	1919 5,675.48 miles operated	1918 5,681.82 miles operated	Increase
OPERATING INCOME			
Railway operating revenues	$283,659,330.70	$269,270,956.51	$14,388,374.19
Railway operating expenses	224,964,911.84	210,637,848.99	14,327,062.85
NET REVENUE FROM RAILWAY OPERATIONS	$58,694,418.86	$58,633,107.52	$61,311.34

The Michigan Central Railroad Company — Seventy-Fourth Annual Report

To the Stockholders of

THE MICHIGAN CENTRAL RAILROAD COMPANY:

The Board of Directors herewith submits its report for the year ended December 31, 1919, with statements showing the results for the year and the financial condition of the company.

The operation and maintenance of the company's road were continued under Federal control during the year 1919, the mileage covered having been as follows:

	Miles.
Main line and branches owned	1,182.97
Line jointly owned	.71
Leased lines	578.35
Lines operated under trackage rights	100.03
Total road operated (as shown in detail on another page)	1,862.06

As compared with the previous year this is an increase of 29/100ths of a mile, accounted for by placing in service during the year 13/100ths of a mile of additional tracks constructed on the Detroit Belt Line Branch, an increase, account of remeasurement, in leased line of 19/100ths of a mile and a decrease of 3/100ths of a mile in trackage rights on the Grand Trunk Railway at Battle Creek.

Federal control of the property of this company continued during the year 1919 under the contract of December 27, 1918, providing for the payment of an annual standard compensation. On December 24, 1919, however, the President of the United States issued a proclamation relinquishing from Federal control, effective the first day of March, 1920, at 12.01 o'clock a. m., all railroads, systems of transportation and property of whatever kind taken or held under such Federal control and not theretofore relinquished, and restoring the same to the possession and control of their respective owners.

Prior and subsequent to the President's proclamation, Congress was actively engaged in the consideration of legislation to meet the railroad situation in its various phases, including such provisions as would protect the carriers during the transition from Federal to private control. Ultimately there was passed the Transportation Act approved February 28, 1920, the essential features of which are as follows:

The provision of means and machinery for transferring the properties.

The funding of the carriers' indebtedness to the United States.

The continuance of rates in effect until September 1, 1920.

Guaranty to the carriers for six months after termination of Federal control.

Arrangements for new loans to the railways during the transition period.

Provision for railroad boards of labor and an adjustment board as a means of settling disputes between the carriers and their employees.

The Transportation Act also includes amendments to the Interstate Commerce Act which, among other things, direct the Interstate Commerce Commission to establish rates which will be adequate to provide the carriers, as a whole or within such rate groups as the commission may fix, with an aggregate annual net railway operating income equal to a fair return upon the aggregate value of their property and for the two years beginning March 1, 1920, a sum equal to 5½ per cent per annum on the aggregate value of their properties and in the Commission's discretion an additional one-half of one per cent for improvements. The Act amends the Interstate Commerce Act by making provision for consolidations, mergers and pooling under certain limitations, for joint use of terminals, for the regulation of security issues, and, in addition, delegates to the Commission numerous other powers.

Section 209 provides, among other things, as follows:

"With respect to any carrier with which a contract (exclusive of so-called co-operative contracts or waivers) has been made fixing the amount of just compensation under the Federal Control Act, that the railway operating income of such carrier for the guaranty period as a whole shall not be less than one-half the amount named, in such contract as annual compensation, or, where the contract fixed a lump sum as compensation for the whole period of Federal operation, that the railway operating income of such carrier for the guaranty period as a whole shall not be less than an amount which shall bear the same proportion to the lump sum so fixed as six months bears to the number of months during which such carrier was under Federal operation, including in both cases the increases in such compensation provided for in Section 4 of the Federal Control Act."

The Act further provides that:

"This section shall not be applicable to any carrier which does not on or before March 15, 1920, file with the Commission a written statement that it accepts all the provisions of this section."

On March 10, 1920, the Board of Directors authorized the execution and filing of the company's written statement accepting the provisions of Section 209. The effect of this will be that for the six months to September 1, 1920, the income of the company will be on the basis of the compensation paid by the government during Federal control.

In the early part of 1918, the Railroad Administration directed that an accurate separation of accounts should be made in order that those pertaining to the operations prior to Federal control and those relating to the operations by the Director General might be segregated. This entailed an exhaustive examination of the accounts in all departments. The corporate officers have kept in close touch with this situation and have employed examiners for the purpose of verifying the separation made by the Director General. The additional expense for these examiners has been more than justified through the correction of errors which otherwise would have operated to bring about a loss to the company.

During the year the Director of the Division of Capital Expenditures required the carriers to signify their approval, or otherwise, of projects contemplated by the Railroad Administration and they were further requested to furnish a statement as to the position of the corporations in regard to financing. With the exception of some few projects of a strictly corporate nature or which would not be inaugurated until after the end of Federal control, the Michigan Central Railroad Company advised the Division of Capital Expenditures that it was not prepared to finance the projects from its own funds or to furnish collateral whereby it might assume the charges to its capital account required to carry out the work. The result has been that in the main the improvement projects have been financed by the Railroad Administration. In due course this company must arrange to reimburse the Director General for the amounts advanced by him in this connection, which, from January 1, 1918, to the end of 1919, approximated $9,200,000.

There was no change in the capital stock of the company during the year.

The funded debt outstanding on December 31, 1918, was	$52,178,418.34
It was increased during the year by the sale of Michigan Central Railroad Equipment Trust of 1917 certificates amounting to	7,800,000.00
	$59,978,418.34

It was decreased during the year by payment of installments on account of equipment trusts as follows:

N Y C Lines Trust of 1907, due November 1, 1919	$260,425.45
N Y C Lines Trust of 1910, due January 1, 1919 and 1920	787,920.88
N Y C Lines Trust of 1912, due January 1, 1919 and 1920	303,421.80
N Y C Lines Trust of 1913, due January 1, 1919 and 1920	524,719.08

M C R R Trust of 1915, due October 1, 1919...	300,000.00	
Michigan Central—Jackson Lansing & Saginaw 3½% gold bonds of 1951 purchased and cancelled by the Trustees of the Land Grant fund of the Jackson Lansing & Saginaw Railroad Company	8,000.00	
		2,184,487.21
Total funded debt outstanding December 31, 1919		$57,793,931.13

As stated in last year's report, the company had issued $3,848,000 of its equipment trust certificates of 1917 bearing interest at 4½ per cent per annum. However, owing to the market conditions, the company having been unable to sell the certificates at the minimum sale price fixed by the State Railroad Commission having jurisdiction, acquired them, as issued, by the means of short term loans for which the certificates were pledged as collateral. The Board on August 14, 1918 (contingent upon the approval of the Director General of Railroads and of the Railroad Commission having jurisdiction in the premises being obtained) authorized the surrender of all of said equipment trust certificates then outstanding and the making of a supplemental agreement with the Guaranty Trust Company of New York as Trustee, amending the agreement dated March 1, 1917, and leases made pursuant thereto, so as to provide that the certificates then outstanding or thereafter issued shall bear interest at the rate of 6 per cent per annum. The necessary approvals having been obtained $7,800,000 of certificates, being all of those originally issued, less those which had matured on March 1, 1918, and March 1, 1919, were exchanged for certificates bearing interest at 6 per cent per annum and were sold by the company. Of the amount realized $7,385,228 was used to pay off the short term loans of the company for which the certificates had been pledged as collateral.

The changes in the property investment accounts for the year were as follows:

Additions and betterments—road:		
Expenditures by the Federal Manager	$2,845,012.64	
Expenditures by the corporation, net credit	23,393.58	
		$2,821,619.06
Additions and betterments—equipment:		
Equipment assigned to the M C R R by the U. S. Railroad Administration	$3,517,257.29	
Expenditures by the Federal Manager less equipment retired and transferred	288,425.47	
		3,805,682.76
Improvements on leased railway property:		
Expenditures by the Federal Manager		186,031.49
The net increase in property investment account during the year being		$6,813,333.31

SUMMARY OF FINANCIAL OPERATIONS AFFECTING INCOME

	Year ended Dec. 31, 1919	Year ended Dec. 31, 1918	Increase or Decrease
Compensation accrued for the possession, use and control of the property of this company and its leased lines:			
Compensation stated in contract.	$8,052,127.48	$8,052,127.48	.....
Additional compensation accrued account completed additions and betterments	647,685.08	196,828.88*	$450,856.20
TOTAL COMPENSATION ACCRUED.	$8,699,812.56	$8,248,956.36	$450,856.20
OTHER INCOME			
Income from lease of road	$3,380.34	$123.43	$3,256.91
Miscellaneous rent income	14,161.59	2,883.56	11,278.03
Miscellaneous non-operating physical property	5,341.01	2,881.23	2,459.78
Dividend income	497,218.28	487,540.00	9,678.28
From funded securities	54,937.86	48,579.78	6,358.08
From unfunded securities and accounts	279,355.10	162,428.18*	116,926.92
Miscellaneous income	3,793.00	1,714.81	2,078.19
TOTAL OTHER INCOME.	$858,187.18	$706,150.99	$152,036.19
GROSS INCOME	$9,557,999.74	$8,955,107.35	$602,892.39
DEDUCTIONS FROM GROSS INCOME			
Rent for leased roads	$2,783,598.46	$2,774,022.11	$9,576.35
Miscellaneous rents	8,113.86	3,208.88	4,904.98
War taxes accrued	719.59	81,566.38	—80,846.79
Miscellaneous tax accruals	7,421.76	5,379.92	2,041.84
Separately operated properties—loss	57,577.60	58,883.36	—1,305.76
Interest on funded debt	2,389,972.30	2,077,363.38	312,608.92
Interest on unfunded debt	1,615,304.29	1,282,387.40	332,916.89
Amortization of discount on funded debt	30,934.77	22,482.24	8,452.53
Maintenance of investment organization	2,344.54	.....	2,344.54
Corporate general expenses	146,699.41	71,605.54	75,093.87
Miscellaneous income charges	19,880.39	8,645.02	11,235.37
TOTAL DEDUCTIONS FROM GROSS INCOME	$7,062,566.97	$6,385,544.23	$677,022.74
	$2,495,432.77	$2,569,563.12	—$74,130.35
Less revenues and expenses applicable to the period prior to January 1, 1918, settled for account of the corporation by the United States Railroad Administration	2,428,203.27	2,021,705.41	406,497.86
NET CORPORATE INCOME.	$67,229.50	$547,857.71	—$480,628.21
DISPOSITION OF NET INCOME			
Dividends	†	$749,456.00	—$749,456.00
SURPLUS FOR THE YEAR CARRIED TO PROFIT AND LOSS	$67,229.50	$201,598.29‡	$268,827.79

*Figures for 1918 restated for purposes of comparison.
†Dividends in 1919, aggregating 4 per cent, charged to accumulated surplus.
‡Deficit.

BALANCE TO CREDIT OF PROFIT AND LOSS (BEING SURPLUS) ON DECEMBER 31, 1918		$18,448,755.41
ADDITIONS:		
Net corporate income for the year 1919	$67,229.50	
Profit on land and equipment sold	7,974.10	
Adjustment in legal expenses account of Detroit River Terminal Company	40,223.95	
Sundry insurance indemnities collected	17,192.17	
Over-accrual in 1917 of Canadian war taxes	60,817.40	
Road property retired and not replaced	95,862.18	
Adjustments of various accounts	4,618.55	
		293,917.85
		$18,742,673.26
DEDUCTIONS:		
Dividends for the year, four per cent	$749,456.00	
Advances, and interest thereon, to Toledo Terminal Railroad Company, for payment of interest on bonds, cancelled by judgment of the Supreme Court of Ohio	110,880.00	
Loss on retired road and equipment	321,019.35	
Various adjustments of accounts	49,299.58	
		1,230,654.93
BALANCE TO CREDIT OF PROFIT AND LOSS ON DECEMBER 31, 1919		$17,512,018.33

The compensation stated in the contract and accrued as income for the possession, use and control of the property of this company and its leased lines remained at $8,052,127.48. There was, however, accrued additional compensation in amount $647,685.08 account of interest on completed additions and betterments (this being on cost of 1917 trust and government allocated equipment). There had been accrued in 1918 interest amounting to $196,828.88 on trust and government allocated equipment placed in service during Federal control.

The increase in dividend income of the company of $9,678.28 is due to an increase in the dividend rate from 5 per cent to 6 per cent on the capital stock of the Toronto Hamilton & Buffalo Railway Company.

The income from funded securities of the company increased $6,358.08. This is due to interest on additional Liberty Loan bonds and interest on bonds of the Toronto Terminal Company received in 1919 to apply on certificates of indebtedness.

The increase of $116,926.92 in interest from unfunded securities and accounts is mainly caused by the accrual of interest on unpaid compensation due by the Director General of Railroads.

There was no Federal income tax chargeable against the company in 1919, so that the account "War taxes accrued" shows a decrease of $80,846.79, which was the amount charged in 1918.

Interest on funded debt shows an increase of $312,608.92 principally due to interest on Michigan Central Railroad Equipment trust certificates of 1917 sold during the year.

The increase of $332,916.89 for interest on unfunded debt is almost entirely accounted for by the interest accrued on deferred payments for equipment and other amounts due the government.

The increase in corporate general expenses of $75,093.87 is due to the fact that in 1918 the outlay for only six months was included, while in 1919 not only were the full year's expenses included but the corporate organization reached its full development.

There was a charge against the corporation's income of $2,248,203.27 in connection with lapover revenues and expenses applicable to the period prior to January 1, 1918, settled for account of the corporation by the United States Railroad Administration. This heavy deduction left but $67,229.50 available for dividends. For this reason, although the usual semi-annual dividends were declared, they were charged to the accumulated surplus of the company.

In a suit by the Hocking Valley Railway Company against the Toledo Terminal Railroad Company the Supreme Court of Ohio held, that under the contract between the proprietor companies, the Terminal Company could not use its net earnings to pay advances made by such proprietor companies to pay its bond interest accruing prior to 1914 or interest on such advances. The effect of this decision was to render worthless this company's claim against the Terminal Company arising out of the advances in question and accordingly, $110,880, representing such advances by this company, and interest thereon, was during the year charged off to profit and loss.

The company sold, during the year, 49 shares of stock of the Detroit Manufacturers' Railroad Company, leaving its holdings in the stock 1,757 shares out of a total of 3,000 shares issued.

The Lansing Manufacturers Railroad, which has a spur line at Lansing, Michigan, reaching a number of industries and connecting with the lines of both the Michigan Central Railroad Company and the New York Central Railroad Company, has been operated under a lease which expires in the near future. It being desirable to continue the operation of this line and an opportunity having presented itself to acquire the stock outstanding ($100,000), the Board of Directors, on December 10, 1919, authorized the acquisition of one-half thereof, the New York Central Railroad Company acquiring the remainder. The companies also acquired in equal amounts $18,000 of note indebtedness.

While throughout the country there is a general shortage of equipment your officers feel that your company has reasonably fulfilled its obligations to the public. During the years 1914-1919, inclusive, the company purchased 84 new locomotives, 65 new passenger train cars and 13,192 new freight-train cars at an aggregate cost of $26,086,900. Today this equipment would cost approximately $51,691,800, or $25,604,900 more than was paid for it.

Of the 2,000 freight cars and 30 locomotives allotted by the Director General of Railroads to this company there were delivered in 1919, 1,173 freight cars; these, together with the equipment delivered in 1918, complete the entire allotment of freight cars but leave 10 locomotives still to be delivered. Arrangements have been made by which the Director General is to take at par the 6 per cent equipment trust notes of the company, maturing in equal annual installments over a period of fifteen years, in payment for approximately 75 per cent of the cost of this equipment, and by which the remainder is to be paid to him by deducting the amount from the equipment depreciation and retirement credits arising in the company's favor under its standard contract with him.

The following appointments of officers and changes in the Board of Directors occurred during the year:

May 8, Mr. Robert S. Lovett elected a Director in place of Mr. Charles B. Seger, resigned.

May 28, Mr. Robert S. Lovett appointed a member of the Finance Committee in place of Mr. Charles B. Seger, resigned.

May 28, Mr. Alfred H. Smith appointed a Director in place of Mr. Horace E. Andrews, deceased, and elected President of the company, effective June 1.

November 1, Mr. George H. Ingalls appointed Vice-President of the company in charge of traffic.

December 9, Mr. Harold S. Vanderbilt appointed a member of the Finance Committee in place of Mr. William K. Vanderbilt, resigned.

The Executive Committee, on March 26, 1919, rescinded a resolution of the Board, adopted September 11, 1917, providing for a suspension of the pension rules for compulsory retirement at the age of 70 years, and restored

in full force and effect, as of March 1, 1919, the original rule of the Pension Board.

In the operation of the Pension Department, 105 employees were retired and placed upon the pension roll. Of these retirements 86 were authorized because of the attainment of 70 years of age and 19 because of total and permanent physical disability. 34 pensioners died during 1919, and at the close of the year 359 retired employees were carried upon the pension roll. The average monthly pension allowance of these is $24.94 and the total amount paid in pension allowances during the year was $108,871.70.

On subsequent pages will be found the condensed balance sheet of the company as of December 31, 1919, and statements giving details of capitalization, expenditures for improvements to property, investments, equipment trusts, taxes, rentals of leased lines, equipment, etc.

There will also be found as an appendix to this report statements showing results of operations by the United States Railroad Administration during 1919 compared with similar results for 1918.

Appreciative acknowledgment is made to all officers and employees of their loyal and efficient co-operation and service.

For the Board of Directors,
ALFRED H. SMITH,

APPENDIX.

Included as Information from Reports Supplied by Federal Auditor.

REPORT OF OPERATIONS OF THE MICHIGAN CENTRAL RAILROAD BY UNITED STATES RAILROAD ADMINISTRATION FOR THE YEAR 1919 AS REPORTED TO THE INTERSTATE COMMERCE COMMISSION.

INCOME ACCOUNT

	1919	1918	
OPERATING INCOME	1,862.06 miles operated	1,861.77 miles operated	Increase .29 miles
Railway operating revenues	$78,844,385.62	$68,520,087.06	$10,324,298.56
Railway operating expenses	57,841,813.86	51,070,072.12	6,771,741.74
NET REVENUE FROM RAILWAY OPERATIONS	$21,002,571.76	$17,450,014.94	$3,552,556.82

The Cleveland, Cincinnati, Chicago and St. Louis—Thirty-First Annual Report

To the Stockholders of

THE CLEVELAND, CINCINNATI, CHICAGO AND ST. LOUIS RAILWAY COMPANY:

The Board of Directors herewith submits its report for the year ended December 31, 1919, with statements showing the income account and additions to the property account for the year and the financial condition of the company.

As a result of the continuation of Federal control during the year the operation and maintenance of the company's railroad were conducted under the supervision of the Federal Manager, the miles of road operated having been as follows:

	Miles
Main line and branches owned	1,693.03
Proprietary lines	126.09
Leased lines	204.43
Operated under contract	201.37
Operated under trackage rights	183.61
Total road operated (as shown in detail on another page)	2,408.53

This is an increase of 12.76 miles over 1918 due to acquisition of trackage rights as follows:

Cleveland Belt Railway from Lyndale to Cleveland, Ohio..... 5.63 miles
Chicago & Eastern Illinois Ry. from Westville to Steelton, Ill... 3.94 miles
Erie Railroad from Glen Echo to Cold Springs, Ohio..... 8.81 miles
Wheeling & Lake Erie Railway in Cleveland, Ohio..... 1.23 miles

partly offset by the abandonment of trackage rights over the Toledo Terminal Railway from Stanley to Gould, Ohio, 6.85 miles.

Federal control of the property of this company continued during the year 1919 under the contract of December 27, 1918, providing for the payment of an annual standard compensation. On December 24, 1919, however, the President of the United States issued a proclamation relinquishing from Federal control, effective the first day of March, 1920, at 12.01 o'clock a. m., all railroads, systems of transportation and property of whatever kind taken or held under such Federal control and not theretofore relinquished, and restoring the same to the possession and control of their respective owners.

Prior and subsequent to the President's proclamation, Congress was actively engaged in the consideration of legislation to meet the railroad situation in its various phases, including such provisions as would protect the carriers during the transition from Federal to private control. Ultimately there was passed the Transportation Act approved February 28, 1920, the essential features of which are as follows:

The provision of means and machinery for transferring the properties.
The funding of the carriers' indebtedness to the United States.
The continuance of rates in effect until September 1, 1920.
Guaranty to the carriers for six months after the termination of Federal control.
Arrangements for new loans to the railways during the transition period.
Provision for railroad boards of labor and an adjustment board as a means of settling disputes between the carriers and their employees.

The Transportation Act also includes amendments to the Interstate Commerce Act which, among other things, direct the Interstate Commerce Commission to establish rates which will be adequate to provide the carriers, as a whole or within such rate groups as the commission may fix, with an aggregate annual net railway operating income equal to a fair return upon the aggregate value of their property, which, for the two years beginning March 1, 1920, is fixed at a sum equal to 5½ per cent per annum on the aggregate value of their properties and in the Commission's discretion an additional one-half of one per cent to make provision for improvements. The Act amends the Interstate Commerce Act by making provision for consolidations, mergers and pooling under certain limitations, for joint use of terminals, for the regulation of security issues, and, in addition, delegates to the Commission numerous other powers.

Section 209 provides, among other things, as follows:

"With respect to any carrier with which a contract (exclusive of so-called co-operative contracts or waivers) has been made fixing the amount of just compensation under the Federal Control Act, that the railway operating income of such carrier for the guaranty period as a whole shall not be less than one-half the amount named in such contract as annual compensation, or, where the contract fixed a lump sum as compensation for the whole period of Federal operation, that the railway operating income of such carrier for the guaranty period as a whole shall not be less than an amount which shall bear the same proportion to the lump sum so fixed as six months bears to the number of months during which such carrier was under Federal operation, including in both cases the increases in such compensation provided for in Section 4 of the Federal Control Act."

The Act further provides that:

"This section shall not be applicable to any carrier which does not on or before March 15, 1920, file with the Commission a written statement that it accepts all the provisions of this section."

On March 10, 1920, the Board of Directors authorized the execution and filing of the company's written statement accepting the provisions of Section 209. The effect of this will be that for the six months to September 1, 1920, the income for the company will be on the basis of the compensation paid by the government during Federal control.

In the early part of 1918 the Railroad Administration directed that an accurate separation of accounts should be made in order that those pertaining to the operations prior to Federal control and those relating to the operations by the Director General might be segregated. This entailed an exhaustive examination of the accounts in all departments. The corporate officers have kept in close touch with this situation and have employed examiners for the purpose of verifying the separation made by the Director General. The additional expense for these examiners has been more than justified through the correction of errors which otherwise would have operated to bring about a loss to the company.

During the year the Director of the Division of Capital Expenditures required the carriers to signify their approval, or otherwise, of projects contemplated by the Railroad Administration and they were further requested to furnish a statement as to the position of the corporations in regard to financing. With the exception of some few projects of a strictly corporate nature or which would not be inaugurated until after the end of Federal control, the Cleveland, Cincinnati, Chicago & St. Louis Railway Company advised the Division of Capital Expenditures that it was not prepared to finance the entire cost of the projects from its own funds or to furnish collateral whereby it might assume the charges to its capital account required to carry out the work. Improvement projects were financed by the United States Railroad Administration involving an outlay of $10,155,449.91, against which has been credited as partial reimbursement by the company $6,959,637.22. In due course this company must arrange to reimburse the Director General for the balance of the amount advanced by him in this connection, which aggregated, at the end of 1919, approximately $3,200,000.

The changes in the property investment account for the year were as follows:

Additions and betterments—road		
Expenditures by the Federal Manager	$4,572,390.25	
Expenditures by the corporation less adjustments—net credit	164,155.88	$4,408,234.37
Additions and betterments—equipment		
Expenditures by the Federal Manager, less equipment retired and transferred	$52,832.65	
Equipment assigned to the C C C & St L Ry by the United States Railroad Administration	2,465,136.00	
Credit adjustments by the corporation	18,595.80	2,499,372.85
Total addition to road and equipment accounts		$6,907,607.22
Improvements on leased railway property		
Expenditures by the Federal Manager, less property retired	$104,626.43	
Expenditures by the corporation	1,228.05	105,854.48
The net increase in property investment accounts during the year being		$7,013,461.70

There was no change in capital stock during the year, the amount authorized and issued to December 31, 1919, being as follows:

Preferred stock authorized		$10,000,000.00
Common stock authorized		50,000,000.00
Total stock authorized		$60,000,000.00
Preferred stock issued	$10,000,000.00	
Common stock issued	47,056,300.00	57,056,300.00
Balance common stock authorized but not issued December 31, 1919		$2,943,700.00

The funded debt outstanding December 31, 1918, was.... $98,361,594.81

It has been increased during the year as follows:

By the sale of 10-year 6% refunding and improvement mortgage bonds	$15,000,000.00	
By the sale of Big Four Railway equipment trust of 1917 certificates	2,133,000.00	17,133,000.00
		$115,494,594.81

It was decreased during the year by the payment of equipment trust installments and by the retirement of bonds as follows:

N Y C Lines Trust of 1907 due November, 1919	$246,689.81
N Y C Lines Trust of 1910 due January, 1919 and 1920	399,251.64
N Y C Lines Trust of 1912 due January, 1919 and 1920	319,780.40
N Y C Lines Trust of 1913 due January, 1919 and 1920	233,467.42
Big Four Railway Trust of 1914 due June, 1919	373,000.00
Big Four Railway Trust of 1915 due July, 1919	115,000.00
Big Four Railway Trust of 1917 due June, 1919	237,000.00
I & St L R R Co first mortgage bonds retired	2,000,000.00
C I St L & C Ry Co general first mortgage bonds retired	77,000.00
C I St L & C Ry Co first consolidated mortgage bonds retired	5,000.00
C C C & St L Ry Co (St Louis Division) first collateral trust mortgage bonds purchased for sinking fund	51,000.00
Central Grain Elevator Co. bonds retired	25,000.00
	4,082,189.27
Leaving the total funded debt outstanding on December 31, 1919	$111,412,045.54

An agreement has been made with a committee representing income bond holders of the Peoria & Eastern Railway Company by which the income account of that company has been readjusted and the acquisition by it of the elevator at Champaign, Illinois, has been put upon the basis of a spread over a term of years at an agreed price. By this agreement all matters of

difference between this company and the income bond holders have been disposed of satisfactorily.

On June 11, 1919, the Board authorized and the stockholders, at a special meeting on June 18, 1919, approved, the execution of a refunding and improvement mortgage upon the railroad and franchises and such other property of the company as may be described therein, the bonds to be issuable in series and to bear such rates of interest and to mature on such dates as the Board of Directors may fix in regard to each series. In pursuance of this authority there were issued during the year $20,000,000 of refunding and improvement mortgage bonds known as Series A, dated July 1, 1919, and maturing July 1, 1929, bearing interest of 6 per cent per annum. Bonds of the par value of $15,000,000 were sold, but owing to the unfavorable market conditions the company was unable to dispose of the remaining $5,000,000 of bonds at a satisfactory price and they are therefore held in the treasury of the company. Of the proceeds of the sale of the $15,000,000 of refunding and improvement mortgage bonds ($14,325,000) there were used $2,000,000 to retire a similar amount of Indianapolis and St Louis Railroad Company first mortgage bonds falling due on July 1, 1919; $6,950,093.57 to reimburse the Director General of Railroads for expenditures to April 30, 1919, for additions and betterments; and $5,366,731.36 to pay off indebtedness to The New York Central Railroad Company incurred for capital account, leaving a balance of $8,175.07 unexpended.

Of the $2,370,000 of equipment trust certificates authorized under the Big Four Railway Trust agreement of June 1, 1917, there were issued during the year $360,000, making the total amount of certificates issued under the trust agreement $2,313,000. Of this amount $2,133,000 of certificates were sold in the early part of the year; the balance, having matured in 1918, were cancelled. Through the sale of these certificates the company paid off $1,607,650 of short term notes for which the certificates had been pledged as collateral.

Of the 2,000 freight cars and 35 locomotives allocated by the Director General of Railroads to this company there were delivered in 1919, 754 freight cars and 6 locomotives; these, together with the equipment delivered in 1918, completed the entire allotment of freight cars but left 4 locomotives undelivered at the end of 1919. Arrangements have been made by which the Director General is to take at par the 6 per cent equipment trust notes of the company, maturing in equal annual installments over a period of fifteen years, in payment for approximately 75 per cent of the cost of this equipment, and by which the remainder is to be paid to him by deducting the amount from the equipment depreciation and retirement credits arising in the company's favor under its standard contract with him.

SUMMARY OF FINANCIAL OPERATIONS AFFECTING INCOME

	Year ended Dec. 31, 1919	Year ended Dec. 31, 1918	Increase or Decrease
Compensation accrued for the possession, use and control of the property of this company and its leased lines:			
Compensation stated in contract	$9,938,597.23	$9,938,597.23	.....
Additional compensation accrued account completed additions and betterments..	488,753.45	73,396.32*	$415,357.13
TOTAL COMPENSATION ACCRUED.	$10,427,350.68	$10,011,993.55	$415,357.13
MISCELLANEOUS OPERATIONS			
Revenues	$25,913.01	$18,842.68	$7,070.33
Expenses and taxes	20,451.30	16,867.55	3,583.75
NET INCOME	$5,461.71	$1,975.13	$3,486.58
OTHER INCOME			
Miscellaneous rent income	$204,241.48	$195,016.70	$9,224.78
Miscellaneous non-operating physical property	99,574.65	81,107.27	18,467.38
Separately operated properties —profit	.....	2,797.20	—2,797.20
Divided income	70,705.92	74,705.89	—3,999.97
From funded securities	72,262.65	238,218.40	—165,955.75
From unfunded securities and accounts	304,768.87	161,149.82*	143,619.05
Release of premium on funded debt	1,545.89	1,885.80	—339.91
Miscellaneous income	4,662.51	3,427.88	1,234.63
TOTAL OTHER INCOME	$757,761.97	$758,308.96	—$546.99
GROSS INCOME	$11,190,574.36	$10,772,277.64	$418,296.72
DEDUCTIONS FROM GROSS INCOME			
Rent for leased roads	$516,740.45	$561,280.09	—$44,539.64
Miscellaneous rents	150,586.37	141,315.15	9,271.22
War taxes accrued	185,678.78	74,825.62	110,853.16
Miscellaneous tax accruals	10,123.45	469.86	9,653.59
Separately operated properties —loss	1,707.22	64,290.97	—62,583.75
Interest on funded debt	4,919,060.03	4,580,303.37	338,756.66
Interest on unfunded debt	961,709.43	505,581.75	456,127.68
Amortization of discount on funded debt	49,569.01	9,026.69	40,542.32
Corporate general expenses	204,108.42	42,085.45	162,022.97
Miscellaneous income charges	33,321.24	56,392.50	—23,071.26
TOTAL DEDUCTIONS FROM GROSS INCOME	$7,032,604.40	$6,035,571.45	$997,032.95
	$4,157,969.96	$4,736,706.19	—$578,736.23
Less revenues and expenses applicable to the period prior to January 1, 1918, settled for account of the corporation by the United States Railroad Administration	3,580,183.52	1,616,343.07	1,963,840.45
NET CORPORATE INCOME	$577,786.44	$3,120,363.12	—$2,542,576.68
DISPOSITION OF NET INCOME			
Dividends declared, 5 per cent each year on preferred capital stock	$499,925.00	$499,925.00	.....
Sinking funds	33,135.66	31,894.10	$1,241.56
Investment in physical property	9,720.38	95,530.40	—85,810.02
TOTAL APPROPRIATIONS OF INCOME	$542,781.04	$627,349.50	—$84,568.46
SURPLUS FOR THE YEAR CARRIED TO PROFIT AND LOSS	$35,005.40	$2,493,013.62	—$2,458,008.22

*Figures for 1918 restated for purposes of comparison.

PROFIT AND LOSS ACCOUNT

BALANCE TO CREDIT OF PROFIT AND LOSS DECEMBER 31, 1918		$11,325,609.16
ADDITIONS:		
Surplus for the year 1919	$35,005.40	
Reacquirement of securities below par	28,044.28	
Unclaimed wages and pensions, 1913	13,368.02	
Sales of land	7,465.25	
Adjustments of sundry accounts (net)	4,123.16	88,006.11
		$11,413,615.27
DEDUCTIONS:		
Adjustment of investment in grain elevators in compliance with exception taken by the Interstate Commerce Commission	$256,377.16	
Advances to Kankakee & Seneca Railroad Co. written off in accordance with ruling of the Interstate Commerce Commission	123,514.30	
Refund of freight overcharges previously written off	112,660.36	
Unaccrued depreciation prior to July 1, 1907, on equipment retired during 1919	107,829.16	
Peoria & Eastern Railway Co.: Adjustments in connection with its income account and sale to it of elevator at Champaign, Illinois	78,499.73	
Surplus appropriated for investments in physical property	10,463.75	689,344.46
BALANCE TO CREDIT OF PROFIT AND LOSS DECEMBER 31, 1919		$10,724,270.81

The compensation stated in the contract and accrued as income for the possession, use and control of the property of this company and its leased lines remained at $9,938,597.23 for the year 1919. There was, however, accrued additional compensation in amount $488,753.45 account interest on completed additions and betterments (this being on cost of 1917 trust and government allocated equipment). There had been accrued in 1918 interest amounting to $73,396.32 on trust and government allocated equipment placed in service during Federal control.

There was an increase in net income from miscellaneous operations of $3,486.58 as a result of increased demand for general storage space at Cincinnati.

The miscellaneous rent income of the company shows an increase over the previous year of $9,224.78 and the income from miscellaneous non-operating physical property an increase of $18,467.38. These increases are mainly attributable to increase in rentals charged for the company's properties and to a more complete occupancy of same due to the increased demand for premises.

The decrease in the dividend income of the company is due to no dividend having been paid on the stock of the Missouri & Illinois Bridge and Belt Railroad Company during the year.

The apparent decrease of $165,955.75 in the income from funded securities is largely caused by a change in the method of accounting for the interest amounting to $200,000 on Springfield Division purchase money lien. There was an increase of approximately $35,000 during the year for interest accrued on Liberty Loan bonds.

The increase of $143,619.05 in income from unfunded securities and accounts is mainly caused by the accrual of interest on unpaid compensation due by the Director General of Railroads.

The increase in war taxes accrued is largely caused by an additional income tax assessed for the year 1917 and paid during 1919.

The increase of $9,653.59 in the miscellaneous tax accruals is due to increased real estate taxes in connection with miscellaneous physical property.

Interest on refunding and improvement 6% mortgage bonds and equipment trust certificates of 1917, sold during the year, are the principal causes of the increase of $338,756.66 in interest on funded debt.

The increase in interest on unfunded debt of $456,127.68 is almost entirely accounted for by the interest accrued on deferred payments for equipment and other accounts due the government.

The increase of $162,022.97 in corporate general expenses is due to the fact that in 1918 the outlay for only six months was included, while in 1919 not only were a full year's expenses included but the corporate organization reached its full development.

While throughout the country there is a general shortage of equipment your officers feel that your company has reasonably fulfilled its obligations to the public. During the years 1914-1919, inclusive, the company purchased 124 new locomotives, 65 new passenger-train cars and 11,436 new freight-train cars at an aggregate cost of $20,586,300. Today this equipment would cost approximately $42,091,300, or $21,505,000 more than was paid for it.

In 1912 the Lake Shore & Michigan Southern Railway Company advanced, on behalf of the Cleveland, Cincinnati, Chicago & St. Louis Railway Company, the necessary funds for the acquisition of certain coal lands in Christian, Montgomery, Fayette, Saline, Franklin and Williamson counties, Illinois. These advances were transferred to the books of the New York Central Railroad Company at consolidation and carried until October 27, 1919, when the indebtedness, $2,266,824.93, was paid in full by the Cleveland, Cincinnati Chicago & St Louis Railway Company.

The Board rescinded the action taken by it on September 11, 1917, providing for a suspension of the pension rule of the company, as to compulsory retirement of employees at 70 years of age, and restored the rule in full force and effect as of March 1, 1919.

In the operation of the Pension Department 56 employees were retired and placed upon the pension roll. Of these retirements 50 were authorized because of the attainment of 70 years of age and 6 because of total and permanent physical disability. Thirty-five pensioners died during 1919 and at the close of the year 306 retired employees were carried upon the pension roll. The average monthly pension allowance of these is $23.94, and the total amount paid in pension allowances during the year was $85,670.23.

The following changes in the Board of Directors of the company were made on June 11, 1919: Mr. Alfred H. Smith was appointed a director to fill one of the existing vacancies; Mr. Robert S. Lovett was appointed a director to fill the vacancy caused by the resignation of Mr. Charles B. Seger and was made a member of the Finance Committee.

On June 11, 1919, Mr. William K. Vanderbilt, Jr., resigned the presidency and Mr. Alfred H. Smith was elected to succeed him.

Mr. George H. Ingalls was appointed vice-president in charge of traffic, effective November 1, 1919.

On subsequent pages will be found the condensed general balance sheet of the company, as of December 31, 1919, and statements giving details of capitalization, expenditures for improvements to property, investments, equipment trusts, taxes, rentals of leased lines, equipment, description of physical property, etc.

There will also be found, as an appendix to this report, statements showing results of operations by the United States Railroad Administration during 1919 compared with similar results for 1918.

Appreciative acknowledgment is made to all officers and employees of their loyal and efficient co-operation and service.

For the Board of Directors,

ALFRED H. SMITH, President.

[ADV.]

Railway Officers

Executive

W. L. Martin, vice-president in charge of traffic of the Duluth, South Shore & Atlantic, with headquarters at Minneapolis, Minn., has resigned effective September 1.

Financial, Legal and Accounting

J. S. VanZandt, assistant to the treasurer of the Pennsylvania, with headquarters at Philadelphia, Pa., has been retired under the pension rules of the company, having reached the age of 70 years, nearly 55 of which were spent with the Pennsylvania system. Mr. VanZandt was born in Philadelphia on August 9, 1850, and began railroad work at the age of 16 as office boy in the treasury department of the Philadelphia & Erie, a subsidiary of the Pennsylvania. In 1876 he was promoted to assistant to the treasurer and secretary of that road. He was elected secretary and treasurer in 1877, and retained that position until May, 1907, when the Philadelphia & Erie was merged with the Pennsylvania. He was then appointed to the position from which he has just been retired. Mr. VanZandt also served as treasurer or assistant treasurer of some 70 subsidiaries of the Pennsylvania.

Operating

G. B. Matthews has been appointed superintendent car service of the Georgia & Florida, succeeding W. C. Griffin, promoted.

F. L. Sample has been appointed assistant superintendent of the Detroit terminals of the Grand Trunk, with headquarters at Milwaukee Junction, Mich., effective September 1.

H. W. Forman has been appointed assistant to the general manager of the Western Pacific in charge of rules, wages and working conditions, with headquarters at San Francisco, Calif. Mr. Forman heretofore was assistant to the general superintendent. Formerly for many years he was on the Nashville, Chattanooga & St. Louis.

F. H. Hooper, chief despatcher of the first and second districts of the Kansas City Southern, with headquarters at Pittsburg, Kan., has been appointed trainmaster, with the same headquarters, effective September 1, relieving **H. C. Wright,** who will continue as trainmaster of the first district, including the Pittsburg yard; **E. Modlin** has been appointed to succeed Mr. Hooper, effective same date.

Traffic

Harry T. Robinson has been appointed general agent in the freight department of the Chicago, Great Western, with headquarters at Pittsburgh, Pa.

B. F. Black, E. F. Kluber and **O. G. Boesser** have been appointed commercial agents of the Seaboard Air Line with headquarters at New York, effective August 25.

Orno M. Brown has been appointed general agent of the El Paso & Southwestern and the Morenci Southern, with headquarters at Cleveland, Ohio, effective August 1.

W. M. Hough, chief of tariff bureau Inland-Waterways, has been appointed general freight agent of the Mississippi-Warrior Service, with headquarters at New Orleans, La.

W. I. Laird, general agent on the Chicago Great Western, with headquarters at Chicago, has been promoted to assistant general freight agent, with headquarters at Des Moines, Iowa.

W. D. McVey, general agent of the Michigan Central with headquarters at Toledo, Ohio, has been appointed assistant general freight agent, with headquarters at Buffalo, N. Y., and **N. J. Brennan** has been appointed to succeed Mr. McVey.

W. S. Basinger, assistant passenger traffic manager of the Union Pacific, with headquarters at Omaha, Neb., has been appointed passenger traffic manager, with the same headquarters, effective September 1. The position of assistant traffic manager has been abolished.

C. E. Muller, assistant general freight agent of the Seaboard Air Line, with headquarters at Jacksonville, Fla., has been appointed assistant freight traffic manager, with the same headquarters, effective September 1. The office of assistant general freight agent has been abolished.

S. C. Harris, traveling passenger agent of the Central of Georgia, has been appointed district passenger agent, with headquarters at Columbus, Ga., succeeding **C. Belk,** who has been appointed special agent to inspect road equipment, with headquarters at Savannah, Ga., effective September 1.

S. R. Lewis, general freight agent of the Duluth, South Shore & Atlantic, with headquarters at Duluth, Minn., has been promoted to traffic manager with the same headquarters, effective September 1; **W. R. Callaway,** passenger traffic manager and **H. M. Lewis,** general passenger agent, have resigned, effective same date.

Edward W. Goodwin, traveling passenger agent of the Boston & Albany, has been appointed assistant general passenger agent, with headquarters at Boston, Mass., effective September 1. Mr. Goodwin was born in Cambridge, Mass., and attended grammar school there. He graduated from the Newton High School at Newtonville, Mass. He began railroad work in 1889 in the passenger department of the New York & New England, now part of the New York, New Haven & Hartford. Afterwards he served in the passenger department of the Fitchburg, now part of the Boston & Maine. In July, 1899, he was appointed city passenger and ticket agent of the West Shore, with headquarters at Boston. He went to the Boston & Albany in 1909 as ticket agent in the city ticket office at Boston. He was promoted to traveling passenger agent in February, 1912.

Mechanical

W. T. Hawkins has been appointed fuel agent of the Missouri Pacific, succeeding W. J. Roehl, who has been transferred, effective September 1.

Engineering, Maintenance of Way and Signaling

H. L. Stanton, assistant supervisor of signals of the Pittsburgh terminal division of the Pennsylvania System, has been promoted to supervisor of signals on the same division, with headquarters at East Liberty, Pa.

B. M. McDonald, division engineer of the Buffalo division of the New York Central, lines east, with headquarters at Buffalo, N. Y., has had his jurisdiction extended to cover sub-divisions 13, 13A, 13B of the maintenance of way department previously included within the Syracuse division, effective September 1.

Railroad Administration

C. S. Lake, staff officer of the Railroad Administration in charge of labor matters, has resigned, effective September 25, to engage in railroad service.

Obituary

A. G. Adams, superintendent car service of the Central of New Jersey, died on August 31 at his home in Plainfield, N. J., at the age of 46 after a long illness.

Charles R. Stewart, formerly marine superintendent of the Erie, with headquarters at Jersey City, N. J., was killed in an automobile accident on August 29, at Daytona, Fla.

EDITORIAL
Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Advance in Subscription Rates

To Our Readers:

The *Railway Age*, after having made no advance for 12 years, excepting a small one to readers west of the Mississippi river, is obliged to announce this week advances in its rates of subscription. For many years our annual subscription rate in the United States was $5 per annum. A short time ago, owing to the establishment of excessive zone postal charges, our rate to subscribers west of the Mississippi river was made $6. Hereafter the subscription rate throughout the United States, Canada and Mexico will be $8. The rate to subscribers in other countries will be $10, and the price of a single copy 25 cents.

I believe that practically all our readers, knowing that the publishing business, like the railroad and all other businesses, has been subjected to large increases in its costs of production, would understand without explanation why it has become necessary for us to make these advances. There are, however, special influences affecting the publishing business about which I feel our readers should be told.

Most of our subscribers doubtless have heard from time to time that publishers of newspapers and periodicals have suffered greatly from increases in the price of paper and from shortages in the amount of it available, but probably few of them have any adequate idea of what the changes in the paper situation have meant to publishers. The white paper used by newspapers and periodicals constitutes one of the largest items in their cost of production. During the first six months of the year 1920 the expenditures for paper for the *Railway Age* and the other railway papers published by the Simmons-Boardman Publishing Company were *194 per cent* greater than in the first six months of 1919. This increase in cost was due only in a small degree to an increase in the amount of paper used. It was due almost entirely to advances in the prices that we have had to pay. On the basis of present prices *the white paper used in the 52 issues of the Railway Age costs $5.42 annually for each subscriber.*

Even if the advance in the price of paper was the only advance in cost that we had to meet it would be serious, but it by no means stands alone. During the first six months of 1920 the expense of typesetting, press work, binding and bulk postage of our railway papers was 125 per cent greater than in 1919. During the same period the increase in the cost of the engravings used as illustrations in our editorial pages was *265 per cent.*

The foregoing statistics indicate the increases which have occurred in our "manufacturing costs." We have also been affected by the same influences which have compelled business concerns of all kinds to increase the wages and salaries of their employees.

Publications of all kinds, owing to similar developments, have been forced to advance their subscription rates. Metropolitan newspapers which formerly sold for one cent are now being sold for two or three cents. Most magazines have increased their subscription rates. The *Railway Age* has been almost the last to take this action.

No publication has ever received more loyal support from its subscribers than the *Railway Age*. We have endeavored to reciprocate by publishing a paper which would be both interesting and helpful to them in their work. It will be our endeavor in the future, as it has been in the past, constantly to make the *Railway Age* a better paper, and we confidently hope not only to retain all of our present subscribers at the new rates, but to go on, as we have in the past, steadily increasing the number of our readers.

Samuel O. Dunn,
Editor.

Roads Should Point the Way

At the present time when the railways are urging shippers to make every effort to secure the maximum service from the available equipment, it is highly important that they point the way by securing full and expeditious loading of company materials. As a step in this direction, the Commission on Car Service urges that shipments of company materials be made in car load lots as far as possible. While it may be more convenient for the local officers using these materials to order them more frequently and in smaller quantities, present conditions are making necessary the withdrawal of many conveniences from the shippers and railway officers can expect no less. Officers of the stores department and of the operating, mechanical and maintenance departments using these materials will do well to scrutinize their shipments to see that they are doing all and more than they expect from their patrons.

Excessive Labor Turnover

One freight station in this country recently showed a labor turnover of stowers of 66-2/3 per cent for one month. Naturally this station shows a high percentage of freight claims chargeable to improper loading and storing and shipments loaded in the wrong cars. What is wrong? Would a personnel department help to locate the seat of the difficulty and remove it?

The British Railways

The evidence that has been coming to this country during the past few months seems to indicate that the railways of Great Britain are carrying a load of worries that makes the troubles of the railways in this country small in comparison. The latest feature is the increase of passenger fares effective August 5 and of freight rates effective September 1. These increases raise the cost of railway transportation so high above the pre-war figures that traffic is actually being driven from the railways. Between the high rates and the pronounced lessening of railway efficiency, motor transport service on the highways is rapidly increasing. Apparent by government control in Great Britain is not much more of a success than it proved to be in this country.

Supervision and More Supervision

If supervision has been an important factor in railway operation in the past, it is doubly so now. The extent to which the roads will be able to meet the heavy demands now being made on them for transportation is dependent on the amount of service they can secure from *every car*. This means maximum loading and maximum mileage. Such a result cannot be secured by general office orders alone. Neither can it be gained by desk operation. It is only possible by intensive supervision of every detail of operation affecting the handling of traffic. It is necessary that shippers be impressed with the necessity of loading cars fully and promptly and of releasing them quickly, that yard masters and others be educated to the importance of eliminating all possible delays in movement, and that every operation be speeded up. This requires close supervision at all points. It is recognized that supervision pays at all times. It is more than an economy now, it is an absolute necessity. It is therefore important at the present time that every management consider the conditions within its own organization to determine whether it has enough supervision.

Equipment Orders in August

If it were not for the recent increase in freight rates and the confident expectation that the railways will soon come into the market for large amounts of equipment, the totals of orders for cars and locomotives placed in the month just past would be somewhat disconcerting. The orders reported in the Equipment and Supplies column of the four issues of the *Railway Age* during August totaled only 14 locomotives and 6,176 freight cars for domestic service. Of the freight cars considerably more than half were included in an order for a private car line—namely that of 3,900 for the Union Tank Car Company. The figures for the first eight months are as follows:

	Locomotives		Freight cars		Passenger cars	
	Dom.	For.	Dom.	For.	Dom.	For.
January	32	213	2,220	1,080	7	..
February	378	86	6,392	516	35	..
March	260	71	10,136	625	240	..
April	469	108	23,528	350	373	..
May	202	9	7,402	207	107	22
June	69	50	3,757	375	..	..
July	97	77	5,732	52	60	10
August	14	24	6,176	940	..	..
Total	1,521	638	65,343	4,145	822	32

From this table it will be seen that August has been the lowest month so far this year. On the theory that night is darkest before dawn, daybreak should not be far ahead of us. In view of the new conditions under which the railways are operating, there is every reason to expect that the remaining months of the year will show a considerable improvement over the three summer months.

Relief for the Pensioners

Efforts to restore the old-time spirit of loyalty among railway employees will direct renewed attention to the pension system from which some of the railroads have obtained no little benefit through improved esprit de corps, faithful service and reduced labor turnover. The benefits to the employee are, of course, obvious. However, the decreased value of the dollar which has been such a disturbing influence in all phases of our national life has worked also to the acute disadvantage of the pensioner. Like a man who has retired from active employment to live from the proceeds of a small competence, the railway employee who was superannuated prior to the war now finds that his resources are only half of what they were at the time of his retirement. The old pensioner feels this situation all the more keenly because employees retiring since the wage increases are generally receiving proportionately larger pensions. This situation has in many cases resulted in actual hardships and points to the necessity for some form of relief. A number of the roads have this matter under consideration and at least one has authorized increases in the pension. The plan proposed on one railroad is to recalculate the pensions granted in antebellum days on the basis of the higher wages paid subsequent to the employees' retirement.

One Means of Increasing Track Capacity

With a train movement not approaching capacity a railroad may be operated without signals with a fair degree of safety, but operation at maximum capacity with a satisfactory degree of safety is practically impossible without block signaling and the degree to which this capacity may be attained depends upon the kind and character of signaling installed. The principal element of a block system that affects the capacity of a line is the length of block, which is evident in a comparison between the manual and automatic systems. A study of this point made recently by one road showed that the installation of automatic block signals in place of the controlled manual system in use, would increase the capacity of the track for passenger trains two and one half times, for fast freight trains somewhat more and for slow freight trains nearly three times. About 38,000 miles of road in the United States is now equipped with automatic block signals and about 63,900 miles with non-automatic signals of which only 1,543 miles consists of the controlled manual system and the remainder includes the use of the telegraph, the telephone and electric bells for blocking. Each year a certain mileage of automatic block signals is installed in place of the non-automatic system. However, it is quite possible that the replacement would be much greater if more extended study were made to determine the benefits which might be procured by the installation of automatic signals on those sections of road now equipped with non-automatic protection, particularly where it is generally known that the present capacity has been reached.

Economy and Safety

Signaling, both automatic and interlocking, when wisely installed, begins to produce economy from the first day of its operation; the immediate saving of money is full justification. But emphasis on this point, in recent notes in this column, must not be allowed to obscure the twin argument, increased safety. Arguments for safety—which today means, in many cases, extreme refinement—often seem to be arguments for future saving as against present saving; and the present always presses hard in every budget discussion; but it is

important to cut out that word "against." "And" is the proper word. Problems of safety *and* future economy are constantly with us; a score of them in the government report on accidents noticed September 3, page 407. These accident records illustrate both extremes, and everything in between. At Schenectady, June 9, (see report in this issue) all usual safeguards were present, even to a flagman who was fairly efficient; who did about all that could be expected of him. Improving the engineman or supplementing his brain by more or better machinery is the only remedy in sight. At South Chicago, on the other hand (*Railway Age,* September 3, page 406) six men were reported as negligent or culpable, and any one of the six could probably have prevented the collision. At Acme, Ill., on July 3 (see report in this issue) the government inspectors found disregard of rules as flagrant as at South Chicago. The disquieting query that arises in the reader's mind is, How often do hazardous combinations of this kind occur which are providentially prevented from killing anybody and which, therefore, are concealed from the public? Provision against this kind of danger has to be prepared long beforehand.

The Fourth Fuel Commandment: Instruction

Experience is a good teacher, but how many years does it require an engineer to learn how to manipulate the throttle and reverse lever in the best interests of fuel economy? How long does it take the average fireman to discover the advantage of a thin fire and avoidance of a rake, if he ever does? Could not the railroads anticipate much of this early experience by a broad plan of education? Through lack of proper instruction many enginemen acquire habits in the early stages of their experience which no degree of *supervision,* as described in the second fuel commandment, nor amount of incentive as suggested in the third fuel commandment, can wholly eradicate. *Organization* as outlined in the first fuel commandment must make some provision for the education of all enginemen, particularly the younger men as these enter the service or are promoted to running. *Instruction* may be regarded as the fourth fuel commandment. The handling of the reverse lever has a tremendous effect on fuel efficiency and recent tests have demonstrated that there is a certain cut-off on each locomotive which at various speeds will give the best results. Railroads should ascertain the proper cut-off and instructions to engineers on this point should be explicit. The least that any railroad can do for its firemen is to describe the process and explain the principles of good firing. An instruction car designed for this purpose would be an asset on any large railroad despite the fact that results from educational work conducted in this manner may not be immediately apparent. What is most needed is direct instruction in the locomotive cab by men not only capable of *telling* the inexperienced fireman what to do, but capable of *showing* the fireman how to do it.

Statistics, Dead or Alive?

Despite the fact that the successful operation of American railroads is highly dependent on statistics, surprisingly few statements are compiled in a form that carries a direct appeal to the employees upon whom results are wholly dependent. Generally they are elaborate and involved, and it often requires considerable ingenuity to discern the conditions that are in reality indicated. It is true that statistics can only represent something that has happened, but it is also true that they should indicate *why* this happened and what may be expected to happen if certain specific conditions are not radically altered. It is not sufficient to note the unsatisfactory conditions of last month, or last year; the figures should clearly indicate all of the contributing causes. Not only this, but where a condition is susceptible to improvement the record should be of a character to inspire a better effort in every individual whose work can in any way influence the result. Where statistics do this they are of inestimable value to the railroads. Figures that show plainly what each division organization has done to improve car and train loading will work wonders; figures that show the relative efficiency of each engine terminal and describe definitely the time locomotives are delayed at these terminals by both the mechanical and the transportation department cannot fail to improve the terminal situation if given publicity; bulletins that indicate the real fuel efficiency of individual locomotives or locomotive engineers, if placed in the hands of these men, will save fuel no matter how ample or how meagre your mechanical facilities may be. If statistics are to fulfill their greatest mission they must be of a character to convey a meaning to every employee—they must be vivid, even graphic if necessary. They must be something more than a post mortem over which we mourn our past, or even, as the handwriting on the wall, through which we see our downfall. Statistics, to be productive of the best results, must be made a live factor, possessing an intimate touch on every phase of railroad operation.

Where Are the Supervisors Coming From?

Supervisory officers of the maintenance of way department are recruited according to two distinctly different policies. Most roads have always selected their supervisors from the rank of foreman; a few have drawn them from the engineering forces. The first, or older, method is founded on the principle that experience is the best and surest teacher, and affords opportunity for a recognition of natural leadership and capacity for responsibility in a way that should permit of small chance for error. The second method is based on the idea that maintenance of way work consists largely of engineering problems and that technical training enables the officer to solve them by direct analytical attack rather than through the haphazard application of past experience. It has the further advantage of giving a large group of engineers the best possible training for promotion to executive positions in the maintenance of way department. Both methods have given excellent results, although sporadic attempts to apply the second plan on roads definitely committed to the first have frequently resulted in failure. At any rate, the high grade of supervisory officers developed in the past by recruiting from the rank of foreman has served to deter most roads from attempting any change in policy. However, a new factor has gradually been brought to bear on this situation. For a number of years maintenance of way officers have complained of the lack of suitable material for the selection of foremen. As a result of this a large part of the gang leaders, especially in the east, are now of foreign birth and many of them use the English language with difficulty, if at all. It has even been necessary to give some foreman an assistant or place a timekeeper in the section gang to perform the foreman's simple clerical duties. This condition obviously reduces the field from which to draw supervisors selected purely from demonstrated native ability. Therefore, unless at least a part of the supervisors are recruited from other sources, the supervisory personnel is bound to depreciate. In view of this situation, and the fact that maintenance of way work on the railroads has gradually become so complex as to demand the greater application of engineering knowledge, it appears highly important to give further thought to the employment of technically trained men.

The Railroads and the Coal Situation

We publish elsewhere in this issue an interesting article by Eugene McAuliffe, of the Union Colliery Company, in which in reply to an article recently published in the *Railway Age*, he discusses the relations between the railways and the coal industry, and especially the extent to which the way the railways have been managed is responsible for the present coal situation.

In the article published in the *Railway Age* a few weeks ago, to which Mr. McAuliffe refers, it was contended that the principal cause of the present shortage of coal was not the failure of the railways to move more coal since January 1, although this has been one of the causes, but that the principal cause was lost production caused by the strike in the coal mines last November and December. Mr. McAuliffe goes back farther into history. He says the insistence of the Railroad Administration in the early part of 1919 that it should not be required to pay the coal prices fixed by the Fuel Administration caused a reduction of production in the early part of 1919, and implies that this created a shortage of coal.

Undoubtedly he is right in his contention that the attitude of the Railroad Administration was largely responsible for the large reduction of production which took place in the early part of 1919. At the same time, Mr. McAuliffe says that if the railways had moved 20,000,000 more tons of coal in the first seven months of 1920 we should not be confronted with the danger of a coal shortage. Doubtless he is right in this. But suppose that the coal strike had never occurred and that last November and December 44,000,000 more tons of coal had been produced and transported than actually were. Then, on Mr. McAuliffe's own theory, the railways could have transported over 20,000,000 tons of coal less than they actually did in the first seven months of the present year, without there being any coal shortage.

The view expressed in the article in the *Railway Age* to which Mr. McAuliffe replied was, that while transportation conditions were partly to blame for the coal shortage it was not true, as has been repeatedly charged by the National Coal Association, that transportation conditions were entirely to blame, and the facts cited by Mr. McAuliffe support this view. The only ground upon which the coal operators can maintain that transportation conditions are entirely to blame for the present coal shortage, is that the railroads should be prepared at any time to make up within a few months any deficiency in the country's coal supply, however enormous, which may result from failure of production due to a strike in the mines or to any other cause or causes for which the railways are not responsible. This, we think, would hardly be regarded as tenable ground.

Mr. McAuliffe estimates that at present a production of 550,000,000 tons of bituminous coal annually is necessary to supply the country's needs. Since the amount of coal produced and transported in the first seven months of the year was 302,739,000 tons, he estimates that during the last five months of the year there should be produced and moved 247,261,000 tons, or an average of 11,681,682 tons a week. The *Railway Age* maintains that the necessity for such a rate of production and transportation in the last five months of the year is not due to any derelictions on the part of the railways. At the same time, we also maintain that the railways can and will transport the required amount of coal if the coal mine operators will keep their mines open and running and railway labor will perform its duty to the railways and the public in a reasonable manner. In the week ended August 14 the amount of coal which actually was produced and transported was 11,813,000 tons, in the week ended August 21, 11,048,000 tons, and in the week ended August 28, 11,674,000 tons. The figures show that in the month of August the railroads actually were moving approximately the amount of coal which, on Mr. McAuliffe's estimate, they must move weekly in order during the present year to supply the amount of coal the country needs.

Mr. McAuliffe implies that railway managers have not in the past shown the zeal for moving coal that they should. We might reply that for many years the coal operators manifested no zeal for supporting the railways in their efforts to get rates and earnings which would enable them to provide the cars and other facilities required to enable them to move sufficient coal. But, as Mr. McAuliffe implies, it is time that the railroad and the coal industries should quit antagonizing and abusing each other and begin seriously to work together. The National Coal Association recently suspended the work of throwing mud at the managements of the railways, in which it had been engaged for some years, and appointed a committee to co-operate with a committee of railway executives in working out a plan for improving the coal situation. The results have been excellent and the amount of coal produced and transported has been greatly increased. The two sections which were in the greatest danger of serious fuel shortages were the Northwest and New England. For some time now the coal operators and the railways have been keeping to the schedules for the movement of coal to these sections which they adopted.

The railways are the largest customers of the coal operators. The coal operators are also the largest customers of the railways. In their own interest they ought to work harmoniously and closely together. They should do it also in the interest of the public. We publish Mr. McAuliffe's article in order to give railway officers a better understanding of the coal operators' point of view regarding the coal situation. If the mine operators and the railway managers will get each other's points of view intelligently and work together, instead of constantly pulling apart, the results will be better for all concerned.

Why Do Not Railway Employees Buy American Railroads?

The propaganda for government ownership and employees' management of the railways is still being carried on. It is merely a part, but an important part, of the Bolshevistic crusade for the destruction of "capitalism" and the establishment of the political and economic rule of the proletariat which is being conducted by radical agitators throughout the world. Among the projects being specifically agitated in the United States is government ownership and employees' management of the coal mines as well as of the railroads. The radicals are distributing literature everywhere telling the manual workers that they create all wealth, and that the capitalists exploit them through the alleged enormous profits derived from the ownership of private property.

That many railway employees accept this doctrine is shown by the fact that they are continuing to contribute to the expenses of the Plumb Plan League and to the distribution of its official paper. The *Railway Age* once more raises the question, if the railway employees really believe that those who own the railways derive immense profits from them, and that employees' management would greatly increase efficiency of operation and thereby increase profits, why do they not themselves buy the railways instead of agitating for the American public to buy them?

This question has been given increased pertinency by the advances in the wages of railway employees which recently have been made. The wages now being paid to them amount to about $3,600,000,000 a year. The advances granted to them recently by the Railroad Wage Board amount to $625,000,000 a year. They easily could and should save at least this part of their annual incomes. Why do they not do this and adopt a co-operative plan, through their labor

organizations or otherwise, for acquiring the ownership of railroads?

The total par value of railroad stocks outstanding in the hands of the public on December 31, 1917, as reported by the Interstate Commerce Commission, was $6,583,000,000. The saving by the railway employees of the recent increase in their wages would give them $625,000,000 annually for investment. On this basis, if they bought at par they could easily, by investing all their savings and their dividends on their savings in railway stocks, become owners of $3,490,000,000, a substantial majority of all the stock outstanding within five years.

But they would not have to pay par. The average price at which the stocks of twenty-five large railroad systems were bought and sold in the open market last week was $58.50. Taking this as the average market price at present of the railway stocks outstanding, all the stock could be bought for $3,851,000,000, and one-half of it, or enough to give absolute control, could be bought for $1,926,000,000. On this basis the railway employees, by saving and investing their recent increase in wages in railroad stocks, could acquire ownership of a majority of the stock of all the railroads within three years. Of course, an extensive buying movement would cause the prices of railway stocks to rise, but it is a conservative estimate that by investing their recent increase in wages in stocks the employees could secure absolute control of the ownership of all the railways in from three to five years.

If the co-operative organization which we have suggested the employees might form did not wish to invest in the stocks of all the railways simultaneously, it could acquire first one railway and then another. For example, the total outstanding stock of the New York Central Railroad is $250,000,000. The total outstanding stock of the Atchison, Topeka & Santa Fe Railroad is $346,000,000. The stocks of both companies are selling below par, but even if par had to be paid for them the railway employees of the United States could buy the whole of the stocks of both companies with that increase in their wages within a single year and have a comfortable margin left to invest in securities of other companies. The combined outstanding stock of the New York Central and the Pennsylvania in the east, and the Atchison, Topeka & Sante Fe and the Union Pacific in the west, amounts to $1,417,000,000. If the employees desired to acquire control first of the ownership and management of only these four great properties they could buy a majority of the stocks of all of them at par with their recent increase in wages in 14 months.

The financial power of the employees of the railways would be enormous if they would but save a comparatively small part of their wages and invest them in securities. The same thing is true of the workers in all other lines of industry. Why should they carry on propaganda to get the public to tax itself to buy and turn over to working men the management of the industries in which they are engaged when it would be within the power of the working men to acquire both the ownership and management of all the industries they are engaged in if they would only practice the thrift in their expenditures upon which has been originally founded the fortune of every man who ever advanced from wage earner to capitalist, or from farm hand to farmer?

If the public should tax itself to buy the railways and other industries and then turn them over to the employees to manage for their employees' own benefit the public would take all the risks of loss, while the employees would get practically all the benefits, if there were any benefits forthcoming. On the other hand, if the employees of the railways and other industries should save their own money and buy control of these industries they would themselves take the chances of loss as well as get the opportunities of profit. The propagandists of the Plumb Plan and of Bolshevism say, however, that the opportunities for profits are enormous and that the exploiting capitalists are now getting huge profits. If the opportunities for profit are so great and working men are so sure that their management of industry would be more efficient than that of the capitalists, they should feel sure that if they saved their money and bought the capitalists out they would have just as good a chance of making large profits in the future as the capitalists would have.

Never was there a time in the history of the United States when the wages of railway employees and other workers were so large in proportion to the prices of railway and other securities as they are now. Never, therefore, were conditions so favorable for the workers to acquire financial control of the industries in which they work and show how well they could manage them. Nevertheless, never was there a time when there was so much agitation among the workers for the destruction of so-called "capitalism." It is all very inconsistent. If the workers really think they are being exploited, and want to stop the exploitation, they can easily do it by buying the capitalists out, and if they will study the present prices of railroad and other securities of all kinds they will find that never for many, many years have the capitalists been willing to sell relatively so cheaply as they are now.

Of one thing we warn the workers now, however. This is, that if they do save their wages and invest as suggested, they will soon find that the difficulty of making profits in business and the ease of incurring losses are much greater than they would ever suspect from reading the literature of the Plumb Plan League and other Bolshevistic organizations!

Atchison, Topeka & Santa Fe

THOSE ROADS that entered on the period of government operation in a particularly good physical condition, weathered the two years in more than proportionately good shape. That is to say, that whereas many roads of necessity had to hold down maintenance and largely expenditures on additions and betterments because of steadily increasing costs of doing business, there were a few roads which because of their location, strong financial credit and particularly able management had continued a full program of both maintenance and betterments even during the early period of the European war. The Atchison, Topeka & Santa Fe was one of these few roads. It continued under the management of W. B. Storey, who had been vice-president in charge of operation prior to 1918, and who became federal manager. The great transportation machine, therefore, which had been the life work of the late E. P. Ripley, entered the period of government operation at almost the top point of its development and in charge of the management to which Mr. Ripley had himself entrusted it.

The road in the last full year of government operation (1919) earned gross $209,500,000, and after the payment of operating expenses and taxes the government had a net of $42,026,000, comparing with a rental which the government allowed the company of $44,616,000. Since this, however, does not take into consideration $3,191,000 additional mail pay, it fails to reflect accurately the relations of the earnings of the property and the government rental. Actually for the two years, 1918 and 1919, the government made a profit from the operation of the Santa Fe after paying expenses, taxes and rental to the owning corporation.

The property is in remarkably good physical condition. The high standards of upkeep which had been for a number of years peculiarly characteristic of the Santa Fe were adhered to in so far as materials and labor would permit, and apparently the Santa Fe fared particularly well in obtaining both labor and materials under conditions which

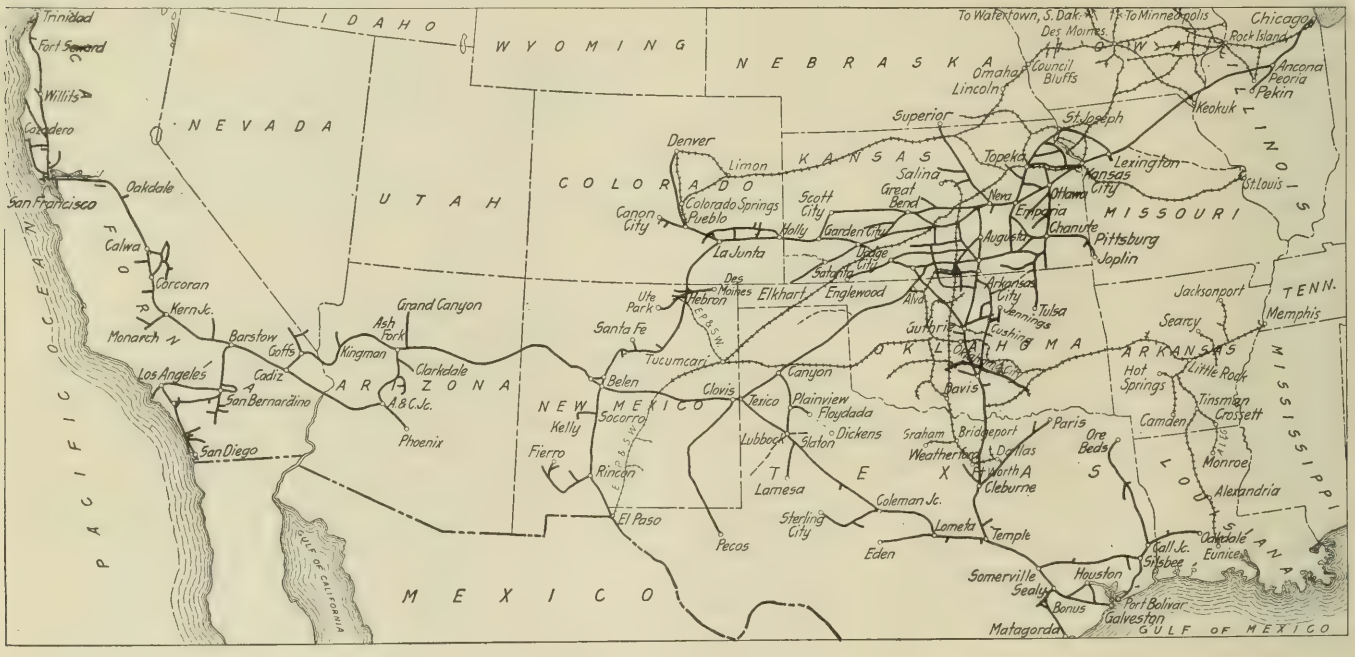
adversely affected many other roads. In the matter of track labor, the Santa Fe has pursued a farsighted policy which proved of great value during the period of acute shortage of common labor. It not only paid the poll tax on Mexican labor, but also paid the tax on the laborer's wife and provided excellent quarters for married track laborers. The result was that in general the Santa Fe was able to keep its gangs up to an average of about a man to a mile of track. In general, track is in the best of condition; motive power is in good condition, but the car situation was at the end of the period of government operation in somewhat the same unsatisfactory condition as on many other roads.

The total operating expenses amounted to $156,026,000 in 1919, as compared with $135,793,000 in 1918. The annual report to stockholders does not give details of the operations of the property under government control. Reports to the Interstate Commerce Commission are for the Atchison, Topeka & Santa Fe proper and do not include the Gulf, Colorado & Santa Fe and the Panhandle & Santa Fe, both of which are included in the report to stockholders. For the Santa Fe proper, maintenance of way in 1919 cost $23,158,350, as compared with $19,037,933 in 1918, and maintenance of equipment cost $40,017,505 in 1919, as compared with $30,100,235 in 1918. Transportation expenses amounted to $63,140,910 in 1919 and $56,588,997 in 1918.

It is interesting to study the operations of the road under government control even notwithstanding the fact that the figures are not directly comparable with those in previous annual reports to stockholders. Comparing now the operations of only the Atchison, Topeka & Santa Fe proper, operating in 1919, 8,650 miles, we find that the total tonnage of freight carried in 1919 amounted to 28,597,000 tons, as against a total freight tonnage in 1918 of 32,943,000 tons. Of the tonnage carried in 1919, 21,255,000 tons originated on the property itself, and 7,342,000 tons was received from connections. In 1918 there was 25,306,000 tons originating on the property and 7,637,000 tons was received from connections. The falling off in tonnage originating on the property was largely in ores. In 1919 there was but 2,625,000 tons of ore tonnage originating on the Santa Fe and 196,000 tons received from connections. In 1918, however, there was 5,176,000 tons of ores originating on the property and 208,000 tons were received from connections. The grain tonnage in the Atchison's territory was even better in 1919 than in 1918, totaling 2,008,000 tons in 1919; a few tons more than in 1918. Total products of agriculture furnished 5,237,000 tons in 1919, as against 4,649,000 in 1918.

The average haul of freight on the Santa Fe is long and was even longer in 1919 than in 1918. In 1919 it averaged 347 miles for revenue freight, and in 1918, 327 miles. The revenue per ton per mile amounted to 1.251 cents in 1919, as against 1.057 cents in 1918. This increase in average revenue per ton mile, together with an increase in passenger business, as indicated by 195,000 passenger miles per mile of road in 1919, as against 166,000 in 1918, and an increase in the rate per passenger per mile of from 2.380 cents in 1918 to 2.698 cents in 1919, accounts for the increase in total operating revenues.

The loss in ore tonnage is reflected in a lower average train load of revenue freight. The average in 1919 was 499 tons as against 511 tons in 1918. Another factor in the train load beyond the control of the operating department was a larger proportion of empty cars. In 1919 the average number of empty cars was 12.28 per train and of loaded cars 27.91. In 1918 the average number of empties per train was 10.97 and of loads 26.17. The average loading per loaded car in 1919 was 19.66 tons, and in 1918, 21.54 tons.


Trinidad
Fort Seward
Willits
Ukiah
Oakdale
San Francisco
Calwa
Corcoran
Kern Jc.
Monarch
Barstow
Goffs
Los Angeles
Cadiz
San Bernardino
San Diego
Grand Canyon
Ash Fork
Kingman
Clarkdale
A&C Jc.
Phoenix
Tucumcari
Belen
Clovis
Texico
Plainview
Floydada
Socorro
Kelly
Fierro
Rincon
El Paso
Lubbock
Slaton
Dickens
Lamesa
Sterling City
Pecos
Eden
Coleman Jc.
Sraham
Bridgeport
Weatherford
Dallas
Worth A
Cleburne
Paris
Ore Beds
Lometa
Temple
Somerville
Sealy
Houston
Bonus
Port Bolivar
Galveston
Matagorda
Gall Jc.
Silsbee
Oakdale
Eunice
Alexandria
Monroe
Camden
Tinsman
Crossett
Searcy
Hot Springs
Little Rock
Jacksonport
Memphis
Arkansas City
Cunningham
Tulsa
Cushing
Sutorie
Davis
Canyon
Amarillo
Clarendon
Panhandle City
Childress
Quanah
Vernon
Wichita Falls
Henrietta
Archer City
Ranger
Cisco
Abilene
Sweetwater
Roscoe
Colorado
Big Spring
Midland
Odessa
Pecos
Sanderson
Marfa
Alpine
Valentine
Marathon
Presidio
Ojinaga
Chihuahua
Torreon
Durango
Mazatlan
Guaymas
Nogales
Douglas
Tucson
Yuma
Mojave
Bakersfield
Fresno
Hanford
Lemoore
Stockton
Modesto
Merced
Oakland
Richmond
Sacramento
Marysville
Chico
Redding
Portland
Seattle
Spokane
Butte
Billings
Miles City
Glendive
Williston
Minot
Devils Lake
Grand Forks
Fargo
Jamestown
Bismarck
Mandan
Dickinson
Medora
Belfield
Beach
Glendive
Sidney
Scobey
Wolf Point
Havre
Great Falls
Helena
Missoula
Spokane
Lewiston
Pasco
Walla Walla
Yakima
Ellensburg
Wenatchee
Everett
Bellingham
Vancouver
Portland
Astoria
Eugene
Roseburg
Grants Pass
Klamath Falls
Reno
Winnemucca
Elko
Ely
Las Vegas
Needles
Barstow

Novel Falsework Method Used on New Haven Bridge

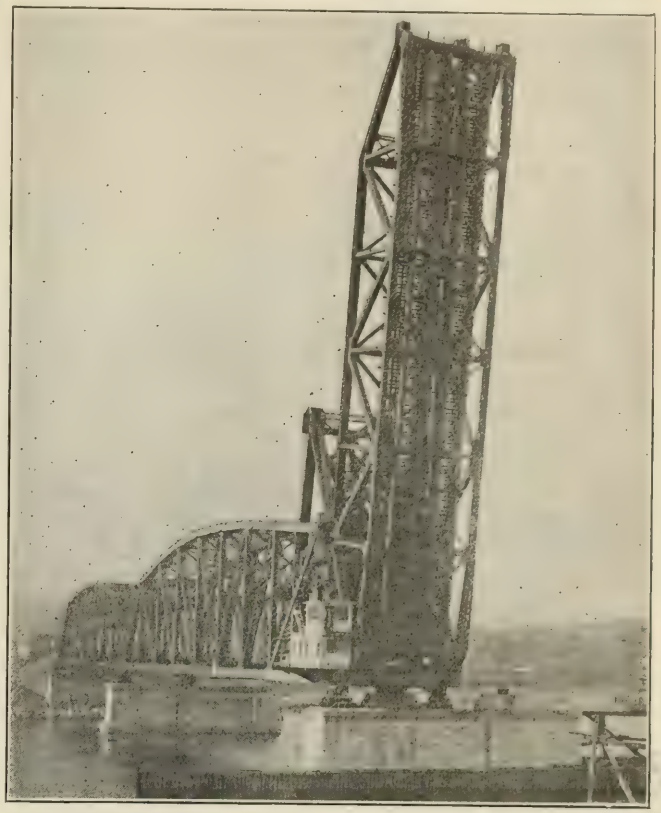
Large Structure at New London, Conn., Presented Difficult Foundation and Superstructure Problems

The New York, New Haven & Hartford has recently completed a new double-track steel bridge over the Thames river at New London, Conn., which is the last of the large bridge projects undertaken or in progress during the European war. This construction was the direct result of a growing necessity for a more efficient means of handling traffic over the Thames river, and its completion has greatly facilitated the movement of trains at this point. While the structure involves nothing remarkable as to length and number of spans, height above water or tonnage of steel used, it presented an interesting and difficult foundation and erection problem because of the depth of the water and the character of the bottom. Suitable pier foundations and support of falsework were found only at depths of from 88 ft. to 131 ft. below the surface of the water. These unusual depths made it necessary to resort to the dredging-well method for three of the four piers, the pneumatic method being employed for the fourth.

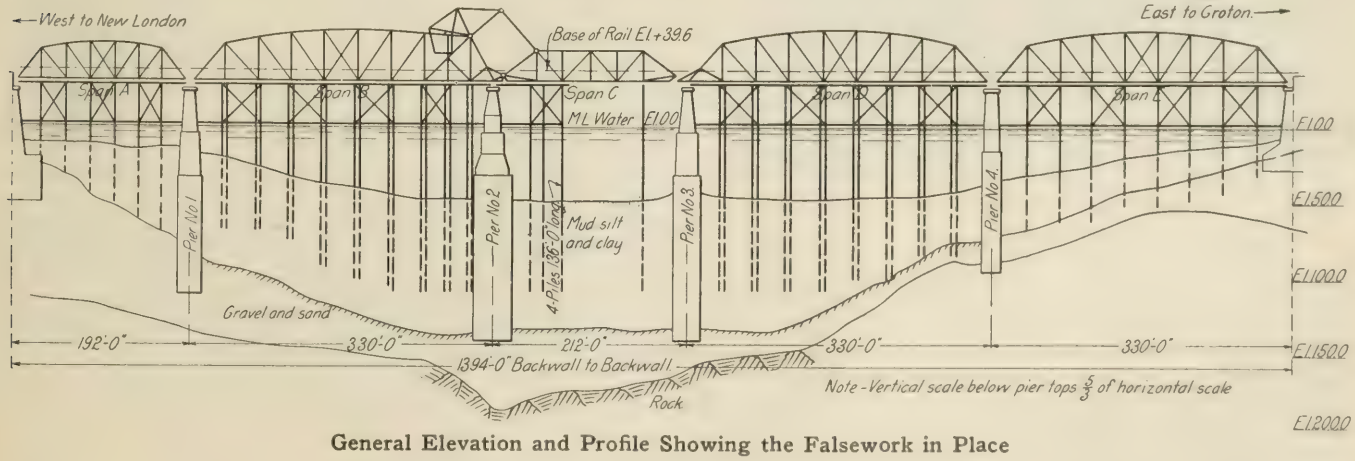
The old bridge, which has been dedicated to the state for public highway purposes, consists of a steel structure with four fixed spans and a 500-ft. draw span, the latter being the longest in existence at the time of its completion. This old Thames river crossing—a landmark in New England railroading—occupies a site parallel to and 186 ft. downstream from the center line of the new bridge. It was originally a double-track structure, but, owing to the greatly increased wheel loads, it became necessary to operate it as a single-track structure with gauntlet tracks laid along the center line. It also became necessary to limit the speed over it, and these obstacles to efficient operation, aggravated further by the continued increase in traffic, proved so serious as to necessitate the construction of a new bridge.

The probability that four tracks would be needed in the future made it desirable to construct a four-track substructure at once. This, under the circumstances, was the economical thing to do, for the conditions were such that it would be not only decidedly expensive but exceedingly difficult to sink piers in two separate sections at two different times. Therefore, it was decided to build a substructure capable of carrying four tracks when traffic conditions became such as to necessitate the addition of two more tracks.

The superstructure weighs about 5,500 tons and consists of five double-track, through riveted spans; and a bascule span measuring 212 ft. from center to center of piers, flanked at either end by fixed spans, the two at the east end being each 330 ft. long and those at the west end 330 ft. and 186 ft. respectively. The fixed spans have Pratt trusses with inclined top chords, while the bascule has Warren trusses. The tracks are spaced 13 ft. center to center and the trusses 32 ft. with a 22-ft. clearance over the top of rails. The under clearance of the bridge is 33 ft. 4 in. above mean low water.



The Lift Span in the Open Position



General Elevation and Profile Showing the Falsework in Place

A waterway 150 ft. in the clear between fenders is pro-

vided for navigation. The ends of the two adjoining fixed spans are cantilevered over the channel piers to form the support for the bascule span and to reduce its length to a minimum. The lift span is of the Strauss heel trunnion type 188 ft. long, center to center of end bearings, and this span, with its counterweight of nearly 1,800 tons, is entirely supported as regards dead load reactions, by the fixed span at the west side of the channel. The maximum angle of opening for the bascule is 82 deg. 30 min. with the horizontal.

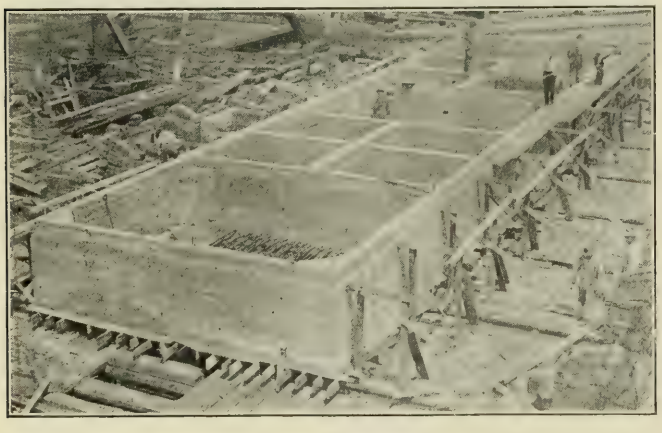
The material for trusses, floor beams and stringers is a special alloy steel allowing working unit stresses of 22,000 lb. per sq. in., for tension members, while compression is limited by the formula $22{,}000 - 96 \frac{l}{r}$ with a maximum of 18,500 lb. The physical properties required for test specimens were as follows:

Minimum elastic limit, per sq. in.	45,000 lb.
Minimum ultimate strength, per sq. in.	80,000 lb.
Maximum ultimate strength, per sq. in.	95,000 lb.
Minimum percentage of elongation in 8 in. equal to 1,600,000 divided by the ultimate strength.	
Minimum reduction of area for material ¾ in. thick or less.	35 per cent

For laterals, portals and other bracing, carbon steel was employed, with a working stress in tension of 16,000 lb. per sq. in., and a limitation on compression of 16,000—70 l/r with a maximum of 13,500 lb. The entire bascule span and the floor, end posts and hip verticals of the fixed spans were designed for Cooper's E-60 live load on each track and the other members for E-55. Horizontal bracing is provided to take care of braking stresses and stringer expansion joints are placed at intervals of about 110 ft. in the longer spans.

The Four-Track Superstructure

Elaborate borings taken on the site of this bridge disclosed the fact that the rock underlying the whole river bed is at depths varying from 60 to 190 ft. below the low water level. This rock is overlaid by a thick gravel blanket, except at one point where the rock rises to a point 60 ft. below water level. Over the gravel and sand is a stratum of mud, clay and shells of varying thickness. The depth of water varies from 10 ft. at the abutment locations to 50 ft. at the center of the stream, while the average rise and fall of the tide is 2.6 ft. With this information available, it was concluded that the best arrangement of the structure would be one providing for the location of one pier, No. 4, on the rock midway between the channel and the east shore where the rock foundation could be reached within the limits of the pneumatic process. The abutments were placed where open cofferdams could be used without trouble. This, of necessity, left three piers on sites where the foundation problem was extremely difficult.



Upper Section of the Three Cylindrical Caissons Supporting Pier 4

The idea of pile foundations was abandoned on account of the extreme length of the piles required, the great size of footings needed to reduce the pile loading to a reasonable figure and because pile foundations had proved unsatisfactory in the old bridge. Studies of caissons sunk by open-well dredging, which seemed to be the only available method of procedure, led to the adoption of a rectangular type of caisson with multiple dredging walls. These caissons were built with a timber shell and a reinforced concrete cutting edge shod with steel plates. The character of the foundation for the various elements of the substructure is summarized in the following table showing anticipated and actual depths of foundation and the type of construction used:



Sinking Center Cylinder of Pier 4

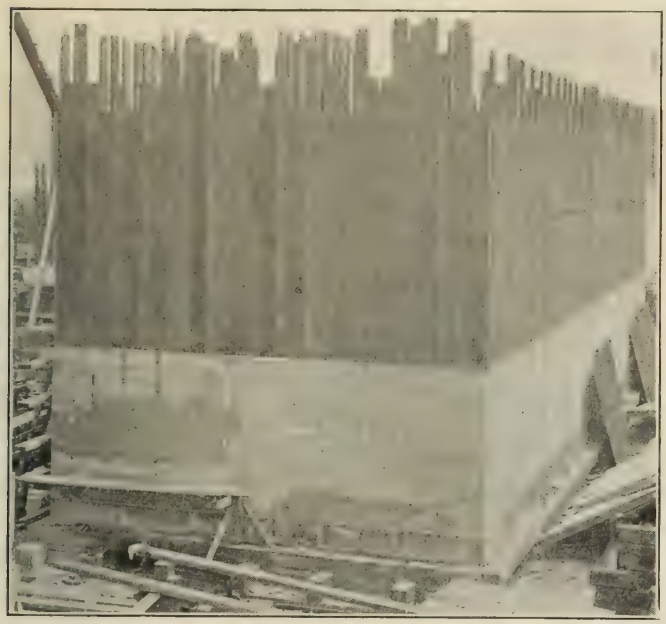
	Elevation of foundation. Maximum anticipated	Elevation of foundation as constructed	Method of construction used
West abutment..	— 40.0	— 40.0	Cofferdam, concrete seal
Pier No. 1.....	—110.0	— 96.2	Open well dredging caisson
Pier No. 2.....	—142.0	—131.4	Open well dredging caisson
Pier No. 3.....	—142.0	—130.1	Open well dredging caisson
Pier No. 4.....	— 96.0	— 90.9	Pneumatic caisson
East abutment...	— 22.0	— 22.0	Cofferdam, concrete seal

The design of the abutments is conventional, being of the buried type with short cantilever wings on the parapet line to prevent the back fill from running over the bridge seat. The piers, as exposed above water, are of a short stocky form ornamented with pilasters at each end and protected at the water line by a belt of granite masonry. Below the water line Pier No. 4, which was built by the pneumatic process, is decidedly different from Piers No. 1, 2 and 3. The first named pier is supported on three cylindrical caissons of 22-ft. external diameter, located under each of the truss bearings of 35 ft. from center to center.

The caissons which supported Piers No. 1, 2 and 3 are of larger proportions. That under Pier No. 1 is 30 ft. wide by 94 ft. long and 81 ft. high; that for Pier No. 2 is 42 ft. wide by 99 ft. long and 111 ft. high, and that for Pier No. 3, 30 ft. wide, 94 ft. long and 111 ft. high. These caissons were of heavy timber construction and were provided with eight dredging wells which flared outward toward the cutting edge at the bottom so that the cutting edges were 6 in. wide. The lower 13 ft. of the caisson covering the dredging well was made of reinforced concrete, both for strength and to avoid the labor of framing the flares in the timber. The upper sections of the caissons were made of 12-in. by 12-in. timbers sized to 11⅞ in. one way, in order to secure uniform thickness of courses.

One unique feature of the plan provided to facilitate the

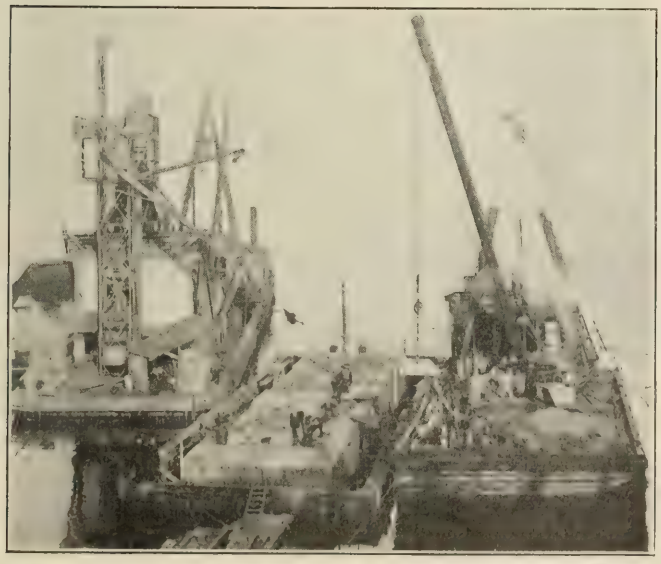
sinking of the caissons was a jetting system installed in the cutting edges. This consisted of orifices, some of them pointing downward to loosen up the material and the others facing upward about 42 in. above the cutting edge proper to provide a film of water next to the sides of the caisson. The jets pointing downward and those pointing upward were supplied from separate systems of pipes, so that either form



Caisson No. 1 Ready to Launch. Note Steel Cutting Edge and False Bottom

of jetting could be used independently. However, as the material encountered was largely mud or clay, the jetting method finally used was that of an independent jetting pipe that was moved about and inserted in any well as found necessary.

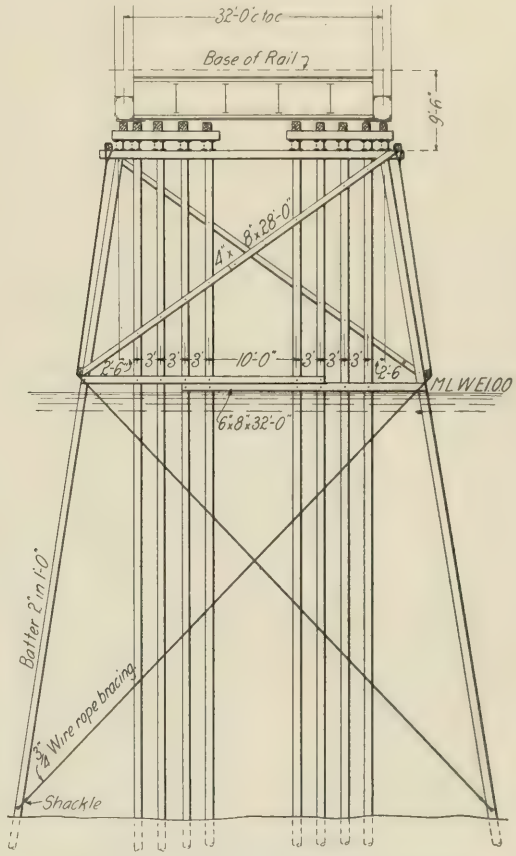
The caissons were sunk by dredging through the wells,



Placing the Granite Belt Courses on Pier 1

a process which undermined the cutting edges and allowed the caissons to sink. When the sinking had progressed to a point where the top of the permanent timber section approached high water level, temporary removable caisson sides were attached to the permanent caisson to form a cofferdam in which the pier shaft was built. When a satisfactory foundation material was finally encountered, all traces of mud were removed by light dredging, repeated several times in each well. The wells were then filled with concrete, deposited through a tremie, until the level of the concrete was brought up to about 10 to 15 ft. below the top of the permanent section of the caisson. The water was then pumped out and the remaining concrete placed in the dry. The caissons showed some tendency to tilt during the process of sinking, but this was adjusted by concentrating the dredging on the high sides and by eccentric loading.

The following table gives the summarized costs of the pneumatic work on pier No. 4 and the open dredging work on Piers Nos. 1, 2 and 3, expressed in terms of the cost per cu. yd. of completed pier. These costs include all preparatory and cleaning up work, excavation and all other



Elevation of a Typical Falsework Bent

costs connected with the structure outside of the engineering expenses, preliminary studies and boring.

	Contents, cu. yd.	Cost	Cost per cu. yd.
Pier No. 1	10,677	$190,368.70	$18.00
Pier No. 2	21,068	287,450.63	13.64
Pier No. 3	14,068	227,025.57	16.14
Total for open well method	45,813	$704,844.90	$15.38
Pier No. 4	4,928	148,892.14	30.22

The Method of Erection

The erection of the superstructure of the Thames river bridge presented many interesting features and is an example of unusual falsework erection. The east and west approaches to the bridge consisted of a four-track fill about 30 ft. deep with little room available for the storage of steel, which was scattered along the top and bottom of the fill. There was considerable navigation on the Thames river of government vessels, lighters, etc., and the channel could not be blocked for a period longer than one or two days. The distance from base of rail to mean low water of 39.6 ft., the con-

siderable amount of unstable material such as mud, silt and clay on the river bottom and the depth of water, varying from 8 to 10 ft. at the abutments to 50 ft. at the channel, influenced the scheme of erection which was adopted.

One of the more important factors determining the scheme of erection was that of the necessary location of the new bridge. Because of the main line approaches it became imperative that the new structure be located as near as possible to the old in order to avoid any increase in the degree of curvature of the approaches. On account of the pile-supported center pier of the old bridge it was only possible to secure a minimum distance of 186 ft. between the two bridge tangents at this point. This location gave rise to a peculiar situation since the arms of the old draw span, 251 ft. 6 in. long, would foul the new bridge when the draw was opened. However, clearances were such that the draw span could be opened in a counter clockwise direction as shown in the diagram, with the bascule span closed, provided the fixed span "D" was not erected and on the other hand the draw span could be opened in a clockwise direction with span "D" erected provided the bascule was opened.

From the conditions at the site, it will be noted that the erection problem consisted essentially in the erection of the bridge in such a manner as to (1) maintain an open channel at all times and (2) permit the opening and closing of the old draw span. There was to be no railroad traffic over the new bridge during its erection, as traffic was not to be diverted from the old to the new until its entire completion.

Owing to the increase in train loading on the old bridge and the necessity of using the gauntlet method of operation with its resulting delays, the New Haven required the most rapid scheme of erection. This requirement of speed in erection together with the above mentioned conditions of the problem led to the use of the following scheme:

(1) Spans "A" and "B" were erected from the New London side, at the same time erecting span "E" from the Groton or eastern side—navigation during this time was



Completing Work on Midstream Span Without Top Bracing in Shore Span

open through both "C" and "D" spans with the draw span turning in either direction.

(2) Navigation was permitted under "D" span only while the bascule span was erected in the closed position—the old draw being swung counter clockwise.

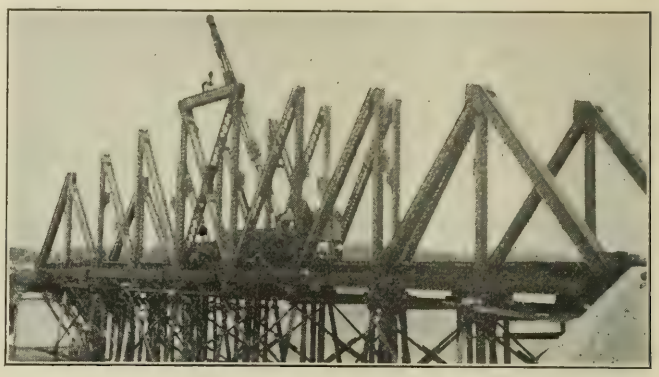
(3) The bascule span "C" was raised to the fully opened position, the draw span was swung clockwise, and navigation was diverted to the west channel so that span "D" could be erected.

(4) The railroad traffic was diverted to the new bridge and the old draw swung clockwise with the bascule raised until a portion of the east arm of the draw span could be cut off.

An Innovation in Falsework Construction

The four fixed spans were erected on falsework. While the distance from base of rail to mean low water, the depth of water and the depth of unstable material on the river bed were not very favorable for falsework erection, nevertheless there did not appear to be any better or more economical method for the erection of the fixed spans.

The general procedure followed in the erection of the fixed spans was to build the falsework, erect the floor system and



Placing Top Chord with a Locomotive Crane

then the trusses on it, rivet the span, swing the span free from the falsework and finally remove the falsework.

The falsework under span "A" consisted of 6-pile bents, under spans "B" and "D" of double bents of 8 piles each, and under span "E" of single bents of 10 piles each. The falsework required extra long piles, both because of the depth of water and from the unstable character of the upper sections of the mud, and silt stratum. Test piles driven at various locations showed that sufficient holding power could be secured by the stiff mud found in the deeper sections at elevations as low as 112 ft. below mean low water. This made necessary the use of piles varying in length from 60 ft. at the abutments to 136 ft. across the central portion of the structure and led to an interesting development in the falsework problem. As nearly 75 per cent of the 500 piles used in the falsework were of necessity 120 ft. to 136 ft. in length, the expense of procuring ordinary round piles would have been very great, in addition there would also have been the greatly increased cost of handling, driving and framing such long pieces. Their salvage value would, of course, have been low. As the cost of the falsework amounted to a considerable item the following method was adopted and used with thoroughly satisfactory results throughout the work of erection:

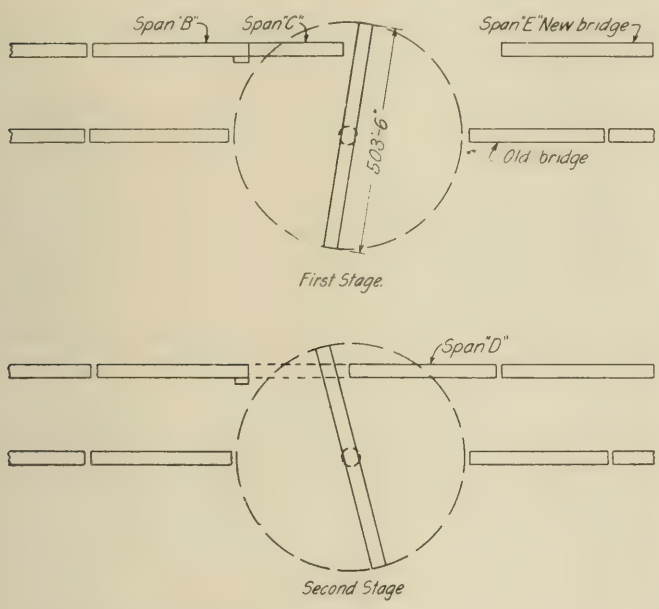
The idea of using one-piece piles was discarded and the use of sawed timber adopted. The piles used consisted of 12 in. by 12 in. long leaf yellow pine timbers varying from 24 ft. to 34 ft. long and spliced at each joint by four 4-in. by 4 in. by ⅜ in. angles each 7 ft. long. A total of 28 ¾-in. bolts were used at each splice. This method rendered the driving of the piles comparatively simple as additional lengths could be added from time to time as the piles were driven, thus obviating the necessity of handling piles of undue length. The piles were driven with a floating pile driver equipped with a 3,000-lb. hammer.

The framing of the bents was of course simplified through the adoption of the sawed timber and a very stable bent was secured. The bents with long piles were braced transversely with a system of submarine cross-bracing consisting of two ¾-in. cables running from a point on each batter pile about even with the river bottom up and across the bent to the

cross braces and then up to the deck as shown in the section of a typical bent. The penetration of the piles in the river bottom varied from 30 ft. to 60 ft. and each carried an estimated load of approximately 12 to 15 tons.

Placing the Steel in Fixed Span and Bascule

The steel was erected with two 60-ton locomotive cranes, the floor system being first erected. Bridge ties and rail for a single track in the center of the bridge were laid as the floor was placed. The members of the trusses were then erected in the following order: The bottom chord working from the fixed end of the span to the expansion end; the



How the New Bridge Was Erected to Avoid Interference With the Operation of the Old Draw Span

posts and diagonals in any order; the end posts and shoe pins, and then the top chords working from the center toward the ends.

Most of the bottom chord sections were two panels long and were set with two cranes. All members of the trusses were handled with erection hitches permitting the direct attachment of the hoisting block to the member and thus doing away with wire rope slings or chains. After the trusses and bracing were erected, the bottom chord splices, the connections of the diagonals and posts to the bottom chords and the floor system were riveted. The spans were then swung free of the falsework by knocking out the blocking and the remaining connections were riveted up. In order to facilitate erection, the top chord bracing of the inshore spans, although free of the falsework, was not placed until the midstream spans were erected. This procedure did not lead to any trouble from the swaying of the unbraced trusses but did permit the locomotive cranes to go back and forth over the end spans without lowering their booms.

The bascule is of the Strauss heel trunnion type, and consisted of the lift itself, the counterweight truss and box, the counterweight and the operating machinery. The lift itself was erected by cantilever erection, following the usual methods for this class of work, the permanent concrete counterweight being poured as the steel was placed in order to keep it in an approximately balanced condition. However, to take care of the unbalanced moment resulting from the locomotive crane running on and off of the lift and also to permit some variation in the amount of counterweight necessary to balance, a "hold-back" or erection strut was used.

This strut, capable of taking tension or compression, tied the counterweight trusses and thus the lift itself, to one of the floorbeams of span "B." The lift span was erected with a locomotive crane, while the counterweight box and trusses were erected with a 30-ton stiff-leg derrick placed on the top chord of span "B."

The counterweight for balancing the lift span was composed of common concrete and steel punchings concrete. The common concrete amounted to 460 cu. yd., weighed about 960 tons, and contained one part of Portland cement, three parts of sand and five parts of 2-in. trap rock. It weighed 155 lb. per cu. ft. when 24 hrs. old. The punchings concrete amounted to 107 cu. yd. and weighed 460 tons. It was composed of steel punchings grouted with a mortar composed of one part of cement and two parts of sand and weighed about 318 lb. per cu. ft. In addition, about 50 tons of cast-iron, counterweight blocks were provided for adjustment.

The Operating Machinery

The bridge is electrically operated, 3-phase, 60-cycle, 2,300-volt current being furnished from the local power plant over a transmission line 1⅛ miles in length. Three 37½-kv.a. transformers step this voltage down to 440 volts



The Bascule Span Showing the Counterweights and Links

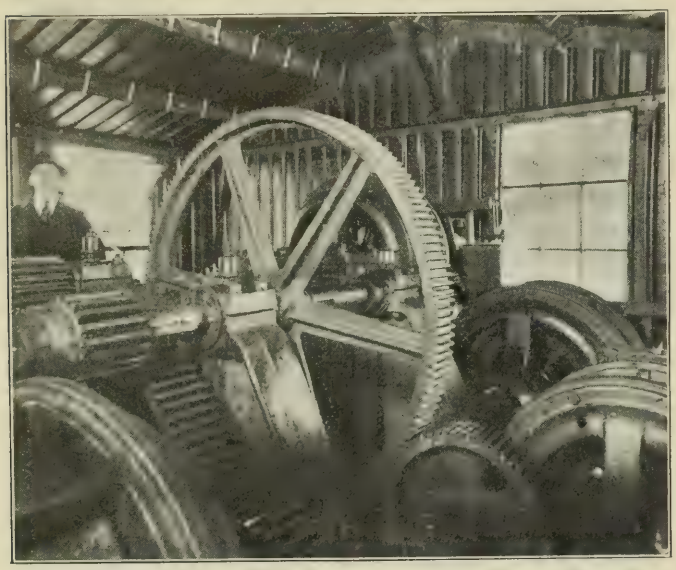
for all power purposes and for lighting it is again stepped down to 110 volts.

The machinery room containing the motive power equipment is located in a machinery house above the tracks, and is of fire-proof construction. Four 82-hp., slip-ring type motors are connected to the gear train, two of which are capable of opening the bridge in 1¾ min. while the other two remain in reserve. Either pair of motors may be used by closing a six-pole, double-throw switch which is mounted on the control panel. In addition to these motors, a 37½-hp. auxiliary motor is provided, which will open the bridge in

nine minutes in the event of the failure of the larger motors. All motors are equipped with solenoid brakes.

The control for all motors is by magnet switches with remote control which, owing to the lack of space in the machinery room, is located in an enclosure immediately below. The master controller is located in the operator's house at the heel trunnion of the moving span, one lever controlling the lifting motors and another the lock motor. These levers are electrically and mechanically interlocked with each other and with the railway signal circuits. A foot switch releases the solenoid brakes, permitting coasting.

As an added precaution in the event of failure of the line current, a gas-engine generator set is provided which supplies current for the 37½-hp. auxiliary motor. This set consists of a six-cylinder, 82 hp.: Wisconsin automobile type motor operating at a speed of 1,200 r.p.m., and direct connected to a 37-kv.a., 440-volt General Electric generator, this power unit being located on the lower floor of the operator's house. The engine is started by means of an electric motor starter controlled by a foot switch in the operator's floor; the spark and gas control as well as the dynamo control being also accessible to the operator. In case of a failure of the service supply of current, the gears can be shifted and the bridge opened and closed with the gas



Interior of Machinery House

engine generator set and gears re-shifted in 35 min. The average load on the set is 15 kw., but it is capable of delivering 40 kw. A motor-driven air compressor, with a capacity of 25 cu. ft. per min., supplies air to a 72-cu. ft. air tank at 125-lb. pressure for operating the whistle and strut brakes.

This bridge was designed and erected under the direction of Edward Gagel, chief engineer of the New York, New Haven & Hartford; W. H. Moore, engineer of structures; I. D. Waterman, engineer of construction and P. B. Spencer, resident engineer in charge of construction. Because of the serious foundation conditions encountered, outside expert assistance and advice was obtained from Ralph Modjeski, consulting engineer, Chicago. The Holbrook, Cabot & Rollins Corporation, New York, had the contract for the substructure and the American Bridge Company the contract for the superstructure, with J. B. Gemberling erecting manager, Eastern division; Herbert H. Starr; assistant engineer; David Fine, resident engineer, and Frank Stangle, general foreman. C. H. Norwood, contracting engineer, Chicago, installed the air, electric and gas engine equipment.

Re-establishment of the Railway Ticket Protective Bureau

THE QUESTION of re-establishment of the Railway Ticket Protective Bureau, organized in 1903 to detect and prosecute forgers of railroad tickets and to fight ticket scalping, is now being considered by the various passenger associations. At the time of the Bureau's organization in 1903 its object was solely to detect and prosecute forgers of railroad tickets. At that time it was not believed possible to eliminate the business of ticket scalping which was strongly entrenched and organized into several national ticket brokers' associations. The executive board of the Bureau, however, found at that time that the only definite remedy for this evil was to proceed against the entire ticket scalping fraternity by resorting to the process of injunctions in state and federal courts enjoining scalpers from buying and selling "signature" form of tickets. Later the Bureau succeeded in having state anti-scalping laws enacted in a number of states. With the coming of the government control all of its work was taken over by the Police and Secret Service Section of the United States Railroad Administration.

The necessity for the re-organization of this Bureau again becomes apparent by reason of the ticket scalpers reopening offices. Higher passenger fares offer new inducements for patronizing scalpers and reduced round-trip rates for special occasions will again find scalpers opening temporary and probably permanent offices. Furthermore, the fact that tickets are being issued non-signature, non-validation and on simplified contract forms, offers a further inducement for inexperienced persons to enter the ticket scalping business.

The situation now, insofar as the Bureau and the legal work which it has performed is concerned, has been outlined by H. A. Koach, formerly assistant to chairman of the Bureau as follows:

"(1) All injunctions secured by railroad lines that have since undergone corporate reorganization are obsolete.

"(2) Lines that have not reorganized are still protected by injunctions against such former ticket scalpers who were defendants to the original injunction and such served as so specified.

"(3) During the Bureau's existence all injunctions secured were kept active by reason of their being kept open, that is, the bonds required by the court were removed each year so that any notice of injunction could be served on any new scalper engaged in ticket business, and thus make him a party to the pending injunction.

"(4) When the railroads were taken under government control all injunctions were closed, hence only such persons defendent to the original injunction and as such served as recorded who were not parties to the original injunction, are enjoined.

"Anyone opening a ticket office to scalp railroad tickets, unless he is one of the original defendants or served prior to the closing of the injunction, must be proceeded against anew. Furthermore, anyone can handle tickets issued by such lines as have been re-organized.

Mr. Koach in further outlining his views has said "The duties performed by the Bureau's representatives covered every phase of passenger revenue conservation, hence its field was wider than generally known. A yet wider field for its activities is suggested by many railroad ticket auditors who believe that the Bureau could be made of service by the supervision of 'under cover' operatives, to ascertain the extent of withholding fares and tickets on the part of railroad employees. It is believed by these auditing officers that if general publicity were given to the fact that an organization, maintained and directed by the railroads, was in operation to give attention to an evil which has grown to large proportions in recent years, much good would result."

Overlap vs. A. P. B. for Signaling Single Track

The Merits of These Two Systems from an Operating Standpoint Are Presented by Two Signal Engineers

TWO TYPES of automatic signaling are employed on single track lines, the overlap and the so-called absolute permissive block systems. The overlap was first used when automatic signaling for single track was developed about thirty years ago. At that time the most important consideration was to increase the safety of operation, little thought being given to the question of expediting traffic. This was the type in use up to about 1911, when the absolute-permissive block began to be installed with marked success from an operating and signaling standpoint.

The advantages of these two types of signaling were presented at a meeting of the St. Louis Sectional Committee of the Signal division of the American Railroad Association on August 20. A. R. Fugina, signal engineer, Louisville & Nashville, discussing the A. P. B. system and A. H. McKeen, signal engineer, Union Pacific System, presenting the overlap scheme. An abstract of these papers is given herewith.

A. R. Fugina on the A. P. B. System

There are a number of reasons why the use of automatic signals on single track has not grown more rapidly, but the one that perhaps hindered progress more than anything else was the shortcomings and defects in the overlap system as used with straight automatic signaling on single track. Under this scheme head-on and following movement protection is provided, but the head-on protection is limited, since it does not extend from passing track to passing track, while the circuit arrangement for following movements must be sufficient to provide much greater spacing between movements than is necessary or desirable.

There are certain inherent defects in this system which are objectionable. The one that is most apparent is that the signal indications permit two opposing trains to enter the single track between passing tracks, providing one of the trains overlooks or mistakes the meet order. With proper location of signals and overlapping the opposite trains will, of course, be stopped before coming into collison with each other, yet one of the trains will have to back up and clear the opposing train. Operating men soon recognized this defect, but in view of the fact that there was nothing better at hand it was necessary to put up with it in order to obtain the very great advantage that automatic signals offered.

Another defect which is not so apparent, and therefore not so well known by the men in the operating department, is the unreliability of the distant signal indication. When two trains approach a passing track from opposite directions one of them is likely to receive a clear distant signal indication, and under certain conditions both of the trains may receive clear distant indications, as a result of which the train, or trains, will approach the home signals, which in the meantime have assumed a stop position, without being under control, and a collision may result. Serious collisions have occurred because of this unreliability of the distant signal indication.

The Louisville & Nashville had but a small mileage of the overlap system in service on its single track. Occasionally trains received improper distant signal indications when approaching passing tracks. These occurrences lowered the confidence of the operating officers, enginemen and trainmen in the reliability of the signal indications. The paramount requirement of any scheme of signaling is that the signal indications must be reliable.

A. P. B. Signaling

Signal engineers recognized the defect in the overlap scheme for single track blocking, and about ten years ago there was a scheme devised for overcoming the objections. The protective and operating advantages gained with this new arrangement were so far in advance of anything that had been known before that the system was generally accepted and installed on those roads that were able to spend the money to install and maintain automatic signals. This system is that generally known as "absolute permissive automatic block." It provides head-on protection from passing track to passing track, and permits following movements to be made with the minimum allowable spacing between trains.

Under the A. P. B. scheme, the leaving signals at the end of a passing track are positive signals, the general practice being to equip this type of signal with a square end blade and a marker light located vertically below the indicating light. The intermediate signals, as well as the entering signals to passing track or station limits, are permissive signals, these being equipped with the pointed end blade and a marker located diagonally below the indicating light.

Operation of the A. P. B. System

When a train leaves station *A* to proceed to station *B* it automatically sets the opposing positive signal at *B* and all intermediate opposing permissive signals at *stop*. While the train is moving towards station *B* it is protected from a following movement by a stop signal and a caution signal, the control of these signals being exactly similar to the control of signals used on double track. The overlap feature for following movements is eliminated, and this permits following movements to be made with spacing that is from one-half mile to one mile closer, depending upon whether it is compared with the single or double overlap scheme. The opposing signals automatically clear up as the train passes them, thus permitting a train that may be waiting on a siding to move out and proceed in the opposite direction immediately.

When the switch at a siding located between passing tracks is opened or the main track fouled, all opposing signals for a movement from this point to either passing track are set in the stop position. As soon as the train that has been in the siding passes a clear signal it establishes its direction of traffic and all of the signals between the passing tracks assume their proper position. If a train wishes, for any reason, to return to the station from which it came, the following general rule will cover: "Whenever a train passes a signal at clear, it establishes its direction the same as though it had not changed its direction of movement."

With the A. P. B. scheme, reliable distant signal indications are assured, and, therefore, trains approaching passing tracks will always receive correct information, provided the rules are complied with. It is customary to have a double caution indication for a train that approaches a passing track or station, provided the opposing train has reached the first track circuit in advance of the passing track switch. Thus the trains are given additional information when approaching stations; this increases the safety and enables the meet to be made more advantageously. Under the overlap scheme, the protection afforded at passing tracks is the weakest part of the system, whereas under the A. P. B.

scheme this is complete. Better signal protection is also obtained for work trains that may be working between stations.

Apparatus Used and Flexibility of A. P. B.

The same kind of apparatus is used for an A. P. B. installation that is used for the overlap scheme. The circuits are quite similar, although somewhat more complicated. The system in general is much more flexible and readily lends itself to any special features that may be encountered.

The cost of installation is no greater and the cost of maintenance is on a par with the overlap scheme. One important feature in connection with the A. P. B. scheme is the use of telephones at all positive signals. These instruments are connected to the despatcher's circuit so as to enable the conductor or the engineman to get into communication with the despatcher, whenever the train is stopped by a positive signal which may be out of order. If the block is clear the despatcher may order the train to proceed. On the L. & N. a special order form is used for this purpose; it reads as follows: "You may pass absolute automatic signal No. — in 'Stop' position and proceed under control to next signal, providing your movement is not restricted by train order or time table authority." The one who receives the order signs it and drops a copy into a box located in the telephone booth.

The Modification of Rules

The L. & N. rules governing the action which is to be taken when a train approaches an A. P. B. stop signal are as follows:

522—When a train is stopped by a block signal on single track it may proceed when the signal assumes the *Clear* or *Caution* position, or if this does not immediately occur, may proceed as follows:

Where other than the "Absolute Permissive Block System" is in use, flagmen must be sent in advance immediately. Train will wait five minutes after flagman has started and then proceed through the block, keeping a safe distance behind the flagman.

522-a—A signal with a square end arm displaying at night a white marker light vertically below the light indicating the position of the semaphore arm is known as an "Absolute" automatic signal. This signal must not be passed while in the *Stop* position without authority from the chief train despatcher, except, that, if unable to communicate with the chief train despatcher, the train may, if time table and train order authority permit, proceed under protection of flag to the next block signal that is found at *Proceed* or *Caution,* as provided by Rule No. 522.

522-b—A signal with a pointed end arm, displaying at night a white marker light diagonally below the light indicating the position of the semaphore arm is known as a "Permissive" automatic signal. After a stop has been made at a "Permissive" signal indicating *Stop*, the train may proceed with caution, expecting to find a train, an open switch, a broken rail or some other obstruction in the block, except that a train moving under protection of flag from an "Absolute" signal shall continue to proceed under flag protection to a block signal that is found at *Proceed* or *Caution,* as provided by Rule No. 522-a.

Other Operating Advantages

Besides providing safer indications and increasing the capacity of the track, the A. P. B. signals have other operating advantages which are quite as valuable and important. Under the overlap scheme it is necessary to flag the block when a signal is found to be out of order. This flagging is responsible for heavy delays to trains, as the train which has to be preceded through the block by a flagman will lose between 15 and 30 min., which in turn affects the movements of other trains, and numerous cases have been called to my attention by operating officers where the flagging of one block caused delays to the train in question, and to other trains, that ran as high as 1½ hr. On an exceedingly busy piece of single track between Henderson, Ky., and F. S. Tower, Ind., which is on trestle, frequent delays occurred with the old overlap scheme. When a train found it necessary to flag a block, the delay was multiplied by the fact that the flagging was done over the trestle. As a result, freight trains that were waiting to move at Henderson or F. S. Tower frequently were further delayed by the time of passenger or superior freight trains and it was the exception rather than the rule that these trains were delayed less than an hour, which often resulted in a "balled up" railroad. This trouble was increased when the trestle was covered with snow or ice due to thawing and freezing weather or sleet storms. At such time it was next to impossible for flagmen to walk the trestle. Finally the overlap scheme was replaced with the A. P. B. scheme, which effected a wonderful improvement in train operation. (A description of this installation appeared on page 1205 in the April 16 issue of the *Railway Age.*)

Despatchers on the L. & N. do not hesitate to permit inferior trains to keep on running ahead of superior trains, provided they know that they can get the inferior train in the clear quickly and pass the superior train by, without undue delay to it. The superior train can close in more closely because of the A. P. B. scheme of control and this, coupled with information that the despatcher obtains from the operators regarding the position of trains at the next passing track, enables the despatcher to keep trains moving with the utmost efficiency.

When a despatcher is figuring close he frequently asks the operator to observe the position of the positive signal, so that he (the despatcher) may know whether the train has left the next siding, at which there is no train order office. With this information the despatcher is given an additional advantage, which enables him to move trains up another station, which could not be done otherwise; despatchers on the L. & N. make use of this service daily and find it of great value.

A. H. McKeen on the Overlap Scheme

The first installation of automatic signals on the single track of the Harriman Lines was made in 1898. At that time little thought was given to the question of facilitating traffic; the most important consideration was to increase the safety of operation by providing a reliable means of maintaining a space interval between trains. The results of the initial installations from this standpoint were so satisfactory that further extensive installations of this type of signalling were made, principally on mountain grades, where train movements were heavy and the view obscure.

Such installations as these demonstrated conclusively that in addition to the protection secured, the movement of traffic on single track was materially expedited by automatic signals. It was found that "19" orders could be substituted for "31" orders in block signal territory, and the elimination of stops, especially of heavy tonnage trains, resulted in the movement of traffic being greatly facilitated. This practice has been continued with each additional installation of signals and is now in effect on 1852 miles of single track on the Union Pacific System.

Signals are of the two-position type with overlap control and the arrangement is such that when the adjacent switches at stations are less than 4½ mi. apart, one set of intermediate signals is installed. When this distance is 4½ to 6 mi., two sets of intermediate signals are installed. The average length of block at the entrance of stations is 1¼

mi.; for starting signals at stations it is 2 mi. with a maximum length of 3 mi., and intermediate signals are spaced ½ mi. apart. Distant signals are located ½ mi. from the home signal approaching stations.

It is generally accepted as one of the principles of good signaling that distant indications should be displayed at reasonably uniform distance from the home signal. The A. P. B. system, in some cases, violates this principle by displaying a distant indication, varying from ½ mi. to as much as 2½ or 3 mi. from the home.

The absolute feature of A. P. B. as affecting opposing movements between stations, whereby one or the other of two trains will be stopped at a station, thereby obviating the necessity of one train backing up, would seem to be an exaggerated claim, due to the possibility of opposing trains entering the block simultaneously. Furthermore, in view of the extreme rarity of instances of this kind, this argument seems inconsistent. If such instances occurred with sufficient frequency to lend any force to the argument, it would indicate a laxity of operating methods not countenanced by any first-class railroad.

If all trains were run in one direction during certain periods of the day, the permissive feature for following trains might have some merit, but inasmuch as operating conditions require trains to move in both directions, it would seem that the permissive feature would only result in the bunching of trains at certain stations, where, unless ample side track room was provided, much delay would result in "sawing-by."

The Union Pacific System rigidly enforces the rule that when a home signal indicates "Stop" a flagman must precede the train on foot to the next clear signal. When a train is stopped by an absolute signal under the A. P. B. system the general practice is to secure authority from the train despatcher to proceed, or, if unable to communicate with the train despatcher, the flagman must precede the train. The question then arises as to how far the flagman should precede the train when the absolute home signal at the outgoing end of a station is at stop and the next intermediate or permissive signal is also at stop. If the train picks up the flagman at the intermediate signal and proceeds under control it is liable to meet an opposing train that has been delayed a few minutes after entering the block on a clear signal. By establishing two different kinds of home signals, a complication in the rules governing trainmen in the observance of signals is created. Furthermore the train despatcher does not always know to a certainty whether or not the block is occupied, and the correctness of such information could not be relied upon.

The A. P. B. system is necessarily more complex than straight automatic on account of the additional relays, line wires, track circuits, circuit breakers, etc. Dependence is placed on back contacts to restore the circuits. These features add to the cost of installation and maintenance. A maintainer will necessarily have to be above the average in experience and ability to maintain the required close adjustment of apparatus and to successfully locate and correct the causes of failure. The simplicity of circuits and the minimum of apparatus required with straight automatic signaling certainly tends toward lower costs of installation and maintenance together with greatly increased reliability and efficiency.

The benefit of temporarily cutting off the overlap for following movements may be of some advantage where a block is much longer than the average, but where stations are close together and the block length therefore comparatively short, there appears to be no benefit in further reducing the block length. In cases where the block is long, the desired flexibility can just as well be secured by installing an additional set of intermediate signals.

Train Accidents in May*

THE FOLLOWING is a list of the most notable train accidents that occurred on the railways of the United States in the month of May, 1920:

Collisions

Date	Road	Place	Kind of accident	Kind of train	Killed	Injured
2	N. Y. N. H. & H.	Torrington	xc	P	0	0
7	Mo. Pacific	Hope	bc	P & F	0	54
†9	Southern Pacific	Bertha	bc	P & P	9	101
23	Md. & Pa.	Tallapoosa	bc	P & F	1	11
†31	St. Louis-S. F.	Woodstock	bc	P & F	2	1
		White Oak	bc	P & P	5	17

Derailment

Date	Road	Place	Cause of derailment	Kind of train	Killed	Injured
9	Pennsylvania	Portage	...	P	...	...
16	N. C. & St. L.	Vinings	...	P	0	2
17	Int. & G. N.	College	ms.	P	0	4
21	A. C. L.	Fayetteville	d. frog	P	0	0
22	Pennsylvania	Collinsville	unx.	P	0	11
23	Los Angeles & S. L.	Latimer	ms.	P	4	0
25	Atchison, T. & S. F.	La Joya	d.track	P	2	30
25	Texas & Pac.	Silver Lake	d.track	P	0	7
30	Erie	Jersey City	acc. obst.	P	0	18
†31	Lehigh Valley	Van Etten	acc. obst.	P	3	10

Other Accidents

Date	Road	Place	Cause of derailment	Kind of train	Killed	Injured
26	Mich. Cent.	Bay City	boiler	P	2	1

The train involved in the accident on the New York, New Haven & Hartford at Torrington, Conn., on the morning of the 2nd, was southbound passenger 1235. Moving at about 25 miles an hour on a curve, the train was thrown into a side track and three freight cars on the siding were wrecked. The switch had been misplaced by a boy 16 years old who was subsequently arrested. No persons were injured.

The trains in collision on the Southern Pacific at Bertha, Or., on the 9th, were local electric passenger trains, 107 and 124. Six passengers and three employees were killed and 91 passengers and 10 employees were injured. The engineman of the eastbound train was killed. This train had run past its meeting point. The collision is reported in more detail in another column.

The trains in collision on the Missouri Pacific, near Hope, Ark. on the night of the 7th were southbound passenger No. 233 and a northbound extra freight. Both engines, three freight cars and three cars of the passenger train were damaged. Fifty passengers and four trainmen were injured. The collision was due to negligence on the part of the freight train, which, because of unexpected delay, encroached on the time of the passenger train, yet did not send a flag ahead.

The trains in collision on the Southern Railway near Tallapoosa, Ga., on the 9th, were eastbound passenger No. 30 and a westbound work train. The workmen on the work train were in a car ahead of the locomotive and one of these men was killed. Two passengers, a trainmaster, one fireman, one flagman, and six laborers were injured.

The trains in collision on the Maryland & Pennsylvania near Woodstock, Md., on the 23rd, were a northbound passenger and a southbound freight. Both locomotives were badly damaged. The engineman of the passenger train was killed and the fireman of the freight was fatally injured. The fireman of the passenger train was scalded. The cause of the collision was failure on the part of the freight train to properly protect by flag.

Trains in collision at White Oak, Okla., on the 31st, were southbound passenger No. 403 and northbound passenger

*Abbreviations and marks used in Accident List:

rc, Rear collision——bc, Butting collision——xc, Other collisions——b, Broken——d, Defective——unf, Unforeseen obstruction——unx, Unexplained——derail, Open derailing switch——ms, Misplaced switch——acc. obst., Accidental obstruction——malice, Malicious obstruction of track, etc.——boiler, Explosion of locomotive on road——fire, Cars burned while running——P. or Pass., Passenger train——F. or Ft., Freight train (including empty engines, work trains, etc.)——Asterisk. Wreck wholly or partly destroyed by fire——Dagger, One or more passenger killed.

No. 112. The southbound train was badly wrecked, but the other consisted of steel cars, and these were not thrown off the track. One passenger, a news agent, a mail clerk and both enginemen were killed, and ten passengers and seven trainmen were injured. The collision was due to mistake or neglect on the part of train 403 in connection with train orders.

The train derailed near Portage, Pa., on the afternoon of the 9th was westbound passenger No. 27, second section.

The train derailed on the Nashville, Chattanooga & St. Louis near Vinings, Georgia, on the 16th, was the southbound Dixie Flyer. The engineman and fireman were injured.

Train derailed on the International & Great Northern near College, Texas, on the 17th, was southbound passenger No. 15. The engine and first two cars were badly damaged and the smoking car was overturned, at a misplaced switch. Four passengers were injured.

The train derailed at Fayetteville, N. C., on the 21st, was northbound passenger No. 34, consisting of an engine and six cars. The locomotive was not derailed but the second car of the train was thrown off the track by a defective frog, and, with the rest of the train, ran about 1,500 ft. on the ties, in this distance crossing the bridge over Cape Fear River. The whole train cleared the bridge but did not fall down the bank. When the derailment occurred the train was running at about 30 miles an hour, but no person was seriously injured.

The train derailed on the Pennsylvania lines at Collinsville, Ohio, on the 22nd was a southbound local passenger. Four cars fell down a bank. Nine passengers and two trainmen were injured. The cause of derailment was not determined.

The train derailed at Latimer, Utah, on the 23rd was southbound passenger No. 3. The locomotive and first two cars were ditched and the engineman and fireman were killed. The derailment was due to a misplaced switch.

The train derailed at LaJoya, N. M., on the 25th, was northbound passenger No. 808. The locomotive was derailed at a point where the roadbed had been softened by a flood, and the whole train was ditched. Two coaches were partly submerged. The engineman and fireman were killed and thirty passengers were injured.

The train derailed at Silver Lake, Tex., on the 25th, was eastbound passenger No. 22. Two sleeping cars were overturned and seven passengers were injured. The derailment was due to distortion of the track by solar heat.

The trains involved in the accident on the Erie, near Jersey City, N. J., on the 30th, were westbound local passenger, moving on parallel tracks at low speed. One of the trains was derailed by a casting which obstructed a switch and the locomotive fell against a coach of the other train. Seventeen passengers were injured. The engineman of the overturned locomotive was scalded.

The passenger train involved in the accident on the Lehigh Valley at Van Etten, N. Y., on the 31st, was eastbound No. 6. The leading engine of a westbound freight train had been derailed in the yard by a part of the tender brake-rigging dropping and wedging between guard and stock rail at a switch, and the second engine was derailed and overturned so as to lodge on the eastbound track. The passenger train came along a few minutes later at high speed and was derailed, the engine and two cars being overturned. One passenger, the engineman, and the fireman were killed and ten passengers were injured.

The train involved in the accident near Bay City, Mich., on the 26th, was a southbound passenger. The locomotive was wrecked by the explosion of its boiler, the engineman and one other employee were killed and the fireman was injured. The explosion was due to low water.

Electric Car Accidents—At Bertha, Oregon, on the 9th, a butting collision of electric trains on the Southern Pacific resulted in the death of six passengers and three employees and the injury of 35 passengers and three employees. Near Waynesboro, Pa., on the 22nd an electric car on a mountain line became uncontrollable and ran away, and four cars were wrecked; the manager of the road was killed and fifteen persons were injured.

The Tool Foremen's Convention

THE TENTH ANNUAL CONVENTION of the American Railway Tool Foremen's Association was held at the Hotel Sherman, Chicago, on September 1, 2 and 3, with the president, J. C. Bevelle (El Paso & Southwestern) in the chair. Following the opening exercises the technical work of the convention was taken up.

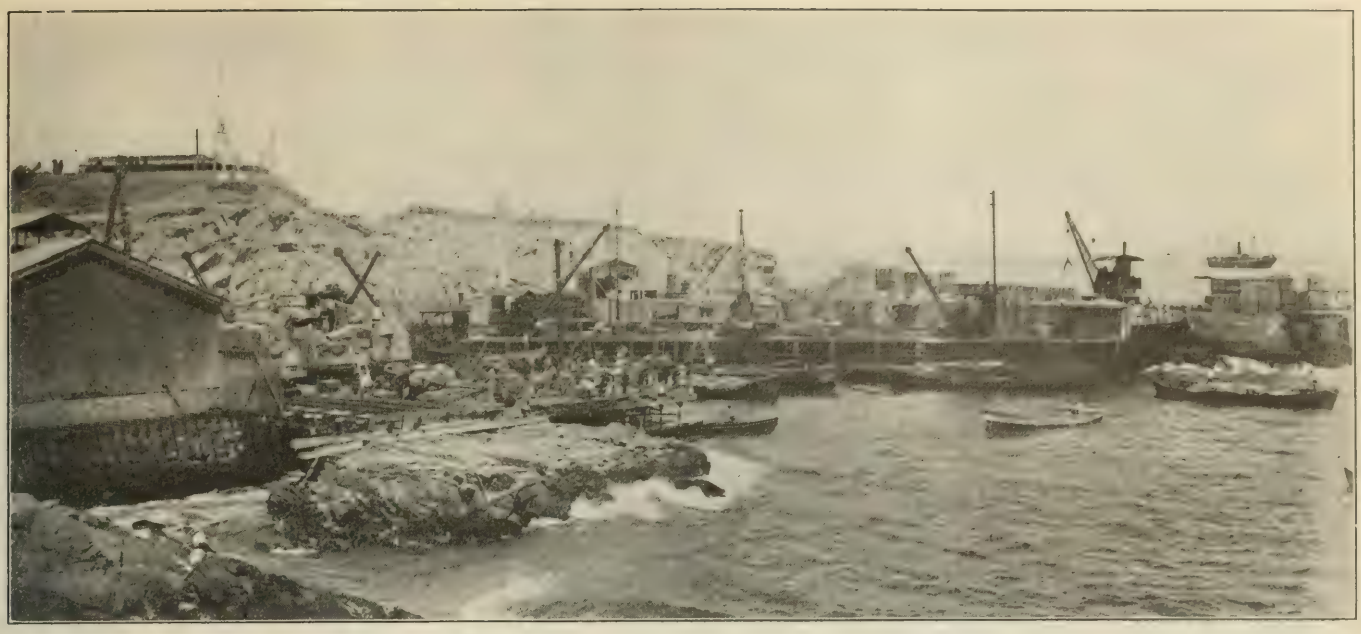
The committee on Standardization of Boiler and Stay-Bolt Taps, of which E. J. McKernan (Atchison, Topeka & Sante Fe) was chairman, recommended three types of staybolt taps; a button-head radial staybolt tap, two plug taps and a boiler stud and patch bolt tap. For the staybolt taps the committee recommended Whitworth thread, 12 to the inch, throughout. For the stud and plug tap United States standard threads, 12 per inch and ¾-in. taper per foot were recommended. The standards recommended are all in use on many railroads and can all be obtained commercially.

The question of what type of thread would give the best service was the principal point discussed. The members indicated that comparatively few roads are using the Whitworth thread while about equal numbers are using the thread and the United States standard. Several of the members reported that tests had been run which indicated the pulling strength of the Whitmore is considerably greater than the others and the form of the thread on Whitworth taps will be much less affected by wear than that of the other makes. V-thread taps have been found to lose as much as 3/1000 in. in diameter in cutting one hole under the heavy drive which they must withstand. Where a road makes its own taps, however, they can be made more easily in the United States standard thread than either the V-type or Whitworth. The committee recommended the United States standard type for plug and stay-bolt taps.

The report of the committee on Heat Treatment of Steels, of which C. A. Shaffer (Illinois Central) was chairman, emphasized the fact that to get the best heat-treated tools, proper equipment for heat treatment must be available, including suitably designed furnaces, pyrometers, quenching baths, tempering baths, etc. The report of the committee also discussed the structural changes which take place in steels as they are heated through a range extending above the transformation point, and drew attention to the great care which should be exercised in heating tool steel for forging. Proper equipment for the heat-treating room was described in detail.

The other subjects on which reports were presented were Jigs and Devices for Locomotives and Car Shops, Power Punches and Dies, and Issuing and Checking Tools in Locomotive and Car Shops.

The following officers were elected for the coming year: President, J. B. Hasty, Atchison, Topeka & Santa Fe; first vice-president, C. W. Smith, Chesapeake & Ohio; second vice-president, Charles Helm, Chicago, Milwaukee & St. Paul; third vice-president, Geo. Tothill, Buffalo, Rochester & Pittsburgh, and secretary-treasurer, R. D. Fletcher. The association voted to accept the invitation of the American Railroad Association, Section III., Mechanical, to affiliate with that organization.



View of Entrance to Lighter Canal, Port of Mollendo, Peru

The American Equipped British Railways of Peru

This Is the Third Article of the Series by Railway Age's South American Correspondent

By John P. Risque

IN A RAILWAY SENSE, the Republic of Peru presents a study in construction and operation not exceeded in interest to the American railroader by any other lines on the South American continent. In order to avoid repetition of details, the reader is referred to an article entitled "Peru's Railways Need Many Connecting Links," which appeared in the *Railway Age* of March 7, 1919, page 531. In this article there appeared a complete table containing the names of all the country's lines, their lengths, gages, commodities hauled and equipment owned. References to Peru's rugged topography, as well as a table of railway imports by countries of origin for the years 1913 to 1917, inclusive, will also be found in the article referred to. With particular reference to the table of railway imports, it is pertinent to draw attention to the fact that on the principal lines of Peru—principally all British-owned and operated—there exists a situation as to equipment which is not duplicated on any other British owned line in South America, if not in the world. American built locomotives and American type cars, both passenger and freight, predominate.

This, as I have pointed out in my two preceding articles, is very much of an exceptional case, but for fear that our own manufacturers of railway supplies may be misled as to the possibilities in Peru the comment is here made that the market on these lines is open to him, "if." This "if" is the same qualification that applies to all British-owned railways in South America and means briefly that if the British owners can procure their materials from England, frequently at a higher price than that asked by an American firm, England will get the order. If the material is not immediately procurable, the road will prefer to wait; so will England. This is the situation of 1920 as compared with ten years ago and later when these Peruvian lines were administered by a mechanical man whose preferences for American equipment were sufficiently strong to overcome the objections of a London board of directors, who, since the war, in their determination to maintain Britain's world trade, have prescribed British goods wherever possible for their own projects all over the world.

Broadly speaking, the principal railways of Peru can, for purposes of easy description, be said to exist in three sections; mostly all of standard 4 ft. 8½ in. gage.

Lines in Northern Peru

The first section comprises the unrelated short lines from mines and plantations to the coast. The first one encountered below the Ecuadorian boundary is the line from Paita to Piura; the others are stretched along the coast at varied intervals all the way to Callao, the port for Lima.

An intending railway contractor would perhaps be rewarded by a trip from Paita to Callao; he would doubtless run across a possibility, perhaps several. A visit to Lima, however, the chief city and commercial center of the Peruvians, is suggested first. From there are administered the local lines in the north and there he will find the center of all the gossip relating to "estudios" and "proyetados" or railway construction studies and projects, respectively.

Central of Peru

The second section comprises the line from Callao, through Lima, and up to a point on the roof of the world called Huancayo. Known as the Central of Peru, a majority of the line constitutes what was once known as the Oroya Railway in the annals of the celebrated American Henry Meigs, who conceived the project and put it through. The road, including branches, is approximately 247 miles in length. Most of it may be described as "straight up." It runs from sea level to an elevation of over 15,000 ft. over a

line having 61 bridges, 65 tunnels and 21 switch-backs, all in a day's work. Four-car trains of American type equipment, hauled by familiar Consolidations, start from the port early in the morning and by evening the traveler will be 15,000 ft. above the semi-tropical sidewalk cafes of Lima, probably in a driving blizzard. The freight traffic on this line consists inbound of mining supplies and food for the camps in the mountains and outbound, or down hill, of copper from the well-known Cerro de Pasco mines, whose well-equipped line joins the Central at Oroyo. The length of freight trains is restricted by the lengths of the switch-backs on this the "highest railway in the world."

At a point on the way up, called San Bartolome, the line runs along a ledge which breaks off abruptly. A few hundred feet above it is another ledge, in order to reach which, in the limited space available, it is necessary for the locomotive to use a turn-table, placed upon an embankment built out upon the face of the cliff. Here the locomotive is turned so that it may continue the run in the opposite direction on the other end of the train. About 1,000 ft. higher up is encountered the Verrugas Bridge, 575 ft. long and set 300 ft. above the bottom of the ravine which it spans. Of the three piers supporting it, the central one measures 50 ft. square at its base. The bridge derived its name from a too well-known fever in these regions which is said to have cost hundreds of lives during the construction of the line.

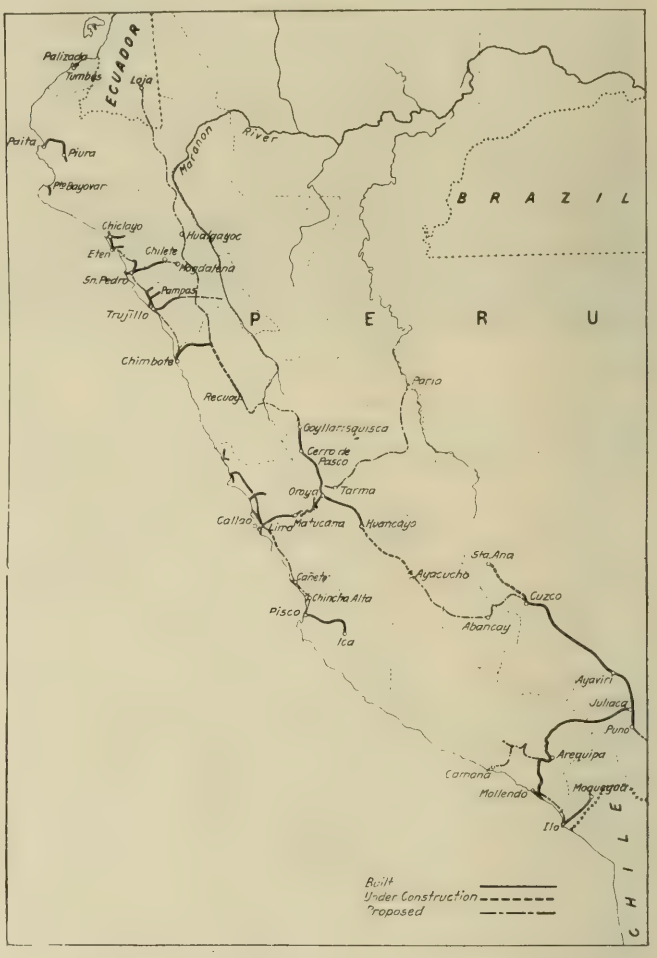
The present administration of the Central has an American general manager whose headquarters are at the Desamparados station in Lima. Repair shops are maintained in a suburb and are worth a visit to those interested in a typical display of South American labor conditions in the maintenance of rolling stock. As yet, modern ideas on Bolshevism have not sufficiently crippled the output as to cause alarm, but sporadic outbreaks of discontentment are not unknown.

Southern of Peru

At a distance of 480 miles south of the port of Callao lies the port of Mollendo, second in importance on Peru's arid coast line and typical in all respects of the South American landing places on the west coast. Here is the base of the railway system located in the third section referred to, and known as the Southern Railway of Peru. In addition to its importance as a heavy importer of tonnage for the railways there, Mollendo is a permanent and never failing object lesson to the American shipper, who, if insufficiently convinced of the necessity for extreme care in packing for South American export trade, need only to go ashore and view the unidentified contents of what was once thought to be a crate capable of withstanding unlimited abuse of dumping merchandise from ships to lighters. Ships, as is usual in these ports devoid of a real harbor, anchor outside some distance from the shore. The lighters which tow the freight from the ships enter, wind and weather permitting, a 50-ft. channel, protected by a break-water on the shore. Along this protected canal are stretched tracks carrying steam cranes which lift the merchandise from the lighters to the cars alongside, or to the Southern's warehouses on the pier.

In following the description of the Southern, it is pertinent to relate at this point that this line's freight, mostly originating at Mollendo, is principally destined for La Paz, the capital and chief commercial center of Bolivia, about 535 miles further on and 12,500 ft. higher up. But the distance does not constitute all of the handicaps this line meets in competing with the Arica-La Paz, a Chilean government-owned line, 248 miles in length from the port of Arica, further down the coast in Chili, direct to La Paz. Besides the Southern's additional 287 miles of haul, the Southern has also two extra transshipments of freight to and from its Lake Titicaca division, as explained further on.

As its name implies, the system lies in Southern Peru. The plan of the line on a map of the country can be said to resemble a roughly drawn letter T, the base of which rests at the port of Mollendo, just described. The trunk of the T terminates at a point called Juliaca, 296 miles northeast, a junction point between the two extremes of the top bar of the T. One end of the T's top bar terminates at Cuzco, 208 miles distant to the northwest, the other ends at La Paz, about 218 miles southeast, in which latter division is included 149 miles of the "navigating" division, the length of the run on Lake Titicaca.

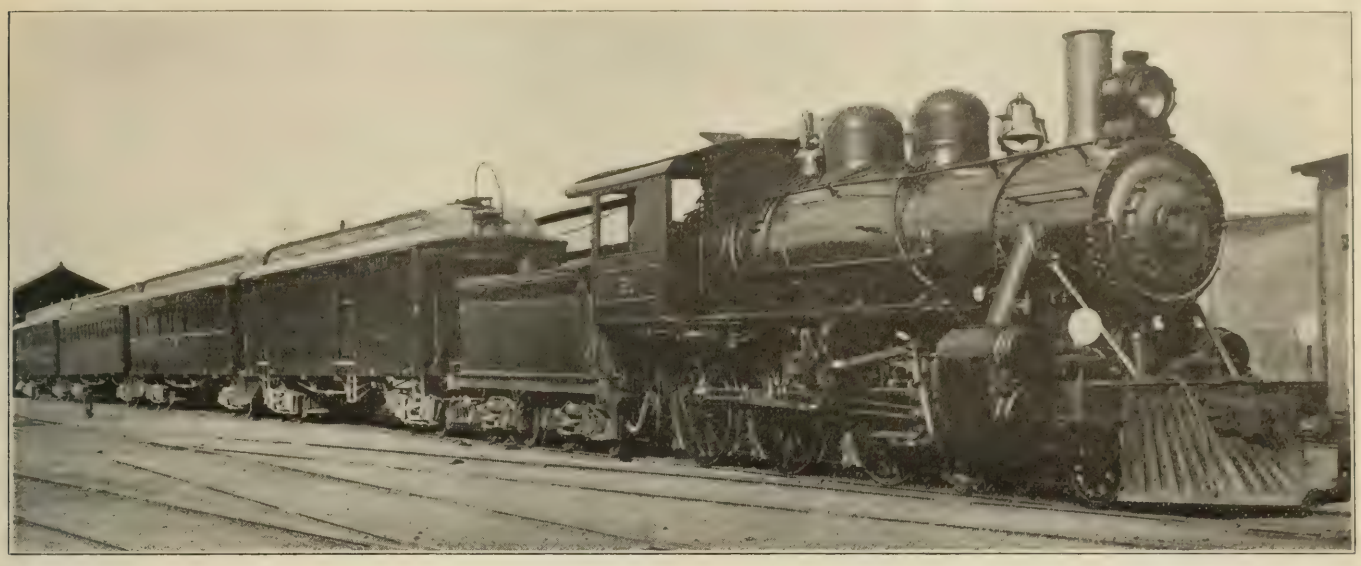


The Railways of Peru

The Southern's first operating division out of Mollendo skirts the barren seashore for about 13 miles, passes through a small but fertile valley called the Tambo, and then turns northeast into the foot-hills of the Andes. At this point begins the climb for Arequipa, 93 miles beyond and at an elevation of 7,500 ft. Here also begin the series of 421, 247 ft.-radius curves with which the line abounds; also the 4 per cent grades. Eighty-pound steel is laid on this division and aside from its three dollar California Redwood ties, there is little else to distinguish this part of the line from any other mountain railway. The second division is that from Arequipa to Juliaca; track conditions are good here, 60 lb. steel being used, but the hauling problem is not modified by any improvement in the severe Andean topography. At a point about half-way up the division, called Crucero Alto, meaning high crossing, the rise has registered an additional 7,000 ft.; the elevation of the line at this point being 14,666 ft. above sea level. From here, the line commences to drop 2,000 ft. until Juliaca is reached, the latter having about the same elevation as that of Lake Titicaca, 12,600 ft. The northwest arm or top bar of the T running from Juliaca to the ancient seat of the Empire of the Incas,

historic Cuzco, involves a climb of 2,000 ft. This division is being relaid with 75-lb. steel. The lower right-hand section of the T's top bar, running southeast and terminating in a twist, is called the Juliaca-La Paz division and is really as important a division as the two main line divisions between Mollendo and Juliaca, previously described. It is, to speak definitely, four divisions in one, viz., a short standard gage line from Juliaca to Puno on the northwest shore of Lake Titicaca, the lake division of 149 miles, a meter gage steam line 56 miles long to Alto, within 6 miles of La Paz, and from there to La Paz down a sheer 1,500 ft. cliff on a meter gage electric line. The standard gage system employs 46 locomotives. Of these 10 are 4-8-0 passenger engines, 18 are Consolidations, and there are ten 4-8-0 types including some two-cylinder compounds, and the balance are switchers.

The meter gage division has four 2-6-0 type and two 2-8-0 type locomotives while the electric division operates with two 20-ton, 550-volt d.c. electric locomotives, four four-wheel trolley cars and four four-motor combination baggage and express cars. Power on the electric division is derived from two Bolinder type Diesel engines each capable of developing 400 B. h.p. at sea level. These engines are direct-coupled to two 180-k.w., 550-volt, General Electric dynamos running at 165 r.p.m. There are also two 400-h.p. producer gas engines belted to two 150-k.w. generators for emergency use. A 1,160-ampere-hour Tudor battery is run in parallel with the above plant and is charged and discharged by an automatic reversible booster. The transmission line is of ordinary 0000 grooved copper wire, supplemented by ample feeders tapped in at intervals of about a third of a mile.



Built Complete at the Arequipa Shops, Southern Railways of Peru



Entrance to Ship or Lighter Canal, Port of Mollendo

Suggestions for Increasing the Freight Car Supply

WASHINGTON, D. C.

AN URGENT APPEAL to manufacturers and business men of the country to join in making better use of existing railroad equipment as a means of providing an immediate improved transportation service is made in an open letter to industrial and commercial organizations by the Railroad Committee of the Chamber of Commerce of the United States.

The committee points out that the equivalent of more than half a million cars can be added to the supply by closer co-operation on the part of all interests concerned with transportation. The letter points out that on September 1, under the provisions of the Transportation Act of 1920, the United States government withdrew its guarantee of a standard return; and "all the railroads of the country, privately owned and privately operated under a new regulatory law, with a new rate schedule and a new wage scale, will again undertake to furnish the public with adequate transportation service." The letter continues in part as follows:

To Shippers and Receivers of Freight Throughout the United States:—

Freight traffic has increased so rapidly in the United States during the past few years that it has completely outgrown the carrying capacity of the railroads. As a result it is now necessary for the roads to devise a practical plan for increasing their transportation service. There are only two ways in which they can do this:

1. By making extensive additions of new facilities and equipment, including feight cars, locomotives, yards, tracks and terminals.

2. By making greater use of existing facilities and equipment.

The railroads cannot carry out the plan first suggested because under present conditions they are unable to obtain a sufficient amount of new capital; nor would it be possible for them to provide new facilities in time to relieve the present emergency even if the capital were available. They must, therefore, rely on making a maximum use of existing facilities and equipment, with the co-operation of all the other interests concerned—the shippers of freight, receivers of freight and railroad employees.

You, as shippers and receivers of freight, can take a very important part in this movement. You can add 535,000 freight cars to the available car supply by loading your cars more heavily and loading and unloading them promptly. If the railroads were obliged to buy 535,000 new cars at the present price of about $3,000 per car, it would cost them $1,605,000,000 and would cost the public at least 6 per cent of that amount in the form of increased freight rates.

The average freight car spends its time as follows: 37 per cent of the time in the hands of the shipper or the receiver; 43 per cent moving from the point of loading or unloading to the terminal where it is put into a train or onto a transfer track; 11 per cent in a train moving from one terminal to another; and 9 per cent laid up for repairs. You, as shippers and receivers of freight, can effect a substantial reduction in the 37 per cent; and the railroads can effect an equally substantial reduction in the 43 per cent.

You can load and unload your cars promptly if you will. As a rule the railroads allow you 48 hours free time to load your cars and 48 hours to unload them before making any charge for demurrage. If you will use only one-half of this time, thus releasing your cars in one day instead of two, and in addition will order according to your loading capacity, restrict your car order to today's program, avoid the duplication of car orders, and avoid the use of cars for storage purposes, you should be able to reduce the time that the average freight car spends in your hands from 37 per cent to 22 per cent of its total time, and thus add 360,000 cars to the available car supply.

The average freight car makes 20 round trips each year. By reducing the time needed for each trip 15 per cent you will enable the car to make 23 round trips each year. This is equivalent to adding 15 per cent of 2,400,000, or 360,000 cars to the available car supply.

The average capacity of the freight cars of the country is 41.6 tons. Some commodities, including coal, steel, ore, sand and gravel, can be loaded 10 per cent beyond the marked capacity of the car. Others, including the bulk commodities of various kinds, occupy a great deal of space without adding proportionately to the tonnage carried by the railroads. In loading commodities belonging to either of these classes you should disregard the prescribed minimum carload provisions for your commodity and, if possible, load your cars to their maximum capacity.

In 1919 the average load per loaded car of all commodities on all the railroads of the country as a whole was 27.8 tons—only 67 per cent of capacity. The railroads have now undertaken to attain an average of 30 tons per car. If you will co-operate with them and add an average of 2.2 tons to each carload, you will add nearly 8 per cent of 2,400,000 cars, or 175,000 cars to the available car supply.

The Association of Railway Executives, representing 95 per cent of the railroad mileage of the country, has unanimously adopted a program for speeding up car movement and increasing car efficiency in which they undertake, with the co-operation of the public, to secure for the country as a whole

1. An average daily minimum movement of freight cars of not less than 30 miles per day;

2. An average loading of 30 tons per car;

3. Reduction of car-order cars to maximum of 4 per cent of total owned;

4. An early and substantial reduction in the number of locomotives now unfit for service;

5. More effective efforts to bring about the return of cars to the owner roads.

You can help to reduce the present excessive number of bad-order cars. The last monthly report submitted by the carriers shows 7.4 per cent bad-order cars in the United States as against 5.7 per cent at the beginning of federal control, an increase of 50,000 cars unfit for use and actually out of service. It should ordinarily be possible to keep the number of bad-order cars below 4 per cent of the total number owned and, if that condition could be brought about today, it would result in immediately making effective on the railroads as a whole in the United States more than 75,000 cars that are now out of service because unfit to run.

You can help the railroads to reduce the number of bad-order cars by loading your cars carefully so as to avoid the injuries to the car that frequently result from the shifting of freight in transit.

The railway executives are aware that prompt action is necessary and they are making every effort to provide the public with adequate transportation service. Each individual road is working out its purely local problems in its own way; and all of the roads together are working out the national transportation problem through their central organization—the Association of Railway Executives. In order to carry on this part of its work effectively their association has created an advisory committee of chief executive officers, to deal with the Interstate Commerce Commission and to exercise general supervision over the handling of equipment and the movement of traffic.

The actual direction of car service on all of the railroads of the country during the present emergency is entrusted to the Commission on Car Service which has its headquarters in Washington, D. C., and is under the supervision of the Advisory Committee of the Association of Railway Executives. The Commission on Car Service is represented at each of the 35 congested railroad terminals by a Local Car Service Committee consisting of one representative of each of the railroads entering that particular terminal.

On May 24, 1920, the Commission on Car Service issued a circular suggesting a number of definite ways in which shippers and receivers of freight can help to improve present transportation conditions. A copy of the suggestions made by the commission is attached to this letter for your information. The Railroad Committee earnestly hopes that you will act on these suggestions.

The letter is signed by George A. Post, chairman of the Railroad Committee, and Richard Waterman, secretary.

The Ever-Present Bituminous Coal Problem

An Average of 1,946,937 Tons Must Be Produced for Each Working Day for the Rest of the Year

By Eugene McAuliffe
Union Colliery Company

THE RAILWAY AGE, issue of August 13, contains an abstract from an address delivered by the Editor, Samuel O. Dunn, before the Illinois and Wisconsin Retail Coal Dealers Association, at Milwaukee, on August 5, 1920. Mr. Dunn opened his address with the premise that the National Coal Association, the principal organization of the bituminous coal operators had unfairly complained, beginning in 1917, and continuing to the present time, that the railroads were responsible for the coal shortage suffered by the coal consumers of the United States and Canada. In attempting a friendly criticism of the opinions expressed by Mr. Dunn, I will try to divest myself of all partisanship, attempting to view this most serious problem in an impartial way. Certainly if the fuel problems of the country are to be solved something more constructive than trying to shift the responsibility must be attempted.

The National Coal Association is an organization which owes its origin to the vicissitudes that the industry suffered for many years. It came into being at a time when the tide of adversity in which the industry was submerged ran strongest. It was organized for protective purposes, let us say selfish purposes, just as was organized the Association of Railway Executives, representing the strong lines, and the affiliated minor association of executives, known as the American Short Line Railroad Association. I do not subscribe to all the National Coal Association does or says, and on the other hand railway executives frequently demur from the conclusions of their respective associations. Let us pass all associations as representing counsel for their respective interests, trying to get all they can.

That brings us back to the existing problem, and the real party at interest is the consumer, and while we are cracking heads, the consumer is squirming for enough coal of any grade and at any price to keep moving, this at the hour of minimum seasonal consumption. In 1917 we produced and transported 551,791,000 tons of bituminous coal, one-third of which contained five per cent excess and readily removable non-combustible impurities, the equivalent of 9,000,000 tons or 180,000 car loads of fifty tons carrying capacity, consisting of rock, slate, bone, and fire clay, which loaded down our freight trains, added to the congestion of terminals, and worse yet, when put into the fireboxes of locomotives caused failures innumerable; in fact, it was this situation which, piled on the back of an overloaded transportation machine, brought the threatened failure of the Allied Governments up to the threshold of the office of the director general of railways early in 1918. Out of the fuel situation experienced in the winter of 1917-18 came the urge for coal and coal transportation, which resulted in the production and movement of 579,386,000 tons of soft coal in 1918.

There is some plea for leniency to be made for what happened in 1917; we had never before seen a world at war. The human mind could not well compass the task of this nation alone, and in rising to the situation as we did in 1918 we made full amends for the previous year's deflections, but the curve of co-operation sagged in the spring of 1919 and *the primary offender insofar as the existing shortage of coal is concerned is the railroad.* Mr. Dunn well states that with the beginning of 1920 the country was short as a result of the coal strike of November 1, 1919, 45,000,000 tons of coal. I will attempt to make clear wherein and how the railroads under government control were directly responsible for the 45,000,000 ton shortage and how the attitude taken by the Administration has been continued with perhaps some modifications under private management in a manner to make the recovery of the lost tonnage impossible.

Here let me refer to what was the real beginning of the coal famine that began to pinch the nation in August, 1919. In 1918, as before stated, we produced 579,386,000 tons of soft coal—this by far the greatest tonnage ever produced in twelve months. When the United States Railroad Administration organization was effected, the purchase of necessary equipment (including locomotives and cars), fuel, steel rails and ties, suddenly became a question of compelling importance. The path of the Division of Finance and Purchases, John Skelton Williams, director, proved to be other than a smooth one; its ambient way if we recall the protests of the locomotive and car builders, the supply men, the tie makers, and the steel men, was apparently not well lubricated. When the time for renewing railway fuel contracts came the same conflict that developed in the case of other necessities sprang to the front, and the conflict amiably fostered by the director of finance and purchases, and the Central Purchasing Committee was later espoused by the director general, until the situation reached the proportions of a direct issue between Director General McAdoo and United States Fuel Administrator Dr. H. A. Garfield; an issue eventually decided by the president who in substance found for the Fuel Administrator.

The question at issue then was, should or should not the Railroad Administration, one branch of the Government maintained by the tax payers, pay the same price for its fuel that the Fuel Administrator had fixed as a fair price for the coal operator to charge the general public, including national, state, municipal and civic bodies, the public utilities, the industries, and the house holders, paying for same in cash; or should the Railroad Administration, on the other hand, buy its fuel from certain preferential mines at a price paid partly in cash and in amount per ton below that fixed by the Fuel Administrator, the remainder of the purchase price to be paid in the form of a preferential car supply, that would for the contractor;

(a) Insure better running time,
(b) Produce correspondingly lower production costs,
(c) Increase the daily and monthly output,
(d) Attract mine labor from other mines,

all of which would cause the operator who was loading the seventy per cent of bituminous tonnage consumed by other than railroad consumers to;

(f) Lose his employees to the railroad fuel mine,
(g) Suffer a decrease in output,
(h) Suffer an increase in unit costs,
(i) Take a reduced profit and further shift a part of the expense of his increased cost of production on to the public in the form of lessened preparation methods, employing such labor as he could obtain, etc.

Dr. Garfield settled the matter by *securing the President's disapproval of the theory of buying railway fuel coal with part money and part cars,* reducing the government price of all bituminous coal sold to all the people ten cents per ton, this arrangement taking effect on May 25, 1918, a re-

verse from which the Railroad Administration never fully rallied.

I have referred to the conflict between the Railroad Administration and the supply men, the tie cutters, the equipment builders, and the United States Steel Company. A measure of compromise was displayed in disposing of the issues referred to other than that covering steel rails, which again went against the administration, but the conflict between the Railroad Administration as represented by the first dynasty and the coal men was perpetuated and accentuated by Mr. McAdoo's successor, who, generally capable of sound reasoning, seemed to have been so thoroughly inoculated with coal strife virus as to make him seemingly incapable of seeing the coal situation as a basic fundamental proposition woven into, and a part of our whole national, social and economic fabric.

This brings us to the real crux of the existing situation, as yet but a shortage, marked by wholesale libidinous exactions imposed on the consuming public, partly the outcome of increased costs due to the complete disarrangement of mine working forces, and resultant increased mine costs; partly to the insertion between the producer and the consumer of an element akin to that which springs up on all abnormal occasions, whether famine, fire, riot, or earthquake; and partly from the "get yours while the getting is good" spirit which seems to pervade the world at present. This fuel shortage occurring at a time when stocks of railway, industrial and domestic fuel coal are at the lowest they have been for years, presages trouble a few years hence when passenger trains begin to require steam heat, freight locomotive fuel consumption begins to climb, public buildings and houses call for fuel, and when the transportation machine slows down under the pressure of absenteeism seasonably exercised by experienced employes, cold weather, snow, ice, etc. In the summer of 1919 when the Central Purchasing Committee and the director general were midstream in their contract price controversy, the operators demanding the old fuel administration prices, and the director general expressing a desire to buy coal, with part money and part cars, the public somehow got the impression that the director general's opinion as to lower prices would prevail and it ceased buying, the railroads picking up the storage stocks left over from 1918, while 250,000 open top cars stood idle for lack of traffic and while mine workers became daily more and more restless under lack of employment, the men restricted, in the case of many mines to one or two days work per week. Later when mutterings of a coming mine labor storm became audible everybody asked for coal, and by July 15 the coal car surplus began to show signs of becoming a deficit, and in August a coal car shortage existed from Kansas to Roanoke.

During the low sales and production period the National Coal Association undertook to awaken the people with a "buy now" campaign appropriating $100,000 for special advertising purposes. When 60 per cent of this fund was spent the campaign was called off largely as a result of the criticism directed at same by Railroad Administration representatives. *From the quarrel between the first director general and his staff continued by their successors and the coal operators over the purchase of Railroad Administration fuel, sprang the fuel famine that since has menaced not only the industrial fabric of the nation but which led to demagogic labor leaders, first, advancing their demands for the nationalization of the railroads and the coal mines; second, demanding a wage increase of 100 per cent coupled with a threat to cut off the production of coal until their demands were complied with.* These threats were, insofar as their abilities made them possible, put into effect on schedule, when 70 per cent of the bituminous coal production was cut off at four p. m., October 31, 1919. This cessation of the production of a vital basic necessity was coupled with a challenge directed by the union's president, not alone against the nation's chief executive, but alike against the integrity of Congress and the United States Courts.

For the reasons outlined above and from the deep-seated feeling that no wrong will be righted until the real seat of the malady is discovered and the proper remedy applied, I have perhaps rather plainly outlined "the relation of the railroads to the coal problem." What is and where lies the remedy? The answer is just a little more coal. Twenty million additional tons produced and transported between January 1 and July 1 of this year would have carried the country out of the land of famine, exorbitant mine prices, predatory middle men, inferior quality and panicky buyers, into still water, requiring less than seven per cent additional coal tonnage effort. Mr. Dunn said in referring to the alleged estimated capacity of the bituminous coal mines of 18,000,000 tons per week or 936,000,000 tons annually, that "unless the railroads are to discriminate in favor of shippers of coal they cannot handle anywhere near all the coal mines can now produce without a very great enlargement of their facilities." I think the 936,000,000 tons annual production figure represents the sum of the coal operators mine ratings which are badly inflated, the actual potential production not exceeding 700,000,000 tons annually. I base my figures on the fact that under a favorable labor and car supply we produced and transported in October, 1919, the month preceding the strike, 56,243,000 tons, which rate if kept up would result in an annual production of 674,916,000 tons. October, however, is usually a good working month, devoid of extra holidays.

In connection with coal transportation, I think it might be well to here attempt the correction of a very common error, i. e., that the coal producer has claims on transportation. I hold he has one claim on the locomotives, cars and permanent way of the railroads, and *that is the right of equality of opportunity. It is the consumer who wants and has a right to demand transportation of coal and not the coal operator* and I wish to repeat what I said to the Interstate Commerce Commission on July 9 last that *when you read of a six, ten, or a twelve dollar price for coal (it has since gone higher) it is transportation that is being sold and not coal.* The public utilities and the general public are engaged in buying the use of coal cars (the coal itself has become an insignificant item). They are paying the tariff freight rate for the use of same and in addition they are paying to some one, or at times to several collectors, a sum frequently equalling four times the measure of the published freight rate, all to secure the use of a coal car and its collateral and attendant train service.

The railroads are continuously quoting comparative statements of coal loaded and moved, 1920 and 1919 compared; seldom does any comparison reach back even as far as 1918 and the comparisons of coal moved this year with last are futile and misleading if the task is to be properly measured. Until the great war came along to disturb conditions the bituminous coal demands of the nation doubled each decade; that meant an increase non-compounded of ten per cent each year. The country has and will continue to grow in wealth, population, and tonnage. If we were to project the increase in soft coal requirements of the country on the basis of but five per cent per annum, beginning with 1911 we would require an output of 588,565,227 tons in 1920. It is well if we are to keep on our course to make an occasional back sight and in this connection seldom is any comment made relative to certain conditions that are vital to the coal and coal transportation problem.

For example the best informed authorities warn us that the use of fuel oil for steam making purposes must be discontinued in the near future, and bituminous coal must be mined and transported to take its place. Again, the production of anthracite coal now at its zenith is destined to decrease and bituminous coal and its derivatives, coke, car-

bocoal, briquettes, etc., must take the place of anthracite. Further, when measuring up the equipment requirements of the carriers, it is a question as to whether we have fully estimated the extraordinary demand that now exists for open top cars for road material, structural steel movement, etc. In a flash we have been thrust into a new era, one of concrete and steel, all of which clamors for open top cars. Much useful information has been developed as to the coal stocks on hand, which are apparently lower than for years past; also as to the requirements of individual cities, districts and industries.

The fuel necessities of New England have been dwelt on by a committee of state governors, the necessities of the Northwest have played an important part in the councils of the Interstate Commerce Commission and the Committee of Railway Executives. The assigned car has barely kept the railroads in fuel with no margin to spare, priority orders are keeping the public utilities currently supplied at the present time, but they cannot use the arrangement to accumulate even a week's supply in storage. The big steel companies and others are scratching along with a few furnaces, dark at recurring intervals, while *pro bono publico,* including the small domestic consumer, is, so to speak, out on a limb. He frequently gets his meager ration from that nebulous portion of the mine production that perhaps should have been shipped on existing contracts, and from the emanations of the thousand small wagon mines that spring up to absorb labor and coal cars when the "picking is good," and what he does get he pays well for. As a matter of fact *nearly everything done up to this time has been of a fragmentary, cut and try, and only partially remedial character.* The man who said we are "trying to distribute our shortage" covered the situation in the fewest possible words.

What is the situation today, and what are our requirements? All else is aside the question. If the nation wants fuel it must have it even though other things must be put aside, and if the production of steel, automobiles, furniture, pianos, and the thousand other items that make up our transportation load are reduced, the coal requirements will be correspondingly reduced; the problem is one of striking a balance. For months coal has been on the low end of the teeter board. If we had had 20,000,000 tons additional production, February to June inclusive, this year, the average cost of coal on cars would be seventy-five cents per ton below the existing basis and the cost to the consumer would average perhaps $2 per ton below what he is now paying. It was the deadlock between the Railroad Administration and the coal operators that precipitated the 100 per cent wage increase demand that led to the strike of November 1 last, and the failure to give the mines cars during the summer season now nearly at an end is responsible for the strikes occurring in July of this year, in the Central competitive field, which is being settled at this hour by another wage increase and a further permanent addition to the cost of production.

No one can accurately calculate the nation's coal needs; at the best we can only approximate them. In 1918 there was produced and transported 579,386,000 tons of soft coal. Of this approximately 30,000,000 tons was left over unconsumed, yet in spite of the industrial recession and the extremely mild winter that followed the armistice, we consumed and exported in that year 550,000,000 tons. In 1919 we produced and transported 458,063,000 tons. To arrive at the actual requirements of the year 1919 we must add the surplus 30,000,000 on hand January 1, 1919, and about 42,000,000 tons which should have been produced when the miners were on a strike extending from November 1 to December 12, and for lack of which production exports were cut off. train service was reduced and our industrial output curtailed. Briefly we would, if it were available, have used 530,000,000 tons of soft coal in 1919. No man will question the fact that our industrial and railroad fuel requirements for coal will during the current year fully equal that of the year 1919, which was above stated 530,000,000 tons. To this we should add 20,000,000 tons to create the small reserve stock absolutely needed to—

(a) Tranquilize mine labor, which has for months taken strategic advantage of the country's coal shortage.

(b) Remove the feeling of impending fuel famine which has hung over the people for more than a year.

(c) Eliminate the predatory speculator in coal, and otherwise reduce the cost to the consumer to a reasonable basis.

(d) To make possible that improvement in quality without which grave operating losses will be sustained by the carriers themselves during the coming winter.

We can dispense with the 20,000,000 tons of reserve stock. I am rather convinced that we will in fact do so this year, but our failure to produce and transport same will cost the people $2.00 per ton on each ton produced until it is secured and moved to destination. This will mean something approaching $400,000,000 for the period September 1 to December 31, a material portion of which will fall on the carrier through the item of price paid for confiscated coal and interference with operation.

If we agree on the estimate of 550,000,000 tons, and no one except a few who seek the glare of the spot light think it is excessive, then the matter can be reduced to a few words. The United States Geological Survey reports a production in the first seven months of the year of 302,739,000 tons, equivalent to 1,672,591 tons on each of the 181 working days, or 10,035,546 tons per week. To produce a total of 550,000,000 tons during the year suggests a car supply and production effort that will load and move 247,261,000 tons in the five months, August 1 to December 31, inclusive. This will require an average of 1,946,937 tons on each of the 127 working days that remain, allowing but one day off on Christmas, when the mine workers take from three to ten days. This represents a weekly production of 11,681,682 tons or a rate of production and transportation 16.4 per cent greater than was obtained in the first seven months of the year. If we decide to dispense with the 20,000,000 tons necessary to tranquilize the industry and safeguard the country (bearing in mind that this amount will disappear in less than ten days of rigorous winter weather) we can get along haltingly and hysterically as we have been doing with a production and movement of 1,787,095 tons on each of the 127 working days referred to, representing an increase of 6.8 per cent over the average production of the period January 1 to August 31.

This is the coal problem, as before stated, reduced to a few words. All discussion relating to Canadian requirements, exports to points over-seas, etc., is merely befogging the issue. We want our growing export trade. If England's trade mantle is about to fall on us why cast it aside? Britain's supremacy in the coal markets of the world is a thing of the past, and why deny coal exporters transportation when our statisticians tell us that our coal is steadily going but in the form of manufactured products? Take steel, for example; we are told that in the first five months of 1920 the exports of finished steel equaled 374,890 gross tons each month. As it takes four net tons of coal to make a gross ton of steel this represents about 7,500,000 tons of coal that went abroad in the form of steel in the five-months' period. Assuming that we keep up this stride, and I hope we will, we will send 18,000,000 tons of coal abroad, camouflaged as steel in the year 1920. In comparison with the 7,500,000 tons of coal that went abroad in the form of steel in the first five months, our actual overseas export tonnage totaled but 5,493,000 tons. If we sent coal abroad for a year at the speed attained during the week ending August 14 we would reach a total for twelve months of but 18,616,000 tons. Bear in mind this goes to Italy, the Netherlands, the

Scandinavian peninsula, Switzerland, the West Indies, five of our Latin American neighbors, as well as other countries. I have not referred to the 12,000,000 tons that annually goes to Canada. No one disputes the propriety of taking care of Canada, on the theory that, like "Mrs. O'Grady and the Colonel's lady," we are "sisters under the skin."

We are informed that the steel industry is operating at from 77 to 80 per cent of its capacity, with millions of tons of steel in storage. A steel mill can lose 20 per cent of running time at less relative loss than can a coal mine. There is not an industry on the face of the earth subject to the daily and seasonal uncertainty of operation that is suffered by the bituminous coal industry. *With the aid of their railway owners the anthracite producers have largely gotten away from a condition similar to that now and in the past experienced by the bituminous operator.* The apparent fixed attitude of many of our railway executives virtually disregarding this condition presages ill for the general public. We have fifty per cent of the world's coal reserve and now produce one-half of the world's coal supply. The railroads burn nearly thirty per cent of the bituminous coal now produced, and coal furnishes about one-third of the total tonnage carried by the railroads, likewise a material portion of the total freight revenue. The curve of railway revenue rises and falls with that covering the production of bituminous coal; a ton of coal moved to an industry shows a compound return in traffic earnings, witness the example of each four tons of coal furnishing a ton of steel, which in turn is frequently transformed into a further tonnage asset. I have discussed the coal labor situation with railway officials, who seem to think that serving a mine with cars 40 or 50 per cent of a possible 48-hour week represents service. If the same procedure was applied to their own train service, their repair shops and car repair yards, their railroads would go to pieces in a week; railway executives should be more than sympathetic with the work of equalizing the mine load factor. They should leave nothing undone, aye, even lead in the work of ironing out the peaks and valleys that beset the path of, not the coal operator, but the coal worker and coal consumer. With their rate problems now well behind them there is no field of opportunity so well deserving of study and effort, and I trust the *Railway Age* will point the way, as it has done many times in the past. In any case it is always pertinent to ask, "Why should the spirit of mortal be proud?"

Radio Telegraph and Telephone in Railroad Service

THE LOUISVILLE & NASHVILLE and the Nashville, Chattanooga & St. Louis are now carrying on exhaustive experiments in radio telegraph and telephone work under the direction of R. R. Hobbs, superintendent of telegraph. These experiments are not being made to test the practicability of radio service in general, as that fact has long since been demonstrated, but to determine its adaptability to the everyday necessities of railroad work. At present no tests are being made on train installations, but long and short wave apparatus is being tried out carefully and thoroughly in actual service and under varying weather, climatic and topographical conditions. The railroad is proceeding cautiously and while the tests have not yet been completed, developments so far have been highly satisfactory.

The Louisville & Nashville has two stations in the general office at Louisville, one located in the automatic telephone room on the twelfth floor and the other in the private office of the superintendent of telegraph on the ninth floor. These sets are of radically different types. The twelfth floor set is a deForest series honeycomb coil arrangement with audion detector and two-step audion amplifier, for strictly long wave reception. This set is mounted in a carefully selected position where inductive disturbances are the maximum day and night; it is close to a main frame where 500 telephone and telegraph circuits center, many of the telephone circuits being arranged for phantom auxiliary and carrying, over the same pair of wires, telegraph duplex, printing-telegraph and composite, in other words all of the modern methods of wire utilization to the fullest extent.

In installing these sets, the railroad wanted to discount at once all of the inductive and static troubles it could expect on the line, and all known tests were tried out with more or less success; with the result that the set remains in the same location and is receiving signals clearly and distinctly from overseas stations with a minimum of interference. The apparatus in the office of the superintendent of telegraph consists of a short wave regenerative receiving set coupled to a three-step audion amplifier cabinet, equipped with audion detector and grid condenser.

The short wave cabinet has two variometers, a coupler, and secondary tuner. Switches are so arranged that the short wave section can be cut off and the audion amplifiers and detector transformed to long wave reception, throwing in through the tickler, a primary and secondary deForest honeycomb coil arrangement which coils are equipped with variable condensers for positive tuning. A sending set of small capacity is also attached for testing purposes only. On this set practically all of the ship and land stations overseas can be copied with ease.

The aerial question has been taken care of in several different ways. Early in the experiments the railroad learned that experts differed greatly as to antenna construction and that there were no set rules or specifications governing all conditions. The railroad built all types for experiment, with switches to throw them into sets. It now has six different aerials at Louisville, these being known in wireless technology as "inverted L," "T," "Fan," "Loop," "Single" and "V." They were not expensive and a total of less than two miles of copper wire was used. They are all good but of different wave lengths and efficiency; some develop more static than others, but the signals ride in over and above this disturbance.

After several months' experiment it was decided to install additional stations at Tullahoma, Tenn., and Guntersville, Ala., on the N. C. & St. L., during September, between which points (70 miles apart on an air line) it has been impracticable to establish land telephone or telegraph service. The equipment at these points will be of the short wave regenerative type with sending energy of 1 k. w. These stations will be followed by others, and it is expected that in the near future all division headquarters on the two railroads will be linked to the general offices by radio, as an auxiliary to the land lines.

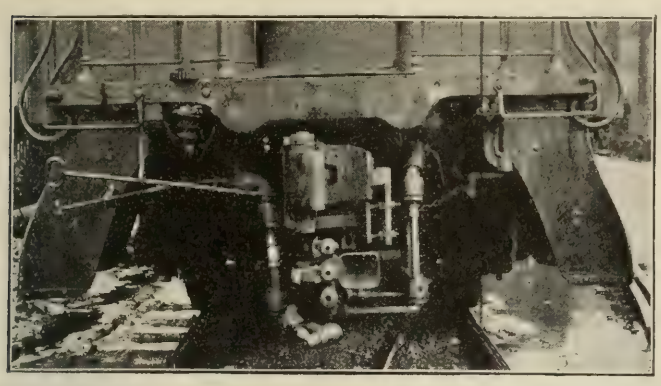
The Louisville & Nashville is particularly anxious to establish radio service between Louisville, Mobile and New Orleans because of the severe storms that occur along the gulf coast every few years, when it is almost impossible to maintain wire service. It appears from the present experiments that it will be entirely practicable to do so, as signals are now being received very clearly and distinctly from radio stations at the points mentioned.

SUCCESSFUL REGULATION, manifestly, must be elastic enough to enable the roads to earn living wages. That does not mean a constantly changing scale of rates, but it does mean that regulation shall not sentence those properties to long terms of penury. The railroad competently managed should not have to eat, sleep and drink with the specter of insolvency; it should enjoy the prosperity which capacity commands in strictly private industry. —*St. Louis Post-Dispatch.*

The Beahm Automatic Connector for Train Pipes

Principal Features Are Pin and Funnel Alining Device and Method of Coupling to Air and Steam Hose

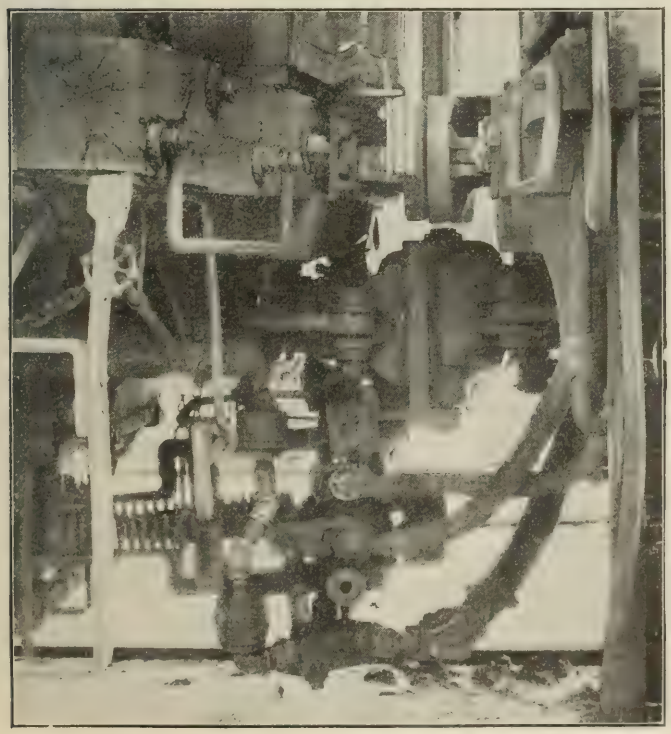
AN AUTOMATIC connector for train pipes, which embodies several interesting features, including a unique method of interchange with cars having standard steam and air hose, has been developed by Peter Beahm, Altoona, Pa., and was applied for test purposes under the direction of the Railroad Administration. The connector differs from other



End View of a Car Equipped with the Connector

types in the gathering arrangement, in the method of attachment to the coupler and in the means employed for coupling to cars not equipped with connectors.

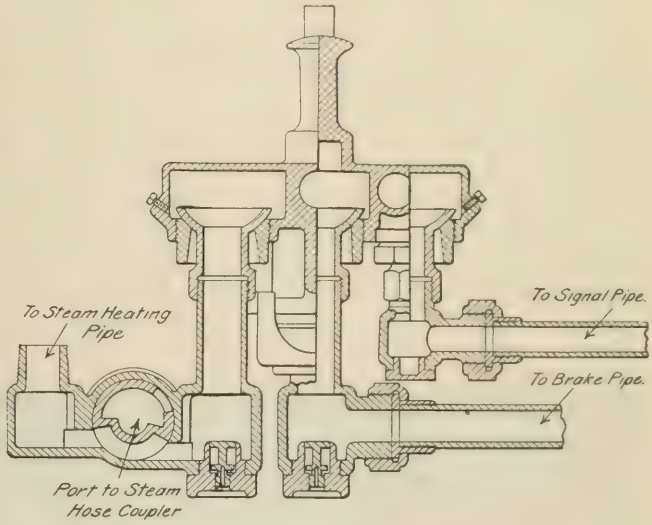
The connectors on adjacent cars are alined by means of



Position of Parts When Coupled to a Car Having Standard Hose Connections

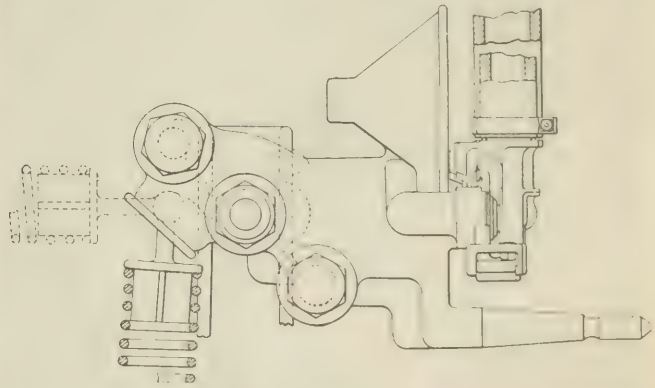
a pin on the horizontal center line of the connector and some distance to one side, and a funnel on the opposite side having a rectangular opening leading to a central cylindrical opening. The funnels guide the pins so that the cylindrical end of the pin will enter the bore of the funnel. The ports in the connector are so located that they come into contact just before the couplers close and are held to their seats by the compression of coiled springs.

The bracket supporting the connector spans the head of



Details of Connections to Coupler Carriage

the coupler and is held in place by a long knuckle pin. The bracket is so arranged that in case the pin breaks it is still held in position and the connector cannot fall to the track. The supporting bracket also carries an arm, on the end of which is a shoe, the shoe being clamped against the guard arm of the coupler by a set screw. The rear portion of the



Plan of Connector Carriage, Showing Method of Attaching Air Hose and Two Positions of Spring

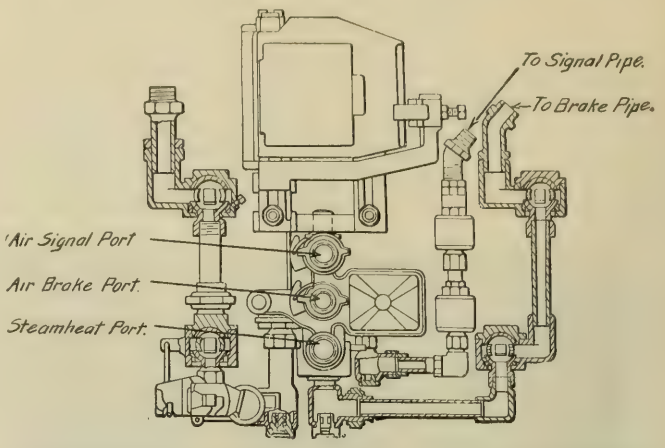
frame consists of a bracket provided with two vertical slotted plates. This bracket supports the main connector frame, which is provided with slotted projections having teeth to engage the bracket of the main frame. Thus the height of the connector can be adjusted independently of the coupler.

The main connector frame has two parallel horizontal members which terminate in a yoke having a boss at the center to receive the rear end of a coiled spring. The vertical guiding stem carrying the connector head fits in a slot in the upper portion of the frame and the carriage for the

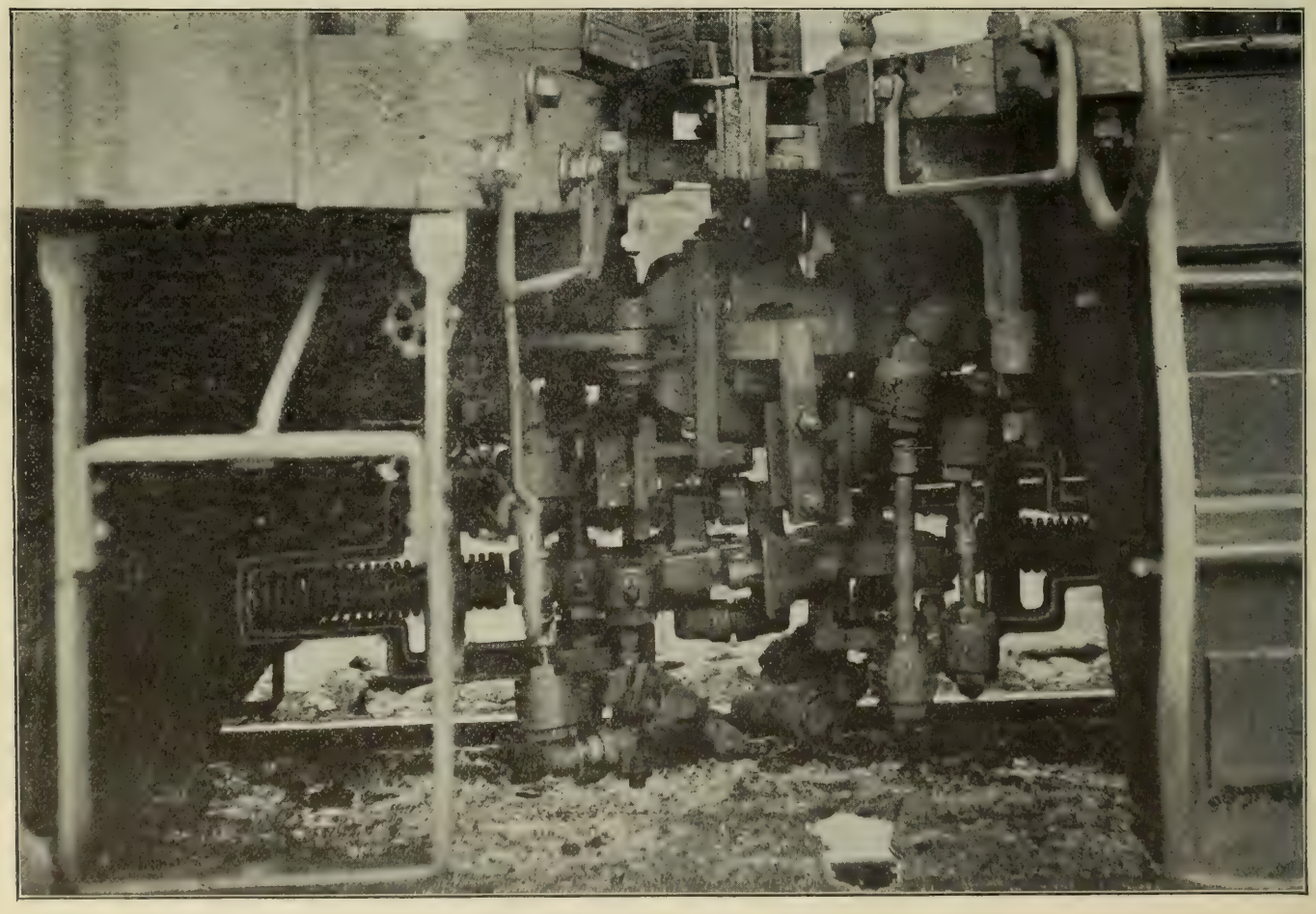
connector, which contains the gathering device and the ports, slides upon the lower frame member. On the rear face of the carriage is a socket into which fits a knob carried in the outer end of the coiled spring, which extends to the rear of the yoke. The spring holds the carriage at the forward end of the yoke, where its travel is stopped by the stem engaging the outer end of the slots. The socket and boss are offset slightly from the center line of the carriage and the form of the slot is such that pressure of the spring will hold the connector ports either on the center line of the car coupler or at a position approximately at right angles to the center line. The carriage is provided with three channels, the center one terminating in the air brake supply port, the others leading to the upper air signal port and the lower steam heat port, all three being in the same vertical plane. On the ends of the carriage opposite the air brake and signal ports are lips provided with recesses for receiving the lugs of the standard air and signal hose couplings.

The channel for the air brake connection leads to the rear of the carriage, where it enters a vertical passage, which is closed at the upper end by a plug, while the lower end carries the condensation valve. This port is also connected by horizontal and vertical ball jointed pipes to the air brake line. The air signal pipe connections are similar to the air brake connections, except that no condensation valve is provided.

The steam heat connection is carried on the opposite side from the signal connection. A vertical pipe from the carriage leads to the condensation outlet valve and a casing having a hole for the reception of a plug cock and an outlet through the cock, which is connected to the steam heat line by flexible jointed pipes similar to the air brake and signal connections. The plug cock in the steam inlet casing carries a standard steam heat coupling, which is connected to a port in the key. When the cock is in the normal position and the carriage is in line to couple with connector-equipped cars, the steam passes through the cut-away portion of the cock directly to the port. In this position no steam can pass out of the steam hose coupling. When the connector is used with the ordinary form of coupler the coupling and the cock are turned through a half circle, when the port assumes a position that prevents the steam escaping to the port in the face of the carriage and opens a passage from the steam line through the steam hose coupling. The carriage can then be turned at right angles to the coupler center line, thus allow-



End Elevation of Coupler Showing Piping Arrangement



Cars Equipped with Beahm Connector Coupled Together

ing the air brake and signal hose to be connected to the respective ports.

A special feature of the connector ports is the metal coupling ring which is provided with several concentric grooves. In case dirt lodges upon the smooth portion of the ring the action of the opposing connector will cause it to be rubbed into the grooves, thereby eliminating leakage.

The connector, as will be noted, provides a complete metallic connection throughout the train. The joints in the carriage and the pipes are formed by removable seats into which are seated hemispherical joints having a limited angular movement. These joints have no packing and are kept tight by the weight of the attached parts and the pressure acting upon them. This form of joint is an earlier invention of the originator of the coupler.

Executives Meet at Chicago

THE ASSOCIATION of Railway Executives, meeting at the Hotel Blackstone, Chicago, on September 3, took action on a number of matters which are expected in their various aspects to be of far reaching importance.

On the recommendation of the advisory committee, of which Daniel Willard, president of the Baltimore & Ohio, its chairman, it was voted to submit through the American Railway Association an increase in the per diem rate to $1.10 from the present rate of 90 cents.

It was voted to establish also an emergency rate of five cents per mile to be paid, under certain conditions noted in more detail below, for excessive empty freight car mileage, which may have been required by orders of the Commission on Car Service or of the Interstate Commerce Commission.

Because of confusion sometimes arising from the use of the word commission in the name Commission on Car Service, it was decided to effect a change in the name of that body whereby it will be henceforth known as the Car Service Division of the American Railway Association.

The uniform contract between the railroads and the American Railway Express Company was considered and after certain revisions was approved.

The meeting also voted to establish a committee to consider the question of statistics, their proper compilation, their publication and use and in general to work out ideas as to the manner in which such data might be most effectively used.

The question of the division of through rates with the short lines was considered and steps were taken to call for the holding of conferences by the proper traffic officers in an attempt to readjust the matter satisfactorily.

The announcement was made of the resignation from the standing committee of William Church Osborn, general counsel of the El Paso & Southwestern, and the election in his place of T. M. Schumacher, president of that road.

Considerable attention was given to the question of national boards of labor adjustment. It is understood that the Association decided to consult with the United States Railway Labor Board relative to this matter, but no official announcement has been made pending the transmission of necessary letters to this board and to others.

The resolution adopted as to compensation for excess movement of cars to which reference is made above is as follows:

Compensation for Excess Empty Movement of Cars

Whereas, The Association of Railway Executives recognizes that the orders of the Commission on Car Service and the service orders of the Interstate Commerce Commission, relocating equipment, have been necessary in the interest of better transportation efficiency, and that from time to time additional orders of the same character will probably be required for the same purpose, and

Whereas, It is of primary importance that freight cars be relocated on the home roads as promptly as possible, and

Whereas, The Association of Railway Executives recognizes that, to accomplish these objects systematically and efficiently, the relocation of cars must be supervised by some central authoritative body and that such relocation of equipment cannot be made effective unless the directions of the central authority, as now vested in the Commission on Car Service, receive full and hearty support and prompt obedience, and

Whereas, In relocating equipment, notwithstanding the Commission on Car Service has been directed to use every endeavor to balance empty mileage by an equal amount of loaded mileage, it is recognized that some excess empty car movements will be inevitable, and that such relocation of equipment being now in the general interest, it is, therefore,

Resolved, That the following regulations be adopted, effective September 1, 1920, to govern compensation for excess empty movement of cars created by the relocation of freight equipment in compliance with orders from the Commission on Car Service, and service orders of the Interstate Commerce Commission.

1. A railroad which is directed to handle empty cars by orders of either the Commission on Car Service or the Interstate Commerce Commission, which for just reasons it claims it ought not to have been required to handle, and by so doing produces within the six months period, September to February, inclusive, or March to August, inclusive, excessive empty freight car mileage on any of its divisions, such railroad may be reimbursed for the excess mileage thus produced at the rate of five cents per car mile, which is intended during the present conditions as an emergency rate and as a reciprocal charge for the service, provided, however, that no payments will be made where the movement exacted of a line, simply fulfills its interchange obligations, subsequent to September 1, 1920, or where it is in accordance with car service rules.

2. Any railroad performing such service may present claim for reimbursement, supported by necessary data, to the Commission on Car Service. Should the commission decide the claim to be warranted it will authorize payment for the same through the American Railroad Association; the amount of such claim to be assumed by the railroads, members of the American Railroad Association, on the basis of loaded freight car mileage made within such period. Due consideration shall be given to the principle of equalization of car movement between carriers and of restoring to the owning roads the substantial equivalent of their ownership.

3. The principle enunciated to apply in connection with carrier railroads handling excessive empty freight car mileage shall also apply to switching or belt railroads and any expense on the part of switching or belt railroads incident to the handling of such excess empty mileage shall be adjusted by the railroads interested within the switching territory under direction of the Commission on Car Service.

4. A railroad whose claim for reimbursement may be declined by the Commission on Car Service shall have the right to appeal the decision of the Commission on Car Service to the Advisory Committee of the Ass'n. of Railway Executives.

5. Records to be maintained by the Commission on Car Service to enable it to avoid, as far as practicable, excessive empty car movements on any railroad.

THE EXPERIENCE OF THE NATION with public operation as aggravated by war finance has been little short of disastrous. Not the least dangerous element in it has been the failure to enlarge equipment and to provide adequate means of transportation. The restoration of the lines to their owners has come in the nick of time if it results in arresting the drift toward inefficiency and toward hopelessly high costs. Whether the private managers who now resume both the responsibility for and the control over the roads can under the new conditions to which they are exposed reintroduce the older ideals of efficiency remains to be seen. It will be essential to labor steadily and with the utmost courage if we are to work out of the present position and at the same time to obtain the capital needed for the development of the lines.—*N. Y. Journal of Commerce.*

Acme, Schenectady, Bertha

Near Acme, Ill., on the Peoria & Pekin Union, on July 3, there was a butting collision of passenger trains, which is like that at South Chicago, noticed in the *Railway Age* of September 3, in that six or more persons were held negligent in connection with its cause. In both cases the disregard of the usual and well-known rules which are prescribed for the operation of trains at speed was so flagrant that one who reads the account of the circumstances is forced, almost, to the conclusion that the men involved must have been laboring under the assumption that the train movements were all being made under yard conditions—under rules requiring every engineman to keep his speed constantly under control and to be prepared at any moment to stop within the range of his vision. Only on that supposition it is easy to believe that trainmen of experience, on busy railroads, having fair records, would conduct, or allow, the movement of passenger trains in such utter obliviousness to well-settled and well-understood rules.

The trains in collision were northbound passenger No. 206 and southbound passenger No. 209, the latter being No. 5 of the Toledo, Peoria & Western. No. 206 was superior by direction. Both trains had reduced speed to about five miles an hour. One employee was killed and 15 passengers and one employee were injured. Train 209 had just passed from double to single track with everybody apparently oblivious to the existence of train No. 206, although both trains were at or nearly on schedule time. The switch was turned by some outsider, not known to the trainmen; and the brakeman, evidently with no sense of responsibility, gave a proceed signal as soon as he saw the switch turned. On this signal, the engineman proceeded. The conductor, absorbed in taking tickets, had left everything to the brakeman. The brakeman took no interest in the time-table rule of superiority, or in train orders, except to assume that the engineman had received orders against No. 206. The engineman, according to the report of the government investigator, "took it for granted" that 206 had arrived. This engineman had no time table and did not know the schedule of 206. The brakeman turned the switch back after the train had passed over it, but the conductor is censured for not knowing whether this was done or not. Clearance cards are provided for, in connection with train orders, but without adequate detailed rules. An operator delivered an order which had been annulled—which error, however, did no harm—but failed to record the time of the repetition of an order; issued an order with no date written upon it, and was in the habit of signing conductors' names to "31" orders without authority. The conductor of 206 failed to register at Hollis Junction.

Following a 1,200-word summary of this kind of evidence, the government investigator concludes: "This accident resulted directly from the failure of all four members of a train crew to perform their duties; any of them, by the exercise of the ordinary precautions expected and required of experienced men engaged in train service, could have prevented this accident. The investigation disclosed inadequate operating rules, extremely lax methods and practices, and habitual disregard of existing rules; these conditions rendered this accident possible, and require immediate correction by responsible operating officers."

Schenectady, June 9

The Schenectady collision, which killed 15 persons, was reported in the *Railway Age* of June 11, page 1689. The I. C. C. report, dated July 20, gives some additional facts. The engineman (who was killed) was experienced and thoroughly acquainted with the road, and had not complained of ill health The automatic block signals are about one mile apart and the fireman gave testimony as to the engineman's calling to him as signals were passed; but the fireman was at work on his fire and his testimony is uncertain, and practically worthless. His usefulness as a monitor was nil. There was testimony that torpedoes had been placed by the brakeman of the standing train, but numbers of persons in the vicinity did not hear any explosions, and the brakeman himself gave no useful information. It appears certain, however, that train 34 was only about four minutes behind train 28 (at a station five miles back) and both were fast. The brakeman is not censured for not going back far enough.

Train 28 had been stopped by a leak in the brake pipe under the tender, caused by a defective nipple. The nipple had been rethreaded at Utica, 75 miles back, and the leak was apparently cured; but the master mechanic, viewing the nipple after the collision, said that it was not fit for use. Careful inspection disclosed no fault in the automatic block signals. The distant signal had given a false clear indication in November, 1918, when an insulation in the track relay had been broken down by lightning; and the home signal had stuck in the stop position in August of that year. These were the only faulty operations of these signals in 12 years. A coach in train 34 had a brake cylinder with too much piston travel, making its brakes useless, but otherwise the brakes were all right.

There is no question that the engineman was awake when a short distance from the standing train, but why he disregarded the signals and the red lantern and the fusee of the flagman is a question left unsolved.

Bertha, May 9

The collision at Bertha, was briefly reported in the *Railway Age* of May 14, page 1425. On a suburban line, a few miles from Portland, Oregon, on the Southern Pacific, two electric passenger trains met on a ten-degree curve where each engineman had only about 500 feet in which to see the opposing train. The eastbound train, No. 124, had run past its meeting point about a half mile and was moving, on a descending grade, about 35 or 40 miles an hour, though the rule limited speed at that point to 20 miles an hour. One steel car was crushed for 19 feet. Six passengers and three employees were killed and 91 passengers and 10 employees were injured.

The I. C. C. report, dated July 9, gives interesting details. Conductor Pharis (16 years' service), and Engineman Willett, (eighteen years) of No. 124, left Bertha after both had recognized it as a meeting point (the conductor by pulling the signal cord and the engineman by sounding the whistle in response). The engineman had talked with the conductor and with a brother engineman and had appeared in normal condition, though he had spoken of not feeling well the previous night. The motor car had "dead man's control," but the evidence is conflicting as to whether the brakes were applied before the trains came together.

The report refers to previous collisions on the same road in the same vicinity, one in 1915, and one in 1918, and says that the density of local passenger traffic between Portland and Reedville, 16 miles, calls for the adoption of an adequate block signal system; such a system should be "promptly placed in operation on this line."

For More Transportation.—The shipper who has been used to employing railway cars as storage space for his own convenience should readily comply with the request that he forego the practice for the sake of better transportation. Some temporary inconvenience can be tolerated in this respect, and in the long run it will prove profitable. The increase in freight rates cannot work magic in restoring railway efficiency of itself. Nationwide support should be given this movement to obtain maximum service from existing transportation facilities.—*New York Sun.*

Freight Traffic Still Showing Increased Movement

Reports Continue to Reflect Marked Improvement in Almost Every Section of the Country.

WASHINGTON, D. C.

THE EXTENT to which the railroads are regaining their efficiency, as the congestion and other effects of the labor troubles which were most acute in April are being overcome, and also the extent of the volume of traffic that is being offered them for movement, is indicated in the increases being shown in the statistics of revenue freight car loading compiled by the Commission on Car Service. For the three weeks of August for which the reports are now available, ending August 21, the railroads handled a greater volume of freight traffic than ever before in the corresponding weeks of the year, a total of 2,878,758 cars, as compared with 2,628,714 in the corresponding three weeks of 1919, and 2,868,373 for 1918.

For the week ending August 21 the total number of revenue cars loaded was 964,256, as compared with 913,209 in 1919 and 971,622 in 1918. This represents a gain of about 2,000 cars over the previous week, and while the total for the week was slightly less than for the corresponding week of 1918, the total for three weeks is 385 greater than for the three weeks of 1918, and 240,000 greater than for last year. As the volume of freight handled in August, 1918, was greater than in August, 1917, the figures indicate that the roads have been breaking the record of the two war years for the corresponding periods, although August is not the heaviest month in the year and this year's traffic has not yet reached the volume attained in July, 1918. The reports have been showing consistent gains in car loading for the past three or four months, but particularly during the last four weeks for which the reports are available. For July 31 the total was 914,000 and for the three weeks of August it has been 942,000, 962,000 and 964,000, as compared with 947,000, 948,000 and 971,000 in 1918. The report for the week ending August 21 is as follows:

show an increase for the week ending August 21 to 137,200 for the United States and 142,320 for the United States and Canada, of which 46,536 were coal cars and 74,777 were box cars.

Reports received by the Commission on Car Service indicate some progress made during the month of July in increasing the average daily movement of freight cars in accordance with the resolutions adopted by the railway executives, establishing an average of 30 miles per car per day as a standard to work to. For July the average miles per car per day was 25.7, as compared with 21.3 in July, 1919, and as compared with 25.1 for the month of June, 1920. The 1920 figure, however, is an average of averages and, therefore, not claimed as entirely accurate, as the weighted average has not yet been worked out.

The weekly reports of the local committees on car service continue to reflect a marked improvement in transportation conditions in almost every section of the country, although in general the supply of equipment is not sufficient to meet all the requirements. Most of the terminals covered by the reports are free of congestion and many committees report freedom from embargoes and normal switching service. Several of the committees in their reports for the week ending August 28 commented on the improvement in labor conditions. Practically all the committees are continuing their campaign to induce shippers and consignees to release equipment promptly and to load cars to capacity.

The Detroit committee reports that all lines in the terminal are working on a normal basis. The National Automobile Chamber of Commerce, the Detroit Board of Commerce, the Detroit Coal Exchange and other organizations are co-operating in bringing about more prompt release of cars and heavy loading. The Denver committee reports that 91 per

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS.

Summary -All Districts; Comparison of Totals This Year, Last Year, Two Years Ago. For Week Ended Saturday, August 21, 1920.

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year, 1920	Total revenue freight loaded: Corresponding year, 1919	Total revenue freight loaded: Corresponding year, 1918	Received from connections: This year, 1920	Received from connections: Corresponding year, 1919	Received from connections: Corresponding year, 1918
Eastern	1920	7,385	2,520	53,867	3,283	8,839	11,123	46,053	94,591	227,661			257,598		
	1919	8,899	2,854	52,716	3,198	8,839	3,759	17,788	130,046		228,099	237,234		237,860	259,604
Allegheny	1920	2,702	3,282	65,061	6,604	3,859	13,605	38,808	71,856	205,777			138,936		
	1919	4,426	3,280	62,478	5,181	4,135	9,282	42,166	73,765		204,713	220,481		142,890	191,385
Pocahontas	1920	191	226	22,073	744	1,876	271	2,971	6,844	35,196			19,631		
	1919	419	363	23,782	620	1,922	240	128	9,388		36,862	40,430		18,142	21,664
Southern	1920	3,335	2,152	24,215	1,715	21,242	2,942	34,708	47,630	137,939			75,149		
	1919	3,653	2,350	21,606	437	22,344	2,451	17,969	56,287		126,997	124,175		69,578	66,673
Northwestern	1920	11,524	6,718	12,965	1,620	17,964	45,206	28,207	39,614	163,818			57,644		
	1919	12,650	8,567	6,757	1,020	15,834	11,888	20,688	46,535		123,939	166,019		61,824	77,412
Central Western	1920	11,200	9,938	20,191	767	6,249	3,119	31,295	46,423	129,182			71,348		
	1919	14,852	11,757	19,606	828	5,924	3,619	24,162	50,572		131,320	125,111		72,761	67,908
Southwestern	1920	3,952	2,490	5,908	238	8,744	322	16,820	26,209	64,683			50,849		
	1919	7,037	2,902	6,879	202	7,584	382	12,512	23,781		61,279	58,173		47,670	45,469
Total all roads	1920	40,289	27,326	204,280	14,971	68,773	76,588	198,862	333,167	964,256			671,155		
	1919	51,936	31,973	193,824	11,486	66,582	31,621	135,413	390,374		913,209			620,725	
	1918											971,622			728,885
Increase compared	1919			10,456	3,485	2,191	44,967	63,449		51,047			50,430		
Decrease compared	1919	11,647	4,647						57,207						
Increase compared	1918														
Decrease compared	1918									7,366			57,730		

The freight car accumulations for the week ending August 27 show a further reduction to 70,455, as compared with 74,945 the week before. The report shows a considerable reduction in the number of cars held on account of no bills, but an increase in the number of cars held on account of consignee's inability to unload. The deferred car requisitions

cent of the authorized repair forces are working and that the yard force is 100 per cent. There has been no congestion or accumulation on any lines during the week.

The committee at Portland, Ore., reports normal conditions as to switching service and while the labor situation is normal as far as numbers are concerned, the efficiency of

car and motive power department employees is stated as 90 per cent and that of the yard forces at 80 to 85 per cent.

The New York committee says that 21 solid trains have been made up during the week to speed up operation as much as possible. The Delaware, Lackawanna & Western handled 53 floats at its Hoboken bridges, establishing a record. The New Haven interchanged 530 cars with the Pennsylvania on one day, which is the maximum number delivered in any one day since April 1. A total of 507 empty open top cars were moved via float to the Delaware, Lackawanna & Western from the New Haven to relieve the westbound situation on that road. Several consignees have been embargoed for failure to unload promptly. A total of 149 embargoed cars were disposed of. A further modification of embargoes on all lines permits practically a free flow of freight into the terminal and switching service is practically normal. A total of 471 bad order cars were repaired on Sunday. Several roads have experienced difficulty in getting their repair forces to work on Sunday. The labor situation continues to improve as a general proposition, but one line is still experiencing occasional trouble with strikers interfering with the men employed.

The Louisville committee reports that the movement of solid trains, of such commodities as pass through the terminal in sufficient volume to justify it, is being given special attention and the practice of classifying interchange movements before delivery to connections also serves to reduce switching service and minimize terminal detentions. There is no shortage of switching power.

The Kansas City committee reports 38 solid trains of freight moved during the week. No embargoes were in effect restraining freight for that terminal. Switching service at industries has been practically normal. A total of 11,531 cars was repaired during the week of August 28, as compared with 10,644 the preceding week. Individual cases of slow unloading involving 102 cars were taken up with a view of securing prompt release. The supply of equipment furnished for all commodities by all lines serving the terminal was 67 per cent of the requirements.

The Omaha committee reports business being handled currently. The car supply for grain is about 75 per cent of the requirements.

The Philadelphia committee reported a normal number of switching crews in service on all roads. The campaign by all roads to release equipment by having cars unloaded Saturday afternoon and Sunday was continued and a total of 804 cars were unloaded, 467 by railroad forces and 337 by individual consignees.

The Twin Cities committee reports a marked improvement in transportation conditions, much of which is due to increased efficiency of the employees, which has been very marked during the past three or four weeks. The committee says that all employees are doing from 13 to 20 per cent better work than two months ago.

The Cincinnati committee reports that about 600 cars a day have been repaired at that terminal.

Germ Process of Compounding Oils

PAPERS on "The Theory and Practice of Lubrication" by Henry M. Wells and James E. Southcombe, of the Henry Wells Oil Company, London, Eng., were read in London and Pittsburgh* recently. The authors explain the rationale of the superior lubricating properties of fatty oils and of oils compounded with fatty oils over "straight" mineral oils (i. e., mineral oils not compounded). This property has hitherto been mentioned by various observers but left in that position. This led to an examination of the principles on which lubrication depends. It was demonstrated that liquids which wet solid surfaces are lubricants, while liquids which do not wet them are not lubricants; that one property which differentiates them is largely that of capillarity, or interfacial tension; that the fatty acids in fatty oils perform the functions of lubrication and not the fatty oil *per se*. It was also found that if the fatty acid be extracted from a fatty oil it is little if any better than a mineral oil as a lubricant, and that if a fatty acid in small quantities be added to mineral oils, their lubricating properties are very appreciably enhanced. Results in the laboratory were confirmed by several independent authorities.

On the practical side, the authors cite many examples where fatty oils or oils compounded with fatty oils have been entirely and successfully replaced in actual practice by "Germ Process" oils for lubrication of steam engines, gas and oil engines and many types of mechanism. Results of trials of marine engine oil on a large scale over 18 months, by the British Admiralty, were cited. "Germ Process" oils are cheaper than fatty compounded oils, and are suitable for the heaviest work in all climates.

The title "Germ Process" selected by the authors is purely arbitrary—chiefly from the fact that hitherto engineers and chemists have had an aversion for the word "acid" connected with any oil. The authors not only dissipated that fear by proving it was grounded on a complete misapprehension of its functions, but proved that the feared fatty acid was a very useful ally when its functions are understood and controlled, which, it is stated, the "Germ Process" ensures. The claim is made that by this method of preparation superior oils can be obtained at a fraction over the cost of mineral oils. The "Germ Process" is the subject of patents in America, in the United Kingdom and in Europe.

*London paper read before the Society of Chemical Industry, Feb. 2, 1920. Pittsburgh paper read before the National Petroleum Association of America, April 27, 1920.

Anti-Rust Compound Resists High Temperature

WHILE STATISTICS are not available, the total waste due to the rusting of machinery, tools, ordnance and metals amounts probably to millions of dollars annually. Many iron and steel products exposed to the weather and dampness rust away to a mere shell and become worthless. Many other machines and machine parts requiring bright polished working surfaces are a total loss when these surfaces become rusted in shipment.

Various rust preventitives invented and used from time to time have been more or less efficient in specialized fields. For example, paint is a most effective covering for products exposed to the weather. Paint cannot be used, however, on working surfaces and is difficult to remove. For bright polished steel surfaces, some compound in the form of a heavy oil or grease is commonly used.

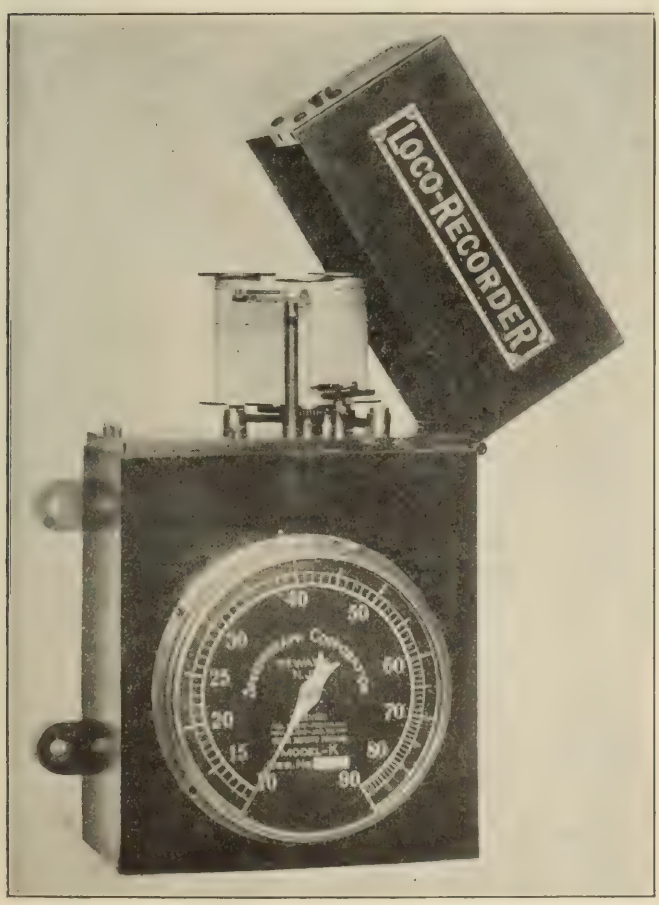
Experience with these compounds has developed the need for three inherent characteristics. First, they must form a protective covering and not melt easily. Under commercial conditions of storage and shipment, temperatures of 70 deg. F. to 100 deg. F. or higher are common, and petroleum and other greases and compounds flow and drip off at these temperatures, exposing the bright surfaces to rust when the temperature has lowered and moisture collects on the metal. Second, they must be easily removed. Obviously a length gage, accurate to within .0001-in., cannot be covered with a compound that requires the application of emery cloth to remove it. The third requirement is ease of application.

A rust preventing compound called Stazon, which is said to fulfill these three requirements has been developed recently by the Conversion Products Corporation, New York. It is easily applied and removed by the simple act of wip-

ing, and being an inert compound will not flow at high temperatures. To demonstrate this fact a large number of trade paper editors recently were invited to witness a demonstration. Four samples of anti-rust compounds, including Stazon, were placed on a metallic plate, the temperature of which was gradually raised by means of an electric resistance coil mounted on the back. The first compound started to melt at approximately 80 deg. F. and at 115 deg. F. three of the compounds had melted and completely run from the plate. Stazon remained and did not begin to soften until the temperature had reached over 200 deg. F., a temperature higher than would be found in any ordinary conditions of storage or shipment. It was stated that this compound when applied to metallic surfaces formed a coating impervious to moisture or atmospheric fumes.

Locomotive Recording Instruments

TWO INSTRUMENTS designed to increase the efficiency of operation of road and yard locomotives by affording a detailed record of speeds and stops have been developed and placed on the market recently by the Speedograph Corporation, Newark, N. J. These instruments, called Loco-Recorders, are durable machines that have been in use long enough to show up any inherent defects and allow them to be corrected. Loco-Recorders are made in models *K* and *L* for road and switcher service respectively.



Device for Use on Passenger Locomotives

Recorder for Road Locomotives

The model *K* instrument, illustrated, gives a permanent record of locomotive speed, direction of motion, whether forward or backward, and the time spent at station and other stops over an entire division. Lost time cannot be made up by dangerous speeds without leaving a tell-tale record for the superintendent, and this practically eliminates danger of excessive speed on curves, or at other points where there are speed restrictions. Unnecessary wear and tear on motive power, rolling stock and tracks through express train speeds of locomotives built for slow and heavy service also are prevented.

Part of the instrument is built on the plan of a speedometer connected by a crank arm and flexible shaft to a rear driving wheel, the speed indicator pointer being actuated by the centrifugal force on a suspended brass ring. Other parts of the instrument consist of a clock, speed and time pencils and an arrangement to drive the recording tape. The recording tape moves at the rate of half an inch to the mile, in keeping with the speed of the locomotive, and is calibrated horizontally in miles per hour and perpendicularly in miles of track.

The speed pencil moves across the tape in proportion to the speed of the locomotive and returns to zero at every stop, acceleration and deceleration being plainly shown. The action is positive and every change of speed is instantly indicated on the dial and recorded on the tape. The mechanism is so interlocked that the recorded speed and the speed shown to the engineer are identical. The time pencil, actuated by the clock, moves back and forth across the tape in 10-min. strokes. When the train is in motion this pencil makes an angular line, the angle depending on the rate of speed, and when the tape stops it makes a straight vertical line, the length of which shows the duration of the stops on the basis of 3/16 in. per min. The dial pointer is the only working part of the instrument exposed to observation. The cover of the case encloses the recording mechanism and tape and can be securely locked to prevent tampering.

By adjusting the tape to a keyboard representing the division over which the train has operated, the speeds at stations, sidings and all points having speed restrictions will be clearly shown; also the location and duration of all stops and slowdowns. The need for this information has long been felt by operating men, and it is stated that enginemen trying the device have found it a material aid on account of the speed indicating feature.

Loco-Recorder for Switchers

For use on switchers, the model *L* Loco-Recorder has been developed, which differs from the model *K* instrument mainly by the elimination of the speed indicating mechanism, not needed at slow speeds. A clear and complete performance record of switcher locomotives is afforded, including the time in hours and minutes that a switcher is idle, the time in hours and minutes that it is working, the distance in miles actually covered and the speed of operation at any point or at any time.

An odometer automatically records the exact mileage, registering every 35 ft., and can be set back to zero at the end of the day, week or month as desired. The recording tape is calibrated in minutes and drawn past the time pencil at the rate of 4 in. per hour. The pencil moves up and down when the switcher is in motion, the distance across the tape, 1 3/16 in. in length, representing one-half mile. The angle of these lines and their relation to the minute marks show the rate of speed, broken lines indicating reverses. When the engine is idle the pencil remains stationary and makes a straight horizontal line on the tape, and the total idle time is thus easily calculated.

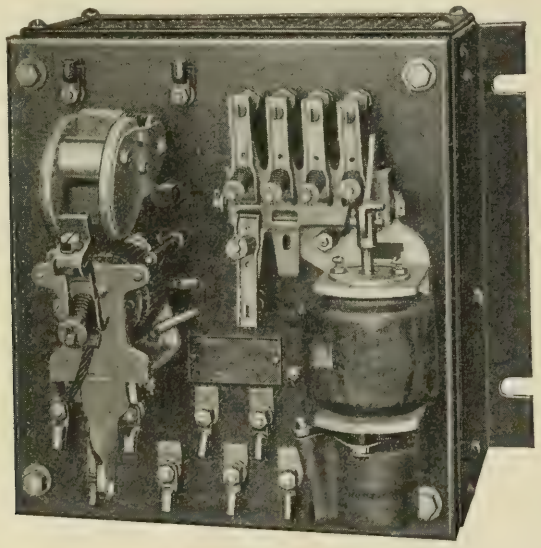
Since speed indications on a switcher are not required, the instrument can be attached to any convenient part and is not necessarily placed in the cab. The water-tight cover, which has to be raised for the removal and insertion of tapes, is securely locked and this prevents any interference

with the recording mechanism. Several model *L* Loco-Recorders have been applied under actual service conditions and it is stated that the result has been a material increase in the efficiency of switcher operation.

Elevator Controllers

THE ENTIRE LINE of direct and alternating current elevator controllers manufactured by The Cutler-Hammer Manufacturing Company, Milwaukee, Wis., has been replaced by a new line of controllers of fewer types and simpler construction for intermittent elevator service. Although the new controllers retain the general design of the previous ones, they have in addition the following main features: standardized carbon-to-copper power contacts, which are non-freezing and quiet in operation; and time limit acceleration by a simple dashpot relay, which is accurate in operation and provides smooth acceleration under all loads.

With direct current equipments, acceleration is effected by cutting resistance out of the armature circuit. The time interval allowed the motor to come up to speed is determined by the setting of a dashpot relay which is externally adjustable for time valves, and when once set will always cut the resistance out of circuit in the same length of time. The relay consists of a magnetic solenoid which actuates a plunger moving in an oil dashpot, as shown in the illustration which is a view of a small controller for use with slow speed elevators. As the plunger moves upward, upon closing the pilot circuit, it rotates a rocker arm carrying a series of fingers, which cut out the resistance step by step in the controller and cause the accelerating magnet switches to close one by one.



Direct Current Elevator Controller with Time Limit Acceleration for Slow Speed Elevators

The resistor, which was automatically inserted in the solenoid circuit in the former controllers, has been omitted, as the coil is of sufficient size to prevent overheating on intermittent duty, without having to reduce the current when the plunger reaches the end of its stroke.

The dashpot is totally enclosed, preventing oil leakage or splashing, and has an exterior adjusting screw for time regulation. A special dashpot oil is provided, with a viscosity which varies only slightly over wide ranges in temperature, a test conducted with this relay from 30 deg. to 90 deg. F., without changing the dashpot adjustment, showing variation in the time of less than 10 per cent.

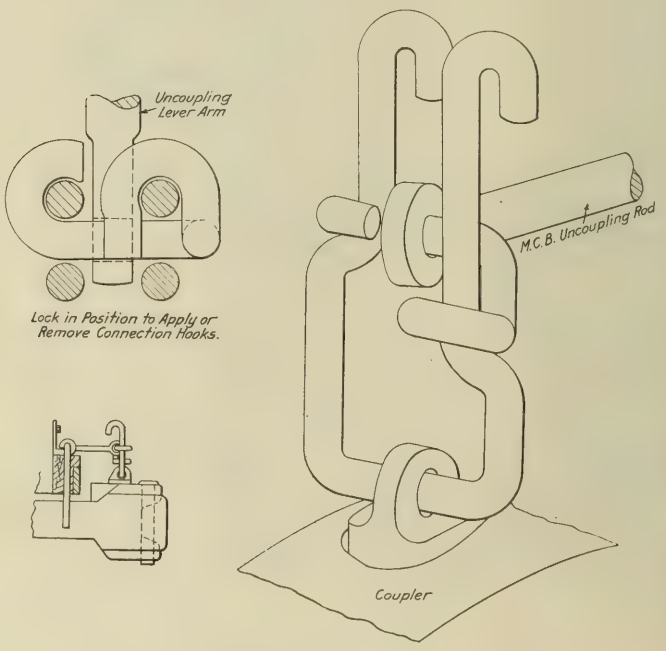
The elevator controller illustrated, consists of a main line contactor and timing relay, mounted on a slate panel and carried on a wall type frame, and is controlled by a reversing switch, which is operated from the cage by wheel, lever or rope. The magnetic main contactor on the control panel has carbon-to-copper contacts and a strong magnetic blowout. It makes and breaks the main line circuit, thus relieving the reversing switch of that duty. The series field of the motor cut out in one step after starting and the design is such that the motor can be reversed only when all the starting resistors are in circuit.

The reversing switch has the fingers inverted with reference to the former design. This makes the terminals readily accessible when the cover of the switch is removed, and the copper dust from the contacts falls to the bottom of the switch without danger of causing a short-circuit between poles.

A controller of the same type designed for heavier duty has magnetic accelerating switches in the motor circuit, and the dashpot mechanism is used as a pilot relay. Similar improvements have been effected on the direct current full-magnetic controllers for operation by car switch or push buttons and on all types of alternating current elevator controllers.

Release Connection for Car Couplers

A CAR COUPLER release connection that can be applied quickly to any M. C. B. coupling lever has been invented recently and a patent on the device has been issued to Edwin Jones, passenger car foreman, Baltimore & Ohio passenger station, Cleveland, Ohio. As shown in the illustration, the connection is applied or removed simply by turning the lock fully over, when the center arm of the uncoupling lever is raised up to the connection hooks. There is no prying open or closing up of open eyes, hooks, or any other parts and the device can be applied or removed as many times as desired without weakening or destroying it. The E. D. J. O. coupler release connection, as it is called, is stated to be reliable, durable and efficient in action. Its simplicity and ease of application will be appreciated by car repairmen who have been used to the older types of connection.



Easily Applied Coupler Release Connection

General News Department

Fire in the yard of the Pittsburgh & Lake Erie at Pittsburgh, Pa., on September 2, destroyed three Pullman cars and one other passenger car; estimated total damage $80,000.

A hearing was held at Washington on September 8 before members of the United States Railroad Labor Board on a number of cases involving grievances of employees of the American Railway Express Company.

Regular mail service by airplane was begun on Wednesday of this week between New York and San Francisco. The time of leaving New York is 4:30 a. m., eastern time, and the scheduled time across the continent in 56 hours, 30 minutes. This speed, if maintained, will shorten the time of transit, as compared with railroad carriage, about 40 hours. The air line distance is something less than 3,000 miles. Near Morristown, N. J., September 1, two air-mail-service fliers were killed in the fall of their machine, one of these being Max Miller, the oldest aviator in the mail service.

The telegraph department of the Chicago, Rock Island & Pacific has organized a society for the purpose of giving every interested employee an opportunity to extend and broaden his technical knowledge of the telegraph and telephone, and to acquire a thorough understanding of the best operating practices for the handling of this class of communication. Papers are to be presented by the members on various timely subjects and the best thoughts and ideas are to be gathered by the superintendent of telegraph for printing and furnished to the members for reference.

The appointment of a receiver for the Brotherhood of Rail-Road Trainmen and an accounting and distribution of the brotherhood's trust fund, estimated at $10,000,000, has been asked by Benjamin Callahan, head of the Columbus Yardmen's Association, in a suit recently filed at Columbus, Ohio. The suit was filed by Mr. Callahan as an individual policyholder. However, it is believed to be an act on the part of Chicago Yardmen's Association which precipitated the recent "outlaw" strike of yardmen. The petition asserts that all members of the brotherhood expelled for participation in the recent strike have been deprived of a share in the trust fund which they helped to create.

The Treasury Department, partly because of the large payments which must be made to the railroads under the government's guaranty for the six months' period from March 1 to August 31, has announced an issue of $400,000,000 of Treasury Certificates of indebtedness. In a letter explaining the issue, the Secretary of the Treasury says that the net current deficit for July and August is due chiefly to actual cash payments, amounting to some $130,000,000, made necessary by the provisions of the transportation act in connection with the return of the railroads to private control; and that according to the latest estimates, payments on account of railroads will probably continue on a large scale during the balance of the present calendar year; and will be relatively heavy during the month of September.

Cincinnati Railway Club

At a meeting of the Cincinnati Railway Club on September 14, J. A. Morris, chairman of the Cincinnati Operating Committee, will present a paper on Transportation. An entertainment will follow the meeting and luncheon will be served.

Canadian Railway Club

J. D. Altimas, assistant general superintendent of car service of the Canadian Pacific, will present a paper on Car Records and Their Relation to Transportation and Accounting at the September 14 meeting of the Canadian Railway Club.

St. Louis Railway Club

The next meeting of the St. Louis Railway Club will be held on September 23. Methods of standardizing track work will be discussed by Earl Stimson, chief engineer of maintenance, Baltimore & Ohio, while J. B. Strong, Chairman of the standardization committee of the Manganese Track Society, will present a paper on manganese construction in track work. Delegates to the convention of the Roadmasters' and Maintenance of Way Association will be entertained by the club. club.

National Association of Railroad Commissioners

The National Association of Railway and Utilities Commissioners will hold its thirty-second annual convention at Washington, D. C., on Tuesday, Wednesday, Thursday and Friday, November 9, 10, 11 and 12. The call for the meeting, just issued, is signed by Walter A. Shaw, president; James B. Walker (New York City), secretary, and D. N. Lewis, chairman of the executive committee.

The usual committee reports will be presented, and, in addition, two afternoon sessions will be devoted to informal discussions of street railway questions, the gas problem and the enforcement of service standards. The circular says that the Association has no quarrel with federal regulation of railroads, within its proper limits, but it resents the efforts of those who seek to curtail the rightful powers of the sovereign states over strictly interstate matters.

New York Railroad Club Meeting

The New York Railroad Club has arranged a unique program for its meeting in the Engineering Societies building on Friday evening, September 17. The program will be divided into four parts, each section dealing with one of the recommendations made by the Association of Railroad Executives to increase the efficiency of operation and meet the present transportation crisis. Each one of the four speakers will devote 12 minutes to making constructive suggestions, or in describing methods which have given unusual success in helping to reach the standards which have been established. The four subjects and speakers are as follows:

1. There should be an average daily minimum movement of freight cars of not less than 30 miles per day. A. J. Miller, chairman of the New York Committee on Car Service.
2. Freight cars should be loaded to an average of not less than 30 tons per car. J. W. Meredith, general superintendent, Central Railroad of New Jersey.
3. Bad-order cars should be reduced to a maximum of four per cent of the total number of cars owned. J. C. Fritts, master car builder, Delaware, Lackawanna & Western.
4. There should be an early and substantial reduction in the number of locomotives unfit for service. F. H. Hardin, chief engineer of motive power and rolling stock, New York Central.

International Railway General Foremen's Association

The sixteenth annual convention of the International Railway General Foremen's Association was held in Chicago on August 7, 8, 9 and 10. The address of welcome, on the opening day, was delivered by Robert Quayle, general superintendent of motive power and machinery of the Chicago & North Western. In his address, Mr. Quayle emphasized the importance of the general foreman's job to the railroad and to the nation. He called attention to the fact that the ton-mile cost of moving freight on American roads is the lowest of any country in the world, Japan ranking second. Continuing, he stated that while our labor costs averages about $1,600 per year per man, Japan's is only $174, which is an indication of the efficiency of American methods and American

railroad men. He stressed the importance of the part the foreman plays in producing this result because of his close contact with the details which in the aggregate make up the final result. In speaking of conditions which have caused the present comparatively low productivity of labor, Mr. Quayle stated that it was his opinion that much of the unrest which has been so common for some time past was due to causes for which the men cannot be held wholly responsible, and that the recent wage increase has removed the dissatisfaction so far as most of the men are concerned. He stated in closing that increased production must be obtained through the general foremen, who must exert a steady pressure on the men to get back to pre-war conditions of output.

New Produce Terminal Proposed at Chicago

A new wholesale fruit and produce terminal will be built in Chicago, if plans, now being formulated by the Produce Terminal Company Trust, composed of many of the larger produce firms now located on South Water Street, Chicago, materialize. Because of street improvements in Chicago, a portion and perhaps all of the produce business which is now confined to South Water street will have to be conducted elsewhere and the Produce Terminal Company Trust has formulated plans for the re-location of the business which will be presented to the city council this fall in the form ot an ordinance seeking the approval of the project.

The territory under consideration as the new wholesale market covers approximately 20 acres lying between the Chicago, Rock Island & Pacific tracks on the east, Stewart avenue on the west and Archer avenue on the south. The property is now owned by the Atchison, Topeka & Santa Fe.

In addition to the wholesale fruit terminal, the plan also provides for the construction of an outside yard where cars of produce coming into Chicago can be assembled and moved into the central market. By the utilization of such a yard, the cars scheduled for re-shipment to other cities will not be brought into the yards of the central market but will be held in the outer yard for transfer.

According to the promoters of the plan, the wholesale terminal will be accessible to all of the railroads entering Chicago on an equal basis and for that reason they believe that little trouble will be experienced in obtaining the approval of all the railroads involved. The location of the outside yard has not yet been made public.

Outlaw Yardmen Institute Campaign of Sabotage

The "outlaw" Chicago Yardmen's Association and the United Enginemen's Association are now directing a campaign of sabotage against the railways operating in and around Chicago, according to railway officers in that district. During the past few weeks yard engine crews have been attacked and their engines turned loose on several occasions, men who have taken the places of strikers have been "slugged," the children of members of the "outlaw" organization who have gone back to work have been boycotted by their schoolmates, the wives of the men who have taken strikers' places have been terrorized and rooming house keepers in districts adjacent to the terminals have been warned that they must not permit any "strike-breakers" to room in their houses under penalty of bombing.

On August 30, the crew of a yard engine belonging to the Chicago Junction were driven from their engine, which was later turned loose under steam. After running a few miles, narrowly missing a passenger train in its course, the engine was stopped. On September 1, a freight engine belonging to the Chicago, Rock Island & Pacific was "captured" and turned loose. A collision with a passenger train was averted only because a switch engine crew overtook and stopped the engine. On September 2, again, a yard engine belonging to the Chicago, Milwaukee & St. Paul was stolen and run for a mile and a half through the Chicago yards and was stopped only when the steam pressure gave out.

In addition to these depredations a long list of yard workers who have been slugged and robbed has been compiled by railway executives who have requested the aid of both federal and city authorities.

A canvass recently conducted by a local newspaper indicates that the "outlaw" strikers intend to wage a guerrilla warfare against the railroads by continuing the stealing of engines and the slugging of yard employees. On the other hand it was reported that employees in various terminal yards have started to raise a fund to employ "sluggers" to retaliate. Unless steps are taken to police the yards properly it is believed that the Chicago terminals will become the battle ground for gang fighting and that the operation of the terminals will be seriously interfered with.

Railway Returns for June and Six Months

During the first six months of 1920 the Class I railroads had a net operating income of $7,336,531, as compared with $156,086,467 in the corresponding period of 1919. This figure is arrived at, however, after charging into the January revenues approximately $50,000,000 of back mail pay, after the payment of $11,874,385 for war taxes since March 1, which were not included in the 1919 expenses, and after only $25,462,027 of the increased wages resulting from the decision of the Railroad Labor Board retroactive to May 1 had been charged to the expenses. For the month of June the roads had a deficit of $16,284,900 as compared with a net operating income in June, 1919, of $52,000,000. For the half year the railroads in the Eastern district had a deficit of $80,000,000, while the roads in other districts had net operating income as follows: Pocahontas District, $7,871,000; Southern District, $16,629,000; Western District, $63,469,000. The summary as issued by the Interstate Commerce Commission for the roads of the United States is as follows:

		June		Six months	
		1920	1919	1920	1919
1	Aver. miles operated	235,501.40	234,199.64	235,003.51	234,181.24
		Dollars	Dollars	Dollars	Dollars
	Revenues:				
2	Freight	339,092,726	284,326,360	1,855,632,757	1,612,424,574
3	Passenger	107,824,929	105,634,362	567,010,780	543,710,851
4	Mail	8,043,564	4,303,349	101,188,699	25,803,129
5	Express	12,337,278	10,068,796	74,391,590	52,845,980
6	All other transportation	13,125,701	11,002,015	67,893,551	57,638,162
7	Incidental	12,996,762	10,390,343	68,422,394	60,692,119
8	Joint facility—Cr.	552,578	544,364	3,461,347	3,269,192
9	Joint facility—Dr.	198,350	179,639	1,079,586	993,529
10	Railway operating revenues	493,775,188	426,089,950	2,736,921,532	2,355,390,478
	Expenses:				
11	Maint. of way and structures	95,102,430	66,300,018	451,492,366	371,005,985
12	Maint. of equipment	127,120,900	96,675,119	710,551,463	573,065,963
13	Traffic	5,752,517	3,828,585	31,250,481	22,445,005
14	Transportation	230,607,147	176,067,702	1,279,141 318	1,042,769.783
15	Miscel. operations	5,527,330	4,130,692	28,434,512	22,414,018
16	General	14,179,186	9,960,052	74.834,024	61,425,960
17	Transportation for investment—Cr.	326,020	554,721	1.657.975	3.025.246
18	Railway operating expenses	477,963,290	356,407,447	2,574.046.189	3,090.101,468
19	Net rev. from railway operations	15,811,898	69,682,503	162,875,343	265,289,010
20	Railway tax accruals	25,685,254	14,552,249	131,640,747	92,130,856
21	Uncollectible railway revenues	80,638	72,620	526,447	365,661
22	Railway operating income	d9.953,994	55,057.634	30,708,149	172,792.493
23	Equipment rents (Dr. balance)	4,598,540	1,653:735	13,851,217	9,509,762
24	Joint facility rent —(Dr. balance)	1,732,366	1,265 236	9,520,401	7,196,264
25	Net of items 22, 23 and 24	d16,284,900	52,138,463	7,336,531	156,086,467
26	Per cent of expenses	96.80	83.65	94.05	88.74

c—Credit
d—Debit.

Exhibitors at the Tool Foremen's Convention

The following is the list of railway supply and manufacturing companies exhibiting at the tenth annual convention of the American Railway Tool Foremen's Association, held at the Hotel Sherman, Chicago, September 1 to 3 inclusive:

Abrasive Co., Chicago.—Grinding wheels. Represented by F. M. Willis and W. P. Corrant.

Air Reduction Sales Co., New York.—Acetylene tanks and torches. Represented by H. H. Melville and R. T. Peabody.

American Machinist, New York.—Represented by F. D. Wheeler.

Armstrong-Blum Mfg. Co., Chicago.—Band saws, steel machine saw, continued punch shear and bender. Represented by H. J. Blum and F. A. Blum.

Armstrong Bros. Tool Co., Chicago.—Rachet drills, tool holders, wrenches and lathe dogs. Represented by J. C. Fletcher and Horace Armstrong

Besley & Co., Charles H., Chicago.—Taps and reamers. Represented by C. A. Knill.

Blancke Co., Inc., L. C., Taunton, Mass.—Twist drills, reamers and cutters. Represented by J. A. Farrell.

Borden Co., Warren, Ohio.—Beaver stocks and dies, Beaver square and pipe cutters. Represented by H. R. Williams and V. M. Gaspar.

Boss Nut Co., Chicago.—Lock nuts. Represented by J. A. MacLean, J. W. Fogg and A. MacLean.

Brown & Sharpe Mfg. Co., Providence, R. I.—Precision instruments. Represented by H. C. Clayton, H. J. Johnson, R. E. Doras and P. A. Topel.

Brubaker & Bros., W. L., Chicago.—Taps, dies and reamers. Represented by J. R. Smith.

Bullard Machine Tool Co., Bridgeport, Conn.—Represented by Mr. Marshall and Mr. Huschart.

Carborundum Co., Niagara Falls, N. Y.—Represented by E. P. Ritzma, W. E. Knott, H. P. Frost and J. W. Frazer.

Chicago Pneumatic Tool Co., Chicago, Ill.—Represented by C. W. Cross, J. L. Canby, C. E. Leverenz, R. C. Black, J. L. Crowley, J. D. Crowley, N. S. Thulin, Mr. Cooke, Mr. Lynch and T. J. Smallwood.

Clark Equipment Co., Buchanan, Mich.—Twist drills. Represented by H. G. Tuttle and C. O. Montague.

Cleveland Steel Tool Co., Cleveland, Ohio.—Punches, dies, rivet sets and chisel blanks. Represented by H. W. Leighton, G. H. Knebusch and F. F. Frey.

Cleveland Twist Drill Co., Cleveland, Ohio.—Twist drills and screw extractors. Represented by H. S. White and O. B. Hansen.

Colonial Steel Co., Pittsburgh, Pa.—Crucible tool steel. Represented by C. O. Sternagle, W. H. Duley, W. W. Shaw, Thos. E. Tietz and Robt. Binshingham.

Crerar, Adams & Co., Chicago.—Jacks, die starters, wrenches, Lidseen's oilers. Represented by Russel Wallace, W. I. Clock, J. A. Martin, Geo. Bassett, E. W. Koon, Chas. Gregory and E. C. Porhler.

Crucible Steel Co. of America, Pittsburgh, Pa.—Represented by F. Baskerfield and J. H. Jones.

Detroit Twist Drill Co., Detroit, Mich.—Drills. Represented by H. T. Scott.

Duff Mfg. Co., Pittsburgh, Pa.—Jacks.

Grip Nut Co., Chicago.—Lock nuts. Represented by J. B. Whitenack.

Hisey-Wolf Mfg. Co., Cincinnati, Ohio.—Represented by J. B. Wells and R. W. Wells.

Hyland Company, R. H., Chicago.—Jacks. Represented by H. O. Norton, George R. Law and R. D. Bates.

Imperial Belting Co., Chicago.—Belting. Represented by A. G. Pickett and W. G. Willcoxson.

Independent Pneumatic Tool Co., Chicago.—Pneumatic and electrical tools. Represented by W. A. Nugent, Paul Mitchell, E. E. Lampe, J. C. Cowell, R. S. Marsh, H. White and H. C. Halbert.

Industrial & Railway Supply Company.—Twist drills, reamers and hack saws.—Represented by R. B. Jones, A. C. Muchter and E. E. Hart.

Ingersoll-Rand Co., New York.—Pneumatic tools. Represented by L. W. Schrutzer, H. H. Drew, C. H. Lungren, T. G. Abrams, W. D. Goddard and H. D. Pearson.

Jackman & Co., E. S., representing Firth Sterling Steel Co., McKeesport, Pa.—Represented by Carl O. Ericke.

Keller Pneumatic Tool Co., Grand Haven, Mich.—Pneumatic tools. Represented by J. C. Campbell, W. Kelly, J. C. Willson, Edw. Biederman, W. Delaney and Mr. Breunen.

Liberty Steel Products Co., Inc., Pittsburgh, Pa.—Portable drill press and countersinker, single line torch, portable rivet heater, pneumatic dolly bar and heading attachment. Represented by G. L. Degenhard.

Lovejoy Tool Works, Chicago.—Boiler makers tools, flue expanders, flue cutters, chuck, Perfection pneumatic trip. Represented by W. H. Dangel and Tom Brown.

Ludlum Steel Co., New York.—Carbonizing pots. Represented by S. T. Pearsons, C. J. Poore, J. E. Poore and M. F. Hall.

Midvale Steel & Ordnance Co., Philadelphia, Pa.—Represented by John Last.

Modern Tool Co., Erie, Pa.—Chucks, self-opening die heads and threshing tools. Represented by R. H. Wood and C. B. Buxton.

Norton Co., Worcester, Mass.—Represented by G. W. Thomson and H. K. Clark.

Onondaga Steel Co., Inc., Syracuse, N. Y.—Represented by H. A. Shier, G. E. Avery and W. N. Pomeroy.

Oxweld Railroad Service Co., New York.—Acetylene equipment. Represented by Wm. A. Champieux, J. P. Nicholson, F. C. Hasse and R. Rivett.

Racine Tool & Machine Co., Racine, Wis.—Machine saws. Represented by F. J. Kidd, D. B. Maxwell and Wm. Rhinehart.

Railway Mechanical Engineer, Chicago, Ill.—Represented by J. C. Marsh and C. B. Peck.

Rivet Cutting Gun Co., Cincinnati, Ohio.—Represented by J. C. Little and F. L. McCune.

Scully, Jones & Co., Chicago.—Wear Ever production tools. Represented by W. G. Salkeld and B. H. Lloyd.

Simmons Mfg. Co., Philadelphia, Pa.—Metal cutting saws, files, tool bits. Represented by Geo. R. Bird and H. P. Bauman.

Street & Co., R. R., Inc., Chicago.—Wrenches, chucks, ball bearing pulleys, hangers, Hyatt roller bearings. Represented by A. I. Coleman, F. H. Jones and A. H. Taylor.

Tool Salvage Co., Detroit, Mich.—Salvaged tools. Represented by H. H. La Vercombe and M. F. Crawmer.

Vanadium-Alloy Steel Co., Pittsburgh, Pa.—Vanadium steels. Represented by O. H. Dallman, R. F. Noonan and A. G. Henry.

Wayne Tool Mfg. Co., Waynesboro, Pa.—Reamers, drills and taps. Represented by J. C. Campbell.

Whitman & Barnes Mfg. Co., Akron, Ohio.—Twist drills and reamers. Represented by M. J. Kearins, K. Grant and J. A. Dilger.

Williams & Co., J. H., Brooklyn, N. Y.—Wrenches, tool holders, lathe dogs, pipe wrenches. Represented by P. E. Thomas and W. C. Teare.

Traffic News

Ships moving through the Panama Canal in August numbered 300, and tolls paid amounted to $930,209. This is the largest monthly record ever reported.

The railroads of New York state—all of the principal companies—have joined in a petition to the Interstate Commerce Commission asking for an investigation of the intrastate rates recently ordered by the Public Service Commission of the state, with a view to securing a decision on the question whether the Interstate Commerce Commission (where, as in the present case, intrastate rates are fixed by state authority on a basis much lower than rates for interstate transportation, over the same lines, declared reasonable by federal authority), may, under the Transportation Act of 1920, require intrastate rates to be advanced.

Owners of wagon coal-mines in Pennsylvania, Indiana, Kentucky and other states at a hearing before Division No. 4 of the Interstate Commerce Commission on September 4 protested against the recent order of the commission giving priority in the use of open top cars to mines equipped with tipples, which deprives the wagon mines of a large part of their car supply. They denied that the loading of cars from wagon mines has resulted in undue delay in the use of cars and characterized the commission's order as discriminatory and unjust. They also asserted that delay in the use of cars is largely due to the practice of railroads in giving railroad mines a week's supply of cars in advance.

Plans for providing Northern Ohio cities with a supply of coal for domestic use were agreed upon at a conference held at Cleveland on September 3 by committees representing the Northern Ohio cities, coal operators, railroad officers and the Interstate Commerce Commission, in accordance with a plan suggested at the hearing before the Commission last week, at which the chambers of Commerce of Cleveland and Akron complained that domestic consumers were being discriminated against by the commission's priority order for lake coal for the Northwest. The coal operators' committee pledged the operators to furnish sufficient quantities of coal for domestic consumers, to be distributed by a local committee without interfering in any way with the operation of Service Order No. 10.

The Chicago, St. Paul, Minneapolis & Omaha, the Great Northern, the Minneapolis, St. Paul & Sault Ste. Marie, and the Northern Pacific have joined in a petition to the Interstate Commerce Commission stating that there is a difference of opinion between them and the Great Lakes Transit Corporation as to the proper division to be allowed the lines east and south of Lake Superior ports of the through rates on grain products shipped by mills in Minneapolis and St. Paul via Duluth, Superior or Itasca, in connection with the Great Lakes Transit Corporation's boats to Buffalo and east thereof. The commission is asked to issue an order requiring the continuation of the present proportion of 23½ per cent of the New York rates for the lines south of Duluth, Superior or Itasca from the opening of the season of navigation.

Coal Production

A partial recovery from the depression of the previous week carried bituminous coal production during the week ended August 28 to a total of 11,374,000 net tons, an increase of 326,000 tons, or 3 per cent, over the output of the week before, although still 439,000 tons short of the output attained in the second week of August, according to the weekly bulletin of the United States Geological Survey. Preliminary reports indicate a substantial increase in total production on Monday and Tuesday of the following week. Production during the first 205 working days of the year has been 347,406,000 net tons, which is 15½ million tons less than that of 1917 and 40½ million tons less than that of 1918, but 49⅔ million tons ahead of the production of 1919. Cumulative shipments of anthracite coal since the beginning of the coal year April 1 now stand at 36,579,000 net tons, a slight

decrease when compared with the preceding year. During the week ending August 21 the average loss of full-time output attributed to transportation was 24.3 per cent. Dumpings of bituminous coal at Lake Erie ports during the fifth week of operation of the amended lake order, of the Interstate Commerce Commission established a new high mark for the present season, a total of 1,278,065 net tons. The cumulative lake movement from the opening of the season now stands at 11,009,000 net tons, as against 16,867,000 in 1918 and 16,174,000 in 1919. The cumulative shipments from the mines under Service Order No. 10 to September 1 were 14,943 cars in arrears. Cars of bituminous coal dumped over tidewater piers during the week ended August 28 totalled 26,116. Considerable quantities of coal shipped under Service Order No. 11 for New England have not been dumped for lack of vessels at the ports. On August 30 the coal on hand at Hampton Roads consigned to New England was reported as 126,000 net tons, whereas the capacity of vessels available for loading this coal was only 8,400 tons.

Rates to Be Increased in Canada

The Board of Railway Commissioners for the Dominion of Canada, at Ottawa, on September 7, announced an order authorizing a general increase of freight rates, on the railroads of Eastern Canada, of 40 per cent; and an increase of 35 per cent on the lines in Western Canada.

The rates are to go into effect on September 13, and be in force until December 31; but beginning with 1921 the rates in Eastern Canada must be only 35 per cent above those now in effect, and in Western Canada only 30 per cent above.

Authority is granted to make a general increase in passenger rates of 20 per cent, but with a maximum rate of four cents a mile. The 20 per cent increase may be charged until the end of this year; and thereafter the rates must be only 10 per cent above those now in force, and on July 1, 1921, fares must be reduced to the rates now in force.

Rates for accommodations in sleeping and parior cars are allowed to be increased 50 per cent; excess baggage rates 20 per cent.

Rates for the transportation of coal are dealt with in a separate section.

Intrastate Freight Rates

The fight between state regulatory bodies and the railroads over the legality of the intrastate rates lower than the rates recently authorized by the Interstate Commerce Commission is now centered in Chicago. On September 8 Commissioner B. H. Meyer opened hearings on the request of the railroads operating in Illinois for the setting aside of the recent ruling of the Illinois Public Utilities Commission, which allows increases in Intrastate freight rates of only 33⅓ per cent and denies the application of Illinois roads for increases in passenger rates comparable with the increases granted on interstate travel.

At the first session the railroad systems centering in Illinois introduced testimony purporting to show that the ruling of the State Public Utilities Commission preventing the interstate passenger rate granted to carriers by the Interstate Commerce Commission from becoming effective in intrastate traffic is discriminatory both as to individuals and localities. P. S. Eustis, passenger traffic manager of the Chicago, Burlington & Quincy, testified that the state ruling prevented the carriers from charging 3.6 cents a mile in Illinois operated to the disadvantage of cities just over the border of the state and to the advantage of competing cities just inside the state line.

He cited several instances to show the effect of the ruling and upon questioning stated that he believed the public would take advantage of this situation. The railroads in Illinois already have obtained a temporary injunction against the Public Utilities Commission restraining it from enforcing the Illinois law. The Utilities Commission maintains that the state has jurisdiction over the rates within the State while the railroads say that the Interstate Commerce Commission's order supersedes this.

An attempt of the state to obtain a continuance of the hearing until October 21 failed. It is believed that the hearings will take five or six days after which the evidence presented will be placed before the Commission sitting as a whole. Railroad attorneys expect a ruling within 60 days.

Commission and Court News

Interstate Commerce Commission

The hearing in the export bill of lading investigation set for Washington for September 20 before Commissioner Woolley has been cancelled, and hearings will be held at Chicago on that date and at Washington on October 4.

The Interstate Commerce Commission has further suspended from September 9, to October 9, certain tariff schedules that seek to cancel joint through rates on sugar subject to a minimum carload weight of 36,000 lb. from California producing points to various western points.

The Commission has permitted the National Council of Traveling Salesmen's Associations to become a party to the complaint of the Order of Commercial Travelers against the Pullman Company, protesting against the 20 per cent increase in Pullman rates which went into effect on May 1.

The Commission, in the case of the Northern Iowa Traffic Association vs. the director general and the railroads, has decided that class freight rates between points in Official Classification territory east of the Indiana-Illinois state line and points in Northern Iowa have not been shown to be unreasonable or unduly prejudicial.

The Commission on September 3 issued its decision, by Commissioner McChord, in the electric railway mail pay case, ordering increased rates for the different classes of mail service performed by the electric railways, on a space-basis system, and providing that side, terminal and transfer service shall be assumed by the Postoffice Department, or paid for on ascertainment of the cost.

I. C. C. to Investigate New York Fares

The Interstate Commerce Commission, on petition of the New York Central and other railroads operating in the state of New York, has ordered an investigation to determine whether the rates required by the New York Public Service Commission, which refused to put into effect for interstate travel the increases in passenger fares allowed by the Interstate Commerce Commission as to interstate traffic, cause or will cause any undue or unreasonable advantage, preference or prejudice as between persons or localities in intrastate commerce on the one hand and interstate and foreign commerce on the other hand, and as to what rates should be charged by the petitioners as to intrastate traffic in New York in order to remove any advantage, preference, prejudice or discrimination found to exist. A hearing was assigned before Chief Examiner Wilbur La Roe, Jr., on September 13 at New York. This order supersedes the order entered by the commission on July 12 providing for an investigation of the alleged discrimination caused by the attempt to enforce a statutory 2-cent fare on the New York Central. The New York railroads in their petition allege that the observance of the state commission's order to put into effect the statutory 2-cent passenger fare throughout the state will result in unjust and unreasonable discrimination against interstate commerce. A similar petition had previously been filed by the Illinois roads and a hearing was set for September 8. Another somewhat similar petition has been filed by the Texas roads and others are in course of preparation.

Reconsignment and Diversion Rules

The Interstate Commerce Commission has rendered a decision on fifteenth section applications proposing certain additional uniform reconsignment rules and increased charges which are approved in the following particulars:

1. Reconsignment of l. c. l. shipments of freight should be permitted when forwarded in one car from one station on one day by one shipper on one bill of lading, for delivery to one consignee at one destination, and the revenue paid thereon is not less than charged for the following minimum quantities: On butter, eggs, cheese, dressed poultry, game, and all other perishable com-

modities for the movement of which in l. c. l. quantities refrigerator or ventilator cars will be furnished under the tariffs, and for the movement of which a refrigerator or ventilator car is actually used, 15,000 pounds; on all other freight in ordinary cars, 24,000 lb.

2. The rule proposing that shipments reconsigned where back hauls or out-of-line hauls are involved will be subject to the published rates to and from the points of reconsignment plus reconsignment charge of $5, is found justified in so far as it concerns reconsignment involving back hauls, except that when such a shipment has not been placed for unloading at the reconsignment point the charge should be the through rate plus the published local or other rates applicable to the back-haul movement in both directions and the reconsignment charge. The proposed rule in so far as it concerns out-of-line hauls where through rates apply from original point of origin to final destination via point of reconsignment is found not justified.

3. Rule proposing that shipments covered by "order" or "order notify" bills of lading placed on hold tracks awaiting surrender of bill of lading, or shipments which are placed for inspection of contents before delivery, and which necessitates subsequent movement of car to place of delivery, will be considered as reconsignments within the switching limits before placement and subject to the provisions and charges in rule 8; this is found justified, provided that surrender of original bill of lading shall not be a condition precedent to the placement of the car or to the giving of the order designating where car shall be placed for unloading, except that where place of delivery designated is other than the local team tracks original bills of lading must be surrendered or indemnity bonds executed in lieu thereof, or other satisfactory assurance given carrier.

4. Rules proposing on shipments of fruits and vegetables at points in western and southern classification territories, one free reconsignment at the through rate and two additional reconsignments at the through rate plus reconsignment charges; and in official classification territory generally, two reconsignments at the through rates plus reconsignment charges, found justified.

Supplemental Report in Rate Case

Supplementing its original report in the general rate advance case, the Interstate Commerce Commission has authorized the railroads to increase rail-lake-and-rail rates between points on the Atlantic seaboard and interior points, on the one hand, and St. Paul and Minneapolis, Minn., and points grouped therewith, on the other, upon the same basis as is applied to corresponding rates to and from Duluth, Minn.

It has been the practice of railroads serving the eastern group, in conjunction with certain boat lines operating on the great lakes, to publish joint rail-lake-and-rail rates between points along the Atlantic seaboard and numerous interior eastern points, on the one hand, and Chicago, Duluth, Minneapolis and St. Paul, and the other western points on the other. In its original report, the commission found that in the construction of rail-and-lake rates the present parity between Chicago and Duluth should be maintained. It authorized an increase of 40 per cent in the rates between eastern points and Chicago, the Duluth rates to be made on the Chicago basis. Minneapolis and St. Paul are in the western group, and the carriers were authorized, under a literal interpretation of the original report, to increase the Twin Cities' rates 33⅓ per cent, the basis generally approved for interterritorial traffic. Attention has been directed to the fact that the rail-lake-and-rail rates to and from the twin cities bear a close relation to the corresponding rates to and from Duluth. The Duluth rates and the Twin Cities' rates are highly competitive, are published in the same tariffs, governed by the same classification, and, the commission says, it would obviously be not inappropriate to provide the same percentage of increase for both.

The present rail-and-lake class rates from New York to Duluth and the corresponding rates to the twin cities are as follows:

Classes:	1	2	3	4	5	6
New York to Duluth	102½	91	69	48½	41	34½
New York to twin cities	123½	109	82	56½	48	39½
Differentials	21	18	13	8	7	5

The above differentials were the result of the findings in *Commercial Club of Duluth v. B. & O.*, 27 I. C. C., 639. To increase the Duluth rates by 40 per cent and the twin cities' rates by 33⅓ per cent would slightly reduce the differential on some of the lower classes, although there has been a substantial increase in Duluth's inbound and outbound rates since 1913, when the last-mentioned case was decided.

The commission is convinced that a literal application of its original report will operate to the undue disadvantage of Duluth. The findings are, therefore, modified so as to authorize the same percentage increases in the twin cities' rates as were approved for the rates to and from Duluth.

Transcontinental Freight Rates

The Interstate Commerce Commission on September 3 made public the proposed report of Examiner W. A. Disque in the case instituted by the Intermediate Rate Association against the director general and the railroads, recommending that the commission find that commodity freight-rates in general applying to so-called intermountain territory from all the country east of the Rocky Mountains are not unduly prejudicial to that territory or unduly preferential of the Pacific Coast cities, but that it require joint through class rates to be established from points in Official Classification territory, the Atlantic Seaboard, Buffalo-Pittsburgh and Cincinnati-Detroit territory, to Boise, Idaho; Missoula, Mont.; Salt Lake City, Utah; Cheyenne, Wyoming and Albuquerque, N. M. A proposed scale of such rates is included in the report. The rates to these points are now combination rates based on the Missouri river or St. Paul.

This latest transcontinental rate case, involving all class and commodity rates to the Pacific coast and the intermountain territory from all points east of the Rocky mountains differs from previous rate cases in that the present rates are not lower to the coast than to the intermountain territory. The situation is now reversed, the question being whether lower rates shall be accorded to the intermountain territory than to the coast. On March 15, 1918, all departures from the long and short haul rule in westbound rates were removed by order of the Interstate Commerce Commission, on the ground that water competition was no longer a compelling force and the class rates were already lower to the intermountain territory than to the coast. In the spring of 1918 representatives of the intermountain shippers approached the Railroad Administration on the question of graded rates on all commodities; and, after a hearing had been accorded them by the Western District Traffic Committee of the Railroad Administration, the matter was referred to a joint committee of members of the San Francisco and Portland district freight committees, with directions to work out and submit a complete system of graded rates. This coast committee submitted the plan to the Western district committee with recommendations to the director general of railroads and the director general and the director of the division of traffic, on a visit to Spokane, indicated that graded rates would be accorded. However, the Chicago committee failed to act on the recommendations and the director general took the matter out of its hands and referred the question to the Interstate Commerce Commission for recommendations. The request was later withdrawn (shortly before the railroads were relinquished) but at the suggestion of the director of traffic the case was brought before the Interstate Commerce Commission by the filing of a formal complaint by the Intermediate Rate Association, a voluntary association of shippers' organizations and state commissions. The complaint alleged that the Pacific Coast had been given unreasonable preference because graded rates had not been accorded the intermountain country. Class rates were in general satisfactory. The plan proposed by the coast committee would satisfy the complainants but the director general and the railroads opposed it vigorously; and, after the chief examiner of the commission had considered it impracticable, a committee of railroad officers was appointed to prepare a proposal including the readjustment the railroads would be willing to make. This proposal was submitted in December, 1919, with the understanding that it was primarily on behalf of the railroad corporations, who were about to resume operation of their properties. It contemplated a complete readjustment of class and commodity rates, giving effect to the grading principle but entailing a disruption of important commodity-rate relationships and suggested the cancellation of many commodity rates. Further hearings were held during May, 1920; and the rates have now been increased 33 1/3 per cent

by the order of the commission in the general rate advance case.

The examiner finds that the intermountain territory is now paying the same rates on most of its traffic from the East as is paid by the Pacific Coast, in spite of a difference in distance ranging from 250 to 800 miles. The complainants asked an entire disregard of water competition, whereas the Pacific coast interests urged that the rates be not graded down on the ground that the rail rates to the coast should be such as to provide an adequate movement of loaded cars westbound to take care of eastbound shipments from the coast; and that water competition would return. Therefore they contended that reasonable rates should be fixed for the intermountain territory without tying them to the coast rates. The railroads supported this position and asked that the complaint be dismissed, saying that their plan of revision had been submitted only because they were asked to propose a plan.

The conclusion of the examiner is that the allegations of the complaint as to discrimination and unreasonableness have not been sustained; that there is no undue prejudice in the rates to intermountain territory as a whole, and that he cannot say that the rates should be graded. There is sufficient water transportation now and sufficient indication that it will increase to cause a belief that in a short time it will be felt in a serious loss of tonnage by the rail lines unless they have in force appropriate measures to meet the situation. The examiner, however, recommends that the complainants' allegations with respect to the combination basis of class rates from Official Classification territory to intermountain territory be sustained and that joint through class rates should be established at figures named in an appendix.

"We are almost inclined to say," the examiner says, "that our conclusion with respect to class rates may be taken as a general disapproval of combination rates. Methods of rate-making that are relics of the dark ages of rate-making should be discarded. The combination basis is abnormal, unnatural, unscientific, discriminatory and, some may say, un-American. The carriers should be regarded more and more as one national system and the time may not be far distant when we should proceed to the establishment of joint through class and commodity rates substantially lower than the combination of locals between practically all points in the country. We have generally recognized that through rates should be less than the combinations; but, prompted chiefly by considerations of paramount public interest growing out of the revenue conditions of certain carriers, we have hesitated and even declined to absolutely condemn combinations. We are now vested with sufficient authority to initiate rates that will protect the revenues of the carriers; and where carriers will suffer depletion of revenues by reason of the establishment of new joint rates, that loss can be offset by slight increases in other rates, or in the general level of rates."

Court News

Government Cannot Withdraw N. P. Lands

The Circuit Court of Appeals, Ninth Circuit, holds that under the land grant to the Northern Pacific of July 2, 1864, the company on completion of its road became vested with a contract right to select non-mineral lien lands within the indemnity limits, and the government could not defeat this right by withdrawing for possible inclusion in a national forest reservation any of the lands within those limits subject to selection before their survey.—U. S. v. N. P., 264 Fed. 898.

Notice of Injury to Drover Essential to Recovery

The Circuit Court of Appeals, Ninth Circuit, holds that the clause of a drover's contract made part of a bill of lading of an interstate shipment of livestock, providing that the railroad should not be liable to the caretaker for any injury growing out of the railroad's negligence unless given written notice of the claim within 30 days after injury, is a condition of recovery and not an exemption from or limitation of liability. It is immaterial that the railroad had actual notice of the injury and through its agents sought, without success, a settlement, where the amount of the claim was never stated, even orally, by the plaintiff or by any representative of his.—Gooch v. Oregon Short Line, 264 Fed. 664.

Foreign Railway News

British Freight Rates Increased

LONDON, August 13.

Announcement has just been made of the increases in freight rates by the Ministry of Transport for Great Britain which will take effect on September 1. This latest revision is to supersede the increases imposed on January 15 last, which were reported in the *Railway Age* of February 20 on page 575. This latest increase raises the rates and charges 100 per cent above pre-war figures plus a flat rate increase. They are of an interim character and are provided for the purpose of meeting, together with the recent increase in passenger fares, the £54,500,000 ($270,000,000 approx.) deficit anticipated for the period ending July 31, 1921.

Whereas the increase put into effect last January varied from 25 to 60 per cent, according to the class of traffic, above pre-war rates, the new rates represent an all round increase of 100 per cent plus flat rate additions.

What is known as Class *A* traffic was increased from 25 to 35 per cent plus a flat rate addition not exceeding two shillings (48 cents) per ton in January last. The new rates call for a flat rate addition of four shillings (96 cents) per ton, including a 100 per cent increase over the pre-war rates. Class *B* traffic was increased 40 per cent in January with a flat rate of 3 pence (6 cents) per ton and the new rates call for 100 per cent plus flat rate of 6 pence (12 cents) per ton. Class *C* was increased 50 per cent with 6 pence (12 cents) flat rate in January and this has been raised to 100 per cent plus a flat rate of 9 pence (18 cents) per ton. In Classes 1 to 5 the general increase was 60 per cent plus flat rate of one shilling (24 cents) and the present rates call for increase of 100 per cent with the same flat rate.

With this new increase in freight charges the public of Great Britain are paying, above pre-war charges, 75 per cent on ordinary passenger fares and 100 per cent on freight rates plus something in respect to flat rates. Thus it will be seen that transport charges on railways will be less than double what they were before the war. On the other side—increased cost—the wages bill has increased more than 200 per cent of what it was before the war. This was partly caused by the increase of 23 per cent in working force occasioned by the eight-hour day. The cost of steel rails is nearly four times the pre-war cost. Pig iron costs more than four times and all engineering work generally has increased over three times the pre-war cost. Mr. Neal, parliamentary secretary to the Ministry of Transport, stated that much larger increases would have been required but for the fact that considerable economy in the working of the railways has been effected. As an example he pointed out the fact that 31 per cent more passengers were being carried with 20 per cent less engine power. He said the present increases do not settle what shall be the final method of dealing with transport charges in Great Britain, stating that there might or might not be another revision before the railways were restored to the companies. He said that the charges which were in operation in August of next year, when government possession of the railways ceases, will remain in operation for 18 months afterwards.

FARMERS are begging for cars; that is to say, freight cars. They already have the limousines.—*Minneapolis Journal.*

ONE THING, ABOVE ALL, is to be borne in mind. If the higher rates result, at length, in improved service, they will tend to decrease rather than to increase prices. Transportation costs are a small proportion of the total cost to the consumer. The answer to the pyramiding argument is, not that the railroads should be deprived of living rates, but that pyramiding should be prevented. For the rest, the added cost due to increased rates will not be intolerable. It will be utterly insignificant in comparison with the reduction in price of many commodities which will ensue if distributive methods are improved.—*Baltimore Sun.*

Equipment and Supplies

Equipment for the Short Lines

The American Short Line Railroad Association, Washington, D. C., has worked out the details of a plan for assisting short line railroads to finance the purchase of equipment with the assistance of a loan from the $300,000,000 loan fund which is being administered by the Interstate Commerce Commission. It has incorporated the Consolidated Railway Equipment Corporation, under the laws of Delaware, with a capital of 10,000 shares of common stock of no par value and 10,000 shares of preferred stock of $100 par value, to purchase cars and locomotives to be rented to short line railroads under a lease-purchase arrangement or a contract of conditional sale. The corporation will issue $20,000,000 of 15-year serial equipment trust notes maturing semi-annually, and it is proposed to purchase about 4,000 freight cars and about $8,000,000 worth of locomotives. The details of the plan are not yet complete and it is not yet known how much of a loan will be obtained from the government, although the Interstate Commerce Commission has tentatively set aside $12,000,000 of the loan fund for short lines.

Locomotives

THE PHELPS DODGE CORPORATION, New York, has ordered 2 switching locomotives from the H. K. Porter Company.

THE CHINA, JAPAN & SOUTH AMERICAN TRADING CORPORATION, LTD., 80 Maiden Lane, New York, is asking for prices on from 150 to 200 Consolidation type locomotives for export.

THE MANILA RAILROAD, reported in the *Railway Age* of July 25 as inquiring for 30 locomotives, has ordered 10 Mountain type and 10 Santa Fe type locomotives from the American Locomotive Company.

THE ILLINOIS CENTRAL, reported in the *Railway Age* of September 3 as being in the market for 50 Santa Fe type locomotives and 25 switching locomotives, has ordered the 50 Santa Fe locomotives from the Lima Locomotive Works. This is in addition to the 50 Santa Fe type locomotives recently ordered by this road from the same builders, as reported in the *Railway Age* of May 28.

Freight Cars

THE DELAWARE, LACKAWANNA & WESTERN is inquiring for 20 caboose cars.

THE CENTRAL ARGENTINE RAILROAD is inquiring for 194 four-wheel cars of 20 tons capacity.

THE SINCLAIR REFINING COMPANY, Chicago, has ordered 6, 55-ton hopper cars from the Pressed Steel Car Company.

THE DETROIT EDISON COMPANY, Detroit, Mich., has ordered 6, 50-ton gondola cars from the Pressed Steel Car Company.

THE OTIS STEEL COMPANY, Cleveland, Ohio, reported in the *Railway Age* of July 30 as being in the market for 10 hopper cars, has ordered 5, 55-ton hoppers from the Pressed Steel Car Company.

THE INTERNATIONAL RAILWAY SUPPLY COMPANY, 30 Church street, New York, has bought from the Gregg Company 100, 20-ton cane cars and 25, 20-ton flat cars for the American Railroad Company of Porto Rico.

THE CHICAGO & NORTH WESTERN, reported in the *Railway Age* of July 9 as being in the market for 250 refrigerator cars and in the *Railway Age* of July 23 as being in the market for 50 caboose cars, has ordered 250 refrigerator and 50 caboose cars from the American Car & Foundry Company.

Passenger Cars

THE CHICAGO & NORTH WESTERN, reported in the *Railway Age* of August 13 as inquiring for 25 passenger cars, has ordered this equipment from the American Car & Foundry Company.

Supply Trade News

William S. Noble, who has been appointed manager of the railroad department of the **Standard Paint Company,** with offices in New York and Chicago, as was announced in the *Railway Age* of August 27, page 376, was born at Danville, Ky. He began railway work in 1887 as secretary to vice-president of the Lehigh Valley. He was later assistant in the president's office of the same road, and from 1905 to 1909 was assistant to president of the Seaboard Air Line, the Clinchfield Coal Corporation and the Carolina, Clinchfield & Ohio Railroad at New York. He then was appointed president's assistant with the Lehigh Coal & Navigation Company. Philadelphia, and in 1914 entered the service of the Standard Paint Company, New York, in its railroad department. He subsequently served as western representative, from which position he was recently promoted to manager of the railroad department of the same company.



W. S. Noble

Charles H. Motsett, superintendent of the New York division of the New York, New Haven & Hartford, with office at Harlem River, N. Y., resigned recently to become general sales manager for the **DeMayo Engineering Corporation,** designers and manufacturers of portable elevators and conveyers for the handling of bulk material. Mr. Motsett's new headquarters are at pier 62 North River, New York. He was born in Peoria, Ill., on December 4, 1873, and began railway work in 1892 as a yard clerk with the Chicago, Rock Island & Pacific, at Peoria. He subsequently served as chief clerk to the general yardmaster, and during 1902 to 1903 as assistant night yardmaster at Rock Island, Ill., and as assistant general yardmaster. He then served as general yardmaster, Council Bluffs, Iowa, until 1904, and during the next two years served in the same position at Des Moines and at Valley Junction, Iowa. In 1906 he left the service of the Rock Island to become trainmaster at Des Moines, on the Minneapolis & St. Louis, and two years later went to the New York, New Haven & Hartford as trainmaster at Harlem River, N. Y. He subsequently served on the same road from 1913 to 1914 as superintendent of the New York division at Harlem River and then went to the Panama Railroad, where he remained for two years as superintendent at Balboa, Canal Zone. He returned in 1916 and was appointed superintendent of the New London division of the New Haven. From 1917 until his resignation, he served as superintendent of the New York division.



C. H. Motsett

Railway Financial News

Atchison, Topeka & Santa Fe.—This company has applied to the Interstate Commerce Commission for an order authorizing it to continue the issuance of its California-Arizona lines first and refunding mortgage bonds, payable in U. S. gold coin, in an additional amount not exceeding $15,486 par value, to enable the Atchison Company to effect the exchange of such of $564,514 par value, of bonds payable in sterling as may from time to time be surrendered for exchange into California-Arizona lines first and refunding mortgage bonds payable in U. S. gold coin.

Boston & Maine.—This company has filed an application with the Interstate Commerce Commission for authority to issue $3,843,000 6 per cent bonds, maturing June 1, 1920, to refund an equal amount of bonds and notes.

Chicago & Western Indiana.—This company has applied to the Interstate Commerce Commission for authority to issue 15-year, 7½ per cent, collateral trust bonds in an amount not to exceed $7,500,000 and $1,000,000 of trust notes for 15 years, with interest at 6 per cent, for the purpose of refunding outstanding obligations.

Chicago, Rock Island & Pacific.—This company has applied to the Interstate Commerce Commission for authority to issue $1,000,000 of general mortgage 4 per cent gold bonds, to reimburse the treasury for expenditures made for improvements, and also a similar amount of first and refunding mortgage bonds to be used as collateral.

Delaware & Hudson.—This company has applied to the Interstate Commerce Commission for authority to issue $3,475,000 first and refunding mortgage bonds maturing May 1, 1943, bearing interest at 4 per cent and secured by a mortgage to the Farmers' Loan & Trust Company dated May 1, 1908. The proceeds are to be used for the acquisition of property and the construction and completion of extensions and improvements of facilities except that it is desired that part of the bonds may be made available for security for a loan of $1,250,000 from the revolving fund, which will be used to pay for part of the improvements. These include the elimination of the Whitehall tunnel, $500,000; a new yard and 30-stall roundhouse at Glenville, $1,250,000; new yard and 10-stall roundhouse at Port Henry, $500,000; 25 passenger coaches at $33,000 each, four combination passenger and baggage cars at $25,000 each and 15 milk cars at $20,000 each.

Denver & Rio Grande.—The Western Pacific Railroad is offering to exchange its ten-year 4 per cent notes for the 7 per cent cumulative adjustment bonds of the Denver & Rio Grande. The offer is conditional on its being accepted by holders of $7,510,000 adjustment income bonds of the Denver & Rio Grande before September 20.

Gulf Ports Terminal.—This company has applied to the Interstate Commerce Commission for a loan of $500,000 to enable it to resume the construction of 26 miles of unfinished line between Pensacola and Mobile, on which the roadbed has been finished for 18 miles, and also for the betterment of 46 miles of road now in operation and the purchase of some additional equipment.

Kansas, Oklahoma & Gulf.—This company has filed an application with the Interstate Commerce Commission for authority to issue securities for the purpose of carrying out the terms of the plan of adjustment stipulated in court proceedings by which the applicant company acquired its property.

Long Island.—This company has been authorized by the Interstate Commerce Commission to execute an equipment trust agreement for $1,668,000 for 12 years, and $419,279 of 6 per cent unsecured notes, the proceeds to be used in payment for 20 steel motor passenger cars, 50 steel trailer passenger cars and 30 steel passenger cars.

New York Central.—A further hearing was held before W. A. Colston, director of finance of the Interstate Commerce Commission, at Washington on September 7, on the application of the New York Central for authority to issue $25,000,000 of 7 per cent collateral trust bonds and a like amount of refunding and improvement mortgage bonds to be deposited as collateral. The hearing was called particularly to allow the Michigan Public Utilities Commission an opportunity to be heard in opposition to the power of the Interstate Commerce Commission to supplant the state authorities in the regulation of security issues. No one appeared on behalf of the Michigan commission, but R. J. Cary, of counsel for the railroad, stated that a stipulation had been entered into with the Michigan commission by which it would test the question of jurisdiction in the courts by entering suit against the railroad to recover the penalties provided by the Michigan law for the issuance of securities without having made an application to the state authorities. Director Colston then read into the record telegrams which had passed between the Michigan commission and the interstate commission in which the Michigan commission had asked the Interstate Commerce Commission to request the railroad to apply to the state commissions, as well as to the Interstate Commerce Commission for authority to issue the securities. Commissioner Daniels, of the Interstate Commerce Commission, had replied, saying that the commission has not held that a railroad must apply to the state commissions concurrently with an application to the Interstate Commerce Commission, and that it does not see its way clear to ask the New York Central to make an application to the state authorities. Director Colston asked a number of additional questions regarding the transactions between the railroad and J. P. Morgan & Co., as syndicate manager, and between the Morgan company and the 400 members of the syndicate through which approximately $39,000,000 of subscriptions were obtained two hours after the books were opened. It had been brought out at the previous hearing that the New York Central received approximately 96.52 for the bonds and that the members of the syndicate received them at 97. Mr. Colston said the record ought to show in some detail as to whether it was actually necessary for the New York Central to pay a commission of 3 or 3½ per cent, and as to whether it could not have placed some of the bonds without the assistance of a syndicate. Mr. Cary pointed out that it would have been entirely impracticable for the railroad to try to sell its own bonds, and that the commission represented a very conservative payment for the services of Morgan & Co., and of the distributing organization represented by the syndicate. A further hearing on these points was set for September 10.

New York, New Haven & Hartford.—The entire capital stock of the Rhode Island Company, which originally cost the New Haven $24,000,000 when the company was formed to operate that road's trolley interests in the state of Rhode Island, was sold on September 2, at public auction, for $2,200. The stock, amounting to 96,855 shares, was purchased by Harry Parsons Cross, of Providence, R. I., who said he was attorney for other interests, which he refused to name.

Paris & Mt. Pleasant.—Authority has been asked of the Interstate Commerce Commission to issue $100,000 of receivers' certificates for the purpose of making repairs to roadway, station buildings and equipment.

Richmond, Fredericksburg & Potomac.—This company has applied to the Interstate Commerce Commission for authority to execute notes aggregating $250,000 to the First National Bank of Richmond, Va., or to discount a portion or all of $250,000 of notes of the Richmond Terminal Railway for the purpose of raising funds needed for the payment of retroactive wages under the award of the Railroad Labor Board.

Seaboard Air Line.—Holders of the $4,000,000 6 per cent notes of 1917 which fall due September 15, 1920, will receive $750 in cash on each $1,000 note and $250 in an extended note due in three years from September 15, with interest at 7 per cent.

Virginia Blue Ridge.—This company has applied to the Interstate Commerce Commission for authority to issue a four-months' note for $8,500.

Western Pacific.—See Denver & Rio Grande.

Railway Officers

Executive

R. M. Shepard has been appointed assistant to the receiver of the Toledo, St. Louis & Western, and assistant to the president of the Detroit & Toledo Shore Line, with headquarters at Toledo, Ohio, effective September 1.

W. S. Andrews, general superintendent of transportation of the Southern Railway, Lines West, with headquarters at Cincinnati, Ohio, has been appointed assistant to the vice-president to give particular attention to car service, with headquarters at Washington, D. C., effective September 1.

Financial, Legal and Accounting

F. B. Sherwood has been appointed auditor of freight overcharge claims of the Illinois Central, the Yazoo & Mississippi Valley, and the Chicago, Memphis & Gulf, with headquarters at Chicago, effective September 1.

Operating

H. C. Brock has been appointed trainmaster of the Slaton division of the Pan Handle & Santa Fe, with headquarters at Slaton, Tex., effective September 1, succeeding H. A. Tait, assigned to other duties.

J. F. Anton, whose promotion to superintendent of the Slaton division of the Pan Handle & Santa Fe, with headquarters at Slaton, Tex., was announced in the *Railway Age* of August 13, (page 299), was born on May 23, 1885, at Hague, Va. Mr. Anton entered railway service with the Baltimore & Ohio as a clerk in yard service in September, 1899. In February, 1905, he was promoted to yardmaster, with headquarters at Baltimore, Md. After a short service with the Missouri Pacific as yardmaster, he entered the employ of the Atchison, Topeka & Santa Fe as a switchman at Pueblo, Colo., in June, 1906. During the latter part of this year he was appointed engine foreman at La Junta, Colo., and not long thereafter was transferred to Las Vegas, N. M. He was promoted to night yardmaster in February, 1907, and then to general yardmaster, a position he held until January, 1913, when he was appointed assistant trainmaster on the Rio Grande division. In June, 1918, he entered the army and upon his return from overseas in August, 1919, was reappointed to his former position. He was transferred to the Plains division in February of the same year, with headquarters at Amarillo, Tex., where he was located at the time of his recent promotion.



J. F. Anton

H. H. Temple, chief engineer of the Pittsburgh & West Virginia, with headquarters at Pittsburgh, Pa., has been appointed general superintendent of that road and the West Side Belt, with the same headquarters, succeeding J. E. Fairhead, resigned, effective September 1.

D. H. Ryan, assistant superintendent of the Canadian Pacific, with headquarters at St. John, N. B., has been appointed acting superintendent of the Schreiber division, with headquarters at Schreiber, Ont., succeeding W. C. Guthrie, granted a month's leave of absence, effective August 21.

James B. Finley, assistant general superintendent of the Southern Pacific of Mexico, with headquarters at Empalme, Sonora, Mex., has been appointed general superintendent, effective September 1, succeeding J. H. Temple, deceased. The office of assistant general superintendent has been abolished.

C. T. Beven, secretary and director of the Car Service committee of the American Railroad Association, has been appointed terminal trainmaster of the Illinois Central, with headquarters at New Orleans, La., effective September 1. **E. R. Gunther,** chief clerk to the terminal superintendent of the Illinois Central, has been appointed secretary of the Car Service committee, to succeed Mr. Beven.

C. M. Mitchell, superintendent of the Cincinnati, New Orleans & Texas Pacific, with headquarters at Danville, Ky., has been appointed general superintendent of transportation of the Southern Railway, Lines West, with headquarters at Cincinnati, Ohio, succeeding W. S. Andrews, promoted, and J. G. Clements, trainmaster of the Cincinnati, New Orleans & Texas Pacific, at Danville, Ky., has been appointed to succeed Mr. Mitchell, effective September 1.

Traffic

A. B. Bierdeman has been appointed general agent in the freight department of the Toledo, St. Louis & Western, with headquarters at Chicago.

Edward Campbell has been appointed assistant general freight agent of the Bessemer & Lake Erie, with headquarters at Pittsburgh, Pa., effective August 31.

J. H. Shaw, general freight and passenger agent of the Tremont & Gulf, with headquarters at Winnfield, La., has been appointed general freight and passenger agent of the Arkansas & Louisiana Missouri, effective September 1, with headquarters at Monroe, La., and will assume entire charge of all traffic matters previously handled by R. R. Renfrow, auditor.

George Stephen, freight traffic manager of the Canadian National, with headquarters at Toronto, Ont.; **H. H. Melanson,** passenger traffic manager, with same headquarters, **W. G. Manders,** assistant freight traffic manager, and R. Creelman, assistant passenger traffic manager, with headquarters at Winnipeg, Man., have had their jurisdiction extended over the Grand Trunk Pacific and the Grand Trunk Pacific Coast Steamship Company, effective August 24. Other officials appointed to represent the Canadian National and the Grand Trunk Pacific lines west of Duluth, Minn., Port Arthur and Armstrong, Ont., are: **A. E. Rosevear,** general freight agent in charge of grain, grain products and livestock, with headquarters at Winnipeg; **J. M. Horn,** general freight agent at Winnipeg, in charge of all traffic not otherwise assigned; **J. M. Macrae,** assistant general freight agent at Winnipeg, **W. Hately,** assistant general freight agent at Winnipeg, in charge of publication of tariffs and divisions; **W. E. Duperow,** general passenger agent at Winnipeg, in charge of the territory east of Lucerne, B. C., and **Osborne Scott,** general passenger agent in charge of territory of Lucerne, B. C., and west, including the Grand Trunk Pacific Steamship Company, with headquarters at Vancouver, B. C. All appointments effective August 28.

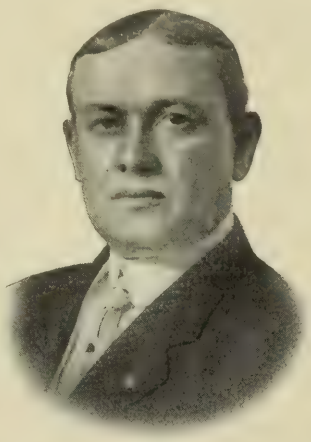
Mechanical

John F. Long, district maintenance of equipment inspector of the Baltimore & Ohio, has been appointed master mechanic of the Connellsville division, Eastern district, with headquarters at Connellsville, Pa., succeeding H. J. Burkley, assigned to other duties.

James Simpson, master mechanic of the Northern Pacific, with headquarters at Spokane, Wash., has been promoted to

general master mechanic of the lines west of Paradise, Mont., with headquarters at Tacoma, Wash., effective August 26. **G. F. Egbers,** master mechanic, with headquarters at Pasco, Wash., has been transferred to succeed Mr. Simpson, as master mechanic of the Idaho division, with headquarters at Parkwater, Wash.; **C. A. Wirth,** road foreman of engines, with headquarters at Pasco, Wash., has been promoted to succeed Mr. Egbers.

Henry Wanamaker, who has been appointed district superintendent motive power of the New York Central, with headquarters at Albany, N. Y., as noted in the *Railway Age* of August 6 (page 260), served as superintendent of shops previous to this promotion. Mr. Wanamaker was born on August 5, 1866, at Pottsville, Pa. He received a high school education and began railroad work on August 1, 1884, with the Philadelphia & Reading, as machinist's apprentice. He was promoted to machinist in 1888 and served in that capacity until 1896, when he was appointed gang foreman at Reading, Pa. He left the Philadelphia & Reading in 1900 to become a foreman in the erecting shops of the New York Central at West Albany, N. Y., where he remained until 1905, when he was transferred to Depew, N. Y., as general foreman. In December, 1911, he was appointed superintendent of shops, with the same headquarters, and was transferred to West Albany on May 20, 1912.



H. Wanamaker

Engineering, Maintenance of Way and Signaling

H. B. Holmes has been appointed chief engineer of the Pittsburgh & West Virginia and the West Side Belt, with headquarters at Pittsburgh, Pa., succeeding H. H. Temple, promoted, effective September 1.

R. A. Sheets, assistant signal supervisor of the Chicago terminal division of the Chicago & North Western, with headquarters at Chicago, has been promoted to signal supervisor of the West Iowa, the Sioux City and the Northern Iowa divisions, as well as lines west of the Missouri river, with headquarters at Boone, Ia.

A. R. Jones, supervisor tracks of the New York Central lines east of Buffalo, with headquarters at Clearfield, Pa., has been appointed division engineer of the St. Lawrence division, with headquarters at Watertown, N. Y., succeeding **P. H. Winchester,** transferred to the Syracuse division, with headquarters at Syracuse, N. Y., effective September 1.

C. L. Spaulding, whose promotion to district engineer, Eastern district of the New York Central, with headquarters at New York, was announced in the *Railway Age* of July 16 (page 128), was born at Fitchburgh, Mass., on March 27, 1867. Mr. Spaulding began railroad work as a chainman for the Fitchburgh Railroad in March, 1893, and served subsequently as a rodman and instrument man until 1899, when he left that road to become assistant engineer of the Boston & Maine, leaving that road in 1903 to go with the New York Central & Harlem River as assistant engineer. In May, 1906, he was appointed resident engineer and was transferred twice while acting in that capacity. In February, 1919, he was appointed secretary and engineer on the Yonkers Waterfront Commission, with headquarters at Yonkers, N. Y. In July, 1919, he was promoted to district engineer of the electric zone and remained in this position until his recent promotion to Eastern district engineer, as already noted.

Boynton S. Voorhees, who has been appointed general office engineer of the New York Central Lines, with headquarters at New York, as announced in the *Railway Age* of July 16 (page 128), was born at Hackensack, N. J., on April 29, 1886, and was graduated from the Sheffield Scientific School of Yale University in 1907. He entered the employ of the New York, New Haven & Hartford Railroad the same year as a chainman at New Haven, Conn., being made inspector in 1908. In the latter part of 1908 Mr. Voorhees left the New Haven and went with the New York Central as a chainman and rodman in the maintenance of way department, being located at Albany, N. Y. From April, 1909, to January, 1912, he was draftsman, transitman and inspector in the construction department at Watertown, N. Y., particularly in charge of field work of the new five-mile freight cut-off location and construction. In January, 1912, he was promoted to assistant engineer in the office of the district engineer of the construction department at Albany, N. Y., and in May of the same year he was transferred to New York as assistant engineer of grade crossing. In 1916 he was promoted to engineer of this work and in February, 1920, was appointed district engineer of the Eastern district at New York, from which position he was appointed general office engineer, as noted above.

Railroad Administration

John Sesser, former assistant general superintendent of the Great Northern, has been appointed a member of Railway Board of Adjustment No. 3 of the United States Railroad Administration, with office at Washington, D. C.

Obituary

Isaac B. Thomas, purchasing agent of the northwestern region of the Pennsylvania, with headquarters at Chicago, died September 1 in that city. Mr. Thomas was born on June 26, 1872, at West Chester, Pa. He graduated from Sheffield Scientific School, Yale University, in 1892. His first railroad work began in 1892 as apprentice at the Altoona shops of the Pennsylvania. On August 1, 1897, he was promoted to inspector at the same shops. In April, 1899, he was transferred as inspector to the office of the assistant engineer of motive power at Altoona. He was appointed assistant master mechanic, with headquarters at Renovo, Pa., on February 1, 1900, but returned to Altoona in 1901 as assistant engineer of motive power. On August 1, 1903, he was appointed master mechanic at the Pittsburgh shops and transferred to the Altoona machine shops in 1906. He was promoted to superintendent motive power, Erie division of the Pennsylvania, and also of the Northern Central, with headquarters at Williamsport, Pa., in 1911. He was appointed assistant purchasing agent of the Pennsylvania, lines east of Pittsburgh, in 1916. Upon the return of the road to private control he was appointed to the position he held at the time of his death.



I. B. Thomas

William H. Moore, engineer of structures of the New York, New Haven & Hartford, with headquarters at New Haven, Conn., died in that city on September 5.

The Nashville Traffic Bureau has petitioned the Tennessee Railroad Commission to disapprove advanced rates, recently filed, for switching cars in Nashville.

EDITORIAL
Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Annual Meeting of the T. & T. Division

The third session of the Telegraph and Telephone Division, Section I-Operating, American Railroad Association, which will be held at Winnipeg, Man., on September 22, 23 and 24, will be one of more than usual importance as it is the annual meeting and also the first session to be held this year. In addition to the consideration of certain special reports, seven interesting and valuable regular committee reports will come up for discussion and action. Such reports as Construction and Maintenance of Outside and Inside Plant; Protection Against Electrolysis and Against Lightning or Electric Light and Power Circuits; Message Traffic; Telegraph and Telephone Development and Inductive Interference will receive consideration. Certain reports will treat of such subjects as the proper strength of pole lines, wire line crossings and message traffic which have a direct bearing upon efficiency of train operation. It would thus appear advisable for the railway managements to take steps to be properly represented at this meeting in order that the association may have the benefit of as large a representative membership as possible acting on the reports presented. In this way those roads having representatives present will be enabled to take an active part in proceedings which will later be submitted to the parent association for approval and adoption.

The Ticket Protective Bureau

The railroads are now considering the re-establishment of the Railway Ticket Protective Bureau an organization started in 1903 to detect and prosecute forgers of railroad tickets and later to fight the strongly entrenched business of ticket scalping. The work of this bureau was taken over by the Police and Secret Service Section of the United States Railroad Administration during the period of federal control. The rule which should govern when questions such as this arise should be the favorable or unfavorable relation of the value of the work performed to the increased expenditure caused. Insofar as the Railway Ticket Protective Bureau is concerned, the savings which can be made through its efforts will so far overbalance the expenditure which its establishment and maintenance would entail that there should be little question as to the advisability of its re-establishment. Ticket scalper's offices are re-opening throughout the country and with higher passenger fares offering additional inducements for patronizing scalpers, a determined effort will have to be made sooner or later to suppress this evil. In addition tickets are now being issued, non-signature, non-validation and on simplified contract forms. This offers further inducements for the rapid extension of ticket scalping. The work of this bureau in combating the ticket scalping evil will thoroughly justify its existence. However, it has been suggested that its activity be widened to ascertain the extent of the withholding of cash fares and tickets on the part of railroad employees. This is an evil which has grown in a startling manner during the past two years. Knowledge of the establishment and maintenance of an organization, one of whose purposes is the detection and prosecution of dishonest railroad employees, would be, in itself, a remedial agent. The actual detections and prosecutions attributable to the bureau together with the psychological effect produced by mere knowledge of its existence, would undoubtedly result in the conservation of a large sum which would, under present conditions, be lost.

Camouflaged Material Stocks

For years the average tonnage of freight trains has been accepted as a satisfactory basis for comparing the efficiency of railroads operating through similar territory. Likewise the average net weight of loaded cars has been commonly considered a good index to operating efficiency, and now it is on the daily mileage of freight cars as well as their loading that the performance of many railroads is being compared. Comparisons of this sort have played a prominent part in raising the efficiency of individual railroads and for this reason they should be extended to every important feature of railroading subject to comparative analysis. The *Railway Age* recently advanced the suggestion that the quantity of unapplied material carried by each railroad in terms of the monthly requirements should be regarded as much an index to operating efficiency as the average train tonnage or the weight per loaded car. There is nothing about the operation of a railroad that will run into money more rapidly than an unnecessary accumulation of unapplied material. Every railroad executive should know the value of this material in terms of the monthly consumption and he should be able to compare this figure with other railroads with the assurance that the comparison was based upon a uniform basis of accounting. However, few railroads account for material in the same way and the general storekeeper whose communication appears in this issue fears that under the circumstance a comparison on this basis would work a great injustice on those railroads which are conscientiously accounting for all material not in actual use when compared with other roads which have disguised large quantities of unused material. But this, in itself, is an important reason why these figures should be included with other data bearing on the relative efficiency of each railroad. Once accepted as a basis for critical comparison it is certain that the scrutiny given these statements will cause a speedy reformation among the railroads who are camouflaging large quantities of unapplied material by various accounting means.

Applying a Platitude

Clerical labor for railroads has been so plentiful in the past, that price, not quality, was the governing factor in the selection thereof. Naturally the tools with which clerical labor worked were purchased on somewhat the same basis. In 1916 there were approximately 103,000 clerks employed on the roads reporting to the Interstate Commerce Commission receiving less than $900 a year each and about 67,000 receiving $900 a year or more. Even in 1917 a considerable change had taken place. Ninety-nine thousand clerks received less than $900 a year and 85,000 received $900 or more. The McAdoo wage award made a radical change in these figures, and,

were the figures available for conditions at the present time, it would show probably a complete reversal of the proportion of clerks getting less than $900 a year in 1916 with also a large increase in the total number of clerks employed. If a clerk hour costs from 50 per cent to 100 per cent more than it did in 1916, it might well repay someone to make a study of the conditions under which clerical help works for the purpose of determining whether or not there was some way in which conditions could be changed so that the average clerk would accomplish in an hour more than he is now doing. To treat clerical labor as if it still cost less than $600 a year per clerk and should therefore receive the minimum of attention and be given the cheapest of materials to work with is an expensive policy. It was probably a mistake to treat clerical labor in this way whether it cost less than $600 a year or not. The output per clerk hour can be very greatly increased by more careful training, better working conditions and better materials with which to work. This is a platitude but the truth contained therein is not by any means always applied.

How Are You Increasing Car Mileage?

The problem of car supply is measured by the needs of the country as a whole rather than those along any individual line, and the necessity for increasing the average daily mileage of cars is country-wide. There is, therefore, every reason for the widespread dissemination of information concerning methods contributing to the more expeditious movement of cars. A survey of the situation shows that some roads are more successful than others in speeding up the movement of cars on their lines. This is due in some instances to methods introduced over an entire system by the management of that road, in others to expedients adopted locally by the officers on the line. Regardless of the origin and scope of these methods they are now of national importance, when the roads are being taxed to the limit to meet the demands of their patrons for service. For the purpose of bringing out for general use those methods which are contributing to this important improvement, the *Railway Age* has announced a contest on "Means of Increasing the Average Miles Per Car Per Day" to which discussions are solicited with the belief that they will aid in the solution of this important problem. Papers should be written concisely, should preferably not exceed 1,200 words in length and should be confined to the presentation of practical measures within the ability of the roads to put into effect. To stimulate interest, prizes of $50 and $35 will be awarded for the two best papers received, while we will pay our regular space rates for others accepted and published. The prizes will be awarded on the basis of the practicability of the ideas presented, the extent of the improvements adoption of them will effect and the readiness with which they may be applied. All papers must be mailed to the editor of the *Railway Age*, Transportation building, Chicago, on or before September 30, 1920.

The Fifth Fuel Commandment: Vigilance

Eternal vigilance is the price of fuel economy. This is particularly applicable to the maintenance of a locomotive in a condition to operate efficiently from the standpoint of fuel consumption. There are innumerable things about a locomotive that may not be essential to getting the engine over the road but which are absolutely fundamental to the efficient use of fuel on the locomotive. The proper maintenance of a locomotive is obviously the function of the mechanical department but this is so highly essential to fuel efficiency that it is wholly within the province of an organization designed to promote fuel economy to exercise a certain amount of supervision over the maintenance of locomotives so far as this may be found to affect fuel consumption. Having outlined in the earlier commandments the relation of the organization to the men who are largely responsible for the economical use of fuel, the fifth fuel commandment relates to the condition of locomotives and specifies eternal vigilance in the proper maintenance of every detail about the construction of a locomotive that can affect fuel use. These details are all well-known and many good features, such as the condition of the arch and superheater, are generally well attended to. But the prevention of front end leaks, the elimination of needlessly restricted nozzles and attention to many other minor details requires far more consideration than these matters are, at present, accorded on many railroads. There is no reason why an absolute check on many of these details could not be maintained by the simple process of requiring the boilermakers when engaged in the monthly inspection of boilers as required by law, to certify at the same time to the size of the nozzle and the condition of other parts that bear an intimate relation to fuel consumption. This would at once furnish an accurate statement, periodically available, as to the condition of every locomotive with respect to those details which vitally affect the economic operation of a locomotive.

Freight Moved Breaks Record; Car Shortage Still Increases

THE LATEST STATISTICS on the amount of freight being moved by the railroads demonstrate at least two things.

The first is that there has been as yet no decline of general business activity in the United States. In the four weeks ended August 28 the railways moved the largest amount of freight they had handled in any four weeks of the present year, but the amount of freight demanding movement was so great that the car shortage actually increased. The requisitions for cars made by the shippers of the United States in the week ending September 4 exceeded by 146,000 the number that the railways could supply, as compared with 137,200 two weeks before. The fact that in spite of the increase in the amount of freight handled there was also an increase of the excess of orders for cars over the number that could be supplied demonstrates that there had been no slackening of general production.

The second thing which the statistics demonstrate is that the efficiency with which the railways are being operated is still increasing. In the four weeks ending with August 28 the number of carloads of freight moved was 3,853,822. This was 273,755 more than were handled in the same weeks of 1919, and 4,196 more than were handled in the same weeks of 1918. The amount of freight handled in August, 1918, was over 7 per cent greater than had ever been handled in that month before, and therefore the railways by moving more freight in August, 1920, than in August, 1918, set a new high record for that month.

The principal reason for the increases which are being secured in the amount of freight handled is the efforts the railway managements are making to increase the average miles moved by each car daily. Some weeks ago they set as a standard to be attained an average of 30 miles per car per day. The latest statistics regarding miles per car per day, which are those for July, show that they are steadily approaching this standard. They increased the average miles made daily by each freight car in the country from less than 20 miles in April, 1920, when the effects of the "outlaw" strikes were most felt, to 25.7 miles in July. This average of 25.7 miles in July, 1920, compares with an average of 21.3 miles in July, 1919.

The railway managements may well be proud of the record of improved efficiency they are making. The fact, however, that in spite of it the car shortage is increasing indicates that they must make still greater efforts. All signs are that the traffic to be moved this fall and winter will be heavier than ever before. Probably it will not be long until snow and cold weather will begin seriously to interfere with operation. The more freight they get moved while the weather continues good the better it will be for them and for the country.

Misleading the Farmers About Railways

AGRICULTURE is the basic industry of the United States and every other country. People cannot live without food. The farmers are the producers of it.

Second only to agriculture in rank as a basic industry is railroad transportation. Neither agriculture nor any other form of industry can be carried on under modern conditions with advantage to both producers and consumers without adequate railroad transportation.

The farmers are the most important class of people of the United States. They are the nation's bulwark against extreme radicalism. It is therefore a great misfortune to the whole country for them to be misinformed regarding railroad matters. It may lead to action on their part which will be unjust and harmful.

A striking example of the way in which the farmers are often misled has been afforded recently in Illinois. The secretary of the Illinois Agricultural Association gave out a statement saying he had had observations made upon the handling of freight cars in that state and had ascertained that 9,294 cars had been delayed at 494 railroad stations, and that 938 of these cars had not been moved by the railways seven days or more. Upon this alleged information he and numerous papers, including some agricultural papers, based the charge that there really was no "car shortage" but that the reason why freight was not being satisfactorily handled was that the railways were being operated inefficiently.

President Markham, of the Illinois Central, ascertained that sixty-six of the cars alleged to have been delayed seven days or more were on the Illinois Central, and got the reports made regarding them. He then had the records of his road checked and ascertained that as to these sixty-six cars the following were the facts:

Nineteen of the cars reported as delayed on the Illinois Central were not on its lines at all.

Nineteen were undergoing heavy repairs in its shops and therefore could not be moved.

Two were duplicated in the reports.

Two were not detained at all at the stations named, but were moved forward on the days they arrived.

Twelve were delayed for periods ranging from periods of one to six days.

Only twelve, or 8 per cent of the number alleged, were delayed seven days or more, and six of these were delayed not by the railway, but by consignees in whose hands they were at the time. Of the six delayed while in the hands of the railway, all but two were delayed by unavoidable causes.

Doubtless similar investigations, if made by the other Illinois lines, would show that the report of the Secretary of the Illinois Agricultural Association was as misleading as to them as it was as to the Illinois Central. Mr. Markham has written an open letter to the secretary of the association giving details as to the handling of each individual car reported as unduly delayed on his road. Whether those who have given widespread circulation to the alleged results of the investigation made by the secretary of the Illinois Agricultural Association really desire to help the transportation situation or merely to arouse antagonism among the farmers against the railroads, will be determined by whether they give as much currency to Mr. Markham's refutation of the charges of the secretary of that association as they did to the charges themselves.

Three Roads to "Industrial Democracy"

ALL OVER THE WORLD, including the United States, propaganda is being carried on against the present industrial system and in favor of what is called "industrial democracy." Most of those who use these words mean by them the turning over of the management of railroads, coal mines and other industries to the manual workers employed by them.

The *Railway Age* also is in favor of "industrial democracy." We realize that the existing system of ownership and management of large industries is very defective, and must be changed in some ways if private ownership and management is to endure and to be made of the greatest possible value to society. But our conception of what really would be "industrial democracy," and of the means which should be used in establishing it, differ from those of the socialistic and Bolshevistic agitators.

The radicals may be roughly divided into two classes according to the views they hold as to what would be "industrial democracy," and as to the means by which it should be established. One class believes the government should buy the railways, coal mines and other industries and turn them over to the employees to manage. It favors political agitation and action for giving effect to its theories. It is prominently represented in the United States by the advocates of the application of the Plumb Plan to the railroads and of some similar plan to the coal mines. Under the Plumb Plan the American public would buy the railroads and guarantee the interest on the money invested in them and also their operating expenses, and the employees would manage them. If any loss were incurred, the taxpayers would pay it all. If any profit were made, the employees would get half of it. All advocates of such plans argue that the industries it is proposed to buy are enormously overcapitalized, and that when they are bought the "water" should be squeezed out. This is merely a euphemism for saying that a large part of their value should be confiscated. It is difficult for a rational mind to detect the "democracy" in a scheme which provides for all the people to acquire large industries and turn them over to the comparatively few people employed by them to manage as they please, and chiefly for their own benefit.

The second class of advocates of "industrial democracy," who are now dominant and very active among the radicals in European countries, and are largely represented in this country, are opposed to the slow methods of political agitation and government purchase. They are in favor of the manual workers, the French name for whom is the "proletariat," taking possession by force of the plants and mines in which they are employed. Some of them would practice peaceful sabotage—that is, the policy of constantly forcing wages higher, doing less work for them, and destroying property when they can do it without getting caught—until management by the capitalists will be rendered impossible. Others advocate "direct action"—that is, the policy of bringing about general strikes which will stop the operation of industry until the capitalists and public are coerced into accepting the rule of Working Men's Councils both in government and in industry. Others would go yet further, and use not only "direct action" but the torch, the bomb, and the machine gun for the wholesale murder of everybody

who opposes proletariat rule in politics and industry. This policy has been followed in Russia. An attempt has just been made to carry it out in Italy. It is constantly being threatened in Great Britain. It is constantly being advocated in the United States.

There are certain obvious obstacles in the way of the establishment of industrial democracy by either of the above outlined methods. It is difficult to convince the public that it should assume all the risks of ownership of railroads, coal mines and other industries and turn them over to the employees to run. The public, in most countries, sees more clearly the probabilities of loss than the possibilities of gain for itself in these plans.

As to the use of "direct action" and other methods of violence for establishing the dictatorship of the proletariat, those who own and those who hope to own property may be relied upon to meet force with force, violence with violence. The manual workers, by employing these methods, might eventually succeed in establishing their dictatorship, but only after a struggle in which most of the railroads and other industrial plants they were bent on seizing were destroyed, as they have been in Russia. The chances are many to one that in a country such as Great Britain or the United States, an uprising of the proletariat would be a dismal failure; but if it succeeded, the proletariat would establish its dictatorship over only an industrial graveyard. Most of the people of Great Britain and the United States would see every factory, every mine and every mile of railroad destroyed before they would yield to the dictatorship of the proletariat or of any other class.

There is another road besides those mentioned which may be taken to "industrial democracy." Unlike the two already mentioned, it would lead to a real and not to a fraudulent "industrial democracy." The employees of the railways and other industries of the United States have not only a great political power which can be used to influence elections, and a great physical power which could be used in an effort to seize other people's property, but also a great latent financial power which could be used to acquire property. The employees of the railways of the United States are now being paid about $3,600,000,000 in wages annually. This is four times as much as the largest amount of interest and dividends ever paid to all the bondholders and stockholders of the railways in any year, and nine times as much as ever was paid to their stockholders in any year. The railway employees recently received an advance in wages of $625,000,000 a year, which is 50 per cent more than the largest amount of dividends ever paid to the stockholders in any year. As we pointed out in an editorial, entitled "Why Do Not Railway Employees Buy American Railways?" in our issue of September 10, the employees could, by saving and investing in railway stocks merely their recent advance in wages, acquire a majority of the stock of all the railways in the United States within three to five years. The third road to "industrial democracy" which we have in mind is the saving by the employees of railways and other industries of, say, one-fifth of their annual wages and the investing of it in the stocks of the industries which they desire to manage.

The radical agitators tell wage workers that they are "wage slaves." If they are, they can purchase their manumission within a very few years by the simple expedient of saving their money, pooling their financial resources, and buying control of the stocks of the concerns by which they are employed. The combined incomes of the so-called "wage slaves" surpass many times over the total incomes of all the rich. There need be no fear that the rich stockholders of the railroads and other industries would refuse to sell out. They would gladly sell if reasonable prices were offered for them.

What more perfect form of "industrial democracy" could there be than one under which the employees of the great industries were also the owners and, therefore, in control of their management? It may be said that for the manual workers to save parts of their wages and invest them in railroads and other industrial concerns would involve sacrifices and risks. But the fortune of almost every man who ever grew rich in this country was founded on savings accumulated through sacrifices and invested at more or less risk.

As a matter of fact, the real test of whether men have the character and brains needed to manage businesses successfully is whether they have the self-control and foresight required to save money, no matter how small their incomes, and the wisdom to invest it where it will earn profits. No man who lacks these qualities is competent to participate usefully in the management of any business. Therefore, to say that the employees of railways and other industries cannot or will not save parts of their wages and invest them wisely, is to say that they have not brains enough to participate successfully in the management of business, and is a condemnation of the practicability of every scheme of "industrial democracy."

Scattered all over the United States are millions of farmers who began life as farm hands, later became tenants, and by saving part of their incomes became farm owners. Have the manual workers on railroads and in factories any better right to become owners and managers of property by government fiat or by force than these farmers had to become managers of farms by similar means? There are many thousands of small and large shop keepers, manufacturers, mine operators and stockholders in railroads who have acquired their property in the same way the farmer acquired his.

Where, and when, did the employees of railroads, coal mines and other industries get any right to acquire the ownership or management of property at the expense of other people, or by force, that these people did not have?

If the employees of the railways, the coal mines and other large industries believe they have the right and the ability to manage these industries, they can demonstrate their right and ability by working hard, saving their money and buying the industries. They cannot demonstrate it any other way.

Delaware, Lackawanna & Western

THE DELAWARE, LACKAWANNA & WESTERN and "a rich coal road" are often used as synonymous, and it is perfectly true that the extraordinary earning power of the Lackawanna in times past has rested primarily on its coal traffic and the strategic position of its coal fields in relation to tidewater. The Lackawanna, however, used this surplus earning power to build up a double-track trunk line railroad from Buffalo to New York, which is generally conceded to embody the very best that money and science can furnish in the way of a transportation machine. It was likewise generous to its officers and employees, and, under a firm management, built up a loyal and efficient organization more nearly like a well regulated and disciplined family than could have been the case with a property larger and the forces more scattered and numerous. The corporation turned over to the government a very perfect physical property and a highly organized, well-trained, loyal and obedient organization.

Both the property and the organization gave a good account of themselves under government operation. Total operating revenues in 1919 amounted to $71,824,000, and in 1918 to $68,740,000. In the year prior to government operation, total operating revenues amounted to $57,211,000.

Operating expenses in 1919 were $56,065,000; in 1918, $59,926,000, and in 1917, $37,676,000. The rental paid by the government averaged $15,749,000 per year. Actually, the property earned a net operating income under the government of $12,287,000 in 1919 and $15,854,000 in 1918.

Measured in service, the comparison may be stated as follows: In 1919, the Lackawanna handled 4,830,000,000 miles of revenue freight; in 1918, 5,575,000,000, and in 1917, 5,591,000,000. It handled 643,000,000 passengers one mile in 1919, 605,000,000 in 1918, and 585,000,000 in 1917. The average revenue freight-train load in 1919 was 860 tons; in 1918, 840 tons and in 1917, 916 tons. The revenue per ton per mile in 1919 was 1.07 cents; in 1918 it was 0.90 cents, and in 1917, 0.75 cents. The average revenue per passenger per mile was 1.92 cents in 1919; 1.85 cents in 1918, and 1.59 cents in 1917.

Under government operation, maintenance expenses measured in dollars and cents were much higher. Thus, maintenance of way cost $7,682,000 in 1919, $5,553,000 in 1918 and $4,515,000 in 1917. Maintenance of equipment cost $15,133,000 in 1919, $13,338,000 in 1918 and $8,929,000 in 1917. Actually, however, W. H. Truesdale, president, says that expenditures during federal control for maintenance were not sufficient to renew rails, ties and ballast to the extent necessary fully to cover wear and tear nor to equal the quantities used during the test period; neither was freight equipment kept up to the Lackawanna standard. In this the Lackawanna is in somewhat the same situation as most other roads, the Lackawanna having this advantage, that the very high standards which it had maintained and the large proportion of structures, etc., which were of the most permanent kind, enabled it to withstand deterioration better than many other roads.

It is not of this physical deterioration that Mr. Truesdale, in his annual report, speaks most feelingly—it is of the harm done to the organization. Especially does he criticize the establishment of an eight-hour day for all classes of railroad employees. Coming as this does from a man who has been both generous to his employees and officers and a strict disciplinarian, it deserves careful consideration. Railroad work demands long training, strict obedience to rules and ability to take responsibility under an unforeseen combination of circumstances. Mr. Truesdale built up an organization that had these qualities to a remarkable degree, and when he says that "the most casual knowledge or investigation of the situation of the railroads will demonstrate conclusively that they have suffered more than any other employers of labor by reason of the establishment of the eight-hour working day for their employees," he deserves to be listened to.

In its coal department the company went through much the same experience as other anthracite mining companies. There was a decreased demand for coal in the first half of 1919 and a very good market for coal in the last half of 1919. Sales of coal and rents of coal lands yielded $44,325,000 in 1919 as against $39,825,000 in 1918. Mining expenses amounted to $39,344,000 in 1919 as against $36,192,000 in 1918. The profit from the coal mining department was $4,990,000 in 1919 and $3,627,000 in 1918.

The following table shows the principal figures for operation of the railroad property under government operation:

	1919	1918
Mileage operated	931	931
Coal freight revenue	$19,055,523	$19,009,846
Merchandise freight revenue	32,839,878	31,287,554
Passenger revenue	12,380,787	11,204,813
Total operating revenues	71,824,047	68,740,076
Maintenance of way and structures	7,682,365	5,552,541
Maintenance of equipment	15,132,815	13,337,602
Traffic expenses	495,947	664,088
Transportation expenses	30,661,441	28,613,367
General expenses	1,368,205	1,219,107
Total operating expenses	56,065,251	49,925,685
Taxes	3,449,429	2,941,212
Operating income	12,287,412	15,858,906

Letters to the Editor

A Coroner on Prevention of Collisions

ALBANY, N. Y.

TO THE EDITOR:

"How is it that the revered *Railway Age* has made no comment on the collision at Schenectady on June 9, when 14 people were killed?" This question was asked me the other day, and I pass it along to you. The fact that in its causes this collision was almost an exact duplicate of the South Byron disaster of last January reminds us that the whole problem of collision causes is still waiting for an authoritative solution. What practical progress has been made since South Byron? Or, if the apparent success being demonstrated by the Miller automatic stop on the Chicago & Eastern Illinois, and the passage at Washington of a law giving power to the Interstate Commerce Commission can be taken to be elements of real progress, what signs can you see of co-operation or co-ordination on the part of these different elements?

The Schenectady collision is in one point different from other recent cases in that a coroner, more than usually intelligent, has made a pertinent comment. Coroner Baxter asks why the railroads do not take as much care to have perfect men as they do to have perfect machinery; why they do not examine their employees as thoroughly and as scientifically as they do their locomotives and their automatic block signals. Coroners frequently say foolish things; and railroad officers, in spite of their apparent neglect, do know a thing or two about maintaining high standards of mental and physical efficiency among their enginemen; but I believe it is fair to say, nevertheless, that the public is warranted in asking the railroads to answer this coroner's question. Are our enginemen as efficient and reliable as they might be? What attitude should the public take toward the railroad manager who says, after a collision on his line because an engineman has fallen asleep in his cab, that the management has done everything that can be done?

E. H. W.

Railroad Section--A. S. M. E.

STATE COLLEGE, Pa.

TO THE EDITOR:

Your editorial note in the issue of July 2 points out the kind of service which may be rendered by the new Railroad Section of the American Society of Mechanical Engineers. The various railroad clubs and the Mechanical Section of the American Railway Association have done and are doing an important work; but is there a single society where the railway and the railway supply engineers have an equal voice and which has as its central thought the scientific development of the mechanical side of railroading? By scientific development, we mean a practical improvement, based upon analysis and investigation, rather than upon merely cut-and-try methods.

It is fair to assume that the 400 members of this section believe that if it is to function, the section must have a clearly defined purpose and that it shall definitely influence the present and the future development of the mechanical side of railroading. To this end, a suggestion may not be out of place. Let the papers presented be carefully selected, thorough in analysis and accurate in their references to fundamental principles. Allow ample time for discussion and shape it so that more of the younger men will take an active

part. Keep the discussion strictly technical and free from a mass of isolated information far afield from the subject under immediate consideration. Sacrifice quantity for quality and tie closely to broad underlying principles.

The section may render an important service through its Research Committee. As a first step, the writer would suggest that a list of say ten especially selected subjects be presented and lines of procedure be suggested so that the results will fit into the work with which the problems are directly related. There are good investigation problems on all sides, but good energy is sometimes worse than wasted by misdirected efforts or through lack of knowledge of what has been worked out by others. If the newly awakened interest in research can be guided, we may expect to see important results, not the least of which will relate to the scientific development of the locomotive. A. J. Wood.

[Have any of our readers suggestions as to the ten subjects which should be discussed?—Editor.]

The Cart Before the Horse

To the Editor:

I have read with much interest your editorial in the issue of the August 27, entitled "Frozen Material Stocks." The idea is excellent, and I hope the day will come when we can make a comparison of store stocks on the same basis as the roads now make comparisons of operating revenue, mileage, and other such statistics. However, in this case, there is a great danger of getting the cart before the horse. Before any such plan as you mention could be worked out, there must first be a solid foundation of common accounting practices; for instance on some roads all material, not only in store stocks and material yards, but material along the line as well, is carried in material on hand account until used, when it is charged to the appropriate operating or betterment accounts. On other roads, a certain small portion of material as carried in store stocks is carried in a material on hand account, and other material is shipped indiscriminately along the line and turned over to using departments in shops, roundhouses, various construction jobs, and immediately charged out to operating expenses or betterment accounts before being used.

Before the question as to the least quantities of material that can be carried to meet the occasion, can be decided and before we can determine how our railroad compares with our neighbor, we must first be assured that we are accounting for material on the same basis.

I believe the day will come when prescribed accounting practices will declare just what must be done, what material should be carried in material on hand account, and when that shall be charged out to operating or betterment accounts. Until such a declaration has been made, or until such a practice is a common one through voluntary agreement, any comparisons now made are bound to result to the detriment of the best organized railroads, as they are the ones who have the correct practices. Many other roads which can make a magnificent showing on paper may actually have twice the investment in unapplied materials that the roads making an apparently far worse showing have in reality.

It has also been my observation that even the value at which material is taken into stock is not always standard. For instance, on one large railroad even freight charges on materials amounting to many thousands of dollars a month, are not being charged into the cost of the material, but currently charged out to operating expenses monthly on the basis of the shop pay roll distribution for that month.

This and many other similar practices that have come to my attention prove very conclusively that at the present time the roads are at such a variance in their practices that any comparison is almost useless, in fact, it would work a great detriment and be a harm rather than of any value. I do not mean to imply that the plan you have mentioned is not creditable and should not be carried out; it is creditable, and it should be the end to which we should all strive. The only point, therefore, that I desire to make is that we should look well to our foundation before we build the structure, and make absolutely sure that we are building upon a foundation that is correct and solid enough to stand upon.

General Storekeeper.

Promoting From Within

Buffalo, N. Y.

To the Editor:

"This important promotion of one of the oldest members of the organization in years of service is quite in accord with the company's tradition of filling all important positions from within its own ranks rather than from without." (From "Co-operation," published by the American Radiator Company, and commenting on the promotion of Archer A. Landon to the vice-presidency.)

How I wish that you could make every railroad executive and official in the country read and take to heart the essence of these few words! Now, when changes have become more or less necessary for the health of the railroads, how much it would help them to build up strong, vigorous personnels by the application of this rule. There is nothing visionary about it; it has stood the acid test of 28 years' application for this company. The men at the head are not merely practical men; they are practical men who, through the association of years, have learned to know every detail that affects the company's operation.

When I was in the game I often wondered why such a practice had not been more generally adopted by the railroads, and now that I have been with an industrial concern long enough to obtain a better perspective of railroad policies, I wonder still more. The company I worked for was one of the strongest, financially and physically, in the country. Its treatment of employees left little to be desired. But time and time again I have seen strange men pulled in from foreign roads and given places in which the company's own men should at least have been given a chance. Nothing sours a man more quickly, nothing embitters him more, than knowing he has been unjustly treated. And such treatment is unjust, say what you may. Give the man next in line the chance; if he doesn't make good, it's up to him. But give him the chance!

Business papers have been full of the cost of labor turnover for the past few years. It costs money to break in a new man, even if he's just going to push a truck. Of course! Then how much more does it cost to break a new man into a responsible position? And when you've brought the new man in and taught him the ropes he's got a disgruntled organization behind him.

"Aw, to hell with the company! They don't give a man a chance. Why should I do that? It ain't my work."

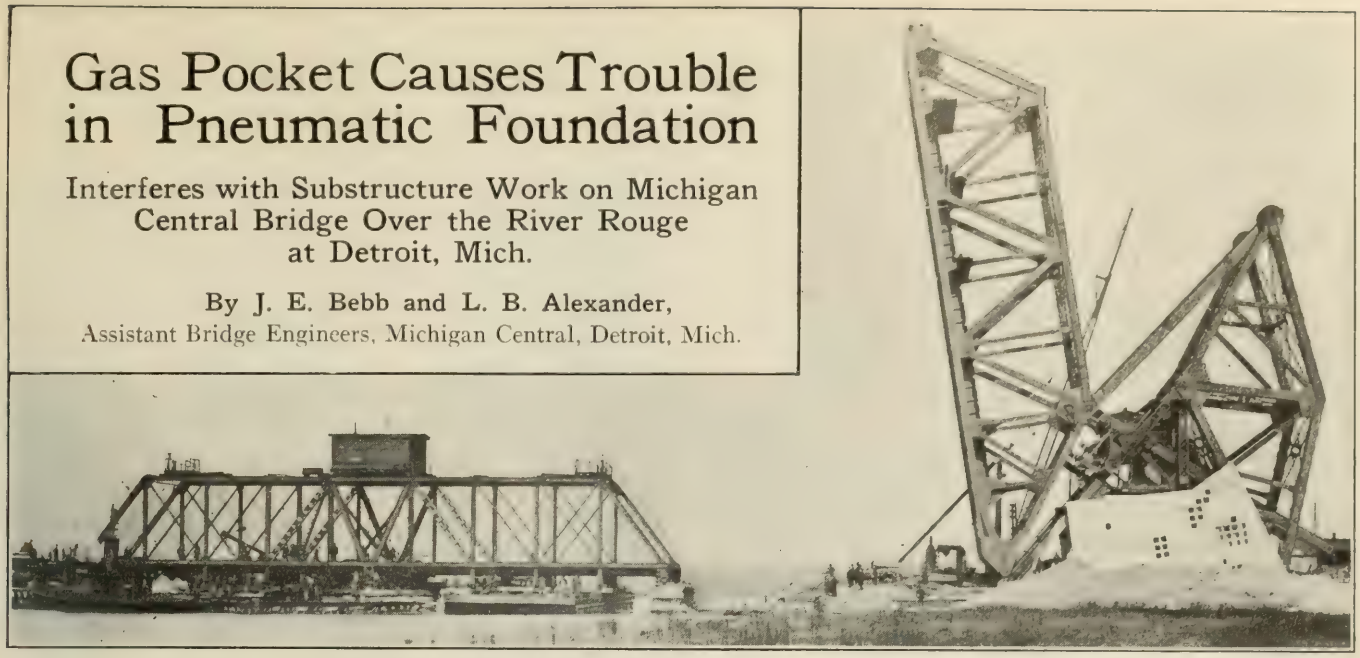
The attitude's wrong? Certainly. But it's human nature just the same. And just as long as the men have real justification for feeling this way the company is paying for a lot of lost motion. Think it over, you gentlemen of the railroads, and see if it is not so. Your industry has an irresistible fascination, there is less drudgery to it than to almost any other. Give your men the same opportunity of advancing as they would have in other lines of work and you'll have an organization that can't be beaten for loyalty, efficiency and accomplishment.

W. B. Keefe,
American Radiator Company.

Gas Pocket Causes Trouble in Pneumatic Foundation

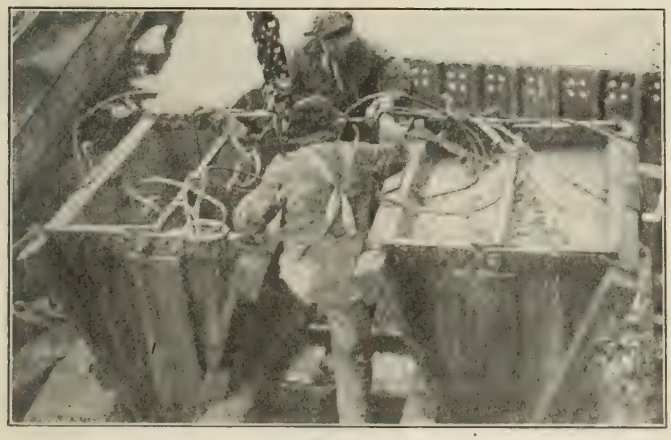
Interferes with Substructure Work on Michigan Central Bridge Over the River Rouge at Detroit, Mich.

By J. E. Bebb and L. B. Alexander,
Assistant Bridge Engineers, Michigan Central, Detroit, Mich.



The Old Bridge About to Be Floated on Two Steel Barges Controlled by Two Tugs

THE LIBERATION OF HYDROGEN-SULPHITE GAS dissolved in spring water was one of the principal problems encountered in the construction of the substructure for a new bridge of the Michigan Central and the New York Central over the Rouge river at Detroit, Mich. The difficulty was encountered in connection with pneumatic foundation work and led to the temporary discontinuance of operations on one of the piers with the result that the supply of gas was eventually exhausted, allowing the work to be resumed. The new structure, which was placed in service on May 4, is a Strauss single leaf bascule bridge of 125 ft. clear span with a square crossing. It provides two tracks and is designed for Cooper's E-70 loading with full impact allowance. It replaced a jointly-owned swing bridge erected in 1887.



Wooden Buckets Used to Place Concrete Under Water

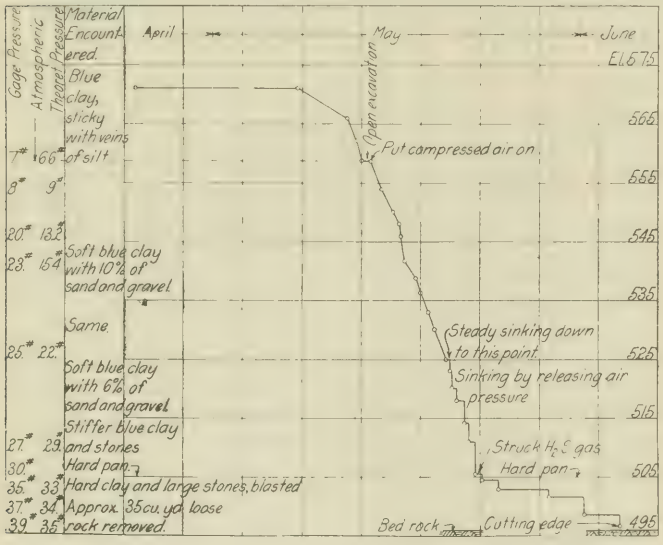
The present project was brought about as the result of an appropriation by Congress in 1917 of the sum of $490,000 to improve the Rouge river to permit the use of this stream by large lake freighters up to Maple road and the new blast furnaces of the Ford Motor Company and open up to industrial development the large area lying directly west of the City of Detroit. It involves a channel depth of 21 ft. below normal water level, a width at the bottom of 200 ft. and a minimum clear span of 125 ft. at bridge crossings. It also contemplated straightening the channel, eliminating the natural bends and short turns. As a consequence, the new channel lies well to the north of the old channel at the railroad crossing. The old structure was built in 1887 by the Detroit Bridge & Iron Works and consisted of a double-track, rim-bearing swing bridge 160 ft. long with a deck girder approach span on the north end.

Owing to the character of foundation condition it was desirable to carry the four piers supporting the dead load of the new bridge to bed rock, 90 ft. below the base of rail, or 78 ft. below the usual river level. These four supports are concrete cylinders 13 ft. 2 in. in diameter and joined at the top by a reinforced concrete framework. The cylinders were sunk by the pneumatic process through material which is generally described as soft blue clay. The progress report chart records the character of material encountered. The rest pier which supports the free end of and receives live load only from the movable leaf was supported on a pile foundation. Piles driven into this ground are frequently erratic as to load carrying capacity unless followed down to hard pan as was done for this pier.

The working chamber in each caisson was 7 ft. 6 in. high and 7 ft. 6 in. in diameter at the top, flaring out to the cutting edge at the bottom. It was lined on the sides with 3-in. yellow pine thoroughly calked and the top covered with ⅜-in. plates having riveted and welded joints. The whole was enclosed with reinforced concrete and protected by a heavy cutting edge made of two angles and a plate. A 36-in. main shaft and a 24-in. material shaft were used. The main shaft was made of 8-ft. sections, each of which could be made into a complete air lock at any time by bolting on doors near the top and bottom. The usual procedure was to leave one door bolted to a section 8 ft. up from the bottom of the shaft for emergency use and to keep one at the top end and one at each of the two joints nearest the top. This type of air lock has much to commend it for simplicity and safety.

The outside forms for the caissons were made of 3-in. yellow pine (S4S) held in position at frequent intervals by hoops of structural steel angles. These hoops were recovered before sinking below the surface and replaced at the top of the caisson. The main and material shafts were

boxed by means of a wooden form before concreting, thus allowing the recovery and re-use of rather valuable material. The sealing of the working chamber, however, made it necessary to lose the first section of shafting. After the removal of the shafting the opening was filled with concrete, thus completing the solid circular section. The caissons were sunk as rapidly as possible and concreting carried on at frequent intervals due to the limited headroom between the water level inside the cofferdam and the falsework. The traffic, involving numerous switching movements, was disturbed but little. Except for the experience with the hydrogen sulphide nothing unusual was encountered, other than the tendency of the bottoms of all piers when halfway down to rotate slightly about some point in the top of the piers. The gas was encountered in one of the piers when 21 ft. from bed rock. It was emitted from highly charged spring water having a head of 12 ft. more than river level. It appeared to come up through test hole and had a striking odor. The men who worked in it for several days experienced swollen and badly irritated eyes, the effects varying greatly with the individual. After going 19 ft., or to within 2 ft. of bed rock, four men working in the chamber were overcome temporarily and it was decided to abandon the pier



Record of the Sinking of Pier 4 Where Hydrogen Sulphide Gas Was Encountered

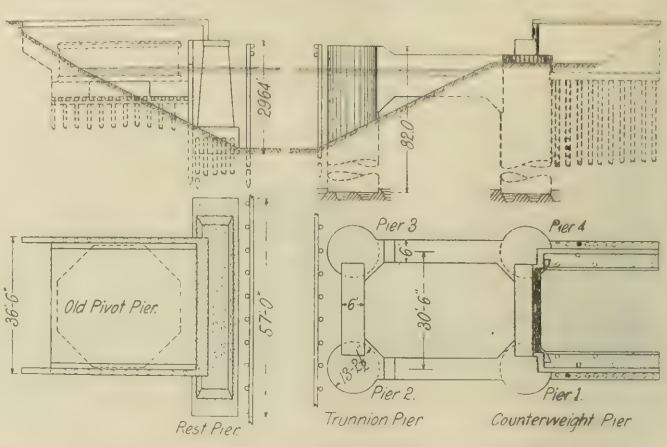
for the time. The air pressure was released and left off for 50 days, the spring flowing constantly meanwhile.

The remaining two piers were completed with but little sign of gas. Connections were noted between these piers and the one mentioned above by slight blowouts. The spring apparently took the gas out by the easiest path but it was not apparent why other springs were not encountered as a test hole was drilled approximately 15 ft. into bed rock for each pier. The odor frightened away many workmen because they seemed to associate it with the more deadly marsh gas.

After completion of the two piers, work was again resumed on the pier temporarily abandoned with considerable trepidation but with no bad results for the gas had apparently become partly exhausted. The writers concur in this conclusion because of similar experience in the case of a 40-ft. open excavation to bed rock. There when hard pan about 6 ft. thick was reached the gas was encountered and affected the workmen's eyes in the same manner. To overcome the trouble holes were drilled through the hard pan and capped with inverted galvanized buckets. Ten-ft. lengths of pipe connected to these buckets carried the gas above the workmen's heads but after a few days it was found that this protection was no longer necessary.

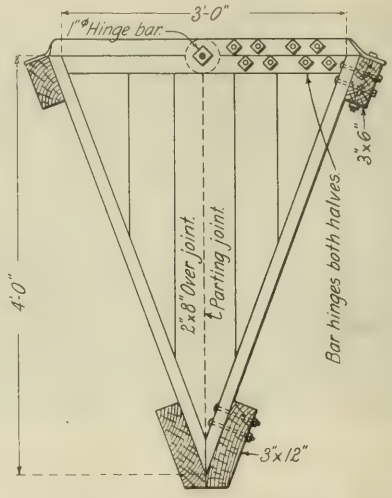
Owing to the limited concreting headroom it was impractical to employ guides for the four piers. Consequently, the foreman was put to considerable pains to keep the piers plumb. Typical blocking used in levelling up a pier is shown in a small sketch.

The rest pier stands upon a cluster of 123 timber piles 50 ft. long, built within a steel sheet pile cofferdam. The foot-



Plan and Elevation of the Substructure

ing for this pier, with its bottom some 16 ft. below low water level, had to be poured under water to seal the cofferdam. When the concrete seal had been placed in the bottom of the cofferdam and sufficient time allowed to set, attempts to unwater proved unsuccessful and it was found necessary to drive a row of 4-in. plank around the steel sheet piling to form a double wall with the intention to puddle between the two walls. It was found, however, that the silt of the river bed would not sustain the weight of clay

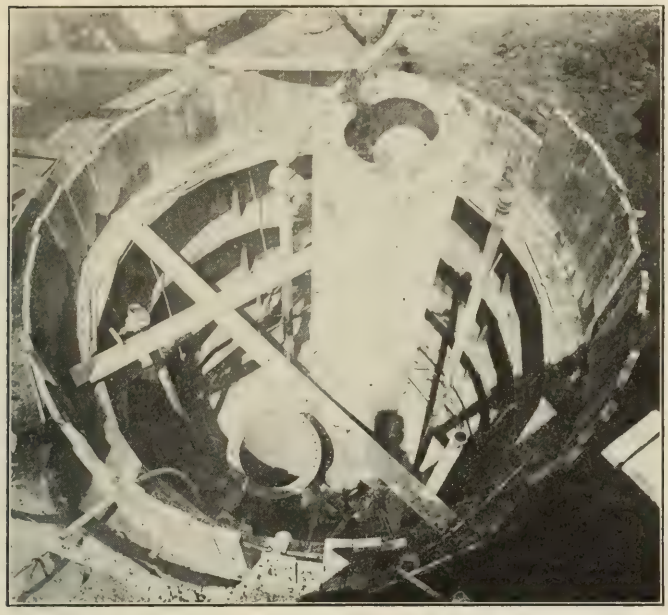


The Bottom Dump Bucket Used to Place Concrete Under Water

and sand, the filling subsiding after it reached a certain height. This difficulty was overcome by the use of manure, obtained from the Michigan Central stock yards at West Detroit. The use of this material proved very satisfactory and sealed the walls of the cofferdam so effectively that it was pumped out easily and very little pumping was found necessary to keep down the seepage water.

The concrete seal was placed by means of two specially designed buckets. These were made on the job of timber with iron fittings and proved very satisfactory. They were

wedge-shaped and each held a mixer batch of concrete and was suspended from the derrick booms by means of two lines, one, the "load line," passed down around the bottom holding it closed. After the loaded bucket was lowered through the water until it touched the bottom the load was



A Bird's-eye View of Caisson No. 3, Showing Forms, Shafting and Blow-off Pipe

transferred to the trip line which left the bucket free to open (like the halves of a clam shell) and let the concrete pass out gradually. The buckets were not covered.

It will be noted that the rest pier is located directly north of the pivot pier of the old bridge for the reason that the new



General View of Foundation Construction, Showing Caissons 2 and 4 in Process of Sinking

channel lies to the north of the natural channel. It is intended to construct two "curtains" or wing walls running back from the rest pier to envelope the old pier completely and thus avoid the expense of removal.

The superstructure of this bridge comprises 1,990,000 lb. of structural steel and 131,300 lb. of machinery. The two winged counterweights each contains 204 cu. yds. of concrete weighing in one portion 146 lb. per cu. ft., and in the other 166 lb.

The desired unit weights were obtained by adding steel punchings to the concrete. The bridge is electrically operated and the movements are controlled from an interlocking tower located on the north bank of the river and about 60 ft. from the end of the bridge.

The bridge was designed under the 1917 specifications for Steel Railroad Bridges of the New York Central Lines and those of the American Railway Engineering Association for movable bridges. The estimated cost, including foundations, structural steel, machinery and all equipment is $541,000.

The structure was built by the Michigan Central under the supervision of Col. G. H. Webb, chief engineer, and G. C. Tuthill, bridge engineer. The Missouri Valley Bridge & Iron Company, Leavenworth, Kans., was the contractor for the substructure, and the Wisconsin Bridge & Iron Company, Milwaukee, Wis., the contractor for the superstructure. The electrical equipment was installed by the Norwood-Noonan Company of Chicago.

Intrastate Rate Proceedings

JOHN E. BENTON, general solicitor of the National Association of Railway and Utilities Commissioners, has issued an additional bulletin giving a summary of the orders entered by state commissions in advanced rate cases which have been received since the date of his last bulletin, as follows:

Florida. Commission on August 26 authorized increase in express rates, effective September 1, on intrastate business within its state of 12.5 per cent, except that rates on milk and cream may be made equal to those contemporaneously applied by railroads between the same points. The case is left open to make such changes as might prove to be necessary. Effective September 1 the commission authorized the filing of tariffs by steamboat companies making freight rates applying on Florida traffic based upon an increase of 25 per cent in the rates effective June 24, 1918, and a further increase of 25 per cent upon the rates so arrived at. This increase, together with the authorized increase of 20 per cent in passenger fares, is to be governed by the rules of the commission in effect on June 24, 1918. Excess baggage rates are increased 20 per cent, except that where stated as a per cent of, or dependent upon passenger fares, the increase in the latter will automatically affect the increase in the excess baggage charges. There was no opposition to the increases asked for by the steamboat companies.

Georgia. Commission on August 26 authorized increase in express rates, effective September 1, of 12.5 per cent, with the same limitations and conditions prescribed by the I. C. C. in its report in Express Rates, 1920. Promulgation of its order in no wise precludes commission from making such changes as might prove appropriate affecting express traffic. Commission has not considered supplemental petition of Express Company for further increases alleged to be necessary as the result of the award of the Labor Board, granting increased wages to express employees.

Iowa. In a supplemental order, order dated August 24, rates on soft coal are increased by adding 15 cents per ton to the rates fixed by Iowa Classification No. 16 (items 58 and 60) plus the following specific amounts: Where rate per ton is 0 to 49 cents, increase per ton 15 cents; where rate per ton is 50 to 99 cents, increase per ton 20 cents; where rate per ton is 100 to 199 cents, increase per ton 30 cents; where rate per

ton is 200 to 299 cents, increase per ton 40 cents; where rate per ton is 300 cents or higher, increase per ton 50 cents.

Louisiana. Hearing on application of carriers for advanced rates originally set for September 21, 1920, has now been advanced to September 9.

Maine. Rate increases in harmony with those authorized by the I. C. C. have been allowed and are now in effect.

Michigan. In our original bulletin the statement was made that "carriers have filed tariffs, effective August 26, making the same percentage increase in freight and passenger rates as have been allowed by the I. C. C. These will not be suspended by the commission, but are subject to later investigation, etc." Michigan has a statutory fare law, but the carriers of that state have secured an injunction against the commission from enforcing it. The application of the carriers for an increase in their passenger fares is, therefore, not yet settled. A hearing in the matter is to be held in the near future. Michigan carriers have petitioned the I. C. C. to take jurisdiction over Michigan intrastate passenger fares in accordance with the provisions of the Transportation Act.

Minnesota. Hearings in the application of the short line railroads on August 26 resulted in the authorization of increases in freight and milk and cream rates on the same basis of increase as the rates for trunk lines outlined in our bulletin of August 28.

Missouri. Commission authorized carriers to file on one day's notice, effective not prior to September 1, 1920, tariffs or supplements containing increases in passenger fares of 20 per cent, in excess baggage rates of 20 per cent, surcharge in Pullman rates of 50 per cent, in milk and cream rates of 20 per cent, and in freight rates of 35 per cent, with exceptions on coal, coke, brick, sand, gravel, stone, crushed rock, lime, cement, plaster, and petroleum products in cases where such rates were increased 70 per cent or more June 25, 1918. The commission treats matter in the nature of an emergency proceeding, and indicates that continuation of the rates increased should be conditioned upon the presentation by the carriers of more accurate data in the future. The commission denies increases at the present time upon the commodities mentioned above because they appear to have suffered unequal advances under General Order No. 28, as compared to like increases upon interstate traffic. The increases authorized are for a period of six months from September 1, and carriers are required to so maintain their records as to be able to file with the commission full details of operations in order to justify the increases.

Nebraska. A hearing was held before three judges of the federal court on August 27 on the carriers' application for an injunction restraining state officials from enforcing the two-cent fare law. The three-cent rate was continued pendente lite until a further hearing is had on September 6. It is intimated that carriers will also file a complaint with the I. C. C. under Section 13 of the act to regulate commerce raising "Shreveport" issues.

New Mexico. Commission on August 25 authorized same increases in freight and passenger fares as contained in the order of the I. C. C., except that no increase in passenger fares is authorized where such fares are now on a basis of 4 cents or more per mile. Increases in rates on coal between Carthage and San Antonio, which recently were the subject of a hearing by the commission, were denied. Exceptions were likewise made in the rate on low-grade ore between Santa Rita and Hurley, which has heretofore been advanced 25 per cent. Commission indicates that inasmuch as the New Mexico Central R. R. lies within two rate groups in which different percentage increases apply, an increase of 33 1/3 per cent instead of 35 per cent shall apply on that portion of its line between Kennedy and Torrance, and an increase of 25 per cent to that portion between Santa Fe and Kennedy. The commission conditions the increases indicated above upon the adjustment of the wages of railway employees in accordance with the scales prescribed by the Labor Board, and any carrier failing or refusing so to do is denied permission to make such increases. Increases became effective August 26.

North Carolina. Commission on August 27 authorized increases, effective fifteen days after filing of tariffs, in conformity with those authorized by the I. C. C. Inasmuch as the commission's order is granted in blanket form, and not based upon investigation in detail of the effect of the increases, it is not to be inferred that the order is final approval of such increases. The case is left open for adjustment or further correction to the same extent as if the order had not been made.

North Dakota. Commission on August 24 authorized increases of 35 per cent on present North Dakota schedule of class and commodity rates, 20 per cent in excess baggage rates, and 20 per cent in passenger rates. The case is to be kept open for further hearing for the purpose of adjusting certain discriminations and for inquiring into the reasonableness of individual class and commodity rates and passenger fares established by the commission's order. As to a surcharge on Pullman fares, which was denied, the commission said: "A surcharge on sleeping and parlor car fares does not appear to be a proper method for securing revenue, for the reason that there appears to be no separate and severable service performed by the carrier to the patron." Increased milk and cream rates were denied to permit consideration of such rates in the application of the express companies now pending.

Ohio. Commission on August 17 authorized, effective upon five days' notice, the filing of supplements to existing tariffs increasing rates not to exceed 40 per cent of existing rates. The commission reserves the right to suspend the tariffs so amended, and upon hearing upon the reasonableness of any or all of the increased rates, the burden of proof is to fall upon the carriers, as provided by the state law, as fully as if the order granting a less period than the statutory time for filing such supplements had not been made. The commission denies the application of carriers for authority to increase their charges for passenger service, for want of jurisdiction, and also denies the so-called Pullman surcharge, charges for the transportation of excess baggage, and the charges for the transportation of milk and cream.

The commissions having thus far rendered decisions in the carriers' applications to advance their intrastate rates are as follows: California, Colorado, Florida, Georgia, Idaho, Illinois, Iowa, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York (1st District), New York (2d District), North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Texas, Vermont, Virginia, Utah, Washington, West Virginia, Wisconsin, and Wyoming.

The Interstate Commerce Commission has this week announced the institution of proceedings of investigation to determine whether unreasonable discrimination against interstate commerce will result from the refusal of state railroad commissions to put in effect increases in rates corresponding to those ordered by the federal commission for interstate business, in three states, Texas, Michigan and South Carolina. This action is taken by the commission in response to petitions filed by the railroads of the states involved and a number of other similar petitions affecting other states are still before it for consideration. Hearings have already been held in respect of similar situations in Illinois and New York. The hearing in the Texas case is assigned before Attorney-Examiner Pattison at Galveston, Tex., on September 27. The Michigan hearing will be held before Commissioner Woolley at Detroit, Mich., on September 27, and the South Carolina hearing will be held before Examiner E. F. Spethmann at Charleston, S. C., on September 27.

The Canadian Railways' Rate Increase

The Board of Railway Commissioners of Canada Was Unanimous in Granting a Temporary Increase in Rates

THE TEXT of the decision granting the Canadian Railways higher rates is in part as follows:

This is an application made by the Railway Association of Canada on behalf of all the railways under the jurisdiction of this board, and consisted, first of a general application for a 30 per cent increase in all railway freight rates. Before the hearing, and as a result of the decision of what is known as the Chicago Wage Award, by which substantial increases were given to all railway employees in the United States, dating back to the first of May last, a supplementary application was made asking for a further increase of 10 per cent in all freight rates; 20 per cent in passenger fares; 50 per cent in sleeping and parlor car rates; 40 per cent in milk and 20 per cent in excess baggage.

Counsel for the Railway Association dealt with the showing of the roads other than the Canadian Pacific.

The operating ratio of the Grand Trunk for the year ending December 31, 1919, was 87.43 per cent, and for the six months ended June 30, was 99.97 per cent. For the Canadian Northern system, not including the Intercolonial or National Transcontinental, the operating ratio for the year ending December 31, 1919, was 112.08 per cent, and for the twelve months ending May 31, 1920, 117.61 per cent. According to estimates filed with the board, the result for 1920, if increased wages were granted, as hereinbefore referred to, and no increase in the traffic rates, the operating ratio would be 134.23 per cent. If the wage increase were granted as from the first of May last, and the full rate increases from the first of September, instant, the operating ratio would be 119.59 per cent, and the estimated result of operations for twelve months on the 1920 basis, with both wage and rate increases granted, would still leave an operating ratio of 105.01 per cent.

The Position of the Canadian Pacific

All the counsel, representing the opposing interests, based their case upon the financial statement of the Canadian Pacific, and practically all the evidence, outside of the financial statements above referred to, dealt only with that railway, and therefore, in arriving at a judgment, I am forced to refer almost exclusively to the condition of the Canadian Pacific in order to arrive at proper conclusions.

Mr. MacMaster, counsel for the Canadian Manufacturers' Association, as I understood him, contended that the rates should be so adjusted that the Canadian Pacific would be able to pay its dividends without drawing upon its reserves, but nothing further. Mr. Symington, counsel for Manitoba, was not quite so generous and Mr. Coyne, representing the amalgamated boards of trade of the three prairie provinces, would draw upon the reserves to some extent if necessary for the payment of dividends.

I am unable to agree with any of these contentions and much less with that of Mr. Geary because, should his doctrine be followed to its logical conclusion, in a very short time the cash reserves would be dissipated, and it would only be a question of time when this company would find itself in the position of the Grand Trunk and Canadian Northern Systems.

"Wise Business Management"

If the Canadian Pacific Railway Company has, for many years past, kept an outstanding position among transportation companies of the world, it is because, through wise business management they have been able to place themselves in such a financial position that the financial world has faith in the institution, and perhaps none of us realize the value which this financial status has been to Canada in the outside world during recent years, the most outstanding case being the loan of $40,000,000 worth of debenture stock to the Imperial Government, which was actually hypothecated in the United States for the purchase of munitions during the great war.

But, apart altogether from this phase of the question we have in the actual conditions in Canada, that about which there can be no speculation whatever. It is known, from their financial statement, that they have actually put into the road out of reserves, proceeds of land sales, etc., $130,000,000, which has probably been expended more or less in every province in Canada through which the road runs, in bettering conditions and fitting it to that extent to better serve the public as a common carrier; and, according to the evidence, during the present fiscal year, they have already expended more than $8,000,000 "out of reserves" for the construction of branch lines in western Canada. Under the present financial conditions all counsel above referred to, I think would admit that none of these branch lines would be possible during the present year if the Canadian Pacific did not have the reserve from which to draw for this purpose, but, even supposing they were able to sell securities to the public it would mean an increase of their fixed charges or dividends which would have to be met out of earnings, and every addition to capital expenditure would be a further demand for increased rates; and therefore, considering the question from every standpoint, I consider it a national necessity that the Canadian Pacific Railway at least be kept in a healthy financial condition, with the hope that, as a result, the other great railway system may be benefited in a corresponding degree.

The financial statement of the Canadian Pacific Railway for the year ending December 31, 1919, showed a surplus of $844,249. It was contended and was not denied, that should they pay the increases to their employees, based upon the Chicago award, without receiving any increase in rates, the 1920 balance sheet would show a deficit of many millions of dollars. The above mentioned award, if adopted by this company, would require an additional wage expenditure before December 31 of $14,822,300 and for the next full year nearly $22,000,000, and, if adopted by the other roads would mean the same proportion of increases.

It was strongly contended by many interests, that the Board in making its decision, should take into consideration only the financial requirements of the Canadian Pacific, and whatever deficit there should be in the operation of the Canadian National system should be borne by the country out of ordinary taxation. In replying to these contentions the representatives of the Canadian National pled most earnestly for the full increases asked for, claiming that were they granted, and they paid the wage increases above referred to, their operating ratio for the next year would be 105 per cent, and they only asked to be placed in such a position that they could run the railroad without going to the country for assistance, admitting for the present at least, that the country should take care of the fixed charges as well as the deficit which was sure to result from the operation of the Intercolonial and National Transcontinental systems.

If we give a rate which will barely allow the Canadian

Pacific to pay its fixed charges and dividends, or a lesser rate, then it is absolutely certain that the Canadian National railway system, including the Grand Trunk, Grand Trunk Pacific, Intercolonial and Transcontinental, will face an operating deficit of at least $50,000,000 per year, assuming that the wage award is adopted and including the Intercolonial and National Transcontinental and Grand Trunk Pacific systems.

In my judgment that is not in the best interests of the country, as a whole, and therefore while not attempting to grant a rate which will immediately place the Canadian National system upon a self-supporting basis, yet it should be one which will at least give its managers the hope that by wise and prudent operation this happy end may be attained, and that it may, within a reasonable time reach a position of independence without which, I fear, nothing but disaster can be the result.

Giving weight to the conditions set out in Re Western Tolls as affecting the relative levels of tolls east and west of Port William and also bearing in mind changes in conditions which have taken place, I am of the opinion that it is justifiable to allow a reasonably less percentage of increase on freight tolls west of Fort William than east thereof. Consequently, I have concluded that an increase in rates should be granted along the following lines, with the exception of the items hereinafter specially referred to.

The Increases Granted

Until December 31, 1920, I would give a general increase of 40 per cent in eastern freight rates and 35 per cent in western freight rates with 20 per cent both east and west in passenger fares; which however should not exceed four cents per mile, 50 per cent in sleeping and parlor car rates and 20 per cent on excess baggage.

Percentages to Be Later Reduced

Commencing the first day of January 1921, and until there is another revision of rates, I would reduce these percentages on freight to 35 per cent in eastern territory and to 30 per cent in western territory, with 10 per cent reduction in passenger fares up to the first day of July next, when passenger rates should come back to the basis in effect prior to the coming into force of this judgment; but continuing the full increases in parlor and sleeping car rates and excess baggage.

It will of course be understood that the percentages of increases in the rates east and west of Port Arthur herein granted will, in the case of through rates between the east and the west (excepting transcontinental commodity rates), apply to the east and west factors thereof respectively.

This will, in my opinion, very nearly give the Canadian Pacific an even balance sheet at the end of the present fiscal year, and for the year 1921, according to my estimate, should give them a reasonable surplus; but it may still leave the Canadian National system with an operating deficit.

Crushed Stone, Sand and Gravel

At the hearing I was very much impressed with the argument presented by those opposing any increase on crushed stone, sand and gravel, as, from the evidence adduced, and which was not contradicted by the railway companies, they must be making a fairly substantial profit in the transportation of these commodities; but I am arriving at this conclusion, to a very great extent, by the public necessities of Canada at the present time. Perhaps, next to the railroads nothing is more urgently required than the improvement of our highways, and any increase in the rates on the materials entering into their construction must of necessity defer this much needed improvement; in fact it was stated by Mr. McLean of the Public Works Department of the Province of Ontario, that they were now establishing in many parts of that Province crushing plants at local centres; as the rates were already greater than the traffic would bear, and therefore any increased rate would not only deprive the public of a real necessity but would probably reduce the business and consequently the profits of the railways, therefore I would give no increases in the rates on these three commodities.

Increases on Coal

Owing to the unprecedented cost of coal today and the likelihood of the same condition continuing for some time to come, I am not inclined to grant the above general increases in this commodity.

Based on the current rates I would allow the following increases, viz:

In rates 0 to 80 cents per ton, increase 10 cents.
Over 80 cents to $1.50 per ton, increase 15 cents.
Over $1.50 per ton, increase 20 cents.

In the west the minimum line haul rate is also 80 cents; but the hauls being much longer than in eastern Canada, the great bulk of the territory will take the maximum increase of 20 cents. From Lethbridge, for example, the maximum increase will operate to destinations Medicine Hat and east.

Other Freight Rates

The increase in the rates on cordwood, slabs, edgings, and mill refuse, all for use exclusively as fuel, should be limited to 10 per cent.

I would also refuse any increase in milk rates as only a few months ago this board on a special application, refused any increase on this commodity.

I also think there should be no increase in the minimum class rate scale as established by order-in-council P. C. 1863, and now in force by a recent order of this board, as well as the minimum charge per shipment.

As substantial increases were given in commutation fares by special Order of this board only a few months ago, no additional increase should be given them herein.

So far, the freight rates dealt with are those charged for line hauls. Local switching rates were materially increased by the carriers about ten months ago, and these, together with the tolls for interswitching, it is not the purpose of this judgment to increase. The same must be said of the charges for such other incidental services as Milling in transit diversion, reconsignment, stop-overs, demurrage, weighing and the like. Should the carriers feel that the existing tariffs do not fully compensate them for the services rendered, any formal applications they may make will be investigated and dealt with on their merits.

In some industries the amount of increase in the rates themselves, is a consideration secondary to the preservation of the rate relationships from the points of production. For example: the maintenance of the existing spreads between the rates from the various mills in British Columbia was urged at the hearing by the lumber interests of the province. While the principle of percentage increases must necessarily disrupt these relationships to some extent, it is considered important that in the working out of the tariffs such recognized differentials as have been referred to should be preserved so far as may be practicable, even though certain rates may result which are lower, or higher, than they would otherwise be.

Transcontinental commodity rates may be advanced correspondingly to the increases now permitted in the United States, preserving the relationship between the territorial groups of the two countries that have obtained since 1918.

As under a percentage division of joint through rates each participating carrier will receive its appropriate share of the increases herein authorized, it is necessary that those railways that in joint traffic are paid an arbitrary division

in a fixed amount, should receive a percentage of increase corresponding to the increase in the through rates.

As our jurisdiction for granting increases on certain lines of railway in western Canada depends entirely upon the amendment to section 325 of the Railway Act, 1919, which expires on July 6, 1922, the rates hereby established cannot continue beyond that date unless Parliament, extends the provisions of that section. Therefore the rates herein provided for shall not extend beyond the first day of July, 1922.

Outlaw Yardmen's Strike Collapses

THE "OUTLAW" STRIKE of yardmen and enginemen in the Chicago switching district ended on September 13. The first indications of the disintegration of the outlaw movement, which had developed into a guerilla warfare between the strikers and the men who had taken their places in the yards, came on September 12, following mass meetings at which the strikers voted overwhelmingly to return to work. For some time railroad officers in Chicago have been visited by various committees of the strikers who, in all cases, asked for the "best terms possible" for their return. In all of these instances the railway officers indicated to the men that they would be glad to take back as many of them as possible, and that those who displayed their former efficiency would be given every opportunity to work themselves into advantageous positions. They were told, however, that in no case, would their seniority rights, which were taken away after they had been given ample opportunity to return to work, be restored. Action such as this could not be taken without bringing the railroads into conflict with the brotherhoods which co-operated during the strike in obtaining men to man the yards.

According to the information available at Chicago, the vote on the question of returning to work was nation-wide, nevertheless it is predicted that the men in the Chicago district will return to work regardless of what is done elsewhere.

The outlaw movement, it will be recalled, started on the Chicago, Milwaukee & St. Paul on April 1, following the removal of John Grunau, a yard conductor and organizer and president of the Chicago Yardmen's Association. Members of this organization in Chicago immediately went on strike, projecting the removal of Grunau as their main grievance and at the same time presenting their demands for increased wages. The strike movement spread rapidly in Chicago and from there to many of the larger terminals throughout the country. At other points organizations similar to the Chicago Yardmen's Association were formed. In addition the strike of the yardmen was augmented by the organization of a similar outlaw organization, the United Enginemen's Association, which struck in sympathy with the yardmen. These strikes, coming as they did in a period of exceptionally heavy traffic movement, greatly interfered with transportation throughout the country. The established brotherhoods from whose ranks the outlaw organizations recruited their members, immediately aligned themselves with the railroads and by temporarily re-distributing their membership, assisted in maintaining traffic movements.

The collapse of the outlaw movement became evident when the United States Railroad Labor Board handed down its decision granting increased wages to all railroad workers on July 20. Practically, from the inception of the strike, yardworkers returned to their old positions individually and in groups and the outlaw organization's ranks were gradually depleted in this manner. From the time the reward of the Labor Board was handed down, further inroads were made in the strikers' ranks until the eventual collapse of the strike was assured.

The last development in the outlaw movement was the institution of guerilla warfare in the Chicago yards, a few details of which were described in the *Railway Age* of September 10. The vigorous opposition presented by both the railroads and the men who were taking the strikers' places put an end to this attempted reign of terror with the result that the strikers finally gave up on September 12.

The last hours of the outlaw movement were featured with uproar and comedy. John Grunau, the instigator of the movement and a few of his faithful followers, attempted to hold the men in line and insisted that the strike vote showed that the majority were in favor of remaining out. On September 14 Grunau issued a statement purporting to show that the vote in the Chicago district was 21,974 to 21,304 in favor of continuing the strike. This caused an uproar among the rank and file, who immediately demanded to know where the extra 21,000 votes came from. At no time during the strike had Grunau claimed more than 20,000 men out and, as a matter of fact in normal times there are but 6,500 yardmen employed in the Chicago district. Following this statement charges of bribery, trickery, stuffed ballot boxes and intimidation were voiced. Subsequently the men called meetings of their own in various sections of the city on the evening of September 14 and by *viva voce* votes left no doubt as to the desire of the men to return to work.

Upkeep of Freight Car Equipment

AT A MEETING of the Central Railway Club, held at the Hotel Statler, Buffalo, N. Y., on September 10, J. W. Senger, superintendent of rolling stock of the New York Central, Lines West, presented a paper on Upkeep of Freight Equipment. The author stated that the roads are now facing a bigger problem in maintaining freight cars than that encountered during the war, due to the shortage of labor and material, the increased traffic and the scarcity of equipment. To meet this situation he urged that the facilities for repairs, which have not kept pace with the increase in equipment, should be augmented as quickly as possible.

Discussing the organization of the car repair forces Mr. Senger advocated a limited scope of responsibility for each foreman, the selection of supervisors from the ranks, and periodical educational meetings. He mentioned methods for overcoming the difficult material situation, which included careful attention to the use of material, co-operation between the mechanical and stores departments and the reclamation of material from scrap. He also pointed out the advisability of considering reinforcing cars when undergoing heavy repairs and avoiding making light repairs when the condition warrants a general overhauling. By giving proper attention to cars in classification yards and on light repair tracks the delays and expense incident to setting out cars en route could be avoided.

In concluding Mr. Senger said: "The demand that has been made upon the equipment department by the operating department of the railroad, due to the necessity for car equipment suitable for transportation purposes, has tended to make it necessary to use all classes of equipment to the maximum. We have been called upon to supply cars, not for the commodities for which they were originally built, but for other classes of service for which they could be fitted by temporary repairs. As a consequence we now find ourselves with equipment on hand which will require some time to build up to its former usefulness, and this cannot be very well accomplished unless all railroads provide themselves with newly constructed equipment which can be placed in service to relieve equipment now running, to enable the cars to be brought into the shop and receive general repairs

or overhauling which will fit them for the service for which they were originally built."

A spirited discussion followed the reading of the paper. Numerous details of construction which affect the cost of maintenance were mentioned. Some of the speakers deplored the tendency to confine the work done principally to light repairs. The fact was pointed out that some roads have not provided adequate facilities and therefore are not doing their share in maintaining cars. Damage to cars in switching also received attention. The statement was made that cars often come together at speeds of six to eight miles an hour, though the highest capacity draft gears now in use will not protect loaded cars from destructive shocks if the speed at impact exceeds four miles an hour. One speaker expressed the opinion that local agreements which contained the provision that the receiving company should run, repair or transfer the car were responsible for keeping cars in service when they should be repaired and urged that the receiving line should in all cases have authority to reject cars in unfit condition.

Cars Must Be Equipped With Safety Appliances

The Interstate Commerce Commission has denied the application of the American Railroad Association on behalf of various railroad companies for a further extension of time within which to make their freight-train cars conform to certain of the standards of equipment prescribed by the commission pursuant to the provisions and requirements of the safety appliance acts.

In accordance with the authority conferred by the provisions of the act the commission had granted successive extensions of the period within which common carriers should comply with the requirements of its order of March 13, 1911, with respect to the equipment of cars actually in service on July 1, 1911, as follows: On March 13, 1911, an extension from July 1, 1911, to July 1, 1916; on November 2, 1915, a further extension to July 1, 1917; on April 12, 1917, a further extension to March 1, 1918; on February 1, 1918, a further extension to September 1, 1919; and on August 29, 1919, a further extension to March 1, 1920, making one continuous period of eight years and eight months from July 1, 1911, to March 1, 1920. Passenger-train cars and locomotives were equipped in conformity with the standards within the periods prescribed by the first extension order. The second, third, fourth, and fifth extension orders pertained to paragraphs b, c, e, and f of the original extension order, paragraphs a, d, and g being so worded as to require no further action.

"The record shows," the commission says in its decision, "that on February 1, 1920, there were 2,319,380 freight cars owned by the carriers represented at the hearing, and that 60,170 of these, or 2.6 per cent of the total owned, were not equipped in conformity with the standards prescribed by the order of March 13, 1911. It is estimated that 3,000 were equipped during the month of February, and that 12,021, or 20 per cent, were special service cars or other cars which do not leave the line of the owning carrier.

No reason was given why these 12,021 special service cars have not been equipped in conformity with the law or why they can not immediately be so equipped. This leaves 45,149 other cars to be equipped. Sixty per cent of them need minor repairs only, but more or less difficulty is involved in equipping the remaining 18,060. Of these, 9,272 have less than 10 inches end-ladder clearance. If a special draw bar is used, the larger percentage of the 9,272 cars can be made to conform to the requirements. The number of bad-order cars on the lines of these carriers is about 138,000, or approximately 6.5 per cent of the total number owned. The percentage of the number of bad-order cars has fluctuated during the last two or three years between a little over 5 and about 10 per cent. Most, if not all, of these non-equipped cars have been through the shops in the last 9 or 10 years. A witness for the carriers stated that he did not know that any freight car could stay out of the shop that long.

"It can not be maintained that the failure to have these cars equipped in conformity with the standards is due to any unforeseen contingency. The requirement for the standardization of safety-appliance equipment is of long standing, and attention has been directed to this requirement from time to time in previous hearings in this matter as well as in the several extension orders; at the hearing in August, 1919, the situation was discussed and the understanding was had that no further extension would be necessary, asked, or granted. The arguments that shortage of material and absence of the cars from the lines of the owning carriers have delayed the required standardization are not convincing with respect to those cars which require only minor repairs, inasmuch as safety appliances are of standard dimensions and an order issued by the Railroad Administration June 30, 1919, required each carrier to equip all cars on its line not already standardized, regardless of ownership. We have seen that it will be more or less difficult to make 18.060 cars conform to the standards. But if these 18,060 cars are added to the number of bad-order cars, shown by the record to exist on the lines of the carriers, the percentage of bad-order cars will be increased less than 1 per cent, or from 6.5 to 7.3 per cent; and if the entire 60,000 cars not equipped according to standard were added to the number of bad-order cars the percentage of such cars would be increased to 9.2 per cent, a figure less than the maximum, which, according to the record, has existed during the past two or three years.

"It is noted that all of the unstandardized cars referred to herein were in service July 1, 1911, and all of them are consequently 9 or more years old. No doubt many of these cars have practically outlived their usefulness and nearly reached the age of retirement. Cars of that age, if they have not heretofore been shopped for extensive repair work, must shortly go through the shops, at which time the safety-appliance equipment can and must be made to conform to the standards.

"We have been very liberal in the past in granting successive extensions of time; in previous hearings on this subject, we have been convinced that good cause was shown for the extensions granted, notwithstanding that representatives of train-service employees in every case have opposed any further extension of time. We are not unmindful of the fact that the primary purpose of the safety-appliance law and standards is to reduce the hazard of employment, and that extension of time within which carriers are required to comply with the standards delays the consummation of the beneficent purposes of the law. The hazard to employees does not diminish in the same proportion as the number of cars which are not standardized diminishes. The employees expect all safety-appliance equipment they are required to use to be standard, and when a car on which the equipment is not standard is used the fact frequently is not discovered by employees until after an injury has resulted.

"Upon consideration of all the facts of record we are of opinion and find that good cause has not been shown for any further extension of the period of compliance and that serious burden or hardship will not be imposed upon the carriers or upon the public by denying the application in this case."

Saving Money and Time at Engine Terminals

Much Has Been Gained Through Standardization of Electrical Distribution and Equipment Properly Installed

By H. L. Cornelison
Electrical Equipment Engineer, Austin Company, Cleveland, Ohio.

THE RECENT STANDARDIZATION of electrical distribution for both light and power at several new engine terminals on the Pennsylvania System has resulted in a reduction in the cost of engineering and construction of these facilities. The employees adapt themselves to the equipment with comparative ease, and when they are transferred from



Gantry Crane for Handling Ashes at Cinder Pits

one terminal to another they are already familiar with the workings of the standard layout. The scheme of electrical distribution as worked out for a 30-stall standard engine house is illustrated by the Crestline, Ohio, terminal. The engineering for the standardization of the lay-out was conducted by the engineers of the railway under the direction of R. Trimble, assistant chief engineer of the Pennsylvania System; while the construction of the terminal and the installation of electrical service was done by the Austin Company, Cleveland, Ohio.

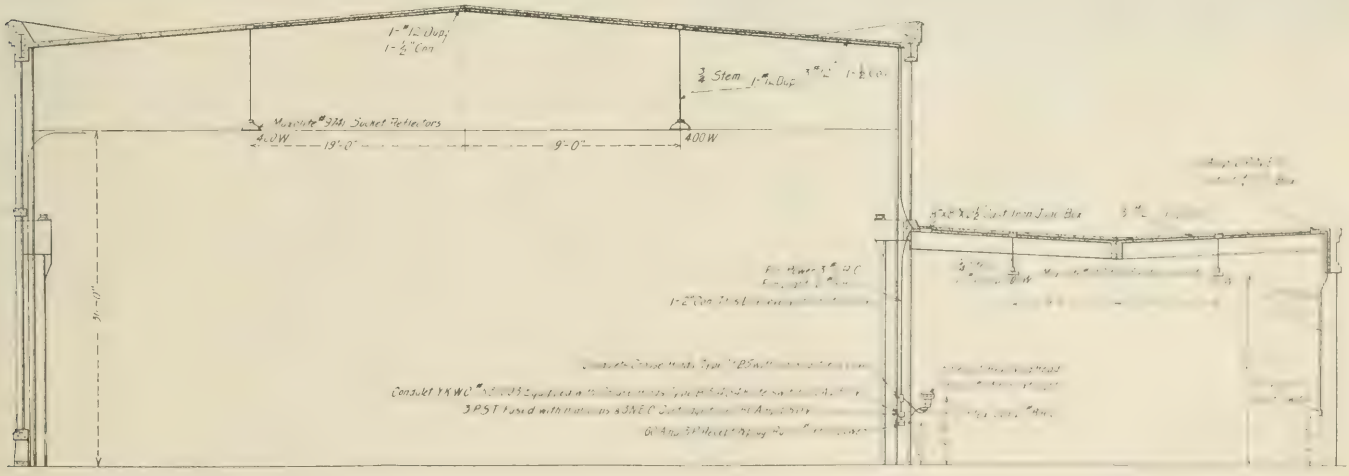
Power, Service and Distribution

At this terminal the railroad purchases electric power from a local power company, 60-cycle alternating current being supplied. This is distributed through the terminal to the various local distributing points at 2,200 volts.

It is the custom of the Pennsylvania to purchase its own transformers and measure the current consumed through meters connected to the receiving side of the transformers. The receiving voltage varies for different locations and ranges from 2,200 to 66,000 volts, the latter being the pressure at which the current is supplied at the Crestline terminal. In this case a substation of the out-door type is provided with the necessary arrangement of transformers, safety devices and other equipment for stepping down the voltage to 2,200. At this pressure it is distributed through the yards and to the various buildings. If current is received from the power company at 2,200 volts this out-door substation is not required.

In general there are three classes of distribution and each is separately controlled at the 2,200-volt switchboard. These are, (1) current for all power purposes, (2) current for interior lighting, and (3) current for all exterior yard lighting. The various loads are supplied with energy from the same source. The standard protective equipment for the out-door substation includes automatic releases, oil circuit breakers, and aluminum cell lighting arresters, together with auxiliary apparatus such as current and potential transformers, and disconnecting switches.

The service line panel on the main switchboard, which is located in the compressor room of the engine terminal power house, carries a watt-hour demand meter and other instruments. The distributing panels are equipped with oil switches on the feeder lines and each switch is provided with an overload release. In addition, the power circuit breakers have a low voltage release as a precaution against damage in case full voltage is restored after partial or complete interruption has occurred in the current supply.



Cross-Section of Engine House Stall Showing Location of Lighting Outlets, Receptacles and Switches

To facilitate the making of connections and to avoid the crossing of wires behind the switchboard, a vault is built below the floor level, in which the feeder lines terminate. From this vault the underground circuits are taken out to the terminal poles near the power house, then up the poles

to cross arms, where connections are made to the overhead distributing system, which in general is the method of distribution employed. The poles are set in concrete in order to further the permanence of the line construction. However, where congestion prevails the circuits are placed in underground conduits. This is the practice wherever a track crossing is encountered.

The distribution for the various buildings, such as office building, power house, oil house, storage building, machine shop and inspection pits, is effected by placing 2,200-volt transformers at the approximate load centers. At these locations the 2,200-volt service is reduced to the required amount for power and lighting purposes.

Application of Power

At each of the new engine terminals a steam generating plant is maintained for the purpose of heating the buildings, operating the boiler washing system, etc., the heating being done by the indirect hot air method. The fans for blowing the air over the heating coils are steam driven, as is the usual standard practice. All other apparatus is electrically driven. This includes the blowers, where forced draft is used, the ash handling equipment, the exhaust fans



Engine House During Construction. The Conduits for the Overhead Lights Are Embedded in the Roof Slabs

for the down-take system of smoke collection in type "A" engine houses, as at Crestline, and the air compressor as well as machine tools, cranes, turntables, etc. All motors are of induction type, operating at 220 volts, with the exception of the smoke exhaust fans, which are 2,200 volt, and also the 2,200-volt synchronous motors which drive the air compressors.

The power house at Crestline, comprises in addition to the boiler room, the heater fan room, the smoke exhaust fan room, the boiler washing equipment room, an electrical repair room and the air compressor room, the latter being used also for the main switchboard room for the control panels of the electrical distributing system of the plant. Just outside the boiler room and immediately adjacent to the compressor room is the out-door substation with concrete base on which are mounted the master transformers and other equipment mentioned in a previous paragraph. In the engine house the motor-driven apparatus consists of the overhead traveling crane, which is a feature of the type "A" house, the drop pit mechanism, the turntable tractor, the electric welding apparatus and such portable tools as may be required.

The scheme of power transmission to the crane motors is a matter in interest in that, since the crane operates on a circular track the usual form of trolley wire is not suitable because of its making tangents between points of support.

On this account three 30-lb. rails have been substituted. These are supported one above the other and bent to the contour of the inner crane supporting rail. They are suspended from the frame work by means of insulating rackets. The collectors on the crane make contact with the rail bases on the underside.

For portable tools a single receptacle is mounted on each second column. From these also are operated the portable electric welding outfits, which consist of 220-volt alternating current motors driving direct current welding generators. The motor equipment at the coal docks is of the same general character as elsewhere. An important feature, however, is the control apparatus, whereby the machinery is automatically set in motion and subsequently stopped by simply pushing a button. The wiring throughout the coal docks is in rigid steel conduit with cast iron fittings to make the work permanent and secure.

Another feature of the Crestline terminal is the gantry crane used for handling ashes at the cinder pit. The usual copper trolley wires on the crane bridge have been replaced with steel shapes, which are less susceptible to injury from the corrosive action of the vapors arising from the pits.

Illumination of Engine Terminal

Incandescent lamps are used for all interior illumination; these are mounted in porcelain enameled steel reflectors, which are of the diffusing type for general interior illumination, while for local use at machines or on extension cords reflectors of the intensifying type are provided. For each stall in the type "A" enginehouse there are two 400-watt lamps suspended from the roof truss in the high bay and two 100-watt fixtures suspended from the roof in the low bay.

For portable lights, conduits are led down the main roof supporting columns, terminating in turret fixtures, in each of which are receptacles for six separate extension cords. In the machine shop provision is made for such special lighting, in addition to the general illumination, as the work in hand may require.

Exterior illumination is effected by means of flood lighting. For the turntable this involves the use of a fixture for each quarter circle mounted on towers on the roundhouse roof in such a manner as to elevate them to a height of 35 ft. above the track. Opposing lights are focused one against the other, so as to avoid shadows. Yard illumination is provided by flood lights of the similar type mounted in cast iron housings. These are placed in groups on poles at an elevation of 65 ft. above ground level. No fixed rules for pole location have been adhered to, the arrangement being in accordance with local requirements and preference. In this case also, the opposing lighting units are focused one against the other in such a manner as to reduce glare and shadows.

Special care has been taken in wiring the oil house to have all circuits tightly sealed in conduits, so as to diminish the fire hazard from short circuits and sparks. The controlling switches and panel boards are mounted outside of the building for the same reason. This also provides greater accessibility in case of emergency. In addition to the Crestline yard project, a number of other terminals have been constructed along the lines described in this article. Among the larger ones may be mentioned the new engine terminal and yard at Richmond, Ind., and remodeling of the old engine house and the building of a new locomotive erecting and machine shop at Logansport, Ind.

General Foremen's Association Convention

Keen Interest Developed in the Discussion of Organization Problems and Handling of Labor

THE RELATION of supervision, adequate machinery and facilities, proper handling of labor, and the fusion welding processes to the reduction in the cost of repairs to cars and locomotives were the subjects developing the liveliest discussion at the sixteenth annual convention of the International Railway General Foremen's Association, which was held at the Hotel Sherman, Chicago, September 7, 8, 9, and 10.

The convention was called to order by President William P. Gale (Chicago & North Western) and, following the usual opening exercises, President Gale addressed the association. An abstract of his remarks follows:

President Gale's Address

Much might be said as to ways in which improvements in railroad transportation may be made. Government control of the railroads in the United States having now ceased to exist, it is natural that the railroad companies should desire to return to improved pre-war conditions. There is a demand for earnest effort at increasing the production of essentials and the markets of the world are ready for our country's products. As foremen in railroad shops we must do our full part in helping to get results. It may be considered a patriotic duty to serve the country in providing efficient and economical transportation for its citizens and products.

In the supervision of employees, foremen can get the best results by dealing kindly but firmly with all men under their charge. Foremen should not be led astray by any false impressions of their personal importance, but must rather be filled with the spirit of fairness to all. The interest of their employers can best be served by a proper understanding not only of the materials which they must handle, but also by securing the effective co-operation of all employees under their supervision. The part of the program pertaining to the proper handling of labor should be fully discussed.

Reducing the Cost of Repairs to Cars and Locomotives

The committee dealt with this subject under 17 heads, each of which was outlined briefly with the purpose of stimulating discussion. An abstract of these subdivisions follows:

SUPERVISION

Careful, well trained supervision is essential. Supervisors should have, or acquire, executive ability—the gift of handling men properly; they should be interested in their men and like them. They should be big enough to get their heads and shoulders above the petty envy and jealousy that has a habit of creeping in. Supervisors who are favored with the opportunity to get a schooling in different departments or experience in different shops are indeed fortunate, and can and do return the favor to the company they are working for.

Should employees be promoted to supervisory positions without previous careful training and coaching when their work and actions mean so much to their employers?

ORGANIZATION OF SUPERVISORS AND SHOP FORCES

In order to have an efficient, energetic and interested shop organization it is necessary to have the co-operation of all members of the staff. To increase this spirit it is advisable to have weekly shop staff meetings at which the welfare of the shop is discussed. At these meetings the shop superintendent or general foreman can get in personal touch with his organization and get a general idea of the condition of each department by the report that each department foreman turns in. This enables him to make any changes which he might deem necessary to further the production in his shop.

At these meetings, too, subjects may be brought up for general discussion, such as general shop conditions or methods to be adopted to shorten the time of machine or erecting floor operations, which tend to decrease the cost of repairs.

ROUNDHOUSE REPAIRS

The first object should be to take care of the small repairs on locomotives, which will take only a short time and require a small amount of material, before they cause damage which will require more costly repairs. Roundhouse work properly looked after keeps locomotives out of the back shop a much longer time.

Roundhouse terminals should be provided with inspection pits for inspecting locomotives before passing over the ash pits in order to detect any parts that need repairs and have the information forwarded in advance to the roundhouse so advance preparation can be made for repairs.

BACK SHOP SCHEDULE

There must be a workable shop schedule or plan for getting the work out with the facilities contained in the shop. Since the piecework and bonus systems have been discarded it has been found that production has slowed up, much to the dissatisfaction of all of us. It has, therefore, been necessary to develop a shop scheduling system to take the place of the other systems.

MACHINERY AND FACILITIES

When it is possible to get new machines or appliances to replace old types they should be obtained immediately, but when this is not possible every loose end should be gathered in and the best made of the situation. There is more money wasted in making repairs to locomotives on account of the use of old and obsolete machinery than there is from any other cause. This is also true on mill work in the car department.

During the past few years locomotives have been growing in size and weight very rapidly but in many cases the repair shops have not kept pace with them and the result is high costs of repairs.

There is also another means by which the cost of repairs may be materially reduced and that is by the introduction on the machine floor of jigs, chucks, dies, box tools for brass work, pneumatic clamps, gang tools, milling cutters, templates and expanding mandrels, all of which reduce the cost of machine operations. On the erecting floors, power driven valve setting rollers, motor driven valve bushing pulling bars, rings for grinding cylinder faces and cylinder heads with air motor attachment, motor driven flue cutters and flue rollers and chucks for grinding steap pipe rings and superheater units with motors have been found to greatly reduce the costs of repairs.

ROUTING AND LOCATION OF FACILITIES

All work going through shops should be properly routed, thereby doing away with unnecessary handling, which costs money. For examples, all side rod work should be confined to one portion of the shop with rod rack, drill press, power press and lathe in close proximity to one another so that there will be no lost time between the several operations on

the different machines. The driving box gang should have the power press, brass crucible for pouring hub liners, planer, boring mill, lathe and shaper within a radius of 10 or 12 ft., as they are in so many shops, so that when a driving box enters that radius it does not get away from it until finished and ready for application.

Material

Sometimes very little attention is given to the handling of material. A high rated mechanic may sometimes be seen pushing a truck up from the stores department with a load of material on which he is about to perform some kind of work.

This task should be taken care of by a trucker or laborer, thereby saving the difference in the two men's wages while at the same time the mechanic may be used on production.

Every effort should be made to have material placed in well regulated store departments so that when men are sent for certain articles they do not waste unnecessary time looking for it.

The material required at the shops should be carefully watched by the supervisory forces and ordered in ample time to save delay and avoid the necessity of having to rob material from one engine or car for repair parts to use on another engine or car. Supervisory forces should keep in close touch with the consumption of material and should see that new material is not used unnecessarily, and that all second-hand serviceable material is handled properly to get the greatest amount of service out of it.

A well organized and well equipped central reclaiming plant is a great money saver.

Proper Handling of Labor

Every employee should be impressed with the necessity of reducing all unnecessary expenses. A great many men are inclined to be careless about the use of material, especially when somebody else is buying it, and consequently, unless a strict check is kept, much of it is wasted.

To get the men thinking along the right line some roads have arranged to have efficiency meetings in the offices of the master mechanic, between representatives of the shop crafts and the members of the staff about once each month, at which the subject of shop repairs, use of material and the elimination of waste is discussed. These men take part in the discussion and advance many ideas from the employees' viewpoint which save time and material. Then once in eight or ten weeks a mass meeting is called in the shop 30 minutes before quitting time at which some member of the staff speaks, followed by a representative of the employees who bring before the men the necessity for conserving material and thereby causing reduction in the cost of repairs.

A spirit of hearty co-operation should be cultivated between the engine crews, road foremen, and shop forces in order to get the help of the engine crews in carefully handling and looking after the engines on the road and making their work reports as explicit as possible.

Workmanship

Another manner in which the shop organization can keep the cost repairs down is to insist upon each man doing his work thoroughly, instead of accepting slighted work, which is sometimes done because the engine is wanted in a hurry. This is a very expensive measure because it will not be very long before the job will have to be done over again, at the same expense if not more.

When cars and engines are shopped for general repairs, all parts should be carefully inspected and necessary repairs should be carefully and properly made. They should leave the shop in first-class condition, to render satisfactory service without it being necessary to expend much on them for running repairs. Running repairs are more expensive than back shop repairs because facilities are lacking. Furthermore the service of the engine is lost while such repairs are being made.

Close care should be given to the proper mounting of car and tender wheels on axles to see that they are properly centered and the wheel gage fits properly at least at three equally distant points on the circumference, and that wheels of same tape sizes are paired. This will tend to reduce flange wear and hot boxes.

Welding Processes

A great saving in material is effected by the use of the electric welding process. Locomotive parts which formerly had to be scrapped on account of wear, such as guide bars, brake beam ends, brake hanger pins, radius bar ends, fork ends of eccentric rods which have become too wide for the link, driving boxes which have been worn down on the shoe and wedge faces, are now built up by the use of the electric arc and made almost as good as new. The oxy-acetylene torch, in the boiler department especially, is being used quite extensively for the welding in of flues, flue sheets, side sheets and patches, thereby reducing the cost over the old method of applying the same with rivets. The use of the cutting torch must not be lost sight of. There is no department which can get more results from it than the locomotive department.

Lubrication

The lubrication of the end play on driving, engine truck and trailer boxes, and shoes and wedges with graphite grease prevents the cutting of these faces and increases mileage.

Care should be used to see that the lubricating devices are maintained in good condition and that sufficient amount of lubricating oils are furnished to meet the requirements. Under the present conditions the proper lubrication of cars and engines depends to a large extent on the shop forces. The supervisory officials should realize this and provide necessary facilities for properly lubricating and looking after the parts in the shops that are not ordinarily given the required attention on the road.

A trained force of men should be maintained to look after the proper packing and lubrication of journal bearings and this work should be followed up by the supervisory forces to insure that it is being handled properly at all times.

Design

Great care should be given to the design of parts to see that they are of sufficient strength and of proper quality to meet the requirements of the service without failing; also to see that the parts on cars, especially, are so designed that they may be easily removed for repairs.

Reinforcing Cars

Draft timbers and gears on wooden cars are the source of high cost of maintenance. The substitution of steel center sills, to which the draft gear is attached, will almost entirely eliminate the maintenance of draft timbers and draft rigging as it gives a substantial attachment to pull the train and also gives a buffing member which will prevent buckling of cars and, in box cars, the breaking of side plates over side doors.

This feature in present-day heavy trains will more than offset any additional cost of repairs to cars and will have them on the repair track less frequently. Another feature of importance is taking care of the breaking out of ends of box cars.

This can be done by substitution of pressed steel ends, of which there are several kinds on the market, and reinforcing the ends with structural shapes which can be anchored to the side framing, floor framing and sometimes to the roof framing.

Inspection

A system of careful inspection should be enforced to detect any defects which may develop that would result in failure or rapid deterioration of parts if not located and given prompt attention.

Cleanliness

Engines should be kept clean and of good appearance as both enginemen and shop forces will take more interest in the engines if they are kept clean. This should be followed up by the supervisors and necessary facilities provided to handle the work economically.

Shops and premises should be kept clean and all refuse and material picked up. This raises the morale of the men.

Short Tracks in Car Repair Shops

It is necessary to have short tracks of 10 or 12 cars capacity, and many of them, in order to get bad order cars spotted with regard to the work to be done on them. Short tracks will also aid in more frequent pulling of the bad order tracks and not hold up a large number of cars as is done on long repair tracks. The repair forces can be better supervised with short tracks and material is more easily handled.

Classification of Bad Order Cars

Bad order cars should be classified as to light, heavy, general repairs and steel work or other special work before they are set on the repair track. This method increases the output, allows the work to be specialized and reduces the cost of handling material.

The report was signed by C. F. Baumann (C. & N. W.), chairman, C. W. Adams (M. C.), H. T. Cromwell and F. L. Wysong.

Discussion

As a means of broadening the experience of supervisors, the discussion indicated that many railroads have adopted the policy of sending groups of their foremen from time to time to visit the principal shops of other railroads. Where this practice has been followed the opinions expressed in every case indicated that the return to the company justified the practice. The value of reading suitable mechanical journals was also mentioned as a means of education which should not be neglected.

The opinion was also expressed that a real foreman requires qualifications which he possesses before he becomes a mechanic. In selecting foremen thought should be given long before the actual selection must be made and those men who have demonstrated qualifications of leadership should be tried out in positions as acting foremen whenever opportunity offers, in advance of their selection to fill permanent positions. The importance of unselfishness as a qualification for successful foremen was emphasized.

The discussion indicated that shop scheduling is rapidly coming into general use. The systems described by those taking part in the discussion varied considerably in the details. Most of them, however, depended on periodical conferences of the shop foremen as a means of fixing the outgoing dates which, once established, are followed up consistently by means of schedule boards and some form of daily reports.

The need of close supervision of speeds, feed and depth of cuts on machine tool work was brought out as particularly important at this time in efforts to secure adequate output. Many of the men on machines now seem to have little idea as to the capacity of high speed steel cutters and show little ability to figure out correct speeds and feeds. The tendency, therefore is to take more cuts than are necessary and operate at speeds which waste time. The discussion on workmanship dwelt largely with the importance of eliminating all unnecessary finishing of parts. Since the abolishment of premium and piece-work systems, where these were formerly in force, there has been a tendency for the men to do unnecessary work. In some cases this has been remedied by taking the matter up through the shop committees in a businesslike manner and impressing on them the need to avoid every possible waste of time.

During the discussion on the welding processes, Professor A. S. Kinsey, Stevens Institute of Technology, addressed the association as a representative of the Welding Conference Committee of the American Welding Society. Professor Kinsey dwelt on the importance of foremen having a more thorough knowledge of the essentials of good fusion welding. He referred to the fact that the Boiler Code Committee of the American Society of Mechanical Engineers will probably give a rating to fusion welds in boiler work and that the rating to be given will depend upon the kind of work that is being turned out. The foreman should know what kind of welds he is getting. Professor Kinsey referred particularly to the National Agreement as a hindrance to the full development of the possibility of fusion welding in railroad shops, since it places the welding jobs open to the senior craftsmen in the various departments, who may not be welders at all.

With discussions of the sections of the paper dealing with car maintenance the present practice of maintenance, which goes on patching up the cars while giving no systematic attention to the draft gears, was condemned. It was stated that the same need exists for periodical inspection and repair of draft gears as has led to the present methods of air brake maintenance, and more recently to the periodical inspection and repacking of journal boxes. It was pointed out that such a policy adopted with respect to draft gears would soon demonstrate what gears are most economical. The value of the short repair tracks of 10 to 14 cars capacity was endorsed by the car men present.

Other Papers and Addresses

Committee reports were also presented on Standardization of Engine Failures and Terminal Delays, and Methods of Repairing Superheater Units.

In addition to the address of Robert Quayle, an abstract of which appeared in last week's issue, the association was addressed by T. H. Goodnow, superintendent car department, Chicago & North Western and E. W. Pratt, formerly assistant superintendent motive power of the Chicago & North Western. Mr. Pratt commented on the fact that in looking over the program most of the subjects for discussion dealt with apparatus and were of a technical nature, but there probably was not one man in 10 in the organization who did not get his job as a general foreman because of his ability to handle men. Mr. Pratt suggested, therefore, that more attention to subjects dealing with the handling of labor and shop organization might be taken up to advantage.

Other Business

The following officers were elected to serve for the ensuing year: J. B. Wright (H. V.), president; G. H. Logan (C. & N. W.), first vice-president; H. E. Warner (N. Y. C.), second vice-president; T. J. Mullin (L. E. & W.), third vice-president; C. A. Barnes (B. R. of Chicago), fourth vice-president, and William Hall (C. & N. W.), secretary-treasurer. M. H. Westbroke (Grand Trunk Western) and C. W. Adams (M. C.) were elected to fill vacancies on the executive committee.

Fire prevention day, October 9, has been made the subject of a proclamation by the President of the United States, in which the governors of all the states are urged to set apart this day and to call on citizens to plan for instructive and educational exercises.

New England Roads Ask Larger Divisions

WASHINGTON, D. C.

AN INTERESTING TEST of the possibilities of the Transportation Act in taking care of the so-called weaker railroads, or groups of roads, which for one reason or another are unable to operate successfully on the general scale of rates prescribed by the Interstate Commerce Commission, for the district of which they are a part, has been instituted by the New England railroads that have filed a formal complaint with the Interstate Commerce Commission asking it to accord them larger divisions of the joint rates to and from other parts of the country. The complaint is signed by the Bangor & Aroostook, Boston & Maine, Central Vermont, Maine Central, New York, New Haven & Hartford, Central New England and Rutland railroads and various subsidiaries, and names as defendants all the other railroads in the country, including the Boston & Albany, the Grand Trunk and the Canadian Pacific, whose interests are more largely outside of New England.

The complaint takes the position that these roads are entitled to an annual net railway operating income of $50,296,485, which is 6 per cent on an aggregate property investment account of $838,274,759, and states that from a careful study of the best information available and on the basis of current costs and revenues, it is estimated that the operations of the complainants for the year ending August 31, 1921, under the new rates prescribed by the commission, will yield an aggregate net railway operating income of less than $14,000,000, or approximately $36,000,000 less than the 6 per cent return and approximately $18,000,000 less than the amount necessary to meet fixed charges. It is also asserted that the commission's rate decision, allowing the railroads of the Eastern district a 40 per cent increase in freight rates, will give the railroads of the Eastern district $25,000,000 in revenue in excess of what they would have received if the complaining roads had not been grouped for rate-making purposes with other railroads in Official Classification territory.

The filing of this complaint follows a series of conferences held for the purpose of ascertaining whether it would be possible to give the New England roads larger divisions by mutual agreement. The complaints state that during the past four months they have urged upon the most directly interested defendants their rights to a more favorable readjustment of divisions of joint through rates, but have been unable to secure any action on the part of the defendants toward that end. They allege that the divisions received have become and are unjust, unreasonable, inequitable, unduly prejudicial and otherwise in violation of paragraph 4 of Section 1 and paragraph 6 of Section 15 of the interstate commerce act.

One of the most serious questions raised while the Transportation Act was under consideration in Congress was as to the method of taking care of the so-called weaker railroads and the difficulty in finding a solution to this problem was one of the motives impelling the suggestions that were made in some quarters for a fixed government guarantee. The Cummins-Esch bill attempted to meet the problem presented by the existence of differences in the prosperity of various railroads by providing for a general standard of rate-making to produce a standard return on the aggregate property value by districts and also providing that roads which earn in excess of 6 per cent shall contribute part of the excess to the government.

It was well understood, however, that this plan was calculated rather to prevent the more prosperous companies from receiving an income which would be regarded as excessive than to take care of the roads which were below the average in earning capacity. An attempt was made to do something in the direction of a solution of this problem by giving the Interstate Commerce Commission power to determine the equitable divisions of joint rates, although its power was so qualified by the statement of certain considerations which must influence the commission's decision that there have been differences of opinion as to how far the commission can go in improving the condition of a road through increasing its divisions. Undoubtedly many members of Congress thought that the commission's discretion had been made broad enough to enable it to go a long way toward equalizing the earning capacity of various railroads.

The commission itself in its decision in the advance rate case said that "while the New England carriers are included in the Eastern group and are subject to the percentage for that group, the evidence as to the disproportionate needs of the New England lines makes it desirable that the railroads give careful consideration to the division of joint rates accruing to those lines."

The complaint filed by the New England carriers does not indicate how much of an increase in divisions they think the commission should make; they merely refer to the paragraphs of the law requiring railroads to establish through routes, just and reasonable joint rates, and equitable divisions thereof, and requiring the commission in the event the railroads are unable to agree upon divisions to say what would be an equitable distribution of the joint revenue as between the participating carriers. The commission is asked to issue an order prescribing equitable divisions of all joint rates and charges.

In the three-year test period ending June 30, 1917, the railroads parties to the complaint had an average annual net operating income of $35,175,077. During the 26 months of federal control the average annual net operating income was only $4,477,989 and during the six months immediately following the conclusion of federal control they had a net operating deficit estimated at $13,500,000.

In urging the need for larger divisions they referred to the peculiar geographic industrial and economic conditions affecting railway transportation in New England and particularly to the fact that these roads are to an unusual degree originating and terminal lines, by reason of which they allege that their unit operating costs are necessarily higher than those of the railroads in Eastern territory generally. These higher unit costs, they say, are not now properly reflected in the divisions of the joint rates.

The complaint also says that the transportation service performed by the New England roads is of vital importance to that territory and to the country at large "due in part to the fact that the location of the territory makes it of strategic military importance, its industries have demonstrated a special adaptability for the production of munitions of war, the production of its soil and forests are consumed in large quantities in other sections, and that within New England is manufactured a great volume of commodities necessary to the welfare of the country and depending upon the service of the complainants for prompt and efficient distribution."

THE ADVANCED FREIGHT and passenger rates recently authorized by the Interstate Commerce Commission will result in a substantial increase in the tax returns to those states which tax the gross earnings of their steam railroads, according to N. A. Nelson, secretary of the Minnesota State Tax Commission, who announced recently that a tax of $3,668,710 for the first six months of 1920 was collected from the railroads operating in Minnesota, as compared with $3,356,583 for the corresponding period of 1919. The gross earnings during this period increased from $67,631,070 to $73,374,180, or an increase of $5,743,109.



Steamer Inca at the Puno Wharf—Southern Railway Steam Crane at Work Coaling the Ship

The American Equipped British Railways of Peru

This Is the Fourth Article of the Series by Railway Age's South American Correspondent

By John P. Risque

THE MECHANICAL PROBLEMS of the Southern Railway of Peru are handled at Arequipa, about one-third of the distance up from Mollendo. The meagerness of



First Appearance of a Railway Motor Car at Sicuani

the layout at this, the main shops of the line, is sufficient to cause an inquiry as to how the job is done. The answer lies in the personality of the chief mechanical engineer, H. E. Dalzell, who during the war, finding himself deprived of most of the necessaries, proceeded to make the most of it—and has been doing mostly that ever since. They say that necessity is the mother of invention. Those who seek a demonstration of the truth of this old adage should stop at Arequipa and see the reinforced journal box lids they are putting on all "axle boxes" and which are successfully withstanding the damaging effects of end thrusts of car axles on 90-meter radius curves which, previous to the adoption of the new type lids, were consuming axles, brasses and inside faces of boxes almost as fast as they could be replaced. Here likewise is to be found an object lesson in feedwater heating for locomotives. Engine 57 is showing a yearly coal saving claimed to be in the neighborhood of 62 tons, which, at the abnormally high price for coal in these regions, amounts to a yearly saving of $1,775. Coal, which has been high in price and most difficult to obtain, is expected to be superseded by the use of Peruvian oil. The management hopes to have all locomotives burning oil by the end of the present year. Front ends have been standardized; electric headlights are used on most of the passenger engines and additional sets are being secured from time to time.

Company Builds Cars

All of the corporation's cars are manufactured complete on the job, the only parts being brought into the country being the axles and rolled steel wheels, cast iron wheels having proved inefficient due to the heat generated by ex-



Administration Building of the Southern Railways of Peru in Arequipa, Showing West End of Passenger Station

cessive brake shoe friction on the steep grades, resulting in cracking. Westinghouse air brakes are used on the passenger trains, but owing to the remaining assortment of old freight equipment, yet to be displaced by the new car building program, it has been thought best not to try to modernize them. For the same reason, link and pin couplers are found in large numbers and it is expected to be but a matter of

a comparatively short time when automatic couplers will be applied to the new rolling stock when the latter will have approached a sufficient quantity to make the move advisable.

Lake Titicaca

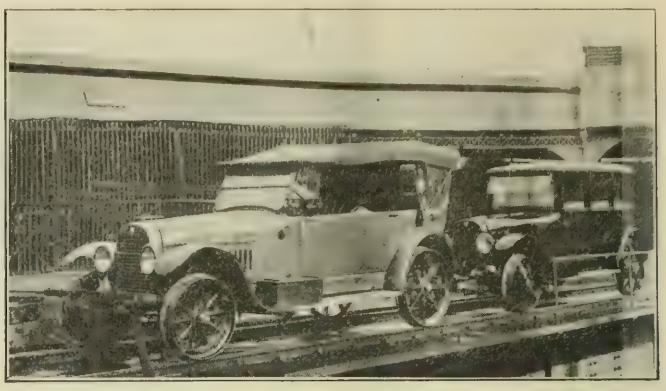
For freight handling on Lake Titicaca, Puno at the west and Guaqui at the east end of the lake, are equipped with batteries of four 5-ton steam cranes for the transfer of freight between cars and ships. The loading record for a vessel at these ports is 750 tons in one day. The equipment on this unique link, a lake division of a mountain railway, is no less up-to-date than all of the other parts which make up the system. There are four oil-burning steel steamers in



The Terminal at Puno, Lake Titicaca. Tug Yapura and S. S. Coya at the Wharf

service there, the largest being the Inca, a 750-ton cargo steamer, built to British Admiralty specifications, with accommodations for 70 first-class passengers, running between Puna and Guaqui, direct. There are two other steamers of 450 and 165 tons capacity, respectively, a tug of 100 tons capacity and two steel lighters built at the Arequipa shops and capable of carrying 320 tons between them.

Traffic on the line comprises daily five and six car passenger trains between Mollendo and Arequipa with three passenger trains per week from Arequipa to Puno on the lake with through steamer connections for La Paz. A daily freight service of two trains is operated from Mollendo to Arequipa, these trains running about 175 tons minimum. The trains are sent from Arequipa to the highest point, called Pillones, in four or five sections, and at that station are made up again and hauled by a single locomotive, across

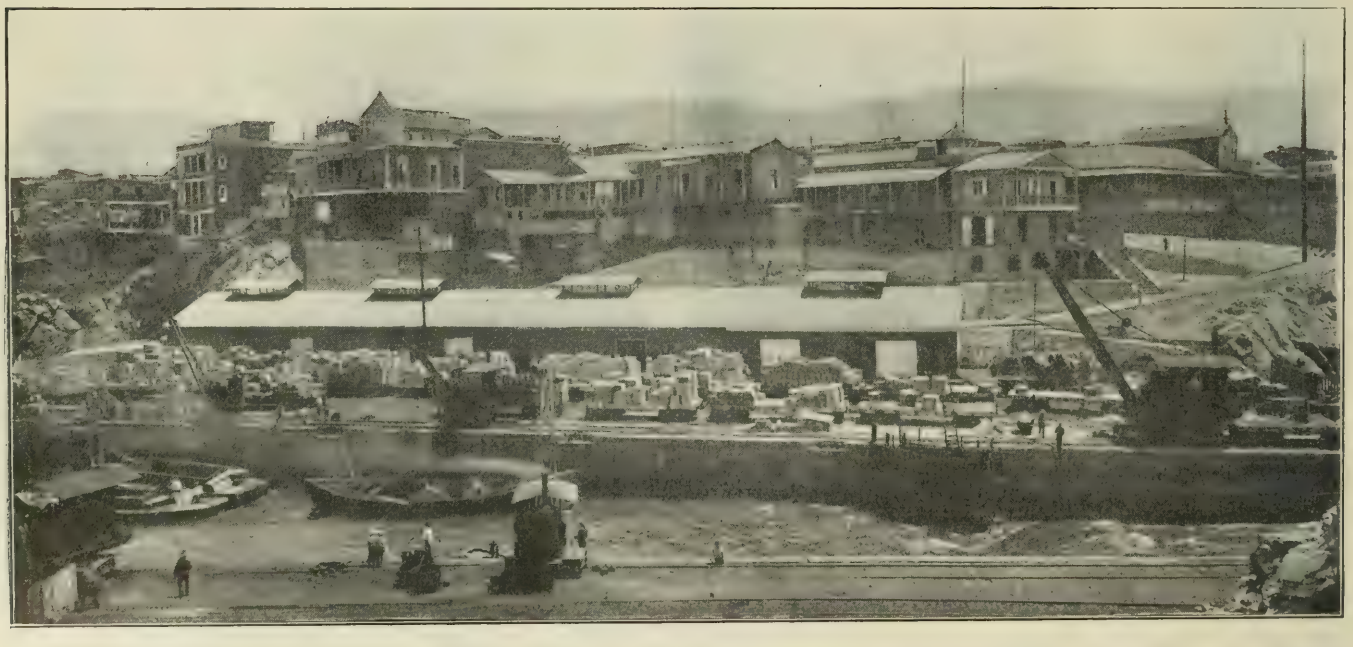


Two Hudson Super Sixes, Converted to Standard Gage Track, Brakes on Four Wheels, Working up to 14,000 Ft. Above Sea Level. The Front Car Has Made Over 40,000 Miles

the level pampas or plains, to Juliaca where the respective cars are distributed for La Paz, via Puno and the lake, and Cuzco in the opposite direction.

The Southern's struggles for increased revenues through the development of resources along the right of way have not been lightened by the difficulty of securing capital because of the war. The new government of Peru, however, is reported to be friendly to the exploitation of the minerals along the lines and the road is looking hopefully forward to the increased business which such developments will doubtless assure.

In bright contrast to the country through which this railway has carried the traveler, are the attractively furnished quarters of the Engineers Society of Lima, facing the Plaza in that city. Those who would cultivate the intellect of the



Mollendo Terminal Freight House and Lighter Canal, Showing the Business End of the Line at Work Unloading Freight from Lighters to Wharf with Steam Cranes

country or who are in search of knowledge of the comparative condition of the many railway projects in this newly awakening land, should not hesitate to direct themselves to the agreeable young civil engineer, Senor Hector Escardo, president of the club and an ex-minister in the cabinet of the former president of the republic.

Proposed New Lines

Prominent among the probable new railways to be constructed in the near future is the proposed 3 ft. gage line from Paita inland to the Maranon or Amazon river. Paita is a town on the northern Peruvian coast. The Maranon will be reached at a point in the vicinity of Limon where it is said that the depth of the stream will allow good sized steamers to ascend from the Amazon. The republic's new president, Senor Leguia, is said to have taken a strong interest in this development, the completion of which will give Peru its first transcontinental route.

A particular pet among certain of the Peruvians is the cherished dream of a through line from Lima to Buenos Aires, via the Central of Peru, up 15,600 ft. over the top of the Andes to Huancayo, thence over a railway which would conquer some 500 miles of extremely difficult topography to Cuzco; from the latter point over the Southern of Peru, across Lake Titicaca, through La Paz and down the Antofagasta & Bolivia meter gage line to Uyuni; thence over the short branch, also of meter gage, to the end of the track at Atocha. From this point there are about 125 miles of partly constructed railway, completion of which is said to be held up by lack of funds on the part of the promoters. On the other side of this gap lies La Quiaca on the Argentine frontier, the northern terminal of the Argentine State lines, also of meter gage. When this Atocha-La Quiaca link is finally completed and the Argentine government completes its part of the program by extending the State railway lines south, from a point slightly north of the city of Rosario, the Bolivian will be able to have a ride in a train of the same gage via this route, or else over the meter gage Central Cordova from Cordova south, all the way from La Paz to Buenos Aires; but the resident of Lima will not. That is, unless the Peruvians build a meter gage road from Lima to the borders of Lake Titicaca, which is unlikely. It is probable that freight from Callao and the district around Lima will not find itself relieved either of cost or difficulty if routed for Buenos Aires over the cherished route described. Freight would perhaps be hauled quicker and cheaper via the Southern from Mollendo La Paz, thence down the new line, or preferably, in order to avoid transshipment which the Southern's route involves at the lake as well as the use of two gages, via the Arica-La Paz meter gage railway from Arica over a connecting link in La Paz.

Freight Traffic Growing Rapidly

WASHINGTON, D. C.

A RECORD MOVEMENT of freight for the month of August is indicated by the reports compiled by the Car Service Division of the American Railroad Association, showing the revenue car loading. For the week ended August 28 the total loading was 985,064 cars, as compared with 951,653 in the corresponding period of 1919 and 980,931 in 1918; for the four weeks ending August 28 the total car loading was 3,853,822 as compared with 3,580,367 in 1919 and 3,849,026 in 1918. As the traffic handled in August, 1918, was greater than that for August, 1917, it is apparent that the freight business for August this year was larger than for any preceding August. The loading for the week ended August 28 not only established a new record for this year, exceeding that for the preceding week by nearly 21,000, but it approaches the largest record ever made. During 1918 in May and October there were two or three weeks when the total freight loading was slightly over 1,000,000 cars. The detailed report is as follows:

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

Summary—All Districts: Comparison of Totals This Year, Last Year, Two Years Ago, for Week Ended Saturday, August 28, 1920

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year 1920	Total revenue freight loaded: Corresponding year 1919	Total revenue freight loaded: Corresponding year 1918	Received from connections: This year 1920	Received from connections: Corresponding year 1919	Received from connections: Corresponding year 1918
Eastern	1920	7,588	2,688	55,192	3,453	8,755	10,955	45,833	100,061	234,525	.....	.....	265,175	.....	.....
	1919	8,910	2,964	53,311	3,473	8,350	5,832	21,192	129,795	.....	233,827	237,261	.....	252,530	267,553
Allegheny	1920	2,970	3,606	68,813	6,497	4,289	13,609	39,096	75,247	214,127	.....	.....	139,203	.....	.....
	1919	4,065	3,255	60,264	3,712	4,577	9,674	42,287	78,970	.....	206,804	225,234	.....	149,154	189,423
Pocahontas	1920	255	279	23,769	1,389	1,374	103	3,145	6,588	36,902	.....	.....	20,277	.....	.....
	1919	353	326	23,260	1,304	1,416	114	120	9,804	.....	36,697	40,880	.....	18,237	24,507
Southern	1920	3,332	1,827	24,995	1,627	19,471	2,960	36,059	38,555	128,826	.....	.....	76,821	.....	.....
	1919	3,509	2,483	22,330	399	18,819	2,526	22,478	47,601	.....	120,145	121,874	.....	67,842	69,287
Northwestern	1920	13,849	7,435	12,196	1,783	19,039	46,356	28,797	41,243	170,698	.....	.....	61,407	.....	.....
	1919	15,290	10,644	8,888	1,175	16,259	42,764	21,333	50,495	.....	166,848	170,707	.....	65,300	85,107
Central Western	1920	12,164	10,185	20,887	359	6,321	3,062	31,791	47,402	132,171	.....	.....	73,431	.....	.....
	1919	14,387	12,868	19,687	1,012	4,783	3,388	22,911	46,794	.....	125,830	126,122	.....	67,946	68,426
Southwestern	1920	4,411	2,603	6,051	133	8,613	347	17,498	28,159	67,815	.....	.....	52,796	.....	.....
	1919	6,185	3,027	6,866	78	7,443	391	13,147	24,365	.....	61,502	58,853	.....	50,126	47,967
Total, all roads	1920	44,569	28,623	211,903	15,241	67,862	77,392	202,219	537,255	985,064	.....	.....	689,110	.....	.....
	1919	52,699	35,567	194,606	11,153	61,647	64,689	143,468	387,824	.....	951,653	.....	.....	671,135	.....
	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	980,931	.....	.....	752,270
Increase compared	1919	.....	.....	17,297	4,088	6,215	12,703	58,751	.....	33,411	.....	.....	17,975	...	.....
Decrease compared	1919	8,130	6,944	.....	.....	.....	.....	.....	50,569	.....	.....	.....	.....	.....	.....
Increase compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	4,133	.....	.....	.....	.....	.....
Decrease compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	63,160	.....	.....

The reports received by the Car Service Division also indicate additional progress in clearing up the freight congestion. For the week ended September 4 the accumulations of delayed cars had been reduced to 64,060. This is a reduction of about 6,000 cars as compared with the preceding week. About 25,000 of the delayed cars are held for export and coastwise movement. The car shortage, however, is increasing as the demand for cars in the grain section increases. For the week ending September 1 the average daily "deferred car requisitions" was 151,440 for the United States and Canada, of which 81,902 were box cars, and 146,070 for the United States alone.

The weekly reports received from the local committees on car service for the week ending September 4 continue to show an improvement in service at most points and progress in the campaign for car conservation. At most terminals switching service is reported as normal or practically normal, although at some cities there is still a shortage of switching forces.

Shortages of labor for car repairs are reported from many points, but many of the committees report an improvement in labor conditions, both as to numbers and as to efficiency. The Twin Cities committee reports that labor conditions have not been so good as at present in the past four years. At Pittsburgh the committee states that the labor situation is very materially improved, due to former employees applying for work, although many men employed during the strike have left the service with the receipt of their back pay. The Indianapolis committee says that practically 90 per cent of the yard brakemen employed at present have entered the service within the past two months. Labor efficiency is still reported as below normal at most points.

Many of the committees report that there has been no complaint as to service from industries during the week, but there are very general reports of inadequate car supply. The Twin Cities committee reported the car supply as adequate at the time, but said that many farmers were holding grain for higher prices and that in about two weeks there would be a much greater demand for cars. Nearly all the local committees report excellent co-operation on the part of shippers and consignees in the campaign for prompt release of equipment and heavy loading. The practice of making up solid trains is being continued at many points with good results.

The Twin Cities committee reports that 14,287 cars were repaired during the week.

At Baltimore the release of equipment continues good, full co-operation being received from consignees and encouraging results as to heavy loading.

The Philadelphia committee says that switching service both at Camden and Philadelphia terminals is about normal. Arrangements have been made to forward 98 bad order cars to other shops for repairs. 19,251 cars were unloaded in the Philadelphia terminal as compared with 18,884 previous week. A total of 325 cars was unloaded by consignees Saturday afternoon and Sunday, in addition to 725 cars unloaded by railroad forces.

Normal switching service is being performed by railroads in the Pittsburgh terminal. The accumulation of cars containing sugar, newsprint paper and canned milk in the Pittsburgh district has been relieved by inducing consignees to place the commodities in storage. Approximately 150 carloads of sugar and 50 to 75 carloads of newsprint were put in storage.

All team tracks in the entire St. Louis district were checked up and the drive resulted in the unloading and release of 62 badly delayed cars. Also 173 embargoed cars were released and rerouted by inspectors. A total of 19,759 cars was repaired during the week of September 2. The normal switching force per day in the district should be 2,232 men, working 17,909 hours. On September 2 there were 2,221 men working 18,141 hours.

At Kansas City all interchange is reported as being handled promptly and switching service at industries is normal. A total of 10,904 cars was repaired during week.

The New York committee reports switching service normal on all roads in territory and no complaints from industries. All roads are making a special drive toward prompt release of cars and heavier loading. The Pennsylvania Railroad established a record in coal dumping at South Amboy, N. J., during August, 627,000 tons. No complaints were received from industries regarding car shortage.

At Cleveland 4,428 bad order loads and 5,398 bad order empties were repaired with 75 per cent of the authorized forces working. The campaign to expedite the release of equipment has been continued and the committee has held meetings with representatives of the larger industries in an effort to have them not only more promptly release equipment, but reduce the number of cars used in intra-plant work. A campaign to reduce the use of equipment in cross-town service is being vigorously pushed and has released approximately 200 cars per week for other service.

At Chicago 269 cars were rerouted because receiving roads were unable to handle to specified destination. Switching performance ranges from 80 to 100 per cent of normal on various lines.

The Detroit committee reports a plentiful supply of labor on all lines.

Daniel Willard, chairman of the Advisory Committee of the Association of Railway Executives, announces that to avoid the confusion that has resulted from the similarity between the names of the Car Service Commission, of the American Railroad Association, located in Washington, D. C., and the Interstate Commerce Commission, it has been deemed expedient to change the name of the Car Service Commission. Effective September 1 the Car Service Commission will be officially designated as the Car Service Division of the American Railroad Association. W. L. Barnes, formerly special assistant, is appointed executive manager of the Car Service Division. He will report direct to the chairman of the Advisory Committee of the Association of Railway Executives.

The Car Service Division will be organized in sections and each section will be under the direction of a manager. For the present and until further notice the organization will be as follows:

W. C. Kendall, manager, Railroad Relations Section.
A. G. Gutheim, manager, Public Relations Section.
W. J. McGarry, manager, Field Work Section.
D. E. Spangler, manager, Open Top Car Section.
L. M. Betts, manager, Closed Car Section.
M. B. Casey, manager, Refrigerator Car Section.
C. F. Stewart, manager, Troop Movement Section.

Managers of sections will report direct to the executive manager of the Car Service Division.

The semi-monthly bulletin of percentages of freight cars on line to ownership, as of September 1, compiled by the Car Service Division, shows a great deal of progress toward equalizing the distribution of cars in accordance with ownership by regions, although they are wider variations as between individual roads. On September 1 the Eastern district had 104.9 per cent of its ownership, the Allegheny district 99.3 per cent, the Pocahontas district 74.4 per cent, the Southern district 86½ per cent, the Northwestern district 99.8 per cent, the Central Western district 94.3 per cent and the Southwestern district 100.4 per cent, while the Canadian roads had 93.5 per cent.

The Car Service Division has issued the following summary of general conditions as of September 13:

Box Cars—The requirements continue to exceed the supply at all points, especially heavy traffic centers. Grain loading in the West is considerably below last year, and while there are some indications of a tendency to withhold shipment in anticipation of possible higher prices, the demand for cars for immediate loading is greatly in excess of the supply. Cars are being moved west in volume, both loaded and empty, although surplus previously available in the East and South is practically exhausted. It is anticipated that the volume of perishable traffic which will be offered for transportation during coming season will be especially heavy. Ventilated box cars must be withdrawn from general dead freight service and the loading of such cars confined to points in direct line of homeward movement.

Automobile Cars—This equipment must be moved, loaded or empty, to the central automobile manufacturing district for protection of automobile loading.

Stock Cars—Demand so heavy for protection of stock loading and for building up supply on Western lines for movement of range cattle and sheep, that utmost efforts must be made to move cars to owning lines, or in accordance with specific orders issued for necessary relocation.

Refrigerator Cars—Requirements for refrigerator cars continue heavy in all sections, especially in California, where it has not been possible to meet the demand. Imperative,

all concerned give special attention to movement of refrigerators. Fall fruit crop in Colorado, Kansas, New York, Michigan and the Pacific Northwest expected to be especially heavy. There is considerable activity in the demand for cars to protect packing house, dairy products and eggs.

Flat Cars—Continue in serious demand, the percentage of orders filled averaging from 40 to 50 per cent. While the press of requirements for agricultural implements is considerably diminished, construction work is held waiting transportation which can be supplied with flat cars, particularly lumber, steel and stone. There should be no let-up in activity to get this type of equipment promptly released and moved in accordance with outstanding directions and the use of flat cars should be confined to those commodities which require this type of equipment for transportation.

Open Top Cars—The coal car placements reported thus far this month indicate that bituminous coal production will average approximately 11,000,000 tons per week, which is slightly better than the average attained during August. The movement to tidewater and to Lake Erie ports is now progressing on a satisfactory basis. Tidewater shipments to New England were temporarily restricted, due to congestion, but have now been resumed. The strike of the miners in the anthracite regions has made available a large number of coal cars which are being rushed to the bituminous fields to assist in increasing production. In the steel loading district special attention is being given to the expeditious handling of mill gondolas, as a considerable amount of steel is still on hand awaiting transportation, although the storage was slightly reduced during the past week. There has been no change in the situation as regards the placing of open cars for commodities other than coal. Important shipments such as those urgently needed to complete road work started before issuance of Service Order 7 and other essential projects are being protected on special permits when cars cannot be provided under provisions in Service Order No. 7 permitting these to be loaded with other commodities in the direction of the coal fields.

The Car Service Division in a circular to the railroads says that the movement of citrus fruit and other perishable traffic originating in the southeast promises to be especially heavy during the coming season. The roads in that section have provided themselves with a liberal supply of ventilated box cars for handling this traffic, but the cars are now badly scattered on foreign lines, and in use in ordinary dead freight service.

In spite of all efforts, proper results have not been secured in the return of such cars to home lines. As a result, during the early fruit movement great numbers of ordinary box cars were used, which were not only an unsatisfactory vehicle for such freight, but their use was often accompanied by serious damage to the car.

Indiscriminate loading of ventilated box cars with dead freight, the circular says, must be immediately discontinued, and the handling of such cars policed to the extent necessary to accomplish a continuous movement to or in the direction of owning road. The following instructions should be immediately placed and given effective enforcement:

Ventilated Box Cars.

1—May be loaded to or in the direction of the home road with freight requiring ventilation.

2—May be loaded to or in the direction of, but not beyond, the home road with other classes of freight.

3—May not be backhauled or held for prospective loading. If immediate loading not available as above, must be moved empty to owner by direct route.

When supply of ventilated cars is not sufficient to protect loading of freight requiring ventilation without using foreign cars contrary to Item 1, permission for such use must first be obtained from the Commission on Car Service. Roads owning ventilated box cars will furnish the Commission on Car Service with a semi-monthly report showing the number of such cars of their ownership located on each foreign line, which will be used to check the return of such cars to home roads.

New Passenger Rates in United States and Europe

THE INCREASED RATES on interstate passenger travel, recently authorized by the Interstate Commerce Commission and placed in effect throughout the country on August 26, have resulted in the expression of apprehension by some persons that passenger travel will be curtailed and that consequently the increased rates will not result in greatly increased revenue from passenger train operation.

In spite of the recent advances in this country, passenger rates here are much lower than in Europe, as shown by statistics recently compiled by the Bureau of Railway Economics are reproduced in the three tables below:

PASSENGER FARES IN GREAT BRITAIN

From	To	Distance, miles	1st Class Pre-war rates	1st Class Present rates	3rd Class Pre-war rates	3rd Class Present rates
London	Glasgow	401.50	$14.11	$24.70	$8.03	$14.05
Manchester	London	183 50	5.96	11.07	3.77	6.59
London	Crewe	158.90	5.88	10.30	3.20	5.62
Liverpool	York	105.75	3.85	6.75	1.99	3.47
Liverpool	London	193.50	7.06	12.35	4.01	7.04
Manchester	Aberdeen	363.50	13.63	23.89	6.89	11.98
Manchester	Glasgow	225.25	8.64	15.37	4.32	7.56
Manchester	York	68.50	2.51	4.40	1.36	2.39
Manchester	Leeds	43.00	1.70	2.98	0.87	1.54
London	Perth	450.00	16.02	28.04	8.86	14.95
London	Crieff	467.75	16.71	28.96	8.82	14.05
London	Carlisle	299.00	9.85	19.59	5.90	10.30
Chester	Windermere	80.25	4.10	7.18	1.95	3.39
Chester	Lancaster	50.75	2.82	4.95	1.34	2.35
London	Mansfield	16.25	4.40	7.71	2.74	4.85
London	Mintlaw	565.00	20.52	35.91	10.44	18.29
London	Oldham	188.25	6.10	10.69	3.77	6.59
London	Edinburgh	400.00	13.99	24.50	7.95	13.95
London	Dunrobin	654.00	24.03	42.10	11.44	20.01
London	Birmingham	113.00	4.22	7.38	2.25	3.91
London	Sheffield	158.25	5.09	8.92	3.18	5.58

PASSENGER AND SLEEPING CAR FARES

From Paris, France, to Various Points on the Continent

From	To	Distance, miles	Passenger fares 1st class	Passenger fares 2nd class (a)	Sleeping Car fares (b)
Paris	Aix-les-Bains	347.97	$22.89	$15.09	$12.53
Paris	Antwerp	226.18	14.14	.....	.....
Paris	Brussels	198.22	12.40	8.22	8.18
Paris	Bordeaux	365.37	24.00	15.82	12.33
Paris	Barcelona	753.72	54.54	37.41	.....
Paris	Biarritz	507.35	32.60	21.49	18.31
Paris	Brindisi	1,129.65	75.12	.....	33.74
Paris	Belgrade	1,237.15	95.32	.....	.....
Paris	Bucharest	1,671.49	137.15	.....	.....
Paris	Cannes	656.17	43.10	28.40	22.99
Paris	Florence	731.35	54.45	.....	.....
Paris	Geneva	375.93	25.68	16.94	14.63
Paris	Genoa	579.74	43.46	.....	.....
Paris	Grenoble	393.33	26.04	17.16	.....
Paris	London (Calais)	287.00	35.20	24.36	.....
Paris	Liege	228.04	14.51	9.67	7.53
Paris	Lyon	318.14	20.89	13.78	.....
Paris	Lausanne	316.28	23.15	.....	11.43
Paris	Lisbon	1,323.00	107.41	.....	.....
Paris	Metz	251.03	16.28	10.75	.....
Paris	Marseille	535.62	35.16	23.18	18.81
Paris	Monte Carlo	685.99	45.06	29.68	25.07
Paris	Modane	472.24	27.45	18.10	14.63
Paris	Madrid	903.47	81.96	58.90	.....
Paris	Montreaux	343.62	24.84	.....	11.80
Paris	Milan	522.57	47.59	32.02	22.12
Paris	Nice	675.43	44.36	29.23	22.99
Paris	Naples	1,045.77	67.90	51.45	.....
Paris	Prague	786.03	93.13	.....	24.96
Paris	Rome	891.64	62.46	39.52	24.67
Paris	Strasburg	312.55	20.44	18.57	11.65
Paris	Trieste	786.03	67.96	.....	30.82
Paris	Turin	500.00	34.02	22.22	20.61
Paris	Vichy	226.80	14.91	9.82	.....
Paris	Ventimille	697.18	46.11	30.39	25.07
Paris	Venice	687.24	61.39	40.41	27.56
Paris	Vienna	871.78	95.04	.....	27.19
Paris	Warsaw	1,279.40	127.78	.....	37.21

(a) These rates have been taken from the latest available tariff published. However, they are subject to change without notice.

(b) Tax of 3 francs on all reservations up to 50 francs when made in advance; above 50 francs, 4 francs tax.

Passenger and Sleeping Car Fares Now in Effect in the United States

From	To	Distance miles	Passenger fare (a)	Sleeping car fares (a) Lower berth	Upper berth
Washington	New York	225	$8.79	$4.05	$3.24
Washington	Chicago	836	30.97	8.91	7.13
Washington	Jacksonville	797	30.68	9.32	7.45
Washington	New Orleans	1,100	43.46	12.96	10.37
Washington	St. Louis	980	36.57	9.72	7.78
Washington	Miami	1,163	44.90	14.18	11.34
Washington	Key West	1,319	52.65	16.20	12.96
Washington	Kansas City	1,328	47.40	12.96	10.37
Boston	New York	230	8.92	4.05	3.24
New York	Chicago	908	25.28	9.72	7.78
Chicago	Denver	1,034	40.26	11.75	9.40
New York	St. Louis	1,052	41.07	11.75	9.40
Denver	San Francisco	1,565	62.02	17.82	14.26
New York	New Orleans	1,325	52.25	15.80	12.64
New York	Cleveland	588	22.16	6.08	4.86
Chicago	Salt Lake City	1,027	59.48	16.61	13.28
Chicago	Omaha	492	19.36	4.86	3.89
San Francisco	Seattle	955	36.31	10.04	8.75
Chicago	Los Angeles	2,246	86.55	25.52	20.41
Chicago	San Francisco	2,564	86.55	25.52	20.41
New York	Jacksonville	1,022	39.46	11.75	9.40

(a) Includes war tax.

The passenger fares for Great Britain include all the increases to date and were compiled from the schedules prepared by the Railway Clearing House, effective on August 5, 1920. Second-class travel in England is now almost non-existent, and the quotations are therefore for first and third classes only. The bulk of English passenger travel is, of course, third-class.

The passenger fares shown from Paris to various points on the continent were furnished by the American representative of the Paris-Lyons-Mediterranean and include all increases up to August 1, 1920.

It will be noted that the British third-class fares are slightly lower than rates in the United States while the first-class fares are very much higher. Third-class accommodations in England cannot be regarded as nearly as good as standard accommodations in the United States, hence the third-class fares are really higher than our standard fares, the character of service considered.

In all these comparisons, foreign money has been reduced to United States equivalents at the normal rates of exchange.

A Labor-Saving Machine for Line Construction

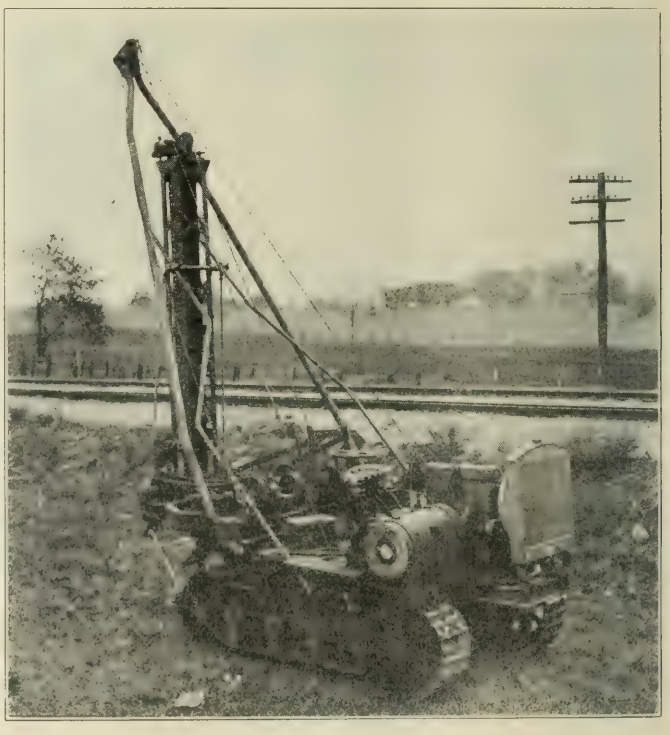
A machine for boring holes has been developed and placed on the market recently by the International Earth Boring Machine Corporation, Chicago. This equipment bores holes from 6 in. in diameter to 30 in. in diameter, 8 or more feet in depth, and is arranged with appliances for setting the poles in the holes after they are bored. While this machine primarily has been designed for the above mentioned purpose it can also be used to advantage for battery chute holes, foundation work and similar construction. Under favorable working conditions it is said that this machine will bore 100 holes and set 100 poles per day; that construction gangs using this machine have been able to bore holes in 45 sec., and that holes 2 ft. in diameter by 8 ft. deep have been bored through hard pan in 12½ min. Ordinarily holes of this character have to be blasted. The claim is made that the saving per hole by the use of this machine is such that the machine will soon pay for itself. The machine has demonstrated its adaptability and capacity for drilling through frozen ground, hard pan, shale, gumbo, clay, ordinary soil, gravel and sand.

Machines for this purpose are built in three types, as follows: Type A is horse drawn, with the boring machine and derrick mounted on a turntable arranged on a wagon frame. Power is furnished by a gasoline motor on the turntable. Type B is a four-wheel-drive motor truck with the boring mechanism and derrick mounted on a turntable clamped to the motor truck frame. Power for the boring mechanism and winch is furnished direct from the truck engine. It is claimed that this machine has great



Type B Machine Boring an Anchor Hole

maneuvering capacities. Type C is called the "crawler-tractor." Its boring mechanism and derrick are mounted on a frame of the machine and the power for the boring mechanism and winch is supplied through a special gearing



Type C Machine

from tthe tractor engine. This machine can travel and operate on swampy ground or steep railroad embankments. The photographic reproductions show type B and C machines in service on railroads.

The Gloucester Ferry Company, which has been operating boats between Gloucester, N. J., and South street, Philadelphia, for about 60 years, discontinued operations on September 9 because it was unable to meet the wage demands of the employees.

General News Department

Two airplane mail carriers, Walter Stevens and Russell Thomas, were killed by the fall and explosion of their machine near Pemberville, Ohio, on September 14.

Fines amounting to $500 were imposed in the federal court at Pittsburgh, Pa., on September 9, against the Pittsburgh, Cincinnati, Chicago & St. Louis for violation of the law prescribing sixteen hours as the work-day limit in train service.

The Union Pacific announces the establishing of a minimum pension of $25 a month. The action will affect approximately 300 pensioners of lines in the Union Pacific system, whose monthly pensions heretofore have been less than this amount.

The Civil Service Commission, Washington, announces that there are more than 100 vacancies in high-grade accounting positions under the Interstate Commerce Commission paying salaries ranging from $2,100 to $3,900 a year. The positions are principally in the field.

Thirty-four miles a day was the average freight car movement recorded on the Delaware, Lackawanna & Western for the month of August, or 3.5 miles better than in August, 1918. The records of the three summer months show: This year, June, 32.3; July, 32.2; August, 34.0. Last year, June, 28.2; July, 29.2; August, 31.4. Year before, June, 29.7; July, 29.9; August, 30.5.

The State Department has announced at Washington that advices have been received from the American consulate general at Melbourne that the Australian commonwealth ministry has decided to secure the services of a railway expert from this country and one from Great Britain to act with an Australian railway man, as chairman, in an investigation of the question of a uniform railway gage.

The Western Railway Club will hold a meeting at the Hotel Sherman, Chicago, on September 20, at which L. C. Fritch, vice-president of the Chicago, Rock Island & Pacific, and Samuel M. Vauclain, president of the Baldwin Locomotive Works, will speak. Mr. Vauclain's address will feature a motion picture entitled, "The Building of a Locomotive in the Plant of the Baldwin Locomotive Works."

Seventy-five managers of grain companies in Illinois met recently at Bloomington, Ill., to confer with Frank H. Funk, commissioner of the Illinois Public Utilities Commission, with a view to taking steps to relieve the need of cars to move Illinois grain. The grain men represented private grain concerns and farmers' co-operative elevators. A committee was named at the meeting to go to Chicago and to Washington to present the Illinois situation to railroad and federal agencies.

Lehigh Valley Employee-Stockholders

More than 1,000 employees of the Lehigh Valley have purchased stock in the company and additional subscriptions are being received daily. Recently employees were advised that they might become part owners of the railroad for which they work through the purchase of stock which could be paid for on the installment plan through small monthly deductions from the payroll, as was done during the several Liberty Loan campaigns. The company buys the stock on orders from employees and they pay the price prevailing at the New York Stock Exchange on the day their orders are received. No drive was made, President E. E. Loomis having ordered that employees were not to be urged to purchase stock, but the first 1,000 purchasers have taken an average of 4.4 shares apiece, representing an investment of approximately $200,000 at the present value of the stock. All classes of employees are represented among the purchasers, many using a part of the back pay recently received.

Representative Esch Defeated for Re-nomination

Representative John J. Esch, of Wisconsin, chairman of the House Committee on Interstate and Foreign Commerce, and co-author with Senator Cummins, of Iowa, of the Transportation Act, was defeated for re-nomination for Congress in the Wisconsin Republican primaries on September 8. Mr. Esch was bitterly opposed in his state by the railroad labor organizations. The national campaign by the sixteen associated railroad labor organizations, including the four big brotherhoods, claims the credit for the defeat of Representative Esch, and they are now preparing plans to attempt to defeat Senator Cummins' re-election, as they failed to beat him in the primaries.

The Railroad Administration Settling Claims

The Railroad Administration has reached a settlement in the cases of approximately 2,000 claims filed by railroad companies on account of items of additions and betterments made during the period of federal control which the companies claimed were made for war purposes or in connection with unification and, therefore, were properly chargeable to the government rather than to the companies. The greater part of the claims have been rejected, although payments were agreed upon by the Railroad Administration amounting to approximately $217,000. The claims which it has rejected or which were withdrawn during the negotiations amounted to approximately $2,000,000. The Railroad Administration has now received complete claims covering all items of account between the companies and the Railroad Administration from 43 companies.

An early announcement is expected of the appointment of a director of the Division of Liquidation Claims of the Railroad Administration, to succeed Max Thelen, and a director of the Division of Finance, to succeed Swagar Sherley.

Opposes National Adjustment Boards

The Citizens' Transportation Committee, New York City, has sent to the United States Railway Labor Board at Chicago a strong protest against a proposal, which has been presented to the board, for the organization of National Adjustment Boards for the settlement of questions raised by railroad employees. The Citizens' Transportation Committee is backed by the Merchants' Association and other large business interests, and it was mainly instrumental in killing off the strikes of longshoremen and truckmen in New York City a few months ago. Its present complaint is based on the absence of any representative of the public on the Boards provided for in the plan now proposed by the labor unions, for the settlement of questions of wages. The labor leaders are aiming to secure the establishment of boards under which the railroads as a whole must enter into contractual relations, on a national scale, with unions which propose to represent every class of employee; in other words, the proposal is for a national closed shop for all classes of railroad employees. This plan, says the protest, is entirely at variance with the intent and purpose of the Transportation Act. "National good faith requires that the roads be returned to their owners on as near the same basis as when taken over by the government as possible. Congress aimed to decentralize railroad management, including the matter of labor control. It is now sought to keep the matter of discipline removed from the hands of the managers and to center it in the proposed Na-

tional Boards of Adjustment. This is a matter of vital importance to the traveling and shipping public. Rules and regulations affecting efficiency and safety must be vigorously upheld, and this is not possible when discipline must be ultimately enforced from a distant point and not directly by a man on the ground. . . . The control of remote national boards in a great basic industry would be a national disaster and menace to industrial and social conditions generally."

Steel Treaters' Societies

Two organizations of men interested in the heat treatment of steel were merged into one at the first session of their annual convention and exhibition held at the Commercial Museum, Philadelphia, September 14 to 18. Plans for the amalgamation have been under active consideration for some time and former members of the American Steel Treaters' Society and the Steel Treating Research Society are now united in one organization known as the American Society for Steel Treating.

Col. A. E. White, chairman of the Amalgamation Committee, presided at the opening session and the convention was welcomed to the city by E. J. Cattell, city statistician, on behalf of Mayor Moore. Tellers were appointed and at the conclusion of the morning session the chairman announced the election of the following officers: Col. A. E. White, president; T. E. Barker, vice-president for two years; T. D. Lynch, vice-president for one year; W. H. Eisenman, secretary; W. S. Bidle, treasurer; H. J. Stagg and E. J. Janitzky, directors for two years, and W. C. Peterson and F. P. Fahy, directors for one year.

Proposed Joint Exhibit for Minor Railway Mechanical Associations

At a joint meeting of the International Railway General Foremen's Association and the Association of Railway Supplymen, held during the recent convention of the former organization, the following resolution was adopted:

"Resolved, In the interest of economy of time, which is a vital factor to the transportation problem today, the Association of Railway Supplymen has suggested that mutual benefit might be obtained by holding the railway mechanical convention at the same time and place whereby the exhibits would serve jointly the several organizations.

"The association, therefore, suggests that the International Railway General Foremen's Association give serious consideration to this thought."

At a special session of the executive committee of the International Railway General Foremen's Association it was decided that the interests of the several railway associations would be advanced if the suggestions embodied in this resolution could harmoniously be put into effect. Accordingly, letters have been sent out to the various other mechanical department organizations, inviting their executive committees to meet in joint session at the Hotel Sherman, Chicago, on October 4, to canvass the situation and, if possible, work out a plan looking toward the holding of the several conventions at one place during one continuous period.

An Appeal to His "P. R. R. Family"

Samuel Rea, president of the Pennsylvania Railroad, in a general notice to all the supervisory and working forces, calls upon them "to face problems which are without doubt the most important in the history of this railroad system. Our reputation and standing, as individuals and as organization, are at stake." Continuing, Mr. Rea says, in part: "Every man and woman in the service has a distinct, individual share of this great responsibility which cannot be honorably evaded or shifted to the shoulders of another. The public has quite generally approved the rate advances. There can be little doubt, also, that the public feels that the employees of this and all other railroads in the country have been treated in the matter of wages with justice. * * * The public will expect a full measure of courteous consideration on the part of every individual officer and employee, such as will restore the old Pennsylvania Railroad standards, of which we were once so justly proud. The owners of large and small amounts of our stocks and bonds rely on us to earn a fair return on their investments. * * * Satisfied patrons, receiving good service and courteous treatment, are far more likely to continue willing to pay the rates necessary to maintain generous wage levels than patrons who are poorly served or discourteously treated. * * * To those who have so well maintained Pennsylvania standards in the past, it is a great pleasure for me to extend the deep appreciation of the directors and management. * * *"

Exhibitors at the General Foremen's Association Convention

Over 80 companies, members of the Association of Railway Supply Men, were exhibitors at the Hotel Sherman, Chicago, during the sixteenth annual convention of the International Railway General Foremen's Association, which was held September 7 to 10, inclusive. The list of the companies, their exhibits and representatives, is as follows:

Air Reduction Sales Co., New York.—Acetylene tanks and torches.—Represented by H. H. Melville and R. T. Peabody.

American Arch Co., New York.—Security brick arch and double tube supported arch.—Represented by A. W. Clokey and R. J. Himmelright.

American Machinist, New York.—Represented by F. D. Wheeler.

American Steel Foundries Co., Chicago.—Models of draft arms, couplers, adjustable coupler pocket. Type D coupler and clasp brakes.—Represented by H. J. Melchert and W. G. Wallace.

Armstrong-Blum Mfg. Co., Chicago.—Band saws, steel machine saw and combined punch shear and bender.—Represented by H. J. Blum and F. A. Blum.

Armstrong Bros. Tool Co., Chicago.—Ratchet drills, tool holders, wrenches and dogs.—Represented by J. C. Fletcher and Horace Armstrong.

Ashton Valve Co., Boston, Mass.—Wheel press recording gages, steam and air gages, pressure testing devices, recording gages and safety valves.—Represented by J. W. Motherwell, J. F. Gettrust and H. O. Fettinger.

Baldwin Locomotive Works, Philadelphia.—Photographs of locomotives.—Represented by F. A. Neely, W. H. Evans and C. H. Gaskill.

Barco Mfg. Co., Chicago.—Engine tender connections, car steam heat connections, roundhouse blower connections, coach yard steam heat connections, air reservoir joints, crosshead and shoe, automatic smokebox blower fitting and power reverse gear.—Represented by F. N. Bard, C. L. Mellor and F. S. Wilcoxsen.

Borden Co., Warren, Ohio.—Die stocks and cutters.—Represented by V. M. Gaspar.

Boss Nut Co., Chicago.—Lock nuts, bolts and rivets.—Represented by J. A. MacLean, J. W. Fogg and A. MacLean.

Brubaker & Bros., W. L., New York.—Taps, dies and reamers.—Represented by J. R. Smith.

Buckeye Steel Castings Co., Chicago.—Cast Steel coupler yoke for use with M. C. B. standard "D" coupler.—Represented by G. A. Sutherland.

Carbo-Hydrogen Co. of America, Pittsburgh, Pa.—Cutting and welding apparatus and carbo-hydrogen gas.—Represented by F. S. Austin, V. F. Schnubb, E. G. Loughner and J. H. Wright.

Carborundum Co., Niagara Falls, N. Y.—Represented by W. E. Knott and H. P. Frost.

Chicago Pneumatic Tool Co., Chicago.—Pneumatic tools.—Represented by C. W. Cross, J. L. Canby, C. E. Leverenz, R. C. Black, J. L. Crowley, J. D. Crowley, N. S. Thulin, D. E. Cooke, E. K. Lynch and T. J. Smallwood.

Clark Equipment Co., Buchanan, Mich.—Twist drills.—Represented by H. G. Tuttle and C. O. Montague.

Cleveland Twist Drill Co., Cleveland, Ohio.—Twist drills, screw extracters.—Represented by H. S. White and O. B. Hansen.

Crerar-Adams Co., Chicago.—Jacks, die starters, wrenches and Lidsen's oilers.—Represented by Russell Wallace, W. I. Clock, J. A. Martin, Geo. Bassett, E. W. Koon, Chas. Gregory and E. C. Porhler.

Crucible Steel Co. of America, Pittsburgh, Pa.—Represented by F. Baskerfield and J. H. Jones.

Dearborn Chemical Co., Chicago.—Represented by W. S. Reid, I. L. Beebe, G. R. Carr and J. D. Purcell.

Detroit Lubricator Co., Detroit, Mich.—Three-feed lubricator with transfer filler attachment. U. S. standard three-feed lubricator and automatic flange oiler.—Represented by A. G. Machesney.

Detroit Twist Drill Co., Detroit, Mich.—Drills.—Represented by H. T. Scott.

Duff Mfg. Co., Pittsburgh, Pa.—Jacks.—Represented by C. M. Thulin and E. E. Thulin.

Edna Brass Mfg. Co., Cincinnati, Ohio.—Lubricators, injectors, water gages, coal sprinklers, fire extinguishers, boiler checks and locomotive boiler appliances.—Represented by E. O. Corey and H. A. Glenn.

Fafnir Bearing Co., New Britain, Conn.—Ball bearings.—Represented by D. D. Davis.

Firth-Stirling Steel Co., McKeesport, Pa.—High speed steel.—Represented by W. E. Nelson.

Flannery Bolt Co., Pittsburgh, Pa.—Flexible staybolts, bolts and installation tools.—Represented by E. I. Dodds.

Ford Co., J. B., Wyandotte, Mich.—Metal cleaning compounds.—Represented by H. J. Willwerth and Geo. J. Lawrence.

Forster Paint & Mfg. Co., Winona, Minn.—Locomotive cement and front end paint.—Represented by Helen J. Caswell.

Franklin Railway Supply Co., New York.—Butterfly firedoor, engine and tender buffer, automatic driving box wedge, Economy engine truck, flexible pipe joints, Universal valve chest, unit safety bar, tender truck, power reverse gear and No. 9 firedoor.—Represented by J. L. Randolph, C. W. F. Coffin, J. L. Bacon, H. F. Ball, R. G. Coburn, W. H. Coyle, H. M. Evans, S. D. Rosenfeldt, J. Sinkler and Paul Willis.

Galena Signal Oil Co, Franklin, Pa.—Represented by W. L. Trout, G. W.

Buckpitt, A. J. Harner, L. C. Sprague, G. B. Corey and J. A. Graham.

Garlock Packing Co., Palmyra, N. Y.—Packings.—Represented by G. W. Sullivan.

Gold Car Heating & Lighting Co., New York.—Vapor valves, hose couplers, oscillating gaskets, inlet valves, regulators and thermostatic control of car heating.—Represented by Allen Sheldon and A. D. Stuver.

Grip Nut Co., Chicago.—Lock nuts.—Represented by J. B. Whitenock.

Hattiesburg Valve Stem Packing Co., Hattiesburg Miss.—Reciprocating valve stem packing.—Represented by J. W. Dyess.

Hunt-Spiller Mfg. Corporation, Boston, Mass.—Gun iron.—Represented by E. J. Fuller and V. W. Ellet.

Hyland Co., R. H., Chicago.—Norton jacks.—Represented by H. O. Norton, Geo. R. Law, R. D. Bates and A. C. Lipke, Jr.

Imperial Belting Co., Chicago.—Belting.—Represented by A. G. Pickett and W. G. Wilcoxson.

Independent Pneumatic Tool Co., Chicago.—Pneumatic and electrical tools.—Represented by W. A. Nugent, Paul Mitchell, E. E. Lampe, J. C. Cowell, R. S. Marsh, H. White and H. C. Halbert.

Ingersoll-Rand Co., New York.—Pneumatic tools.—Represented by L. W. Schrutzer, H. H. Drew, C. H. Lungren, T. G. Abrams, W. D. Goddard and H. D. Pearson.

Jenkins Brothers, New York.—Valves and packing.—Represented by Geo. Royal.

Johns-Manville Co., H. W., New York.—Pipe and boiler insulations, locomotive spiral pipe insulation, locomotive and shop packings, air brake packing cups and expander rings, steam traps, high temperature cements and Airtite boiler coating.—Represented by J. C. Younglove, W. J. Stewart, H. J. Crowe, L. S. Wilbur and P. R. Austin.

Keller Pneumatic Tool Co., Grand Haven, Mich.—Pneumatic tools.—Represented by J. C. Campbell, W. Kelly, J. C. Willson, Edw. Biederman, W. Delaney and C. A. Bremmer.

Leslie Co., Lyndhurst, N. Y.—Steam heat and electric headlight pressure regulators and reducing valves.—Represented by J. J. Cizek and S. I. Leslie.

Liberty Steel Products Co., Inc., Pittsburgh, Pa.—Portable drill press and counter-sinker, single line torch, portable rivet heater, pneumatic dolly bar and heading attachment.—Represented by S. W. Midgley, J. M. Borrowdale and A. W. Preikschat.

Liberty Tool Corporation, Baltimore, Md.—Labor saving shop tools and equipment.—Represented by G. L. Degenhard.

Locomotive Firebox Co., Chicago.—Nicholson thermic syphon.—Represented by J. L. Nicholson, L. R. Pyle and Wm. Wilson.

Locomotive Lubricator Co., Chicago.—Schlacks system of locomotive forced feed lubrication.—Represented by W. J. Schlacks.

Ludlum Steel Co., New York.—Carbonizing pots.—Represented by S. T. Pearsons, C. J. Poore, J. E. Poore and M. F. Hall.

Mahr Mfg. Co., Minneapolis, Minn.—Oil fuel rivet forge and torch for steel car repairing.—Represented by W. G. Barstow, C. M. Simonds and A. E. Stenzel.

Malone, J. L., Whistler, Ala.—Piston rod remover and hydraulic jack.—Represented by J. L. Malone and Jos. Kamfner.

Manning, Maxwell & Moore, New York.—Railroad shop tools and steam specialties.—Represented by C. L. Brown, R. R. Cuthbertson and R. S. Dean.

Metal & Thermit Corp., New York.—Thermit process for welding heavy parts, butt welding of wrought iron and steel pipe and carbon free metals.—Represented by H. S. Mann, C. D. Young, W. Y. Moore, W. O. Aldrich, E. Bloom, H. D. Kelley and A. Lucas.

Miller Heating Co, F. W., Chicago.—Literature and drawing describing Miller hot water washout and refilling system.—Represented by F. W. Miller.

Miner Co., W. H., Chicago.—Friction draft gears for freight equipment, friction buffers and draft gears for passenger equipment, bolster locking pins for passenger equipment, and frictionless side bearings for passenger and freight equipment.—Represented by J. R. Mitchell, B. S. Johnson and Arthur Biddle.

Modern Tool Co., Erie, Pa.—Self-opening die heads, tapping attachments and chuck and collet equipment.—Represented by R. H. Wood.

Nathan Mfg. Co., New York.—Injectors, lubricators, boiler checks, gage cocks and water gages, coal sprinkler, whistles, globe and angle valves.—Represented by Richard Welsh, W. R. Walsh and F. C. Davern.

National Boiler Washing Co., Chicago.—Machine showing pictures of parts of boiler washing plant.—Represented by David Anderson and F. W. Gale.

National Malleable Castings Co., Cleveland, Ohio.—Adjustable brake beam fulcrums, wrecking hooks, couplers, journal boxes and hand brake mechanism.—Represented by L. S. Wright and G. R. Rasmussen.

National Railway Devices Co., Chicago.—Shoemaker vertical firedoor in operation.—Represented by A. F. Lind and Jay G. Robinson.

Niles-Bement-Pond Co., New York.—Small tool catalogues.—Represented by W. G. Flaig and D. H. Teas.

O'Malley-Beare Valve Co., Chicago.—Valves and bearings.—Represented by F. H. Hitesman, J. E. Brown, J. Gallagher, W. J. Murphy, J. M. Pigott, W. Morris and Edw. O'Malley.

Ohio Injector Co., Chicago.—Lubricators, flange oilers, lifting and non-lifting injectors, water glass protector, automatic drifting valve and Ohio fire jet.—Represented by A. C. Beckwith, F. W. Edwards, W. S. Furry and F. B. Farnsworth.

Okadee Co., Chicago.—Front-end hinge, locomotive blow-off valves, tender hose couplers, water gage glass and roundhouse washout valves.—Represented by A. G. Hollingshead, G. S. Turner and W. H. Heckman.

Oxweld Railroad Service Co., New York.—Acetylene equipment.—Represented by Wm. A. Champieux, J. P. Nicholson, F. C. Hasse and R. Rivett.

Paxton-Mitchell Co., Omaha, Neb.—Piston rod packing and air pump packing.—Represented by J. L. Paxton, E. L. Chollman and J. J. Keliher.

Pilliod Co., Swanton, Ohio.—Baker valve gear.—Represented by E. J. Barnett, W. H. Bellmain, K. J. Eklund and R. H. Weatherly.

Pyle National Co., Chicago.—Cast iron headlight cases with glass reflector and wing side number doors, headlight generators, lamp cases, lamp stands, connectors and model of the Young valve gear.—Represented by J. Will Johnson, W. Miller, O. W. Young, W. Smith, J. Reese, C. LeFevre, R. L. Kilker, T. P. McGinnis ,C. P. McGinnis and G. Haas.

Racine Tool & Machine Co., Racine, Wis.—Machine saws.—Represented by L. J. Kidd, D. B. Maxwell and Wm. Rhinehart.

Rivet Cutting Gun Co., Cincinnati, Ohio.—Rivet cutting gun.—Represented by J. C. Littel and F. L. McCune.

Roberts Automatic Connector Co., Ltd., Sarnia, Ont.—Model of automatic connector.—Represented by M. A. Sanders and W. E. Saylor.

Sargent Co., Chicago.—Gage cocks, grease cups, water glass cocks, blower valve, and water glass protectors.—Represented by Geo. S. Garren.

Simmons-Boardman Publishing Co., New York.—*Railway Age* and Railway Mechanical Engineer.—Represented by C. B. Peck, J. M. Rutherford and A. R. Jarvis.

Simonds Mfg. Co., Fitchburg, Mass.—Saws, files, hack saws, tool bits, cold saws and inserted tooth cold saws.—Represented by Geo. R. Bird and H. B. Baumann.

Sunbeam Electric & Mfg. Co., Evansville, Ind.—Turbo-generator and headlight.—Represented by C. E. Kinnaw and H. A. Varney.

Tool Salvage Co., Detroit, Mich.—Salvaged milling cutters, reamers and drills.—Represented by M. F. Crawmer.

Torchweld Equipment Co., Chicago.—Welding and cutting equipment.—Represented by W. A. Slack, H. R. Fenstermaker and R. B. Scharff.

Union Draft Gear Co., Chicago.—Friction draft gear.—Represented by J. E. Zarelton.

United States Metallic Packing Co., Philadelphia, Pa.—Metallic piston rod packing.—Represented by M. B. Brewster, H. E. Hislop and R. R. Wells.

Wayne Tool Mfg. Co., Waynesboro, Pa.—Reamers, drills and taps.—Represented by J. C. Campbell.

Wells Machine & Tool Co., R. W., Chicago.—Power saws, grinders and sheet metal cutters.—Represented by R. W. Wells.

Westinghouse Air Brake Co., Pittsburgh, Pa.—Represented by L. Wilcox.

Williams & Co., J. H., Brooklyn, N. Y.—Wrenches, tool holders, lathe dogs, pipe wrenches.—Represented by P. E. Thomas and W. C. Teare.

The following officers were elected for the calendar year 1921: President, Clarence L. Mellor, Barco Manufacturing Company, and secretary and treasurer, A. W. Clokey, American Arch Company, Chicago. A. C. Beckwith, Ohio Injector Company, and W. J. Schlacks, Locomotive Lubricator Company, were elected to serve on the executive committee for three years.

National Safety Council's Ninth Annual Congress

Final arrangements have been completed for the Ninth Annual Congress of the National Safety Council, which will be held at the Auditorium, Milwaukee, Wis., from September 27 to October 1, inclusive. The program for the sessions of the Steam Railroad section has been arranged as follows:

WEDNESDAY MORNING

September 29, 9:30 o'clock

Chairman, Robert Scott, superintendent, insurance and safety, Atlantic Coast Line, Wilmington, N. C. Secretary, H. M. Mayo, superintendent of safety, Southern Pacific, Houston, Tex.

Report of Chairman.
Report of Secretary.
Reports of Committees.
Appointment of Nominating Committee.

Address—W. M. Jeffers, general manager, Union Pacific, Omaha, Neb.

"Safety and Time Service"—Webb C. Ball, general time inspector, Bureau of Railroad Time Service, Cleveland, Ohio.

"Co-operation with Railroad Labor Organizations"—Isaiah Hale, safety superintendent, Atchison, Topeka & Santa Fe, Topeka, Kan.

THURSDAY MORNING

September 30, 9:30 o'clock

"Shop Accidents"—J. A. McNally, safety agent, Wabash, St. Louis, Mo.

"Economic Phases of Railway Safety Work"—Samuel O. Dunn, editor, *Railway Age*, Chicago.

"Transportation Accidents"—C. H. Baltzell, superintendent, St. Louis-San Francisco, Fort Smith, Ark.

THURSDAY AFTERNOON

September 30, 2:30 o'clock

Round Table

Chairman, Harry A. Adams, Bureau of Safety, Interstate Commerce Commission, Washington.

"Use of Statistics in Connection with Safety Work"—Discussion led by J. C. Clark, assistant to general manager in charge of safety, regonO Short Line, Salt Lake City, Utah.

"Competition in Safety Work"—Discussion led by R. C. Richards, president, National Safety Council, Chicago.

"Duty of Safety Committee Members"—Discussion led by Marcus A. Dow, general safety agent, New York Central, New York.

FRIDAY MORNING

October 1, 9:30 o'clock

Report of Nominating Committee

"Maintenance of Way and Motor Car Accidents"—Arthur Ridgway, assistant chief engineer and safety officer, Denver & Rio Grande, Denver, Colo.

"Safety Work of the Interstate Commerce Commission"—W. P. Borland, Chief of Bureau of Safety, Interstate Commerce Commission, Washington.

"Public Safety"—C. M. Talbert, director, Department of Streets and Sewers, City of St. Louis, Mo.

Traffic News

A partial advance summary of traffic statistics for Class I steam railroads for the month of July, given out by the Interstate Commerce Commission, shows a total of 23,434,000,000 net ton miles, as compared with 20,391,000,000 for July, 1919. The summary covers 149,000 miles of road. Reports are expected from 58 additional roads.

The New York State Public Service Commission, second district, has suspended until December 10 proposed increases in the freight rates on peaches. Complaint was made by large shippers in western New York and the Commission held that if the proposed advance had been made known to the Commission thirty days earlier, these growers would have shipped practically their entire crop of peaches before the increased rate would have gone into effect.

Freight loading on the lines of the principal railways of the southern states for the six weeks ending August 21 surpassed all records. The total number of cars loaded in the six weeks this years was 795,397, as against 716,294 in 1919, and against 737,904 in 1918, when every nerve was strained to move the traffic incident to the war. Weekly records show an increase of over 12,000 cars a week in August over July, indicating a progressive improvement for this year as well as increases over last year and the year before.

The National Industrial Traffic League will hold its fall meeting at the Seelbach Hotel, Louisville, Ky., on September 30 and October 1. The docket for the meeting will be distributed this week, giving in detail the subjects to be considered. Members have been urged to notify the assistant secretary of non-members invited to the meeting, as the organization is desirous of issuing invitations and a copy of the docket to these prospective members. It is urged that all planning to attend make hotel reservations promptly.

Officers of transcontinental lines and the West Coast Lumbermen's Association recently reached an agreement for a joint conference on the permanent freight tariffs which the carriers will file with the Interstate Commerce Commission. The meeting was arranged in an effort to adjust the controversy between Northwestern lumbermen and the transcontinental railroads over the application of the freight rate increases. The conference, as announced by Robert B. Allen, secretary-manager of the lumbermen's association, stated that the meeting will convene in Portland, Ore., at a date to be agreed upon after both carriers and shippers have had opportunity to put their problems in definite form. According to Mr. Allen "the arranging of this conference has inspired the lumber industry with the hope that it may result in a re-establishing of competitive conditions which will permit West Coast shippers selling in long-haul markets on an approximately equal basis with the short-haul producers."

Coal Production

The production of soft coal declined again during the week ended September 4, according to the weekly bulletin of the Geological Survey. The total output is estimated at 11,051,000 net tons, a decrease of 3 per cent as compared with the preceding week. The cause of the decrease is said to be not yet clear. Reports of loadings by individual railroads showed that the decrease centered in the Northern Appalachian region. Production during the first 211 working days of the year has been 358,464,000 net tons, which is over 51 million tons ahead of that for the corresponding period of 1919, 14½ million tons behind the record for 1917 and 40½ million tons behind 1918.

With the suspension of work at many collieries in the anthracite region, the bulletin says, hard coal has displaced soft coal for the time being as the center of interest and concern. The week's production represents three days when many collieries were closed by the strike. Cars of anthracite loaded by the nine principal carriers are reported as 21,103, a decrease of 40 per cent as compared with the preceding week. The cumulative production of anthracite from January 1 to September 4 was 58,614,000 net tons, an increase of 4.7 per cent as compared with the corresponding period of 1919, but less than that for 1918 or 1917.

For the week ended August 28 an improvement in car supply was reported in many districts. The percentage of full time output lost on account of transportation disability is estimated at 24.4 per cent. Lake dumpings declined slightly during the week ended September 4 and the cumulative lake movement from the opening of the season now stands at 12,084,000 tons, about 33 per cent behind 1918 and about 28 per cent behind 1919. The movement to tidewater also slackened perceptibly during the week ended September 4.

Packers Want More Coal

A complaint against the order issued by the Interstate Commerce Commission giving priority in the supply of cars for coal for public utilities has been made to the Interstate Commerce Commission by the American National Live Stock Association, the American Institute of Meat Packers, and various other packing and live stock organizations. Complainants say, in a telegram: "* * * order classifying packers as non-essential is threatening serious curtailment of the supply of coal essential to the maintenance of refrigeration and the continued operation of killers. No more essential industry exists and any order interrupting the movement of stock to markets will result in tremendous losses to all concerned." The telegram urges that preferential classification be accorded the packing industry.

Illinois Central Calls Attention to Its Record

As part of an intensive campaign to cultivate the good will of the public, C. H. Markham, president of the Illinois Central, recently inserted in newspapers and publications along that line, an advertisement headed, "Illinois Central Proudly Calls Attention to Its Record." The purpose of the advertisement is to refute the impression that the railroads are not functioning efficiently. In this connection Mr. Markham said: "If this talk were to the effect that the railroads are facing the task of attempting to move a greatly increased volume of traffic with an impaired and insufficient plant, or that the railroads have not kept pace with the growth of the country, it would do no harm, because it would be true, but any statement to the effect that the railroads have not been doing their utmost and are not at the present time doing their utmost with the facilities with which they have to work, must not be permitted to go unchallenged."

In answer to the criticism, Mr. Markham presented a statement of the gross ton miles of freight handled by the Illinois system per year for the last ten years and the number of passengers carried one mile per year for the last ten years as follows:

Gross ton miles of freight		Passengers carried one mile	
1910	21,297,062,271	1910	745,818,345
1911	21,889,824,779	1911	811,282,510
1912	21,531,250,666	1912	807,969,807
1913	24,391,106,507	1913	815,812,320
1914	24,365,570,056	1914	832,881,282
1915	24,893,278,841	1915	747,797,713
1916	27,704,768,863	1916	850,797,693
1917	31,302,858,783	1917	982,111,873
1918	34,227,609,231	1918	1,026,898,494
1919	28,740,018,000	1919	1,142,044,011
1st 6 months, 1920.	17,568,332,000	1st 6 months 1920.	568,884,894

In conclusion Mr. Markham said: "The Illinois Central is but one railroad system out of many. I do not claim that its performances are any exception to the rule. No doubt many railroad systems have done as well, and perhaps some have done better. The Illinois Central personnel is anxious to serve the public even better in the future, and very earnest efforts are being put forth in that direction, but I hope our patrons fully appreciate that it will take time to restore our equipment and enlarge our facilities. I promise them that no time will be wasted. Constructive criticism and suggestions are invited."

Commission and Court News

Interstate Commerce Commission

The Commission has authorized carriers and their agents to file, on one day's notice, special supplements correcting errors that have occurred in the special supplements filed for the purpose of putting into effect the increases in rates allowed in Ex Parte 74.

The Interstate Commerce Commission has rendered its decision in the case of the Natchez Chamber of Commerce v. Louisiana & Arkansas Railway Company, et al., holding that rates on certain commodities between Natchez, Miss., on the one hand and points in western Louisiana on the other relatively higher than the commodity rates applying between points within western Louisiana subject Natchez to undue prejudice and disadvantage. Reasonable rates to be established for the future are prescribed and the undue prejudice is ordered to be removed.

The Commission has reopened for further hearing, Ex Parte No. 73, on petition of the Tidewater Coal Exchange and the Sewalls Point Coal Exchange. The commission is asked to give a further hearing concerning the extension of credit in connection with demurrage assessed under the average agreement on pooled coal. The practice has been for the carriers to render a statement to petitioners at the close of each calendar month for each port or pier; the petitioners then apportion to their members their respective proportions of the demurrage charges and the amount is then remitted, after being collected, by petitioners to the carriers within 30 days from the presentation of the carriers' statement. The case is reopened solely upon the question of the propriety and lawfulness of the above-described extension of credit.

Federal Inquiry on New York Intrastate Rates

Wilbur La Roe, Jr., examiner, held a hearing in New York City, on September 13, on the application of the New York Central and other roads for a review of the recent action of the Public Service Commission of the State, second district, in refusing to allow intrastate rates to be advanced to correspond with the freight and passenger rates recently authorized for interstate traffic.

L. V. Porter, assistant controller of the New York Central, presented a statement, on behalf of the principal roads doing business within the state, to the effect that failure to secure authority to make the desired advances would mean a difference of probably $12,000,000 annually in the receipts of the roads in question.

C. L. Hunter, assistant to the chairman of the Trunk Line Association, called attention to the fact that passengers could save $3 or $4 on trips to Cleveland, Chicago and points beyond by first purchasing tickets to Buffalo and then buying tickets for their destination. On a sleeping-car trip to Cleveland made in this way a saving of over $3 could be made on the Pullman and railroad fares. As matters now stand, competing lines which run from New York to Buffalo partly through other states (the Delaware, Lackawanna & Western and the Erie) will have to reduce their rates to meet the rate on the New York Central.

Ledyard P. Hale, counsel for the State Public Service Commission, declared that the state would insist on its right as a sovereign power to fix intrastate rates, indicating that an appeal would be taken to the United States Supreme Court. He quoted the Tenth Amendment to the Constitution of the United States and said that the sovereign rights guaranteed therein would be insisted upon.

Edward C. Griffin, deputy attorney general, appeared for the state.

A delegation from Queens Borough, New York City, protested against any increase on the Long Island Railroad. It was charged that the passenger rates now in effect on that road are now from 20 to 25 per cent higher than those of other roads.

Court News

Negligence at Station Barring Recovery for Injury

A woman at a station to meet her husband, on hearing a whistle and seeing a train approaching on tracks which curved, so that she could not tell which track it was on, assumed it was coming on the fourth track, whereas it was on the first. She was struck in attempting to pass through a gate between the first and second tracks and killed. In an action for her death the Wisconsin Supreme Court held that the deceased's negligence was the cause of her death, for which there could be no recovery.—Jacky v. McAdoo (Wis.), 177 N. W. 885.

Failure to Warn Not Proximate Cause of Injury

In an action for killing a mare at a crossing, the Texas Court of Civil Appeals holds that the mare having been killed by a train while she was caught in a cattle guard at the crossing, the negligent failure of the railroad's employees to sound the statutory warnings for the crossing could not be the proximate cause of the killing. The railroad could not fence its track at the crossing, and the burden was on the plaintiff to show that negligence on the part of the company was the proximate cause of the killing.—Hines v. Collins (Tex.), 221 S. W. 1108.

Trespasser Touching Electric Wire

The Circuit Court of Appeals, Second District, holds that a railroad company which maintained an electric feed wire alongside its track, 29 inches from an abutment where it passed under a highway bridge 22 feet above the track, is not chargeable with negligence rendering it liable for the death of a boy 10 years old, who climbed on the abutment and then, through an opening in the wire screen above it touched the wire with a tin can, so that the current entered his body; there being no reasonable ground to anticipate the child's action.—Heller v. New York, N. H. & H., 265 Fed. 192.

Statutory Penalty and Compensatory Damages Distinguished

Under the Missouri statute imposing a penalty of from $2,000 to $10,000 in the discretion of the jury on railroad companies negligently killing any person with their locomotives or cars, the Missouri courts hold that the sum of $2,000 is a penalty, and the remainder up to $10,000 is compensatory. If the petition in an action for death alleges no facts warranting compensatory damages, evidence of such damages is inadmissable, and the statutory penalty of $2,000 is the limit of the amount recoverable.—Rollinson v. Lusk (Mo.), 217 S. W. 328.

Unforeseen Shortage of Refrigerator Cars

The tariff of an interstate carrier gave a shipper the option of shipping fruit at his own risk of freezing or at carrier's risk under an increased rate. The Supreme Court of the State of Washington holds that the carrier, not having a refrigerator car, on account of an unprecedented and unforeseen shortage, was not required to make a shipment in an ordinary box car at its own risk, notwithstanding a clause in a supplement to the tariff defining "perishable freight" to include "any article requiring protection from cold, either by use of refrigerator or other insulated car, by artificial heat, or by both," etc.—Pacific Fruit & Produce Co. v. Northern Pacific (Wash.), 186 Pac. 852.

Last Carrier's Responsibility for Loss of Baggage

On a certified question by the Court of Appeals, the Georgia Supreme Court holds that where a passenger buys a through ticket over a line of railroads, having a coupon attached for each road, and checks his baggage through to his destination, if upon his arrival it is found to be lost, he may hold the last road of the line responsible therefor, whether the last road actually received the baggage or not (following S. F. & W. v. McIntosh, 73 Ga. 532)—Central of Georgia v. Dean (Ga.), 101 S. E. 771. Note.—This is contrary to the general rule in other states, which is to the effect that proof of the mere failure of the last carrier to deliver

the baggage, without proof that it ever came into its hands, will not entitle the passenger to recover from such last carrier. Kessler v. N. Y. C., 61 N. Y. 538; Stimson v. Connecticut River, 98 Mass. 83; Felder v. Columbia & Greenville, 21 S. Car. 35; Texas & New Orleans v. Berry, 31 Tex. Civ. App. 3.

Liability for Injury from Act of Another Passenger

The New York Appellate Division holds that a railroad company is not liable to a female passenger for injuries resulting from a bag being accidentally dropped on her hand by an immigrant, when he and other immigrants were being transferred from the smoker to the day coach in which the passenger was riding. There was no evidence of misconduct or disorder on the part of the immigrants. Haste and rudeness alone will not justify a carrier in excluding persons with proper tickets from day coaches occupied by other passengers. It is not liable for some rude act of a passenger which it could not fairly anticipate.—Hershey v. N. Y., O. & W., 189 App. Div. 270, 179 N. Y. Supp. 396.

Railroad Not Liable for Automobile Accident at Overpass Through Defect in Roadway

The Supreme Court of the State of Washington holds that under the statute of 1913 providing that, when a highway crosses a railroad by an overcrossing, the framework and abutments shall be maintained by the railroad, a railroad was not liable for the death of an automobile driver at an overpass above the railroad's tracks at a sharp curve in the highway, the fall of the car having been caused by the grade of the roadbed or an insufficient guard rail. In the statute "framework" is used in contradistinction to the roadway, so that everything above the framework and abutments would be part of the roadway, which would include the flooring and everything above that.—Pridmore v. Northern Pacific (Wash.) 186 Pac. 862.

Proceedings by Commission to Compel Railroads to Install Interlocking Plant

In mandamus proceedings by the Missouri Public Service Commission to compel the Missouri Pacific and the St. Louis-San Francisco to comply with its order for the installation of an interlocking plant and to divide the expense, the Missouri Supreme Court holds that such order is full authority for the Missouri Pacific to proceed to perform its duties, and mandamus was not necessary to give it access to the Frisco's right of way for the purpose of constructing the plant. If the Frisco should fail to pay the sums becoming due under the order, the Missouri Pacific may invoke proper means to collect, if under the law and facts collection is possible; but mandamus lies at the instance of the commission only against the Missouri Pacific to compel the construction, and not against the Frisco, as well to determine its liability to pay.—State v. Missouri Pacific (Mo.), 218 S. W. 310.

Reservation of Private Farm Crossing Defined

In an action against a railroad for fatal injuries to a boy struck by a train at a private crossing at Fall River, the controlling question was whether the boy was an invitee or merely a licensee in walking across the track. Originally the crossing was laid out as a private farm crossing under a reservation in the deed from the grantor. After the grantor's death, a summer colony came to occupy part of the farm, for which the right was reserved, and the members of which used the crossing. The Massachusetts Supreme Judicial Court held that, assuming the reservation was not merely for the grantor's lifetime, but was intended to continue for the benefit of portions of the farm cut off by the railroad, it could not be extended by implication so as to embrace within the scope and obligation of the railroad's "invitation" the residents of this large summer colony, the existence of which was not contemplated when the deed was executed. The boy when injured had therefore only the rights of a licensee. In using the crossing he went at his own risk. The railroad would be liable only in case it injured him intentionally or wantonly. Judgment for the railroad was affirmed.—Berube v. New York, N. H. & H. (Mass.), 125 N. E. 629.

Agent Consignee, Given Credit for Freight, Liable for All Charges

The Circuit Court of Appeals, Fifth Circuit, holds that a live stock commission merchant who has an arrangement whereby stock consigned to him is delivered and the freight charged to his account, which he settles later, cannot avoid liability for a proper charge in connection with a shipment (in this case for disinfecting cars) on the ground that he was known to be merely an agent, and that he had settled with the shipper before he knew of the charge. Having got possession of the cattle by agreeing to pay the railroad what was due on them, it is immaterial whether or not he was the owner, or whether he would or would not have been liable for the freight and other lawful charges thereon, if deliveries had not been made to his credit.—Rice v. Louisville & Nashville, 264 Fed. 427.

Safety Appliance Act—Couplers and Drawbars Proximate Cause of Injury

The New York Court of Appeals holds that the federal Safety Appliance Act was intended to obviate the necessity of men going between the ends of cars, but not to provide a place of safety between colliding cars. A car without a coupler was standing on a siding, a brakeman was riding on a second car, kicked on the same siding, a collision occurred and the brakeman was crushed between the two cars. There was no attempt to couple on to the defective car or to handle it in any way. It was held that under such circumstances the brakeman was not one of those for whose benefit the Safety Appliance Act was passed. The collision was not the proximate result of the absence of the coupler. Their presence was not required so that they might act as bumpers.—Lang v. N. Y. C. (N. Y.) 125 N. E. 681.

Liability for Consequential Damages for Delay Released by Clause in Bill of Lading

The New York Appellate Division holds that a carrier may limit its liability for negligence, where the shipper receives a consideration therefor; and that liability for consequential damages from mere delay in transportation is released by a provision in a bill of lading that the amount of any loss or damage for which the carrier may be liable shall be computed on the basis of the value of the property at the place and time of shipment It was held that the shipper could not recover the amount of the increase in the rate of freigt for ocean transportation, on a shipment from Schenectady to New York, the bill of lading of which contained notations showing the freight was intended for export to South Africa. —American Locomotive Co. v. New York Central, 179 N. Y. Supp. 851.

Statute Requiring Elevation of Track Held Unconstitutional

While a state may, under its police power, require a railroad to change its tracks when necessary for the protection of life or for the good of the public generally, there must be fair and reasonable grounds for it, and the acts required to be done must have some effective relation to the end sought to be accomplished, and a state may not arbitrarily select a particular railroad company and require it to raise its tracks at a particular place for the alleged purpose of preventing the obstruction of traffic by overflow where the track is subject to overflow at the same time at other places, and where other roads through the state are subject to the same obstruction. Applying these rules, the federal district court for the Eastern District of Arkansas holds that the Arkansas Act of 1919, requiring the St. Louis & Western to raise its roadbed within the Clarendon levee district, at a cost of upwards of $150,000, is unconstitutional, as it would not aid in preventing interruption of traffic, because the track for three miles beyond was upon a trestle and subject to the same overflow.—Hines v. Clarendon Levee Dist., 264 Fed. 126.

Foreign Railway News

Railway Equipment Developments in Germany

LONDON.

The Rheinische Metallwaren and Maschinenfabrik has gone into the construction of railway cars and locomotives in a very similar way to the Krupp plant. It has recently completed its first locomotive together with a freight train of 30 cars.

This company before the war did practically nothing but munition work, supplying all countries of the world. It is estimated that this concern will soon be able to manufacture 400 locomotives and 3,000 freight cars a year.

Exports of Steam Locomotives in May

The exports of steam locomotives in July totaled 134, valued at $4,742,306. Of these, 37, valued at $1,797,040, were destined for Poland and 35, valued at $1,050,000, for France. The detailed figures by countries, as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

COUNTRIES EXPORTS OF STEAM LOCOMOTIVES IN JULY

Countries	Number	Dollars
Belgium	12	663,000
France	35	1,050,000
Poland and Danzig	37	1,797,040
Canada	5	29,525
Mexico	1	17,500
Cuba	4	85,570
Argentina	1	16,720
Chile	11	265,196
Venezuela	1	8,865
China	13	660,575
British India	3	39,000
Japan	2	15,010
Philippine Islands	9	94,305
Total	134	4,742,306

Standard Railway Gage in Australia

LONDON.

The Board of Trade Journal is authority for the statement that at a conference between the engineer-in-chief of the Australian Commonwealth railways and the engineering experts of the railways of the various states, it was decided that the standard gage of 4 ft. 8½ in. was the most suitable for adoption.

In 1913 the estimated cost of unification was £37,164,000 (or about $148,656,000 at the present rate of exchange), but since that date the track mileage has been considerably increased, while the cost of material has nearly doubled, so that the cost of unification will be a very serious matter for the states other than New South Wales, which now has standard gage lines. At the premiers' conference it was proposed to proceed with the work, the commonwealth contributing one-fifth of the cost, and the states four-fifths, on the basis of population.

The trial of the third rail system which recently took place at Tocumwal was a success and it is claimed that through trains could be run over the whole of Australia without disturbing any of the existing tracks. The estimated cost of a third rail installation is £3,500,000 (or $14,000,000 at the present rate of exchange), and the time of completion is stated to be 18 months.

French Railway Progress—Fuel Oil

LONDON.

Previous news items have told of the desire of the French railways to use fuel oil called "Mazout" as fuel for locomotives. Both the Paris, Lyons & Mediterranean and the Paris-Orleans have made successful experiments with oil burning locomotives and the number of locomotives to be equipped for burning oil depends in a large measure on the amount of oil France can obtain. Under present conditions it appears that some difficulty will be experienced in this respect. Mazout is a residue of the crude oil which is of a little heavier consistency than that termed as "fuel oil" used in the United States.

M. Pouillon, an engineer of the Paris, Lyons & Mediterranean, in a recent article in the Revue Generale des Chemins de Fer tells of experiments made on that road, as a result of which it is planned to equip some 90 locomotives for burning oil provided that sufficient oil can be obtained. In speaking of the economies resulting from the use of this fuel, M. Pouillon states that with Mazout at 550 francs (or about $41 at the present rate of exchange) per ton, there is a possible annual saving, on 35 locomotives, of 300,000 francs (approximately $22,500 at the present rate of exchange), considering coal at 330 francs (about $25). He estimates that it will cost 4,000 francs (approximately $300) to equip each locomotive for burning oil or for 35 locomotives 150,000 francs ($11,250). In addition to this there will be an expense of 300,000 francs ($22,500) for providing the necessary installations for handling the oil. Thus the expense of providing equipment for 35 locomotives will be 450,000 francs ($33,750), as against an annual saving of 300,000 francs, which means that under the price of Mazout above mentioned the use of fuel oil will pay for itself on 35 locomotives in a year and a half, but as mentioned above the chief difficulty in the proposition is procuring the oil—and this is believed to be very great.

Exports of Car Wheels and Axles in July

The exports of car wheels and axles in July had a total value of $1,476,881. Over half of this total represented exports to France and large shipments were made to Argentina. The detailed figures by countries as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

EXPORTS OF CAR WHEELS AND AXLES

Countries	Dollars
Belgium	10,710
France	759,671
England	19,179
Canada	85,472
Costa Rica	880
Guatemala	973
Honduras	4,804
Nicaragua	659
Mexico	17,769
Jamaica	397
Trinidad and Tobago	34
Other British West Indies	880
Cuba	19,784
Dutch West Indies	163
Dominican Republic	1,160
Argentina	264,803
Brazil	25,573
Chile	2,802
Colombia	2,835
Ecuador	139
Dutch Guiana	252
Paraguay	128
Peru	23
Venezuela	182
China	48,525
Kwantung	71,245
British India	7,368
Dutch East Indies	25,996
Japan	66,914
Siam	177
New Zealand	4,095
Philippine Islands	33,289
Total	1,476,881

German Railways' Revenues and Expenditures

LONDON.

The Board of Trade Journal in a recent issue gives the figures published in Germany of the expenses and the revenues of the railways during the war, the revolutionary period and since the armistice. During the last peace year the expenses, amounting to 2,345,000,000 marks, were covered by a total revenue of 3,347,000,000 marks, an increase of about 43 per cent. In the course of the following three war years the expenses and revenues increased, but the expenses never surpassed the revenues. In 1915 the receipts were 3,268,000,000 marks and the expenses 2,338,000,000 marks, giving a difference of about 40 per cent. In 1916 the receipts amounted to 3,805,000,000 marks and expenses to 2,724,000,000 marks, a difference of 40 per cent, and in 1917 the receipts amounted to 4,435,000,000 marks and expenses 3,648,000,000 marks, a difference of 21.6 per cent. The year of the revolution ended with an increased total of revenues amounting to 4,617,000,000 marks, but in this case the expenses overran the receipts by 1,324,000,000 marks, or 28.7 per cent, to 5,941,000,000 marks. During the year 1919, in spite of the increase in passenger rates, the expenses were 11,040,000,000 marks, which again exceeded the revenues by 4,366,000,000 marks, or 65 per cent.

For the current year the revenues are estimated at 14,344,000,000 and the expenses are set at 16,935,000,000 marks.

Exports of Railway Track Material in July

The exports of rails in July totaled 51,869 tons, having a value of $3,329,530; of spikes, 2,845,462 lb., of a value of $123,574, and of switches, frogs, splice bars, etc., of a value of $735,726. The detailed figures by countries, as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

Exports of Railway Track Material in July

Countries	Spikes		Steel rails		Switches, frogs, splice bars, etc.
	Pounds	Dollars	Tons	Dollars	Dollars
Denmark	.....	.....	2,253	94,186	.....
France	.....	.....	.....	.....	2,391
Norway	.....	.....	.....	.....	500
Roumania	.....	.....	888	48,980	7,383
Spain	.....	.....	1,399	97,787	17,529
Sweden	.....	.....	3,605	337,500	.....
England	.....	.....	427	22,080	3,513
Canada	7,032	450	524	34,110	38,795
Costa Rica	10,000	781	.....	.....	1,794
Guatemala	1,400	75	.....	.....	880
Honduras	30,000	1,820	.....	.....	2,665
Nicaragua	16,200	883	47	2,400	.....
Panama	4,000	105	.....	.....	16
Salvador	.....	.....	785	50,674	2,733
Mexico	99,924	5,593	410	24,562	38,995
Jamaica	2,500	305	37	2,441	2,883
Trinidad and Tobago	50,800	4,819	.....	.....	.....
Cuba	786,026	29,254	11,344	685,552	59,175
Dominican Republic	26,700	1,758	.....	.....	.....
Argentina	.....	.....	2,700	127,116	1,159
Bolivia	.....	.....	.....	.....	2,304
Brazil	135,136	7,181	939	57,197	2,870
Chile	177,000	6,113	1,452	99,147	47,879
Colombia	18,000	1,139	1,048	56,021	27,446
British Guiana	.....	.....	.....	.....	1,568
Peru	40,340	2,284	474	29,770	4,722
Uruguay	.....	.....	97	6,591	2,109
Venezuela	16,422	1,033	50	3,000	1,439
China	15,445	585	2,533	156,165	234,978
British India	.....	.....	1,116	63,994	.....
Straits Settlements	.....	.....	513	33,339	2,926
Dutch East Indies	4,720	408	4,236	269,344	26,813
Hongkong	.....	.....	39	1,316	640
Japan	1,152,150	45,181	13,632	920,048	166,096
New Zealand	.....	.....	.....	.....	114
Philippine Islands	251,667	13,807	1,273	102,920	31,444
British South Africa	.....	.....	48	3,290	367
Portuguese Africa	.....	.....	.....	.....	1,600
Total	2,845,462	123,574	51,869	3,329,530	735,726

Transportation Crisis in Roumania

The outstanding features of the present economic position in Roumania are the deficiency of internal transport, the small amount of exports, and the low exchange value of the Roumanian lei, writes Trade Commissioner L. D. Wilgress in the Weekly Bulletin of the Canadian Department of Trade and Commerce. These three factors are closely inter-related with one another, but the transport crisis may be said to be the fundamental problem now confronting the country. The exchange situation renders ordinary trade with Roumania almost out of the question for the present, since it is evident that with the lei quoted at between two and two and a half cents as compared with a par value of 19.3 cents, Roumanian importers can only pay cash for goods absolutely essential. Credit therefore becomes for a time an important consideration in the promotion of business relations with reliable Roumanian firms and organizations. Negotiations are also in progress with a view to the exchange of products on a barter basis. It is necessary to carefully inquire into these questions and also as to how long the present situation is likely to continue. Attention should first be directed to the important matter of internal transport.

Lack of Locomotives

The transport crisis is chiefly due to the deficiency in the number of locomotives in good working order. Before the war there was a railway system of 2,200 miles in Old Roumania, for the needs of which 1,000 locomotives sufficed. At the present time Greater Roumania has a network of 4,200 miles of railway and the number of locomotives is 1,965, of which about 550 are in service. Only about 200 of these, however, are in good working order. When the Germans and Austrians evacuated Roumania they took with them most of the locomotives in running order. The Roumanians later obtained many locomotives and other rolling stock from Hungary during their occupation of that country, but these locomotives have been for the most part useless, since they are not adapted to burning oil, the chief fuel used on the Roumanian railways, and the majority are also badly in need of repairs.

Roumania has not proper facilities for effecting heavy repair work of the kind needed to restore most of the idle locomotives to working efficiency. The policy has lately been adopted of giving two or three locomotives at a time over to the private workshops belonging to the oil and industrial companies, and in this way a great deal of repair work has been done, although for the most part of a temporary character. The large works near Temisoara, formerly operated by the Hungarian State Railways, are also being utilized for repair work and for converting into oil burners the locomotives obtained from Hungary last year. There has been a shortage of materials, although a large amount of necessary supplies were brought in under the credit for £500,000 accorded by the British government. A British railway commission has been in Roumania for several months studying the situation and recommending what supplies should be obtained under the credit referred to. This commission is now winding up its affairs.

Nearly all the railway bridges destroyed by the Germans on leaving the country have been temporarily repaired by the Roumanians, so that trains can be operated without interruption. The long bridge over the Danube on the line to Constantza, which was blown up by the Roumanians in 1916, has, however, not yet been repaired, and trains have to cross the damaged section on pontoons.

A noticeable improvement in the operation of the railways has recently been effected as a result of the above measures, but the facilities provided are still far from being sufficient to cope with the demands for transport. There is no lack of railway cars, although passenger cars are mostly without window glass and otherwise badly in need of repairs. The government has now decided that it is necessary to purchase new locomotives, and tenders are being called for. An order for 50 locomotives has been placed with the Baldwin Locomotive Works of America and deliveries of ten a week are to commence in July, 1920. Payment is to be made in six months in either oil or dollars. As soon as the government can secure the necessary funds abroad, other orders are to be placed for locomotives up to about 500, which is considered the minimum number required for the present. Parts and accessories for locomotives and railway tools, as well as clothing aand other articles for the use of the railway personnel, are also to be purchased abroad.

Effect of the Transport Crisis

The receipt of new locomotives should greatly relieve the present crisis. The disorganization of the railway services has practically paralyzed the economic life of Roumania. The exportable products of the country cannot be moved readily to the ports or neighboring countries, while it is frequently a matter of months for import consignments to be transported to Bucharest from the ports of Galatz and Constantza. Great difficulty has been experienced in moving the crops, and this applies not only to the surplus exportable products of the country but also to supplies for the consuming centers. The oil industry has been greatly handicapped by the lack of transport. Drilling operations have been largely suspended owing to the difficulty of transporting materials and equipment, while oil for export has been blocked, although the reservoirs are full. Over 200,000 tons of oil products are at the refineries awaiting shipment. The suspension of drilling operations has resulted in a decrease in the daily production of crude oil since the armistice from 3,000 to 2,000 tons a day, and as compared with a pre-war production of 5,000 tons a day. Petroleum residue is the chief fuel for Roumanian industries, and factories have had to close down owing to the difficulty of obtaining fuel. Similarly there has been a shortage in the towns of fuel for heating purposes, although the oil fields are within a few miles of such cities as Bucharest, Braila, and Galatz. The transport crisis has also greatly affected the timber industry both in the Old Kingdom and in Transylvania, and there is a large quantity of sawn timber in the country which cannot be exported for lack of transport. The same applies to salt, which could be exported in almost unlimited quantities provided the transport facilities were available.

The ports of Galatz and Constantza are greatly congested with goods, and importers often have to wait several months before securing railway cars to transport their merchandise to the centers of consumption.

The above is a review of the present conditions of internal transport in Roumania. The government realizes that this problem is one of the most important now confronting the country and every effort is to be made to restore the operating efficiency of the railways. The chief difficulty is to secure the funds abroad wherewith to purchase the necessary materials and locomotives.

Negotiations are in progress for the raising of a foreign loan, and a measure has been passed for placing at the disposal of the government the funds resulting from the sale abroad of the exportable products of the country.

Exports of Cars in July

The exports of freight cars for steam railroads in July numbered 2,575, having a total value of $4,825,290, of which nearly one-half was represented by shipments to Poland, France and Cuba also received large shipments. The detailed figures by countries as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

EXPORTS OF CARS FOR RAILWAYS IN JULY

Countries	Steam: Passenger No.	Steam: Passenger Dollars	Steam: Freight and other, For other railways No.	Steam: Freight and other, For other railways Dollars	Steam: Freight and other, For other railways No.	Steam: Freight and other, For other railways Dollars	Parts of cars Dollars
Finland					8	23,850	
France			810	1,675,092			243,850
Poland and Danzig			1,200	2,315,000			
Roumania			30	13,382			
Spain							96,005
Ireland							660
Canada			34	27,759	63	56,202	130,780
Panama							516
Salvador			1	1,744	25	3,125	
Mexico			24	15,650	54	5,858	17,134
Newfoundland & Labrador							929
Jamaica			20	35,150	6	5,835	
Trinidad and Tobago							700
Other British W. Indies							775
Cuba	1	45,000	419	664,113	3	3,357	98,354
Dutch W. Indies							300
Argentina			20	31,893			27,519
Brazil					20	13,200	28,555
Chile							23,293
Colombia					30	6,990	10,803
Paraguay			12	32,445			6,000
Peru			5	13,062			10,000
China					10	900	247,404
Kwantung							23,849
British India							9,250
Other British E. Indies							90
Dutch E. Indies							7,775
Japan							106,228
New Zealand							11,570
French Oceania							990
Philippine Islands					150	42,450	53,703
Total	1	45,000	2,575	4,825,290	369	161,767	1,157,032

The Atocha-La Quiaca Trade Route Between Bolivia and Argentina

The recent granting of a contract for the construction of the railway from La Quiaca in Argentina to Turpiza in Bolivia is of great importance in that this line will form another link in the chain which will eventually connect the Argentine and Bolivian railroad systems and furnish through communications between Buenos Aires and La Paz, writes Trade Commissioner W. L. Schurz in Commerce Reports. At present the 128 miles which lie between Atocha and La Quiaca, Turpiza being a midway point, must still be covered by mule, though the road is passable by automobile during a part of the year—from about the middle of May to about the middle of November.

In 1915 the Bolivian Government gave the contract for the construction of the Turpiza-La Quiaca section to a French house, the price stipulated to be £900,000 ($4,500,000). After this company had carried out some of the preliminary work on the line, it suspended construction operations, alleging war conditions as the reason for its inability to continue the work. During 1919 the Bolivian Congress annulled the contract with this company, and on May 12, 1920, granted the contract for the completion of the line to an Argentine firm. The conditions are practically identical with those of the original arrangement. It is said that $2,000,000 of the $10,000,000 loan recently contracted with a New York firm is to be used in the construction of this line.

The effect of the railway, when completed to Atocha, will undoubtedly be to strengthen greatly the commercial relations between Bolivia and Argentina. It will not only offer a better market to the products of the Provinces of Jujuy, Salta and Tucuman, but will furnish the means of importing manufactured goods into Bolivia from as far as Buenos Aires, a traffic that has hitherto been seriously handicapped by the difficulties of transport between the frontier and the Bolivian railhead at Atocha. It will thus enable Argentine manufactures to compete with those of Chile, as well as with American and European products.

Equipment and Supplies

Locomotives

THE PERE MARQUETTE is inquiring for some six-wheel switching locomotives.

THE NORTHERN PACIFIC TERMINAL has ordered 2 locomotives from the American Locomotive Company.

THE STANDARD OIL COMPANY OF INDIANA has ordered 5 Mikado locomotives from the American Locomotive Company.

THE COLUMBIA CHEMICAL COMPANY, Zanesville, Ohio, has ordered one saddle-tank locomotive from the Vulcan Iron Works.

THE CHICAGO & ALTON has ordered from the American Locomotive Company 5 Mikado type locomotives, with cylinders 26 in. by 30 in., and a total weight in working order of 292,000 lb.

THE CHICAGO & NORTH WESTERN has ordered 10, 150-ton Mikado type locomotives from the American Locomotive Company, in addition to the 30 ordered from this company and noted in the *Railway Age* of July 30.

JAVA STATE RAILWAYS.—The order for 82 locomotives, inquiry for which was reported in the *Railway Age* of July 9 as having been issued by the Colonial Department of the Netherlands Government, has been placed with the Krupp Works of Germany.

THE INTERNATIONAL RAILWAY SUPPLY COMPANY, 30 Church street, New York, purchasing agents for the American Railroad Company of Porto Rico, has ordered 2 switching locomotives from the Baldwin Locomotive Works, and 2 Consolidation type locomotives from the American Locomotive Company.

Freight Cars

THE SEABOARD AIR LINE is inquiring for 350, 50-ton hopper cars.

THE WESTERN PACIFIC is inquiring for 600 gondola cars of 50 tons' capacity.

THE MCKINNEY STEEL COMPANY, Cleveland, Ohio, is inquiring for 1, 50-ton, all-steel flat car.

THE SOUTH AFRICAN RAILWAYS are inquiring for from 250 to 500 cattle cars of 20 tons capacity.

THE DELANEY FUEL & IRON COMPANY, Buffalo, N. Y., is inquiring for 4 flat-bottom gondola cars.

THE AMERICAN RAILWAY EQUIPMENT COMPANY, Philadelphia, Pa., is inquiring for 100, 50- to 70-ton steel hopper cars.

THE INDIAHOMA TANK CAR COMPANY, Tulsa, Okla., is inquiring for 50 tank cars of 10,000 gal. capacity with 50-ton trucks.

THE CHESAPEAKE & OHIO has ordered from the Pressed Steel Car Company 1,000 hopper car bodies of 57½ tons' capacity.

THE BERTHA COAL COMPANY, Pittsburgh, Pa., has ordered 100, 70-ton steel hopper cars from the Ralston Steel Car Company.

THE CUBA CANE SUGAR CORPORATION, 123 Front street, New York, has ordered 150 cane cars from the Magor Car Company.

THE ANDREW STEEL COMPANY, Newport, Ky., is inquiring for 3, 75- to 90-ton steel copper-bottom cars and 6 self-clearing hopper cars.

T. E. SNYDER, Chicago, has ordered 5 tank cars of 8,050 gal. capacity, with 50-ton trucks, from the Pennsylvania Tank Car Company.

THE BALTIMORE & OHIO, reported in the *Railway Age* of August 20 as inquiring for 500 steel underframe refrigerator car bodies, has ordered this equipment from the American Car & Foundry Company.

The Midland Refining Company, Eldorado, Kan., is inquiring for 50, 8,000-gal. tank cars.

The Interstate Public Service Company, Crown Point, Ind., has ordered 15, 30-ton box cars from the Interstate Car Company.

The Commercial Car Line, Chicago, has ordered 10 tank cars of 8,050 gal. capacity, with 50-ton trucks, from the Pennsylvania Tank Car Company.

The Foco Oil Company, Franklin, Pa., has ordered 5 tank cars of 8,050 gal. capacity, with 40-ton trucks, from the Pennsylvania Tank Car Company.

The Chesapeake & Ohio is having repairs made to 500 gondola car bodies at the Huntington, W. Va., shops of the American Car & Foundry Company.

The Waverley Oil Works, Pittsburgh, Pa., has ordered 4, 4,500-gallon tank cars and 10, 10,000-gallon tank cars from the Pennsylvania Tank Car Company.

Passenger Cars

The Illinois Central has ordered 20 suburban passenger cars from the Pullman Company.

The China, Japan & South American Trading Corporation, Ltd., 80 Maiden Lane, New York, is asking for prices on 35 steel passenger cars for export.

The Jonesboro, Lake City & Eastern is inquiring for one good-conditioned, second-hand mail and express passenger car, the mail space to conform to government requirements, for postal cars.

The Delaware, Lackawanna & Western, reported in the *Railway Age* of July 16 as being in the market for 10 milk cars, has ordered this equipment from the American Car & Foundry Company.

The Pere Marquette, reported in the *Railway Age* of June 25 as being in the market for coaches and baggage cars, has ordered 12 all-steel baggage cars and 12 steel passenger cars from the Standard Steel Car Company.

Iron and Steel

The Wilkoff Company, 2315 Woolworth building, New York, is in the market for steel rails, including 10,000 tons of 50-lb. sections.



The Accident in Which the Prince of Wales Had a Narrow Escape While Traveling in Australia

Supply Trade News

George J. Lynch has resigned as sales manager of the Youngstown Steel Car Company, Niles, Ohio.

D. M. Brown has been appointed manager for Ontario, with headquarters at 342 Adelaide street West, Toronto, of the **Holden Company, Ltd.**, Montreal, Que., dealers in railway supplies.

J. C. Blanton, formerly for ten years manager of the Jacksonville Terminal Company, is now associated in a sales capacity with **Manning, Maxwell & Moore, Inc.,** 119 West Fortieth street, New York.

B. B. Milner, heretofore engineer of motive power and rolling stock of the New York Central, at New York, who has become associated with the Frazar importing and exporting interests, as was announced in the *Railway Age* of July 30, page 207, was born on November 5, 1881, at Hartford, Kans. In 1899 and 1900 he worked in the Parsons shops of the Missouri, Kansas & Texas, and later entered the mechanical engineering school of Purdue University, from which he was graduated in 1904. He then entered the service of the Pennsylvania as a special apprentice at Altoona. Here he also had much test department experience and charge of numerous special investigations having to do with freight train service. In 1907 he was in charge of arranging a complete revision of the machine tool layout at the Altoona shops, and later visited the principal railroad terminal points from the Atlantic to the Pacific in a study of operating and maintenance of equipment methods. In 1908 he served in the office of W. W. Atterbury, then general manager at Philadelphia, on various betterment studies and was engaged in the introduction of improved operating statistical information. He subsequently served in the same office in preparing the Pennsylvania Railroad's case in the arbitration of demands made by enginemen for increases in pay. In May, 1911, he was appointed assistant master mechanic of the Philadelphia, Baltimore & Washington (now the Southern division of the Pennsylvania), at Wilmington, Del. In October, 1913, he left the service of the Pennsylvania to go to the New York Central as special engineer on the staff of the senior vice-president, A. H. Smith, and was sent to the Cleveland, Cincinnati, Chicago & St. Louis to assist in re-establishing satisfactory operating conditions after the disorganization precipitated by the floods of that year. He continued as special engineer on the staff of Mr. Smith, who had been made president, and later was appointed engineer of motive power of the New York Central under Chief Mechanical Engineer R. B. Kendig. In addition to duties as engineer of motive power, he handled problems in connection with car department work and the organization and administration of the test department headed by the engineer of tests. On May 10, 1917, Mr. Kendig died and Mr. Milner took over his entire work through the war and United States Railroad Administration period. During the later half of 1918, or until after the armistice was signed, he assisted H. A. Worcester, the Ohio-Indiana district director, with headquarters at Cincinnati. When the railroads were returned to their owners for operation on March 1, 1920, he



B. B. Milner

was made engineer of motive power and rolling stock. Mr. Milner expects to sail in November for Japan, where he will become a member of the organization of Sale & Frazar, Ltd., in Tokyo, in the meantime maintaining office with Frazar & Company, 30 Church street, New York. Mr. Milner will devote his time to the railroad branch of the business.

Charles Whiting Baker, for many years editor-in-chief of Engineering News, and since 1917 consulting editor of the Engineering News-Record, announces his resignation and the establishment, under his direction, of the **Engineering Business Exchange,** 31 Nassau street, New York, an agency to bring together those desiring to sell any sound engineering or technical business — manufacturing, constructing, selling, or professional— and those seeking opportunities to purchase. Mr. Baker graduated as a civil engineer from the University of Vermont in 1886, and then, to 1895, served as associate editor of Engineering News, when he became editor-in-chief. From 1898 to 1911 he was also vice-president and director of the Engineering News Publishing Company. In 1917 he was appointed consulting editor of the Engineering News-Record. He has been a member of the American Society of Mechanical Engineers since 1893, and was vice-president of that society in 1909-1911. He served as vice-president of the American Society of Terminal Engineers in 1919-1920, and has been a member of the Engineering Council since its organization in 1917, representing the American Society of Mechanical Engineers.



C. W. Baker

The American Automatic Connector Company, Cleveland, Ohio, on October 1, will open offices and an exhibit room at 235 Railway Exchange building, Chicago, in charge of F. R. Bolles, vice-president and general manager.

S. W. Fries has been appointed district sales manager for Kansas City territory of the **Economy Fuse & Manufacturing Company,** Chicago, with offices at 1205 Commerce building, Kansas City, Mo. Mr. Fries succeeds R. P. Crawley, resigned.

The Schierbecker Tie & Lumber Company, St. Louis, Mo., has been reorganized and incorporated under the firm name of the **Central States Tie & Lumber Company. H. F. Schierbecker** is president and will have charge of the tie branch of the business, and **C. A. Neuenhan,** secretary and treasurer, will be in charge of the lumber department.

C. O. Deabler, who was tie and lumber agent of the Southwestern region of the United States Railroad Administration, and recently tie and lumber agent for the Missouri Pacific, has become associated with the **Abeles & Taussig Tie Corporation,** of St. Louis, Mo. Mr. Deabler and **J. A. Brewer** assumed charge of the lumber department on September 1.

Obituary

Joseph S. Ralston, president of the **Ralston Steel Car Company,** Columbus, Ohio, died in that city on September 11, at the age of 55.

John G. Talmage, president of the **Talmage Manufacturing Company,** Cleveland, Ohio, died very suddenly in Washington, D. C., on August 25. Mr. Talmage founded the company bearing his name in 1896 and was the active head of the same up to the time of his death. Mr. Talmage contributed many appliances in the development of the locomotive.

Railway Construction

Alabama & Mississippi.—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Vinegar Bend, Ala., to Leakesville, Miss., and Pascagoula.

Atchison, Topeka & Santa Fe.—This company has let a contract to Jerome A. Moss, Chicago, for the construction of a water station at Galatia, Kan., together with a treating plant and a service tank.

Atchison, Topeka & Santa Fe.—This company and the California, Arizona & New Mexico have applied to the Interstate Commerce Commission for authority to abandon what is known as the Poland Branch, about five miles in length, located in Yavapai county, Ariz., which was built to serve a mine that has now been abandoned.

Canadian National.—This company has let a contract to the Roberts & Schaefer Company, Chicago, for the installation of an electrically-operated Duplex patent shallow pit feeder in one of the deep pit plants constructed some years ago at Monk, Quebec, Canada.

Chicago, Rock Island & Pacific.—The Roberts & Schaefer Company, Chicago, will install a new electrically-operated, hoist-control apparatus at Atlantic, Ia.

Chicago, Rock Island & Pacific.—This company has let a contract to the Railroad Water & Coal Handling Company, Chicago, for the construction of a complete water treating plant at Kellogg, Ia. The Rock Island has also awarded a contract to T. S. Leake & Co., Chicago, for the construction of an eight-stall roundhouse at El Dorado, Ark.

Chicago Union Station Company.—This company is asking bids for the construction of a viaduct at Twelfth street, Chicago. The viaduct, which is part of the Chicago Union station project, will extend from Canal street to the Chicago river, and will be of re-enforced concrete construction.

Chicago & North Western.—This company has let a contract to the Allington Miller Company, Chicago, for the construction of a passenger station, 20 feet by 90 feet, of stucco construction, at Franklin Grove, Ill.

North Carolina Roads (Electric).—Surveys will be completed soon on the first 25 miles, and three-fourths of the right-of-way has been obtained for a proposed electric line to be about 82 miles long from Mt. Holly, N. C., via Denver, Newton, Hickory, Lenoir to Blowing Rock. Blowing Rock is a large summer resort and at present is 22 miles from a railroad from the east and about 10 miles from a railroad from the west. The present plans call for the construction of the line to Blowing Rock, later to connect with a railroad at Shulls Mill. J. D. Elliott is president and Dr. W. T. Shipp, Newton, N. C., is general manager.

The Delaware, Lackawanna & Western is building an extension of six stalls to its enginehouse at Port Morris, N. J., of brick and concrete construction. The work is being carried out by company forces.

South Dayton Railway.—This company has applied to the Interstate Commerce Commission for a certificate to authorize it to abandon 340 feet of track in Dayton, Ohio.

Western Pacific.—A survey has been made for a line from a connection with the Indian Valley Railroad to Westwood, Cal., and Susanville, to tap the timber resources of that district.

Paper Hope in Alaska.—Alaskan forests contain a complete answer to the American newsprint shortage, in the opinion of Colonel W. B. Greeley, chief of the United States Forest Service, who recently returned from a month's inspection of timber and power resources of the Tongass National Forest. Alaska can produce 1,500,000 tons of paper annually "in perpetuity," according to Colonel Greeley.

Railway Financial News

Boston & Maine.—Ernest Martin Hopkins, president of Dartmouth College, and Harry Hubbard Dudley, president of the Mechanics' National Bank of Concord, N. H., have been elected directors of the Boston & Maine, to succeed Theodore N. Vail and Benjamin A. Kimball, both deceased.

Chicago & Western Indiana.—The Interstate Commerce Commission has ordered a hearing at Washington on September 20 to this company's application for authority to issue not to exceed $7,500,000, 15-year, 7½ per cent collateral trust bonds and $1,000,000 of 15-year 6 per cent collateral trust notes.

Chicago, Rock Island & Pacific.—The Interstate Commerce Commission has ordered a hearing at Washington on September 22 on this company's application for authority to issue $1,000,000 of general mortgage gold bonds and $1,000,000 of first and refunding mortgage gold bonds.

Chicago, St. Paul, Minneapolis & Omaha.—The Interstate Commerce Commission has ordered a hearing at Washington on September 21 on this company's application for authority to sell $770,000 of equipment trust certificates and to issue $950,000 of additional certificates.

Delaware, Lackawanna & Western.—An application for approval by the Interstate Commerce Commission of a plan for the proposed segregation of the company's coal properties in Pennsylvania was filed with the secretary of the Interstate Commerce Commission on September 15, but was not made public on that date by the commission.

Gulf Port Terminal.—This company has taken exception to the denial of two applications to the Interstate Commerce Commission for a loan from the $300,000,000 fund provided by the transportation act and has made a further application for a loan of $300,000 as to which the commission has ordered a hearing at Washington on October 12.

Kansas City, Mexico & Orient.—The receiver has applied to the Interstate Commerce Commission for authority to issue $1,000,000 of receiver's notes bearing 6 per cent interest, to meet operating expenses.

Memphis, Dallas & Gulf.—Martin Walsh, vice-president and general manager of this road, with headquarters at Nashville, Ark., was appointed receiver on September 10 by Judge Youmans in the United States District Court at Fort Smith, Ark. The receivership was granted on the petition of four St. Louis banks, which claim to hold obligations of the road in excess of $200,000. The road operates between Hot Springs, Ark., and Ashdown, 130 miles.

Missouri, Kansas & Texas of Texas.—This company has applied to the Interstate Commerce Commission for authority to issue equipment notes to the amount of $675,000, at 6 per cent, to be issued in part payment for 300, 50-ton, 10,000-gal., steel oil tank cars purchased from the American Car & Foundry Company.

New York Central.—At a hearing before Director Colston, of the Bureau of Finance, on September 10, George P. Whitney, of J. P. Morgan & Co., and J. E. Oldham, an investment banker of Boston, testified that the commission allowed to the bankers that handled the flotation of the $25,000,000 of 7 per cent collateral trust bonds was conservative under the circumstances and compared favorably with commissions allowed on similar issues in the past. The hearing was held for the purpose of receiving additional testimony on this point because of questions asked by Director Colston as to the reasonableness of the amount. J. P. Morgan & Co. had taken the bonds from the railroad company at 96.52 and formed a syndicate of about 400 members, who received the bonds at 97 and sold them at par. The profit of the Morgan company was a little less than one-half of one per cent, and of the 3 per cent received by the syndicate members Mr. Whitney testified that 1½ per cent went to the bond salesmen and after paying all expenses the profit to the syndicate members was 1.09 per cent. He said the cost of distributing securities is now much greater than formerly, particularly because the average sale is now about $3,300, as compared with $25,000 to $50,000 in former years. At the request of Director Colston he submitted a list of the syndicate members for the purpose of checking up any interlocking relationships with the railroad, but requested that it be not made public. Mr. Colston said it would be for the commission to decide whether the list should be made part of the record. Mr. Oldham testified that the commission is reasonable and described how the cost of distributing securities has been increased.

The Interstate Commerce Commission on September 13 issued an order granting the application for authority to issue the $25,000,000 of collateral trust gold bonds which were sold, subject to the commission's approval, on August 20, and also $25,000,000 refunding and improvement mortgage bonds to be pledged as part of the security for the collateral trust bonds. The order provides that the bonds shall be sold at a price of not less than 96½ per cent and that the proceeds shall not be used for any purpose other than that specified in the application.

Pittsburgh & Lake Erie.—The Interstate Commerce Commission has issued an order authorizing this company to issue $2,400,000 of equipment trust certificates at 7 per cent to be used in the acquisition of 1,375, 55-ton, all-steel hopper cars, at a total estimated cost of $3,508,300. It is ordered that the certificates shall be sold at not less than 97 per cent of their face value and accrued interest, to give net proceeds of $2,328,000.

Seaboard Air Line.—The Interstate Commerce Commission has certified its approval of a loan of $6,073,400 to aid this company in acquiring refrigerator cars at a cost of $1,058,000, in making additions and betterments at a total cost of $750,000, and in meeting its 1920 maturities aggregating $8,248,000. To meet the loan of the government the carrier itself is required to finance $3,982,600. The additions and betterments include ballasting, rail renewals, bridging, shop machinery and facilities, cinder pit and fuel facilities and additional industry tracks. The company has also applied to the commission for authority to issue $1,000,000 of three-year, 7 per cent, extended, secured gold notes for the purpose of extending part of its outstanding $4,000,000 of two-year, 6 per cent gold notes maturing September 15, and to pledge and repledge various securities for the notes, and also as security for the loan from the government.

St. Joseph Belt.—The Interstate Commerce Commission has ordered a hearing at Washington on September 22 as to whether this company is entitled at all to the benefits of Section 204 of the Transportation Act, which provides for the reimbursement of deficits incurred by short line railroads during the period of federal control, and particularly as to whether the company during any portion of the period of federal control "operated its own railroad," within the meaning of those words as used in the law. The company has petitioned the commission for a certificate to the Treasury Department for the sum due the company, which it estimates at $165,000.

Terminal Railroad Association of St. Louis.—The Interstate Commerce Commission has certified its approval of a loan of $898,925 to this company to aid the carrier in meeting its demand notes and in making additions and betterments. The amount of the loan from maturing obligations was $377,750, the total amount of such obligations being $1,511,000. The carrier is required to finance effectively for a period of not less than one year at a cost of not more than 7 per cent, the remainder, $1,133,250, of its maturities. The amount loaned for additions and betterments is $519,175, and the carrier itself is to finance an amount equal to the government loan for the same purpose. The additions and betterments include improvements to the Eads bridge at a cost of $129,000, a new yard at a cost of $44,900, completion of the upper Wiggins yard, $170,000; a viaduct, $35,000; equipment for car repair shop, $2,300; additional trackage, $109,250, and an extension to the Brooklyn shops, $494,700.

Railway Officers

Executive

Martin W. Walsh, vice-president and general manager of Memphis, Dallas & Gulf, with headquarters at Nashville, Ark., has been appointed receiver, effective September 10.

Warren S. Andrews, who has been appointed assistant to the vice-president of the Southern, with headquarters at Washington, D. C., as noted in the *Railway Age* of September 10, (page 467), served as general superintendent of transportation prior to this promotion. Mr. Andrews began railroad work in 1884 as operator for the Ohio & Mississippi, now part of the Baltimore & Ohio. Later he became train despatcher. In 1886 he went to the Great Northern as train despatcher, and in 1893 was appointed chief train despatcher and trainmaster of the Illinois Central. He served in that capacity until 1902, when he became trainmaster of the Southern. Afterwards he was promoted to assistant superintendent at Charlotte, N. C., and later to superintendent at Danville, Ky. While in that position he was transferred to Alexandria, Va. In 1905 he was appointed general superintendent of transportation, with headquarters at Cincinnati, Ohio.

Financial, Legal and Accounting

W. E. Harrington has been appointed assistant auditor of the St. Louis Southwestern of Texas, with headquarters at Tyler, Tex.

Cline C. Hine, general attorney of the Chicago, Indianapolis & Louisville, with headquarters at Chicago, has been appointed general solicitor, effective September 1, with the same headquarters, succeeding Perry McCart, resigned because of ill health.

Operating

R. E. Brooks has been appointed assistant superintendent of the Oregon Short Line, with headquarters at Nampa, Idaho, effective September 9.

E. B. Brock, Jr., has been appointed assistant to the general manager of the Gulf & Ship Island, with headquarters at Gulfport, Miss., effective September 1.

A. E. Warren, general manager of the Western lines of the Canadian National, with headquarters at Winnipeg, Man., has also been given jurisdiction over the lines of the Grand Trunk Pacific.

C. Garrity has been appointed terminal trainmaster in charge of the Chicago terminal territory of the New York, Chicago & St. Louis, with headquarters at Stony Island (Chicago), Ill., effective September 15.

H. H. Brewer, general superintendent of the Grand Trunk Pacific, with headquarters at Winnipeg, Man., has been appointed assistant general manager of the lines of the Canadian National from Armstrong, Port Arthur, and Duluth, west to Edmonton, Alta.

C. F. Martin, inspector of transportation on the Canadian National, with headquarters at Winnipeg, Man., has been promoted to superintendent of transportation of the Pacific division of the Canadian National and the Grand Trunk Pacific, with headquarters at Vancouver, B. C.

J. R. Cameron, assistant general manager of the Western lines of the Canadian National, with headquarters at Winnipeg, Man., has been appointed assistant general manager of the Pacific division of the Canadian National and the Grand Trunk Pacific, with headquarters at Vancouver, B. C.

F. J. MacKie, superintendent of the Slaton division of the Atchison, Topeka & Santa Fe, with headquarters at Slaton, Tex., has been promoted to assistant to the general manager, with headquarters at Topeka, Kan., in charge of personnel and labor matters on the Eastern lines. **John Dyer** has been appointed assistant to the general manager with headquarters in Amarillo, Tex., with jurisdiction over the Western lines, and **C. S. Kirkpatrick,** assistant to the general manager with jurisdiction over the Gulf lines, with headquarters at Galveston, Tex. These men will constitute a committee with **F. A. Gregg,** who has been appointed assistant to the vice-president at Chicago, as chairman, having jurisdiction over personnel problems.

John W. Cuineen, who has been appointed superintendent of the New York, New Haven & Hartford, with headquarters at Danbury, Conn., as noted in the *Railway Age* of August 27 (page 338), served as assistant superintendent of the Central New England prior to this promotion. Mr. Cuineen was born on June 2, 1869, at Leeds, Eng. He received a public school education and began railroad work in 1881 as messenger boy for the Lehigh Valley. In 1884 he became telegraph operator, and with the exception of an interval of some months, served in that capacity until 1888, when he was appointed train despatcher. In 1905 he went to the Missouri Pacific in the same capacity, and in October, 1906, accepted that position with the Central of New England. He was promoted to chief despatcher in 1907, and in May, 1911, was appointed trainmaster. He was promoted to assistant superintendent in January, 1912.



J. W. Cuineen

Traffic

I. T. Sparks has been appointed district freight and passenger agent on the Southern Pacific, with headquarters at Eugene, Ore.

C. W. Runge has been appointed district freight and passenger agent on the Southern Pacific, with headquarters at El Centro, Cal.

E. F. Anderson has been appointed freight claim agent in charge of loss and damage and overcharge claims of the El Paso & Southwestern, with headquarters at El Paso, Tex., effective September 1, succeeding W. S. Dawson.

H. A. Benjamin has been appointed assistant general freight and passenger agent of the Waterloo, Cedar Falls & Northern, with headquarters at Waterloo, Ia., and **T. J. Cleary** has been appointed commercial agent with the same headquarters.

F. G. Adams has been appointed assistant general freight agent of the Canadian National and the Grand Trunk Pacific, with headquarters at Winnipeg, Man., in charge of solicitation of freight traffic. The following have been appointed division freight agents of both roads: **John Paul** at Winnipeg, **R. M. Milliken** at Regina, Sask., **W. A. B. Russell** at Calgary, Alta., **R. H. Bell** at Edmonton, Alta., and **L. V. Druce** has been appointed commercial agent at Edmonton.

James C. Pond, assistant general passenger agent of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Chicago, will retire on October 1, after 51 years of continuous railroad service. Mr. Pond was born at St. Lawrence, Minn., on November 30, 1857, and began railroad work as a

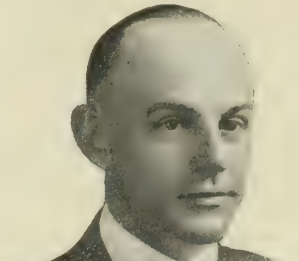
messenger boy on the St. Paul & Sioux City, in August, 1869. He served subsequently on that road as a telegraph operator, clerk and chief clerk until 1879, when he left to go with the Northern Pacific as ticket agent at St. Paul, Minn. After advancing through several grades to assistant general ticket agent, Mr. Pond left the Northern Pacific to become general passenger agent of the Wisconsin Central, with headquarters at Milwaukee, Wis., which position he held until April, 1909, when he was appointed assistant general passenger agent of the Soo Line, which had absorbed the Wisconsin Central, with headquarters at Chicago, the position he now holds.

William S. Basinger, whose promotion to passenger traffic manager on the Union Pacific, with headquarters at Omaha, Neb., was announced in the *Railway Age* of September 3 (page 426), was born on August 28, 1870, at Savannah, Ga. Mr. Basinger entered railway service as a clerk in the office of the general agent of the Union Pacific at Kansas City, Mo., in October, 1891. Six years later he entered the operating department of the Leavenworth, Kansas & Western, at Leavenworth, Kan. In October, 1903, he was appointed superintendent of this road and two years later became general agent. He was appointed trainmaster on the Union Pacific, with headquarters at Kansas City, Mo., in April, 1905, and in July, 1907, became assistant general passenger agent at Omaha, Neb. Following this service he was for three years assistant to the director of traffic of the Harriman lines, with headquarters at New York and Chicago. He returned to the Union Pacific as general passenger agent, with headquarters at Omaha, in February, 1913, which position he left March 1, 1918, to become assistant in the division of traffic of the United States Railroad Administration at Washington, D. C. When the roads returned to private control he returned to the Union Pacific as assistant passenger traffic manager at Omaha, Neb., the position he held at the time of his recent promotion.

Engineering, Maintenance of Way and Signaling

R. H. Coulson has been appointed district engineer of the Western district of the New York Central Lines, with headquarters at Buffalo, N. Y., succeeding N. F. Thompson, deceased.

Louis V. Bean, who has been appointed chief engineer of the Georgia, Florida & Alabama, with headquarters at Bainbridge, Ga., as noted in the *Railway Age* of August 27 (page 378), was born on April 3, 1887, at Lexington, Ky. He attended the College of Civil Engineering of the University of Kentucky from 1904 until 1907 and began railroad work shortly afterward as rodman in the office of the division engineer and road master of the Cincinnati, New Orleans & Texas Pacific at Lexington. In May, 1909, he went to the Central of Georgia as draughtsman in the office of the chief engineer at Savannah, Ga. He was appointed resident engineer in February, 1910, and assistant engineer in 1911, remaining meantime at Savannah. He resigned on November 1, 1911, to become second assistant engineer to the engineer of roadway of the Atlantic Coast Line, with headquarters at Savannah. In 1915 he was promoted to first assistant engineer. Mr. Bean served with the Building Division of the Construction Division of the United States Army from July, 1918, to July, 1920.



L. V. Bean

C. B. Mutchler, assistant superintendent and signal engineer on the Grand Trunk Pacific, with headquarters at Melville, Sask., has been relieved of his duties as signal engineer.

John Greer has been appointed assistant engineer of the Portland division of the Grand Trunk, with headquarters at Portland, Me., succeeding R. F. Nicholson, resigned, effective September 1.

H. Hulatt, manager of telegraphs of the Canadian lines of the Grand Trunk, with headquarters at Montreal, Que., has been appointed consulting manager of telegraphs of the Western lines, effective September 10.

Mechanical

J. E. Stone has been appointed assistant master mechanic of the Salt Lake division of the Southern Pacific, with headquarters at Sparks, Nev., succeeding Paul Jones, who has resigned.

Purchasing and Stores

Henry Hansen, chief clerk to the purchasing agent of the Northern Pacific, has been appointed assistant purchasing agent, with headquarters at St. Paul., Minn., effective August 15.

Special

W. L. Barnes, superintendent of transportation of the Chicago, Burlington & Quincy, has been appointed executive manager of the Car Service Division of the American Railroad Association, with Office at Washington, D. C., reporting to the chairman of the Advisory Committee of the Association of Railway Executives. Mr. Barnes was formerly a member of the Commission on Car Service and has recently been special assistant to the chairman of the Advisory Committee.

Floyd L. Bell, publicity director of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., has been appointed director of public relations, a newly created position. In this capacity, Mr. Bell will have charge of all publicity for the Frisco System, and will also deal with civic and public organizations in promoting a thorough understanding between the public and the railroad. Before his appointment as publicity director of the Frisco on the return of that road to private control, Mr. Bell was engaged in daily newspaper work for 14 years.

Obituary

George Leighton, Civil engineer, and formerly assistant engineer of the Delaware, Lackawanna & Western, at Bath, N. Y., died on September 13 at Glenburn, Pa., in his sixty-second year. After his service with Delaware, Lackawanna & Western, Mr. Leighton was associated with the planning and construction of the Pennsylvania tunnels under the East River, also of the East Shore terminal at Charleston, S. C.

Quite Like Old Times.—"It's quite like old times," said the head of a firm which specialized in railroad stocks and bonds, "in the old days." Whereas this house three months ago could boast of transacting but a few hundred shares of railroad stocks daily and trades in less than 20 bonds, on Wednesday it did 26,000 shares of railroad stocks and $69,000 of bonds, with every indication of these totals being improved upon during coming days. Many firms are astounded at the country-wide enquiries regarding low-priced bonds of some of the smaller railroads. Their statistical departments are kept busy looking up the status of roads which so far as the tape was concerned a month ago were long since dead, but which now appear to be very much alive. One firm received the following wire from a client who is in the Canadian Rockies on a vacation: "Buy me 25 railroad bonds at a price under 40 which in your estimation have a chance of doubling in price during next two years. Interest rate immaterial."—*The Wall Street Journal Straws.*

EDITORIAL
Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

The Sixth Fuel Commandment: Co-operation

Ralph Waldo Emerson said that nothing great is ever accomplished without enthusiasm. Maximum efficiency in the use of fuel on American railroads would be a great achievement; it cannot be accomplished without enthusiasm on the part of all who are concerned in this problem. It is one of the chief functions of the organization devoted to fuel conservation to enlist *the co-operation of every department in an enthusiastic effort to save fuel.* There are many ways in which this may be accomplished; the formation of fuel committees on each division in which all departments are represented is one of the best.

German Competition in Locomotives

In the Equipment and Supplies column of the *Railway Age* of July 9 an inquiry was reported as having been issued by the Colonial Department of the Netherlands Government for 82 locomotives for the Java State Railways. This order has since been placed with the Krupp Works in Germany, which is understood to have been able to underbid our own manufacturers because of the low value of the mark as compared with the dollar. The Krupp Works may find difficulty in filling the order because of shortage of materials. Nevertheless, the taking of this large order is an indication that the Germans are making big efforts to get back on their feet again in export trade in railway supplies.

Contest on Increasing Car Mileage

Although the last two weeks have shown indications of a decrease in car loadings in some localities, pointing to a lessening of the pressure on the roads for transportation service in the near future, this should not cause any relaxation in effort on the part of operating officers. Rather, it should provide an incentive for them to get on top of this problem as the opportunity offers. The demands for service have been so far in excess of the capacity of the roads and relief in the way of increased facilities will come so slowly that the necessity for the utmost effort will continue for a long time, and the goal of an average of 30 miles per car per day for the railways of the country, set by the Association of Railway Executives some time ago, is as important to attain as ever. For this reason we again call the attention of students of the present transportation problem to the contest on Means of Increasing the Average Miles Per Car, Per Day, which is now drawing to a close. We solicit the co-operation of transportation officers for this contest, with the knowledge that a thorough discussion of those methods and practices which have expedited the movement of cars in one locality will be of similar assistance elsewhere. To stimulate interest in the contest, prizes of $50 and $35 will be awarded for the best papers received, while we will pay our regular space rates for others accepted and published. The prizes will be awarded on the basis of the readiness with which the ideas presented may be placed in effect, the extent of the improvements they will secure, and their general practicability. All papers must be mailed to the editor of *Railway Age,* Transportation building, Chicago, on or before September 30, 1920.

Forging and Heat Treating Equipment Needed

In placing orders for additional shop machinery and equipment, railroad officers should not forget the imperative need for new forging, annealing and heat treating furnaces; also the pyrometers, temperature control apparatus and other equipment necessary for their efficient operation. Fuel oil has increased greatly in cost in the past twelve months and is becoming more and more difficult to obtain. Competent authorities estimate that the average fuel oil furnace without proper equipment for mixing air and oil, or a pyrometer to indicate temperatures, wastes at least 33 per cent of the heat of the oil. This loss is caused by too little or too much air for complete combustion and unnecessary radiation losses. In addition, much work is spoiled through overheating which could be prevented by the use of a pyrometer. Altogether, aside from the question of fuel economy, high speed steel is too expensive to be spoiled or heat treated in such way as to secure any but the best results. Antiquated equipment, together with guesswork methods of judging temperatures and treating the steel must be done away with, because they result in inefficient or spoiled work, the cost of which in a month may often equal the entire cost of the right kind of equipment. A specific case will serve to illustrate the point. The only furnace giving temperatures of 2,400 deg. F. in an eastern railroad shop was too small for the easy removal of a high speed steel reamer, worth about $200, which was being heat treated. The reamer was brought up to the required temperature, but before it could be removed from the furnace and quenched it was overheated and became a total loss. The experiment would have been as costly had the reamer been underheated, due to the absence of a pyrometer, and failed in service. Fuel economy and correct heat treatment of steel cannot be secured without proper equipment.

The Prevention of Mistakes

A very appreciable part of the entire time of the accounting office force is spent in rectifying clerical errors. This is not necessarily any reflection on auditing office methods; the opportunities for making an error, say in the freight department, are legion. From the time the waybill is made out and the rate, weight and route are entered on it until the amount of money involved is entered as part of the total freight revenue for the month in the general books, there are so many opportunities for a slight mistake to be made that it would take a chapter all to itself to merely enumerate them. A mistake once made, however, often involves more time than the original transaction itself involved, with, of course, the possibility of a further mistake. If it were possible that all errors could be eliminated in both revenue and disbursement audit-

ing offices, it is fairly safe to say that much more than 10 per cent of audit office expenses could be saved. There are two particular methods by which the possibilities of errors can be reduced—one is more careful training of employees, the other the provision of better tools with which to work. There are not only mechanical devices which greatly reduce the possibility of human error, but there are also other elements which have a bearing on the human tendency to make mistakes. Modern office equipment is an important factor. It is sometimes rather difficult to convince an executive who has never had any personal experience in the accounting department that expenditures for light, spacious offices, well-designed office furniture, steel cabinet files, etc., shows any return on the investment. It is a fact, however, and one that has been proved conclusively. Roads, such as the Southern Railway and the New York Central, which have made special studies along these lines—and there are probably many other roads—have demonstrated actual savings beyond reasonable question.

Courage on the Freight Train

The conductor who stops his train because he merely *thinks* that something is wrong, and, after stopping finds that he has only caused a seemingly unnecessary delay, must cultivate quick wit at all times. It is childish to manufacture excuses afterwards. And for the engineman who has to manage imperfect air brakes on steep descending grades this admonition is perhaps even more important. Commenting on this feature of train running, as touched upon in our issue of July 23 (page 131) a correspondent asks us to put in a friendly word for the man whose boss is super-critical concerning any and all delays; for the inexperienced conductor who may risk his train because he fears to risk his job. We must admit that always to aim at safety-first requires courage. Everybody is familiar with the cowardly engineman's plea that on a given occasion he had run faster than his own judgment dictated, or had taken some other risk, because of his cold-hearted superior, who would wink at risky practices but would not forgive the runner who came in 15 minutes late. It is needful not only to know your job but to know the right words to be used in justifying any act. To leave it to the boss-griever to make the defense at a protracted investigation a week later, is an unbusinesslike makeshift. Possibly the reader may object to our use of the word "cowardly"; but do we not all admire the man who follows the safe and courageous course, even if he has to spend an hour—or a day—in sustaining his position? Be careful, however, not to tell your superior "where he is to get off." If he is in any degree wrong he should find it out, not by your arguments, but, rather, be your skilful marshalling of facts.

Improvement in Transportation Conditions

The improvement in transportation conditions which has been made within recent months is indicated by the fact that in the week ending September 10 the accumulations of loaded freight cars awaiting movement at various points amounted to only 50,737. A few months ago the accumulations of cars were abnormally large. They are now just about normal. About half of the cars included in the reports of accumulations are being held at the ports loaded with freight for export or coastwise movement. Car loading continues to show increases over the corresponding weeks of 1919 and 1918. The total number of cars loaded during the week ending September 4 was 947,743, as compared with 904,393 in 1919 and 872,560 in 1918. The low figure for 1918 is doubtless attributable to the fact that Labor Day was included in the week. Up to September 11 the total amount of bituminous coal which had been moved this year was 369,143,000 net tons. This is about 15,000,000 tons less than in the corresponding period of 1917 and 42,333,000 tons less than in the corresponding period of 1918, but 50,750,000 tons more than in 1919. The United States Geological Survey, in giving these figures, adds the following significant statements: "In this connection it should be remembered that production during 1918 exceeded consumption and provided for a net addition to consumers' stocks by the end of the year of approximately 30,000,000 tons. In 1919 the condition was reversed. Consumption exceeded production and there was a net draft on stocks of perhaps 40,000,000 tons for the year." The railways have practically remedied the shortage of coal in New England and are maintaining the schedule of movement to the Northwest which, some weeks ago, it was decided was necessary in order to prevent a coal famine in that section next Winter. Perhaps the greatest difficulty being met by the railways now is that of providing sufficient cars to move the grain from the Western States. While the transportation situation as a whole cannot be regarded as satisfactory, it may safely be said that it is nearer satisfactory than it has been at any time since last March.

How Are the Supervisors Supervised

No railway track can be maintained without expenditures commensurate with the burden of traffic imposed on it, but having met this condition within reasonable limits the chief requirement for proper results in maintenance of way is adequate supervision properly applied. This requisite is, of course, common to all departments but unfortunately a peculiar attitude has grown up on some roads as regards the conduct of maintenance work which tends to interfere with the effectiveness of the supervision. On many roads in this country, supervision of maintenance of way rests with the roadmaster and the master carpenter, who report to a division superintendent who in most cases is himself an operating rather than a maintenance of way man. If this superintendent is a true executive and if his supervisory lieutenants are thoroughly competent, he will exercise his control over their work through his ability to judge of their capacity for the work to which they are assigned and also by directing the general distribution of the moneys appropriated for maintenance of way work. In other words, the superintendent will supervise by judging the results rather than the methods. But unfortunately for reasons that may or may not be sufficient some superintendents feel called upon to direct the work in its minutiæ and as a consequence the supervisors are required to carry out detailed instructions rather than to exercise their own initiative or apply their own technical knowledge. Railway operating officers are more inclined to take this attitude toward the work of the maintenance of way department than that of the motive power department because the details of the former are essentially less involved than those concerned with the locomotive. Nevertheless, maintenance work embodies a technology that can be mastered only through intimate contact over a period of years and any attempt to exercise minute supervision over this work by one not thoroughly familiar with its details will tend to reduce its efficiency. Therefore, if the work of the roadmaster or master carpenter requires a degree of supervision that goes much further than the distribution of appropriations and materials or a consideration of the results he secures, it is important that such detailed supervision be exercised by one who is essentially a maintenance of way officer, namely, a general roadmaster, a division engineer or an engineer maintenance of way.

Car Building in First Seven Months of 1920

STATISTICS regarding the number of freight and passenger cars delivered to the railways of the United States by the car building companies during the first seven months of 1920, and the numbers on order but undelivered at the end of this period, reflect strikingly the effects of the principal influences to which the railways were subjected during this time. These influences were the delays in determining the future of the railways and the "outlaw" strikes.

Almost a year ago the *Railway Age* began to give warning that unless the railways were returned to private operation by January 1, 1920, under legislation assuring them the opportunity to earn reasonable returns, it would be impossible to make plans and raise capital in time substantially to increase their facilities in the year 1920. The Transportation Act was not passed until late in February and the roads were not returned to their owners until March 1. The appointment of the Railroad Labor Board was delayed and it did not make its wage award until July 20. The Interstate Commerce Commission had proceeded with commendable celerity, but could not profitably pass on advance in rates until the wage award had been made, and therefore the rate advance case was not decided until July 29. The advances in rates did not become effective until late in August and, in consequence, no railway management knows as yet how much net operating income it will be able to earn on the new rates. Meantime, the "outlaw" railroad strikes had slowed down production in all lines of business, including that of car building.

The effect of these influences upon the building of freight cars is indicated in the accompanying table, showing the number of freight and passenger cars delivered by twenty-three car building companies up to the end of July, including all but two or three having a substantial output.*

TABLE I—CARS DELIVERED

	Freight cars		Passenger cars	
	Dom.	For.	Dom.	For.
January	4,482	1,904	1	9
February	3,774	1,039	4	..
March	2,796	1,994	11	28
April	2,127	1,912	15	..
May	2,630	1,387	..	..
June	2,608	708	..	21
July	2,583	380	18	27
	21,000	9,324	49	85

The figures given are rather striking, to say the least. They show that these companies built during the first seven months of the present year a total of only 21,000 cars for domestic service, or an average of 3,000 a month. This output is very small, and it indicates that 1920 is likely to furnish a new low record for car production. It is worth noting that the total production of cars of all car building companies and of railroad shops in the United States for domestic service in 1919 was 67,063. And yet domestic freight car production in 1919 was the lowest ever recorded in the annual statistical compilations of the *Railway Age* with one exception, namely, 1915, when 52,226 cars were built.

Similar comparisons when applied to passenger cars are even more striking. The total output of passenger cars for domestic service in the first seven months of 1920 was 49. Deliveries in the best month, July, totaled only 18, while in the two months, May and June, no passenger cars were delivered at all. The lowest production ever recorded in the *Railway Age* statistics was for 1919, when 300 passenger cars were built for domestic service. In 1918, 1,480 passenger cars were built for domestic service.

TABLE II—CARS ON ORDER AND UNDELIVERED

(Figures for end of month)

	Freight cars			Passenger cars		
	Dom.	For.	Total	Dom.	For.	Total
December, 1919	24,816	10,720	35,536	407	110	517
January, 1920	27,282	9,381	36,663	311	103	414
February, 1920	29,706	8,389	38,095	282	103	385
March, 1920	33,061	7,854	41,455	522	80	602
April, 1920	42,869	7,180	50,049	586	88	674
May, 1920	47,761	6,338	54,099	732	110	842
June, 1920	48,171	7,792	55,963	796	97	893
July, 1920	50,275	8,212	58,487	811	88	899

Table II gives the numbers of "Cars on Order and Undelivered" at the end of each month. It will be seen that when the year opened the car builders had orders from American railways for 24,816 freight cars and 407 passenger cars. The number on order and undelivered increased steadily until at the end of July it amounted to 50,275 freight cars and 811 passenger cars. The increase in the numbers "On Order" was obviously due to the fact that the builders were constantly receiving orders faster than they were turning cars out. Undoubtedly it is significant that in April, when the effects of the "outlaw" railway strikes were felt most by all industries, the output of freight cars declined to the lowest figure reached, although the unfilled orders showed a marked increase.

The number of freight cars built this year up to July 31 and the number on order on that date combined amounted to 71,275. Therefore, if all on order at that time were built before the end of the year the total number built in the year would fall far short of the 100,000 which past experience indicates should be built each year to take the place of those which are so badly worn out that they should be scrapped. The number of passenger cars built up to the end of July and the number on order at that time amounted to 860. If all those on order at the end of July should be built before the end of the year the number of new passenger cars provided would be substantially less than in any previous year except in 1919.

The cost of new cars is now much greater than a few years ago. The difficulty of getting them has been intensified by labor and material conditions. The capacity of railway repair shops has been reduced since before the war by the establishment of the eight-hour working day and the abolition of piece work. These and other conditions have prompted the railways to turn over to the plants of the car building companies an increased number of their old freight cars for repair.

The increase in the number of cars car builders have been repairing probably to some extent explains the comparatively small number of new cars they have turned out. Since May there have been compiled, in addition to the production figures, statistics covering freight car repairs in the shops of the twenty-three car building companies. As shown in Table III, these are now running at about 2,500 cars a month. On May 31 there were on order with these com-

* The figures are supplied through the courtesy of the Railway Car Manufacturers' Association, the membership of which is as follows:

American Car & Foundry Company, New York, N. Y.
Bethlehem Shipbuilding Corporation, Ltd., Wilmington, Del.
Bettendorf Company, Bettendorf, Iowa.
Osgood Bradley Car Company, Worcester, Mass.
J. G. Brill Company, Philadelphia, Pa.
Cambria Steel Company, Philadelphia, Pa.
Cincinnati Car Company, Winton Place, Ohio.
Greenville Steel Car Company, Greenville, Pa.
Haskell & Barker Car Company, Chicago, Ill.
Keith Car & Manufacturing Company, Sagamore, Mass.
Keith Railway Equipment Company, Chicago, Ill.
Laconia Car Company, Laconia, N. H.
Liberty Car & Equipment Company, Chicago Heights, Ill.
Magor Car Corporation, New York, N. Y.
McGuire-Cummings Manufacturing Company, Chicago, Ill.
Mt. Vernon Car Manufacturing Company, Mt. Vernon, Ill.
Pacific Car & Foundry Company, Seattle, Wash.
Pressed Steel Car Company, New York, N. Y.
Pullman Company, Chicago, Ill.
Ralston Steel Car Company, Columbus, Ohio.
Ryan Car Company, Chicago, Ill.
St. Louis Car Company, St. Louis, Mo.
Standard Steel Car Company, Pittsburgh, Pa.
Youngstown Steel Car Company, Youngstown, Ohio.

These manufacturers, not members of the association, co-operate in its reports:

Chicago Steel Car Company, Harvey, Ill.
Pennsylvania Tank Car Company, New York, N. Y.

panies 20,130 cars awaiting repairs. On July 31 this had only risen to 23,541, so it is apparent that the builders were keeping up with orders for repairs better than they are with orders for new equipment.

TABLE III—FREIGHT CAR REPAIRS

	Delivered during month	Delivered Jan. 1 to end of month	On order and undelivered at end of month
May	2,296	10,442	20,130
June	2,541	12,983	24,092
July	2,491	15,474	23,541

The situation reflected by the foregoing figures, and especially by those regarding the orders for and production of new freight and passenger cars, is highly unsatisfactory. The need for a large increase in rolling stock, as well as other railway facilities, was never so pressing as now and yet seldom were the railways ordering and receiving as few cars as now. Doubtless, with labor and material conditions improving, the car building companies, if given opportunity, could within the near future largely increase their production. Whether they will be given the opportunity will depend on whether the railways increase their orders. Every railway management is now anxiously awaiting statistics of earnings and expenses which will show the financial effect produced upon its own railroad by the recent advance in wages and in rates.

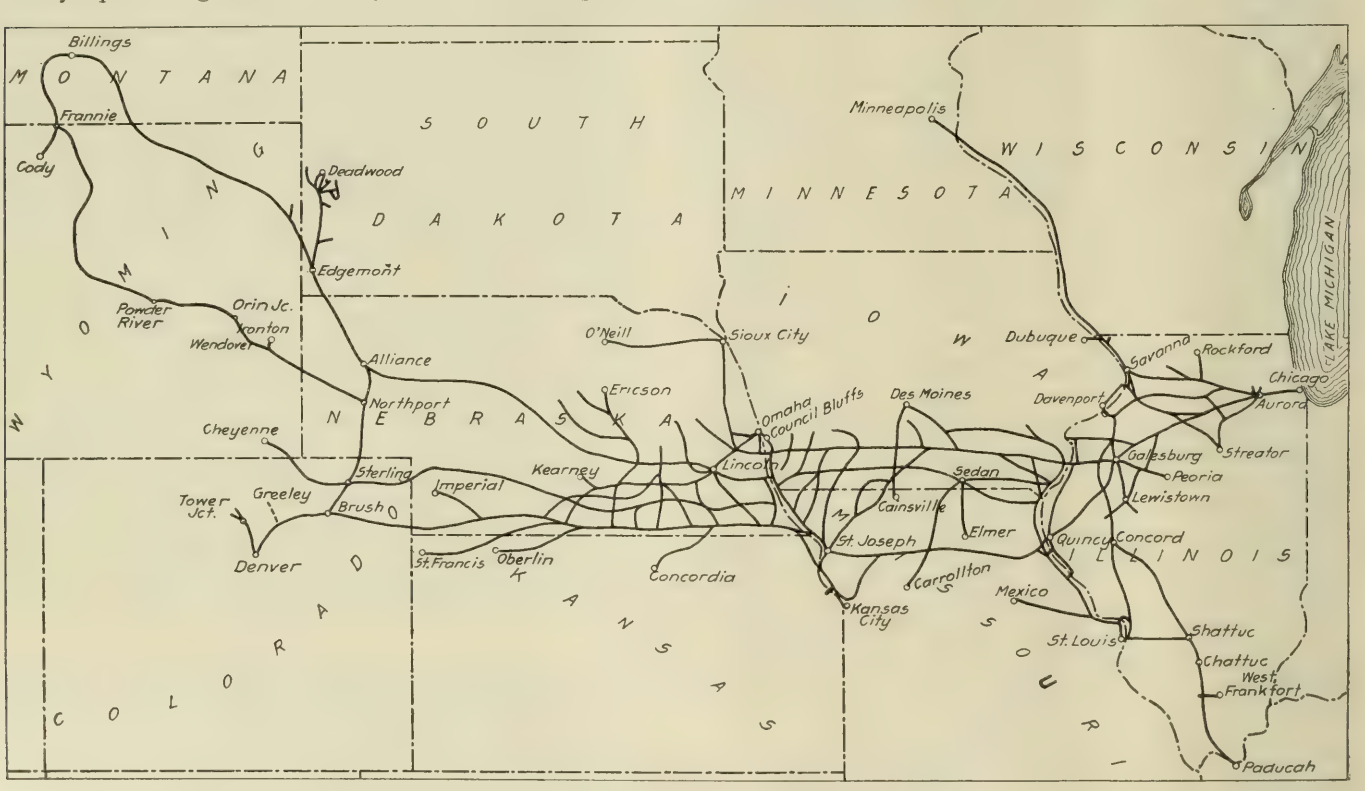
The time when waiting must cease, and decisions must be made regarding programs of expansion, is almost here, however. The railroads appeared before the Interstate Commerce Commission and asked for certain advances in rates, chiefly upon the ground that they were needed to provide net earnings which would enable the companies to improve and increase their facilities. The Interstate Commerce Commission gave most of them practically all they asked. Many of the state railroad commissions are refusing to co-operate by granting corresponding advances in state rates, but there is reason for hoping that in time the railways will be given most of the advances in state rates for which they have asked. The public will soon demand that the railway companies shall begin increasing their facilities on a large scale, and while financial and other difficulties will be great, the public will insist that in view of what has been done to help the railway companies their managements shall put forth the utmost efforts to overcome these difficulties. No data could show more conclusively than those given above that at present almost no progress is being made in increasing facilities.

Chicago, Burlington & Quincy

IN A CLOSE STUDY of the losing fight which the railroads as a whole were waging against economic conditions and oppressive laws in the past 10 years, one is apt to lose sight of the splendid constructive and profitable achievements which were characteristic of American roads—with, of course, exceptions—prior to 1906. New money invested in the railroads since that time has on the whole been unproductive. Grade reductions, the acquisition of heavier locomotives and larger capacity cars, great advances in nearly all branches of the science of railroading have failed to offset restrictive regulation and changing industrial conditions. The Pennsylvania Railroad might spend $40,000,000 to add a two-track 0.2 per cent line from Harrisburg to Philadelphia, the Erie might rebuild and double-track its entire line from New York to Chicago and thus handle double the traffic with the same expenditure of train miles and yet have a hard struggle to make revenue meet expenses. Making new capital expenditures earn a profit on the investment, on most roads, appeared to be nearly impossible.

In the contemplation of this generally gloomy picture, now possibly relegated to the past by the passage of the Transportation Act, and the changed attitude of the Interstate Commerce Commission, one is apt to lose sight of the fact that there were some exceptions. There were some roads which were still operating under the law of increasing returns, that were still carrying on the best traditions of American railroading in the profitable development of new country, and thereby earning a profit on the new capital invested in their own extension and betterment. Such a road is the Chicago, Burlington & Quincy.

In the nine years, 1910-1918 inclusive, the Chicago, Bur-



The Chicago, Burlington & Quincy

lington & Quincy invested in additions and betterments to road $64,629,000; in additions and betterments to equipment, $39,169,000, and in extensions (new road), $15,600,000—a total of roughly, $119,000,000. The year 1910 is selected because it was the first one in which the Burlington in its annual reports to stockholders adopted the classification of expenses and additions and betterments prescribed by the Interstate Commerce Commission and because it was in general a prosperous year for the railroads. In 1910, the Burlington's operating income, that is the amount that it had available from the operation of the railroad property to pay interest on its debt and profits to its stockholders, was $21,724,000. In 1919, under government operation, the property earned an operating income of $27,712,000—an increase over 1910 of about $6,000,000, or a little more than 5 per cent on the additional investment of $119,000,000.

The year 1919 was not a favorable year, as is shown by the fact that the standard return of the Burlington, based on the average operating income of the three years, 1915, 1916 and 1917, was $33,361,000. The very remarkable feature, however, of the Burlington case is the fact that, notwithstanding the wage increases that took place under government operation, the natural increases in costs of labor and material, the suppression of competition in which the traffic relations, the strategic position, etc., of the Burlington, placed it at a great advantage—notwithstanding all these facts, the Burlington continued to earn the same return on its property investment made prior to 1910 that it did in 1910 and earned 5 per cent on the $119,000,000 additional investment since 1910. The funded debt of the Burlington in 1910 was $196,797,000 and it is now $168,050,000. Interest charges in 1910 were $8,506,000; they are now $6,670,000.

Just how much the increased rates will mean to this property, is beyond the scope of these comments. It should be pointed out, however, that besides the increased rates there is the factor of competition. The Burlington is in good physical shape and has an organization which should permit it to at least get its full share of all competitive business—possibly quite a bit more than its full share.

In 1919, under federal operation, total revenues amounted to $154,011,000, comparing with $144,173,000 in 1918. Operating expenses amounted to $120,493,000 in 1919, and of $112,068,000 in 1918. After taking into account other income and after the payment of rentals and interest charges, there was $26,882,000 net in 1919, and $27,358,000 in 1918. The season that the 1918 net was the larger, was because in that year the government took into its non-operating income $4,239,000* miscellaneous income as against $1,257,000 miscellaneous income in 1919. Included in miscellaneous income are lapover items from the period prior to January 1, 1918.

There was a falling off in freight tonnage carried, but this was more than made up for by the increased revenue per ton per mile and the increase in passenger business and rate received per passenger per mile. The total tonnage of revenue freight carried in 1919 was 40,235,000 tons, and the average length of haul was 297 miles. In 1918, revenue freight tonnage totaled 47,264,000 tons and the average haul was 300 miles. The average revenue per ton per mile was 8.95 mills in 1919, as against 7.38 mills in 1918. The number of passengers carried in 1919 was 22,995,000 as against 20,517,000 in 1918. The revenue per passenger per mile was 2.624 cents in 1919, and in 1918, 2.451 cents. Much of the decrease in tonnage in 1919 is accounted for by the fact that only 11,326,000 tons of bituminous coal were carried in that year as against 17,056,000 tons in 1918. Or, to state it differently, in 1919 but 28 per cent of the total tonnage carried was bituminous coal, whereas in 1918, 36 per cent of the total tonnage was coal. This change in character of traffic was reflected in a decrease in the average trainload from 669 tons, the average in 1918, to 621 tons in 1919.

The Burlington fared well as to upkeep under government operation. Many roads suffered severely from inability to get new rail. The Burlington, however, laid 256 miles of new 100 lb. and 90 lb. rail in 1918 and 266 miles in 1919. This is possibly not quite as much rail renewal as would have been done had the company been itself operating the property, but it is not bad for a western road with comparatively little mountain mileage and with a large proportion of its main line tangent. Of the total mileage owned by the Burlington, 4,488 is main line and 4,531 miles is branch and spurs.

The more one studies the Chicago, Burlington & Quincy situation, the more one is impressed with the fact that the road still is going through a process of profitable development. Possibly nothing can bring this fact out any better than to quote, even at some length, from the annual report which Hale Holden, president, makes to his stockholders:

"About 6,000 inquiries for land were received and about 20,000 booklets distributed giving information about lands. Three new books about Colorado, Wyoming and Nebraska were published by the Railroad Administration.

"One thousand four hundred and fifty-one cars of immigrants' effects were received on the McCook Alliance, Sheridan and Casper division, and a total of 4,800 families located. 2,270,000 acres of land were homesteaded in Wyoming. This should bring 2,500 new families into Wyoming. About 16,000 acres of government irrigated farms were taken on the Shoshone and Ft. Laramie projects, which means 228 new families. There was an extraordinary demand for these lands, 3,300 soldiers applying for only 80 farms on the Ft. Laramie unit. This business is largely the result of previous advertising. The demand for farms advanced land values from 50 to 100 per cent throughout the entire territory.

"Last year was the dryest year Wyoming has ever experienced. The agricultural department was asked to locate pasture and feed for hundreds of sheep and cattle men who were in need of assistance. Fifteen special feed bulletins were issued. Feed and pasture was found for 35,000 head of cattle. Fifty-two carloads of cotton seed cake were bought in Texas at an average saving of $1.00 per ton for stockmen and farmers. Forty-five cars of hay and straw were bought through this department.

"Assistance was given in the purchase of 181 head of high grade dairy cows shipped to western points. Burlington seed bulletins have brought about the transfer of 150,000 pounds of seeds for spring planting.

"A potato exhibit car was operated on lines west in March. About 4,000 farmers were put in touch with improved methods and 2,700 pounds of pure certified seed distributed in small lots to farmers. Two carloads of seed potatoes were purchased as a result. A potato bulletin was published and 5,000 copies distributed. A special campaign to interest dry land farmers in producing seed potatoes for Texas growers has been started. 6,000 bulletins and posters on silos were distributed and several meetings held. The department has record of 290 silos built; 64 elevators, mills and feed warehouses were built last year."

The following table shows the principal figures for operation under the government in 1919 and 1918:

	1919	1918
Mileage operated	9,372	9,375
Freight revenue	$107,019,788	$104,492,837
Passenger revenue	35,345,285	28,052,905
Total operating revenues	154,011,438	144,172,769
Maintenance of way and structures	21,487,643	19,996,386
Maintenance of equipment	32,422,401	29,726,987
Traffic expenses	1,064,457	1,209,796
Transportation expenses	60,170,510	56,825,203
General expenses	4,183,847	3,502,856
Total operating expenses	120,777,801	112,173,978
Taxes	8,115,392	7,990,957
Operating income	25,086,664	23,991,477

*There were offsetting miscellaneous income charges in 1918 of $2,317,000, but the difference between income and income charges still leaves a very considerable favorable (to the government) balance for 1918, as compared with 1919.

Letters to the Editor

Trainmen's Rest-Hours Away from Home

Boston, Mass.

To the Editor:

I see by your issue of January 16, page 264, that the Honorable Hoke Smith, United States senator from the State of Georgia, desires to have the Interstate Commerce Commission investigate trainmen's life at terminals away from home; meaning, I suppose, to find out what kind of lodgings and meals the men get, how much they have to pay for them, what kind of society they enjoy, and, in general, to show up in a public way just how much or how little these men improve themselves while they are loafing at a place where they have no legitimate amusement. Perhaps instead of the word "improve" I should consider the question, not of bettering conditions, but of keeping them up to par. Ordinarily the young man who is idle and does not know what to do with himself is fortunate if he keeps from running down, to say nothing of making any advance in his character.

The Honorable Hoke has a good idea. He need not be ashamed of it. His constituent who put him up to the job may not have the best of motives, but there is no question about the need of making life pleasanter for men who have to stay from eight to fifteen hours in some dreary place where they have no profitable acquaintances. The Young Men's Christian Association cannot do everything. Many men of a much higher mental order than the average brakeman have a problem to keep themselves out of mischief when away from home under unfavorable conditions.

But in a problem involving so many variable and elusive elements there is little that is new to be said; all of the good advice on the subject has already been printed a hundred times, and I am writing you only to mention two points.

1. For the reason just given, the federal government can do nothing useful in this field except, perhaps, to collate, from the geographical standpoint, some of the facts already well known locally. There is no need of any special expenditure. The Y. M. C. A. secretaries can give all of the essential facts in short order.

2. The most widespread and most fundamental need in the trainman's life is regular hours of work, and this is a matter that the government cannot handle. Only the officers of the railroads, in co-operation with the trainmen themselves, can change this unscientific, inhuman arrangement, and both of these parties at present don't care, or at least they do not seem to care.

Regular hours of work are essential to the best efficiency, especially for men like locomotive engineers, whose minds must be alert at all times, yet on freight trains these hours are made as irregular as possible. If an evil spirit should try to make them worse than they are he would fail. "First in, first out" makes the hours fluctuate constantly according to variations in volume of traffic and in the number of engines available, and when men lay off on account of sickness a third disturbing element is added. No trainman can tell, for six days in advance, whether he will be called for duty in day time or night time; for 36 hours at a stretch (with a minimum rest period) or for only 8 or 10 hours, followed by a long idle period. This irregular work makes for irregular life.

This has been the condition for many years, and the 16-hour law, while ameliorating the situation by stopping the practice of making 18-hour days, has done harm by encouraging various seductive arrangements to get two days into one, which is most unscientific.

The railroad companies—that is, the managers—ought to make hours as regular as possible, just on grounds of safety. There has been much talk, first and last, about the importance of having enginemen always come on duty fresh and rested, yet all the time every superintendent is approving schedules of work which operate directly against this. To rest the fewest hours possible and then work the longest possible is unnatural, or at least it tends powerfully to thwart the engineman's efforts to form regular, hygienic habits.

The great majority of the trainmen ought to work within a regular 12-hour day. (On passenger runs a 16-hour day is tolerable if there is a regular long rest in the middle of the work day, but I am considering more particularly the through freight trains.) A law to be reasonable and humane and effective should provide, as now, for a 16-hour maximum day, but for a 12-hour normal day. There should be something in the nature of a penalty for exceeding 12 hours. I am considering this matter wholly from the standpoint of hygiene and efficient work; I am not thinking of the rate of pay or whether overtime should begin at the tenth, the eighth or the fifth hour, and of course I am not proposing 12 hours of actual work; I am aiming to define a work-day limit. The ideal day would be from six to six, or seven to seven; but the ideal can be approached by making it eight to eight or even eleven to eleven, or four to four. The night work-day cannot be avoided, of course; and the way to correct that is to adopt the time-honored scheme of making arrangements for having the day men change off and work nights a part of the time.

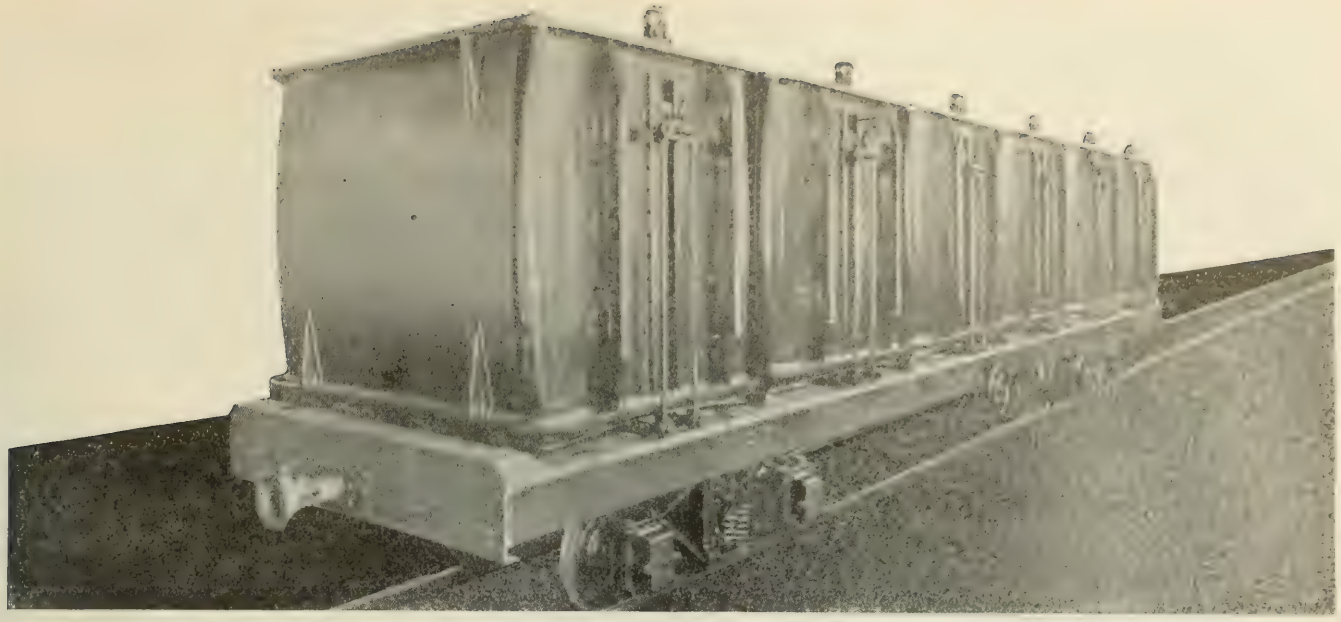
By all rational considerations the railroad manager should require some such reasonable arrangement, be held responsible for it by the state, and punish careless disregard of the rules.

But railroad managers nowadays in matters of this kind do not manage; so, as I have said, the managers and the trainmen should jointly carry out the reform. A percentage of the men would be obliged to work as now very irregular hours, but by friendly co-operation this percentage could be made very small.

Does this proposal seem like a refinement which is too idealistic to merit the consideration of the hard-headed trainmaster of the twentieth century? It is no more of a refinement than the "automatic train control" on which the government has spent thousands of dollars. If trainmen at the away-from-home terminal could have regular hours and reasonably long "lay-over" hours they would have an incentive to find and utilize comfortable quarters, and after a time would cultivate some local interest. A man who runs from A to B on a schedule from 8 a. m. to 5 p. m. ought not to attempt to get back home at the earliest possible moment; he should stay at B until 8 the next morning and then make a second day just like the first one. This is an old idea, and at the present time it would be an innovation sufficient to scare the wits out of the average trainman; if the proposal were to be read to a meeting of present-day railroad men theless, I make it.

K. Koolidge.

Nearly one billion is now the annual rate of passenger traffic on the subways and elevated lines of the Interborough Rapid Transit Company, New York City. Several extensions of the lines operated by this company have been put in operation during the past year, and the total number of passengers carried in the twelve months ending on June 30 was 955,133,110. Of these millions, 586 were carried on the subway lines and 369 on the elevated lines. A large amount of new signaling has been installed on the elevated lines during the past year, including automatic block signals on the express tracks.



Coal Handling Equipment for South African Railways at Durban Coal Station

The Container System of Freight Transportation

Interchanging from Motor Truck to Car or Boat; Reduces Freight Handling; Speeds Up Transfer

THE TRANSPORTATION SYSTEMS of the world were never more overtaxed than at the present time and industrial efficiency is seriously hampered because of inadequate shipping facilities. This is true of both railways and waterways but it applies particularly to the railroads and is largely due to the congested condition of freight terminals and transfer points. This condition is the logical result of the fact that the growth of transfer facilities has not kept pace with the increase in business nor with the development of other departments of the transportation lines. In many localities, however, the terminals would be entirely adequate if some means were provided to expedite the handling of less carload shipments and small package freight.

Transportation engineers have studied this problem for many years and a long step toward relieving the situation appears to have been made by the River and Rail Transportation Company of St. Louis, Missouri. This company has developed the Trinity Freight Unit—an interchangeable metal container—designed to carry freight and particularly to facilitate its transfer. This container is designed so that merchandise may be placed in it at a manufacturing plant, or in a warehouse, the container locked and sealed, and then transported by motor truck to a railroad, or to a waterway, where the container and its contents are transferred to a flat car, or to a boat, without rehandling the materials. This not only facilitates the transfer of merchandise, but as the container is both weather-proof and thief-proof, the losses frequently incurred from those causes, are eliminated. In addition, because of the manner in which the freight is packed in the container, and the fact that the freight itself is handled only at the shipping point and at its destination, much of the damage occurring in train movement when goods are loaded loosely in a car or when less carload shipments are transferred at junction points will be prevented.

The complete unit system includes a specially constructed flat car. This car, however, differs from those now in use on the railroads of the United States only in providing a means of clamping the containers fast to the platform of the car. Estimates, based on present prices, place the cost of equipping a car with five 10-ton units at $1,000. A flat car having these special features may be built for the same cost as for building an ordinary flat car, or existing flat cars may be altered to carry the containers at an approximate cost of $250.

Containers made in a number of different ways are provided for carrying various kinds of material—with side opening doors for package freight; with top doors and drop bottom for loose bulk freight; and other types for refrigerator service and for carrying liquids.

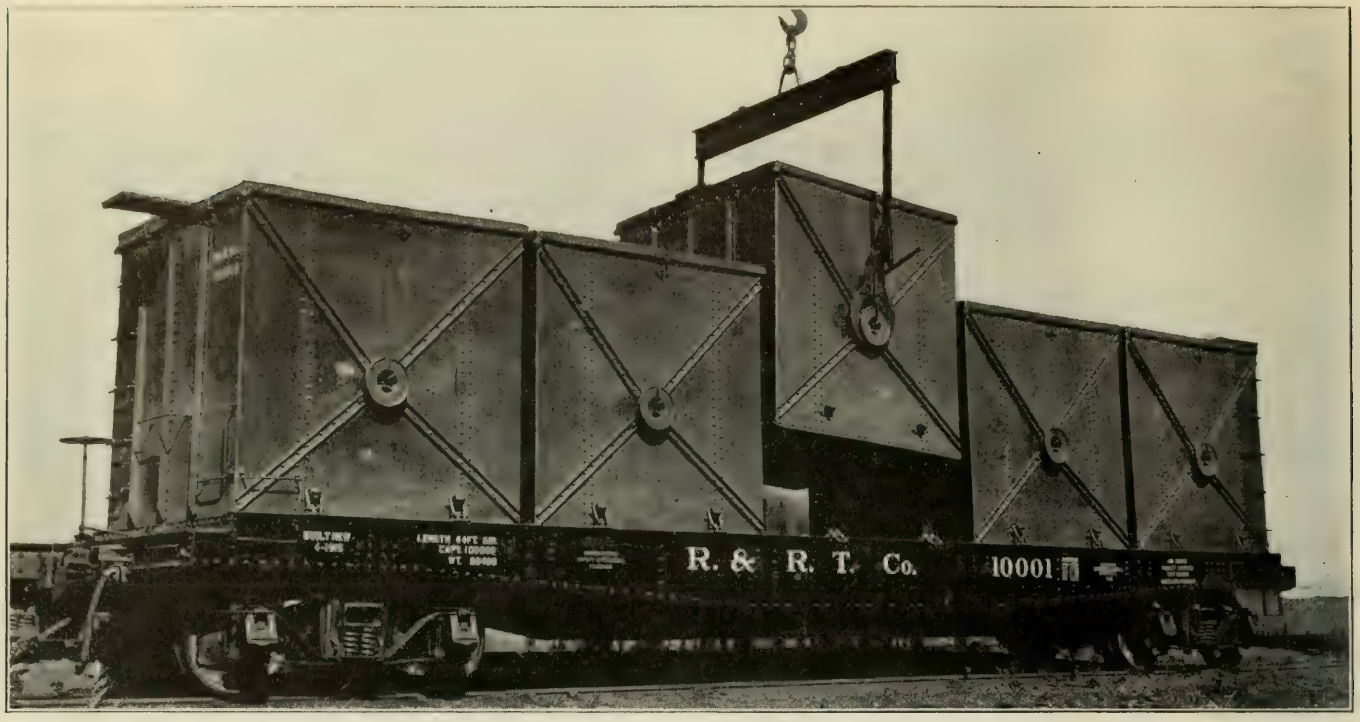
The units are made in capacities of 2-½ tons and 10 tons each and are proportioned so that five 10-ton units, or twenty 2-½ ton units, or several units of both capacities, and for any of the different classes of freight, can be carried on a flat car of 50 tons capacity. They are rectangular in form and are substantially constructed of steel plate rigidly reinforced with angle irons to withstand the strains due to the weight of the contents and the transferring of the unit from one vehicle to another.

Those containers designed for package freight are provided with side opening doors on two sides, through which they are loaded or unloaded. This type of container is fitted with steel cables, attached to lugs at the top corners, by means of which it is lifted and placed on, or taken off of, the truck, car, or boat. To lift the entire unit a crane, derrick, or other lifting device is required and such equipment generally is installed in large freight houses or yards, and at terminals. When such equipment is not available, a portable crane of the motor type may be used. It, therefore, is generally possible to handle the loaded container, but when, at small manufacturing plants, or at outlying freight houses, this can not be done, due to lack of facilities, the car on which the containers are placed may be run alongside a

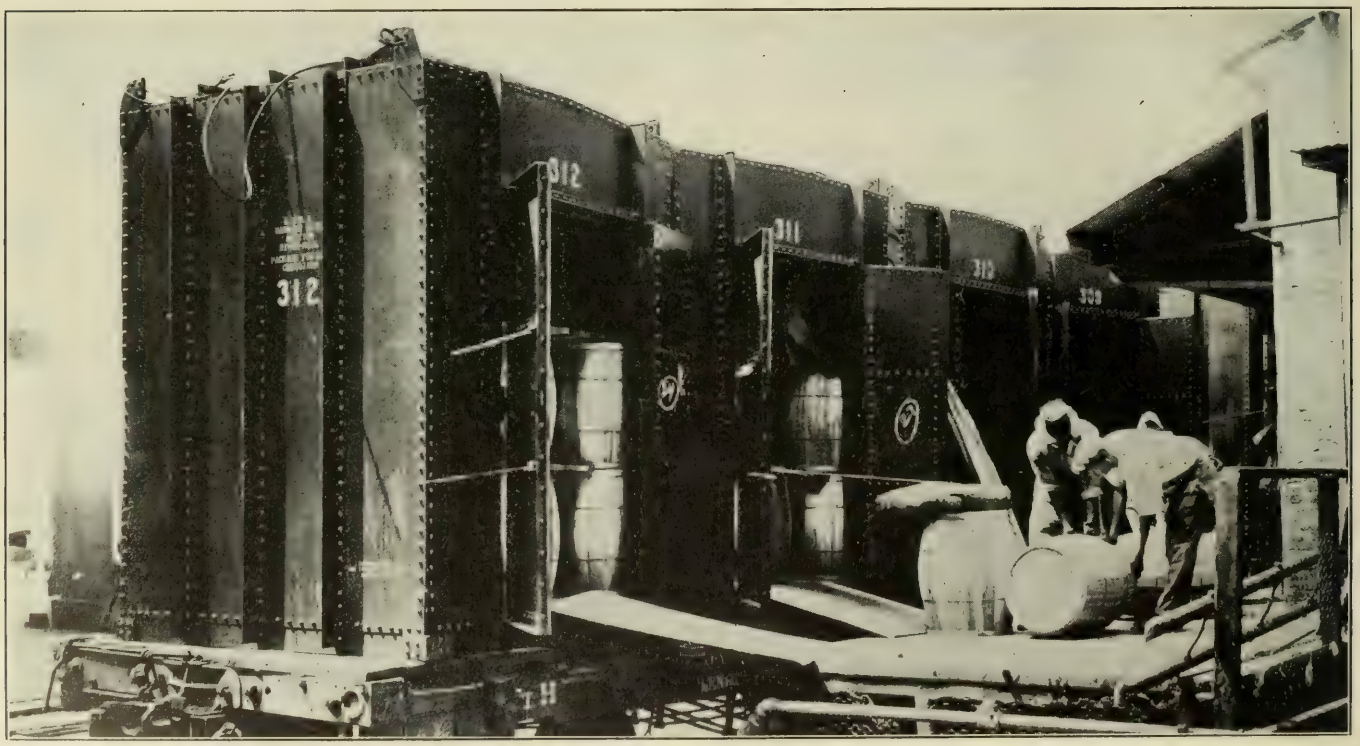
platform and the freight loaded in the same manner as in an ordinary box car.

The United States Railroad Administration adopted this system to facilitate water-rail shipments of war supplies.

In later improved designs, containers for handling loose bulk materials were equipped with ladders, handholds and running boards in the same manner as a box car. This type of container is constructed with top doors, through



Trinity Freight Units—Loose Bulk-Freight Type—on a 50-Ton Capacity Unit-System Flat Car. Method of Handling at Large Terminals



Trinity Freight Units—Package-Freight Type—on an Ordinary Flat Car. Method of Loading at a Small Station Where No Handling Equipment Is Available

Twenty of the 10-ton package units were built and gave satisfactory service in the New Orleans district in handling package freight.

which the freight is loaded, and sometimes, with a drop bottom door for discharging the load. It may be loaded by hand or by means of an automatic bucket, or by other

devices for handling loose materials. After loading the container the doors are closed—and locked if desired—and the entire load lifted by means of specially designed lifting links suspended from a spreader bar. These links engage in slotted trunnions on the sides of the container keeping it in an upright position by means of a latch on the links. When the container is in the desired location, the link latch can be released and the container overturned, or the drop bottom doors can be released—when the container is of that type—and the load discharged.

A similar means of handling loose bulk material has been in use for some time past on the South African Railways at the Durban Coal Station.

This equipment was built by the Canadian Car & Foundry Company. It consists of five rectangular containers or buckets, of 10 to 12 tons capacity, which are carried on a flat car designed especially for the service. The buckets are very similar in construction to the loose bulk freight container of the Trinity Freight Unit system. They have a strongly reinforced steel plate shell and may be handled by means of a hoisting tackle or may be rolled on or off of the car.

There are advantages in this method of handling large quantities of coal or similar material: The use of buckets of such large capacity makes it possible to move loose material in compact packages; it eliminates most of the hand labor necessary in shipping such material loosely in a gondola car; and, where coal pockets and hopper cars are not available, provides an efficient means for handling coal in railroad or industrial work.

This system of transportation is flexible, as any or all of the various classes of freight may be transported in small quantities on the same car. This gives many of the advantages of carload shipments and none of the disadvantages of the present method of shipping less carload freight.

It will unify the highways, the water ways and the railways and will deliver freight from origin to destination without rehandling, regardless of distance or number of transfers. It will increase the transportation mileage of truck equipment; permit the loading of freight before the arrival of the car or boat and cars may be unloaded and released in a very short time as compared with other methods of transfer. The great decrease in the time required for loading or unloading will increase the capacity of terminals without any outlay except for the lifting apparatus. Its use should reduce joint river and rail rates and not only speed up river traffic but relieve congestion at ports and terminals.

Estimates based on the performance of the Trinity Freight Unit in government service indicate that the handling of freight is not only greatly expedited by its use but can be handled at from 300 to 400 per cent less cost than with any of the present methods.

The apparent advantages of this container system of handling freight and the possibilities it offers for relief to the overtaxed transportation systems warrants a careful study of its use.

The difficulties in the way of its general adoption are not insurmountable and may be overcome by the gradual introduction of the interchangeable units. Its progress will be watched with interest by the transportation world.

For a "Full Freight Car."—Manufacturers of the Long Island district have decided to adopt and follow to the largest possible extent the "full car" plan. At a conference of half a dozen of the largest manufacturers in the district it was decided that the smaller concerns would be solicited to join and to co-operate in putting the plan into operation in Queens. This plan means that every car of freight that is shipped out of the district will be loaded to capacity. If this is followed it will greatly reduce the shortage in cars.—*Brooklyn Eagle.*

Lackawanna Proposes a Stock Distribution

The Delaware, Lackawana & Western has asked permission of the Interstate Commerce Commission to increase the amount of its stock outstanding. The application itself has not been made public but the lawyers' brief accompanying the petition was and is in part as follows:

"The organizers of our company were interested in anthracite coal properties and most of its lines of railroad were constructed for the purpose of transporting such coal to market.

"Prior to 1900, its interests were confined to the operation of its coal mines, and to the transportation and sale of its coal. It did not seek and was not equipped to handle, to the satisfaction of the public, either other freight or passenger business. During the past 20 years the railroads of the company have been developed for transportation purposes generally. New rails, ballast and ties, new bridges, stations and shops, signals and interlocking, branch lines, yards, sidetracks, switches and terminal facilities, have all been provided, together with modern equipment for both passengers and freight.

"During the 11 years preceding Federal control the company expended an average sum of $2,000,000 per year in betterments and some $20,000,000 in new construction.

"It is now equipped to handle both freight and passenger business as efficiently and economically as its competitors and with at least equal satisfaction to the shipping and traveling public.

Corporate History

"Our company is a Pennsylvania corporation and has had the statutory powers prescribed by various special acts of the legislatures of Pennsylvania, New Jersey and New York. Such acts authorized an increase in the capital stock of the company for the sole purpose of new construction of its owned lines in the State of Pennsylvania. To obtain general statutory authority to increase its stock it was necessary, under the laws of Pennsylvania, for the company to formally accept its constitution. A section of such constitution, however, prohibited a railroad company from engaging in the business of producing coal.

"Partly because of the history of the company, partly because of a fear that if it should divest itself of its coal properties the same might be acquired by competitive interests and the coal tonnage diverted from its lines, the board of managers have been unwilling in the past to segregate its coal properties. The result has been that there has been no increase in the amount of its capital stock since the year 1876, when it amounted to $26,200,000, except on two occasions.

In 1909, on merger and exchange, some $4,000,000 of stock was distributed as a 15 per cent stock dividend. In 1914 the stockholders subscribed for $12,000,000 of new stock, for the construction of a 30-mile cut off line of new railroad in the State of Pennsylvania.

"One of its merged lines was subject to $320,000 of bonds, $102,600 of which is outstanding. Otherwise the company operates approximately 960 miles of road either owned or leased in perpetuity through a densely populated region, and including second, third and fourth tracks and sidings, has about 2,700 miles of track.

"There is outstanding in the hands of the public, in addition to its own present capital stock of $42,220,550, $44,222,600, par value in stock of its leased lines and $53,800,257, par value in bonds. Of the latter amount $6,537,000 represents par value of bonds of its ferry companies, so that the total outstanding railroad obligations,

including stocks and bonds of its owned and leased railroad companies, aggregate $153,700,407 par value.

"In the data prepared for the Bureau of Economics in connection with the recent increased rate case, we showed a total investment in road and equipment to December 31st, 1919, including materials and supplies, of $244,272,965. Of this amount some $21,000,000 represented investments actually made, but not entered as such on our books because made prior to July 1st, 1907, when, under the existing practice of the company, the same was charged to its operating expenses or to income account. On the basis of taking property investment as value, under the Transportation Act, we would be permitted to retain $14,640,000 of our net railway income. If to this we add additional income not subject to the act, of $401,710, and subtract rentals (*i. e.*, dividends on stock and interest on bonds of leased lines), of $5,084,552, we have a balance of $9,957,158, which would be sufficient to pay 6 per cent on $165,952,633 of capital stock; 7 per cent on $142,245,114; 8 per cent on $124,464,475; 9 per cent on $110,635,088; 10 per cent on $99,571,580.

"Compilations which we have just completed on recent business, adjusted to include the Wage Board and the rate advances, would indicate a considerable increase in net revenue.

"Thirty per cent. upon our present capital stock of $42,000,000 would be $12,600,000 per year. This amount we will earn net from our railroad properties after payment of rentals in prosperous years, in my judgment.

Purposes of the Application

"From the foregoing it is apparent that the financial policies of the company, as to capitalization and otherwise, have been controlled by its ownership of coal mines and its charter restrictions growing out of such ownership. But for this relationship to coal properties and the consequent legal restrictions, its financial policies and capitalization would have been entirely different.

"Under these circumstances, if we are now to change fundamentally the plan and purpose of the company, divest it of its coal properties and convert it into a transportation industry alone, we should readjust its financial structure so as to make it conform now to what it would undoubtedly have been except for the conditions which are now to be changed.

"Manifestly there can otherwise be no justification for accepting the disadvantages of disposing of our coal properties. To establish for the company a normal and adequate financial structure adapted to the company's changed conditions and its expected growth and expansion as a transportation company only is an essential part of our plan.

"Our board of managers have concluded that the company can now safely divest itself of its coal properties, and, if the commission assents, are ready to accept the constitution of Pennsylvania, whereupon the company will be authorized to increase its capital stock as may be proper. In their opinion, existing public sentiment, as expressed in legislation, both in Congress and in the State of Pennsylvania, and by the Courts of both the United States and the State of Pennsylvania, favors the course so determined upon and that a common carrier largely engaged in transportation of passengers and freight should not be engaged in any other business.

"A separation of its coal properties will moreover enable the management of the company to devote itself exclusively to the development and operation of its railroad properties.

"Upon such separation we will have the same statutory powers as have other corporations to increase our capital stock.

"It is recognized that the stockholders have been justly entitled to the net earnings of the company during past years.

"Its managers have withheld a large part of such earnings and applied the same to additions and betterments to its railroads and to investments which would strengthen it financially. The right of its stockholders to have stock issued to them in lieu of dividends, where their earnings were so used for capital purposes, is clear, but could not be accorded because of statutory restrictions. Now that such restrictions are to be removed we desire to immediately give to our stockholders what they are fairly entitled to. We believe our conservative methods were advisable in any case under the competitive and other conditions prevailing in the past. We now feel that the stockholders should be encouraged in every posible way in order that they may continue and extend their investments in the stock of our company. We ask to be permitted to capitalize our surplus and distribute the same as a stock dividend. The proposed issue of stock would be most helpful for such purpose. The stockholders would feel that their equities were being recognized and the managers would feel that their course had not resulted in loss to the stockholders.

"It is their view moreover that our small capital and high rate of dividend, which doubtless should be increased in the near future, creates an erroneous impression with the public that its rates are excessive. The public does not know that the company has more than twice the amount of its capital stock in surplus earnings which its stockholders have been good enough to permit it to retain. Nor does it know that the total investment in its owned and leased properties devoted to public use is about double the aggregate par value of the outstanding stocks and bonds.

"If the capital stock of the company should be increased as requested, so that its dividend rate be normal and represent more nearly the rate of return which the stockholder is obtaining upon the moneys invested, no such view will obtain.

"The public also contrasts our small capital and large earnings with the capital and earnings of other carriers, resulting in erroneous inferences both as to our earning in excess of a proper return for a public carrier and in excess of the earnings of other carriers.

"It will be observed that the present application is not made in contemplation of or in connection with any new financing or new construction or other matter in which there is any public interest. In our judgment, the Commission would be entirely justified in holding, with respect to this application, that the requirement of the act that the proposed increase shall be shown to be compatible to the public interest does not apply. In other words, that such requirement is limited to a case where a public service company proposes to obtain money from the public, directly or indirectly. The capitalization of our surplus and the giving to our stockholders of three certificates in place of one, to represent their respective same proportionate interest in the assets of our company, is a matter in which, in our judgment, the stockholders of the company solely are interested, as the public can in no way be affected thereby."

PASSENGERS WRECK SLOW TRAIN.—Press despatches from Buenos Ayres report that a train on the Southern Railway (presumably Buenos Ayres Great Southern), which usually makes the run from Talleres in 18 minutes, but was delayed recently for an hour and a half, finally arrived at the Buenos Ayres terminal with two cars missing and the furnishings of the others completely wrecked and their windows broken. The damage expressed the displeasure of the passengers over the delay. The coaches missing had been set on fire. After venting their anger in this fashion, most of the commuters got off and walked till they reached the trolley and taxicab zone. The railroad company, hearing of the trouble by telephone, called police reserves to the terminal to protect their offices against the ire of the remaining passengers and those of other delayed trains.

Traveling Engineers Hold Annual Meeting

Best Methods of Handling Freight Trains, Draft Appliances and Other Subjects Were Discussed

THE TWENTY-EIGHTH ANNUAL CONVENTION of the Traveling Engineers' Association was held at the Hotel Sherman, Chicago, September 14 to 17, inclusive. After the formal coming exercises President G. A. Kell (Grand Trunk) addressed the association in part as follows:

President Kell's Address

During the past few years, particularly during the great war, special efforts were made by every man employed in the operation of railroads to conserve coal in particular and to operate the railroads at the lowest possible expense in general. It is just as important today to save coal and supplies as it ever has been. There should be no relaxation on our part in any way, but every effort should be put forth to get more skillful operation of the locomotives on the road with increased efficiency in handling trains at the lowest possible cost of operation.

The drastic labor conditions that prevail throughout the country are cause for great concern. There is social, racial, and industrial unrest everywhere, brought about to a great extent by the spirit and practice of profiteering and by the high cost of living. Strikes and tie-ups have taken place; in some cases due to over-zealous self-appointed labor leaders more than to anything else. Traveling engineers, whose conservatism and loyalty have never been questioned, who are scattered throughout the country and who come in contact with a great many railroad employees, can do a great deal towards influencing the rank and file of the men toward taking the right view of the present critical conditions. If ever there was a time in the world's history when calm and cool judgment should be exercised, now is the time.

Best Methods of Handling Freight Trains

In order to handle freight trains efficiently and economically, it will be necessary to take into consideration the locomotive which hauls the train, as well as all other equipment used in doing the work; the locomotive must be put in the best possible condition before leaving the shop, so that it can handle the train efficiently and economically. With the eight-hour day and time and half time for overtime, the locomotive must haul the allotted tonnage over the division in as short a time as posible. This cannot be done with a 50 per cent engine.

Condition of Cars

Cars should be in good condition before being sent out in a train to avoid delays due to accidents on the road. In order to do this, cars should be properly inspected and repairs made, or the cars switched out. It is necessary to have receiving yards laid out so that the work can be done quickly, and facilities should be provided to take care of all the details of inspection at one time.

All trains when stopped in receiving yards should have couplers stretched from engine to caboose; this can be done by having some hand brakes set on the rear of the train and have the engine pull the slack out. It is better to delay a train in the yard for inspection and repairs than it is to have it delayed out on the road. While in the yard only one track is blocked and other trains can pass on some other track, but on the road, when stopped by an accident, other following and opposing trains, in charge of crews making overtime, are blocked. When a train is delayed in the yard there is no crew time to be considered.

The same can be said of hot boxes. With the long and heavy trains that are being handled today, when you have to set out a hot box about 75 or 90 cars from the engine, it takes time and very often results in damage to other cars in the train.

All trains when stopped in the yards before the engine is cut loose should have the air brakes applied with a full service application, so that the air inspectors can go over the train and mark up the piston travel and defective brakes or brakes that are cut out, so that cars can be given the proper attention before being sent out of the dispatching yard. If the defect is such that the car must be shopped, it can be switched out while switching the train and then it will not have to be done after the train is made up, which very often delays the crew at the start of the trip and causes overtime.

All despatching yards should be provided with a yard air brake testing plant, and as soon as the train is switched the air should be coupled up from the yard plant and brake pipe leakage taken up, piston travel adjusted and retaining valves tested.

When the train and engine crews arrive, all that they will have to do is to couple the engine to the train and charge the brake pipe to the maximum pressure carried and test to comply with the rules in effect on the road. It has been found when trains have been worked properly by air men, all that is necessary for the crew to do is to know that the brakes will apply and relase at the front and rear end of the train before leaving the yard.

Handling Freight Trains on Level Divisions

The trains on level divisions should consist of all through loads as much as possible, and the train should consist of as much tonnage as the locomotive can handle and make an average speed of at least 14 miles an hour. If it is necessary to fill out a train with cars for intermediate points or to give the train local cars, they should be switched on the front part of the train in station order, so that only the cars to be set off will have to be handled.

With the long heavy trains that are being handled at the present time, after a train has started out of the yard it should be kept moving, for the stopping and starting is what causes delays and damage to equipment.

The train should not be stopped for coal over the division and should be stopped for water as few times as is possible. In making stops for coal and water, the engineer should be very careful not to make spot stops with a freight train.

All long and heavy freight trains should be stopped with one application of the air brakes and the engineer should endeavor to keep the slack bunched from the front end. This can best be done by making the initial reduction just sufficiently heavy to run the slack in and follow up with light reductions until the train is stopped. In order to keep the front end from running out, the engineer should make a reduction of about eight or ten pounds about 60 ft. before coming to a full stop. This is to keep the air brakes applying stronger on the front end to hold the slack in and leave the brake applied on the train when the engine is cut off. Engines so equipped give splendid performances both from capacity and fuel economy standpoints.

In starting a train with one engine, the engineer must be very careful until he has pulled all of the slack out of the draw-bars before fully opening the throttle. There is about 9 to 12 in. of slack between the cars, and this will increase

on the front end in starting, due to the compression of the draw-bar springs and the dead weight of the cars that have not been started. The engine will move about 60 to 70 ft. on a 70 to 75-car train before the rear end moves on the level and more on an ascending grade.

In starting a two-engine train on level roads, the lead engine only should start to pull and take up all the slack that it can. Then the second engine should start to pull by opening the throttle gradually until the entire train is started, then increase the throttle opening as may be required. The train should be moved a a slow rate of speed for a distance of just one train length, so that the trainmen can look over the train and in case any brakes are sticking they can be released. Very often it is possible to locate a defective coupler in the train when it would not be noticed at any other time, except when the train is stretched out so far. This will occur at times when couplers are badly worn and the draft spring broken or worn.

Despatching Trains From Yards

Where the yard is equipped with an air-brake testing plant, see that the brake pipe leakage is below standard allowance and all other work done before the train is ordered to leave the ward, so that when the road engine arrives in the yard it can be coupled onto the train at once and make the road test.

The success of the trip greatly depends on the start out of the yard. The importance of having the train ready to move by the time it is called is readily seen, for one hour delay at the start means overtime on the eight-hour day and 12½ mile an hour basis.

The train despatcher must not stop trains unnecessarily, for an avoidable stop made by a heavy freight train means a loss of time in stopping, then getting the flagman in and starting, and very often the train is parted in trying to start, due to a broken coupler or coupler slipping by which might not have occurred if the train had not been stopped. There is also an excessive amount of fuel consumed by the extra stops and in trying to make up some of the time lost by the stops.

There is no economy in loading a freight train so that it cannot get over the division without making overtime.

Handling Freight Trains on Mountain Divisions

On divisions where the grades are heavy and it is the practice of using one or more helpers on the ascending grades, it is important that no weak cars be used in heavy tonnage freight trains, if possible to avoid it. With the Mallet and Santa Fe type locomotives having tractive efforts of from 70,000 lb. to 105,000 lb. cars with weak end and center sills or weak couplers are very dangerous to handle in trains of this kind. There should be instructions given to all yard masters and car inspectors that cars that appear to be old or of weak construction should be switched out of heavy trains where helpers are used and placed in a train to be run without a helper or a train hauling light tonnage.

It has been demonstrated from time to time that it is not necessary to use hand brakes on freight trains on descending grades any more than it is on passenger trains, when the equipment is properly maintained. With the ordinary air brake, if properly maintained and manipulated, it is possible to handle freight trains on heavy descending grades with the air brakes with a greater degree of safety than with the use of hand brakes, because it is possible to do the braking more uniformly throughout the train and to maintain a more uniform rate of speed, which is very important, as the wheel temperature is less with a low and uniform speed than with the use of hand brakes.

According to the information obtained from the different roads, the permissible brake pipe leakage on trains of 30 to 100 cars varies from five to eight pounds per minute, which is about all the air feed valve will take care of and about the limit of leakage with which an engineer can do a good job of braking. It has been found by actual tests on heavy mountain grades that it is very difficult to release the brakes on the rear end of 75 to 90 cars with a brake pipe leakage of over seven pounds, and if the brakes are not released on the rear end after each application the tendency for jerking the train and excessive heating of wheels is greater.

Some roads are handling trains on level tracks as well as on heavy mountain grades with electric power, and some other roads are figuring very strongly on electrification. While this method of operation applies only to a few roads, we are of the opinion that more roads will take up the matter of electrification in the near future from the fact that with the electric locomotive the terminal delays can be reduced considerably, as well as delays in stopping for water and coal, and it has been demonstrated that an electric locomotive can be run over three divisions of over 100 miles each, by changing crews, without any delays to the locomotive. This would indicate a high point of efficiency from the fact that it could be a no-stop operation from one end of the division to the other. This would eliminate the pulling out of draw-bars and damage to equipment due to starting and stopping. It would also reduce the cost of brake shoes and other brake equipment.

On heavy grades the speed of the train is controlled while descending, by regeneration, but it must be understood that by regeneration the speed of the train is only held under control and it will be necessary to use the air brakes to stop the train.

The report was signed by Frederick Kerby (B. & O.), Chairman; M. O. Davis (A., T. & S. F.), M. A. Daly (Nor. Pac.), P. G. Leonard (G. H. & S. A.) and Malon Laquay (Grand Trunk).

Discussion

The discussion dealt almost entirely with the question of how best to make water stops and with air-brake conditions. The practice of stopping short of the water crane, then moving the train up slowly to the final stop, was favorably commented on by several of the members. This practice, as opposed to the more common requirement that the train be stopped and the engine to cut off before moving to the water crane, results in a saving of time ranging all the way from 20 minutes to 1 hour and 30 minutes, depending upon the amount of brake pipe leakage which must be overcome in recharging the train after the locomotive has been coupled on. Furthermore, the experience of some of those speaking has been that a reduction in the amount of damage to draft gears has been effected by the adoption of this practice, because much of the damage is caused by brakes sticking following the recharge and release after a water stop. It was evident, however, that the roads where this practice has been adopted are comparatively level, where under which condition 3,000-ton to 4,000-ton trains can be handled successfully by this method..

What Are the Most Suitable Draft Appliances?

The most suitable draft appliance is that which will produce the required draft with least back pressure under the varying conditions of locomotive operation. That such draft be developed uniformly is greatly to be desired in order that cinder losses may be reduced and the mixture and chemical union of gases in the fire-box improved, and also because the peaks or maximum efforts of intermittent draft are largely responsible for the plugging of flues; the loss in superheat caused by obstruction to the flow of gases in the superheater tubes frequently being as high as 32 per cent.

Development of draft apparatus which gives promise of approximately complying with these requirements has been

under way during the past year or two and should be encouraged; but for the immediate need we must confine our efforts to the fixtures at hand or easily obtainable. The required draft in many instances is less than that which will develop the maximum evaporation. Engines in switching service or regularly in light work of other nature may often be run successfully with draft appliances which demand less back pressure than would be required if the same engines were engaged in more severe continuous work.

While the cinder losses will average approximately 6 per cent of the fuel burned, these losses frequently increase to from 18 per cent to 23 per cent during the period of maximum effort. However, the amount of fuel used per unit of work done decreases rapidly and consistently as the tonnage per train increases toward a reasonable maximum. Therefore, in general, the draft appliance should be so constructed as to provide for satisfactory performance at maximum capacity of each locomotive, and fortunately such arrangement will be found as generally satisfactory as is possible with present apparatus during periods of lighter work.

Section III Committee Report

Results of a series of nozzle tests were recorded briefly in the report of the Committee on Fuel Economy and Smoke Prevention at the June convention of the American Railroad Association, Section III, Mechanical.*

This committee summarized the results of these tests and its conclusions as follows:

"They indicate that under the conditions peculiar to this test with a nozzle having four internal projections it was possible to obtain a higher equivalent evaporation per hour with less back pressure than with a circular or rectangular nozzle having approximately the same net area.

"Your committee does not consider the information now available sufficiently complete to justify positive conclusions as to the most efficient shape of nozzle, and is only in position to report that the circular form of nozzle does not result in the highest vacuum and the least back pressure. As to what form will produce those conditions it is impossible to say without an extended investigation involving a long series of test plant observations.

"It seems evident, however, that all preconceived ideas of exhaust jet action must be revised to agree with the apparent fact that the best results will be obtained when the jet contour is interrupted, as is the case both with the internal projection nozzle and with the one having one axis longer than the other."

The increased draft obtainable by use of the four internal projection nozzle is said to be due to the increase in gas entraining capacity which results from breaking up the continuity of outside of exhaust steam column, thus increasing the surface of the steam jet with which the smoke-box gases may come in contact and promoting the intermingling of these gases with the steam jet.

Indicator cards taken during tests with the internal projection nozzle illustrate clearly that at low temperature the steam does not flow so rapidly as at higher superheat, that with low superheat there is higher back pressure and also a lower initial cylinder pressure even when the steam chest pressure is higher for low superheat than for high superheat. This increase in rapidity of flow due to superheat accounts for the "snappier" exhaust of the superheated locomotive; and as the amount of draft depends, among other conditions, on the length as well as the speed of exhaust jet, it might appear that a reduction of nozzle size should accompany the superheating of a locomotive. However, this has not been found necessary in many instances and a conclusion that draft appliance details, including size of nozzle tip, when most suitable for locomotive using saturated steam, should not be changed when superheating apparatus is installed, is sustained by carefully conducted tests at the Pennsylvania Railroad testing plant at Altoona. We are justified, therefore, in using smaller nozzles with superheated steam than were most suitable for saturated steam only as a last resort.

* See the *Daily Railway Age* for June 11, 1920, page 1705.

The Basket Bridge Nozzle

Attention is also invited to the nozzle tip arrangement in use on a large number of New York Central locomotives which consists of the usual circular nozzle provided with a so-called "basket bridge," consisting of two splitters set at right angles with each other with the point of intersection directly over the center of nozzle, the splitters being arched to 1¼ in. above the tip at the center. This device is giving very satisfactory service, the use of splitters so arranged having made it possible to increase the effective nozzle opening very materially above the required opening of the plain circular nozzle tip. Engines so equipped give splendid performance, both from capacity and fuel economy standpoints.

N. & W. Tests

In the June, July and August, 1918, issues of the *Railway Mechanical Engineer,* there appears a series of articles written by H. W. Coddington, engineer of tests of the Norfolk & Western, giving accurate and valuable information obtained from extensive tests under most carefully arranged conditions in road service. The experiments indicated clearly the possibilities for improvement in draft and locomotive performance by variation from the standard practices and appliances which have been in use for years. These tests also show conclusively that by increasing the external surface of the exhaust column, thus affording greater opportunities for contact of this steam column with the front end gases, that material improvement in draft and locomotive performance can be obtained.

The results recorded were obtained during tests with Norfolk & Western engine No. 100, class "K-1" 4-8-2 type. The original nozzle was 7 in. in diameter with 9⅜-in. splitter, and a free area of 35.86 sq. in., 18-in. stack and 26½-in. inside extension. As a result of experiments the stack was changed to one of 24-in. in diameter, with 26½-in. extension and 14-in. diameter annualar waffle iron nozzle, with effective area of 49.35 sq. in. The steaming capacity was improved; exhaust pressure with the circular nozzle and splitter was 10.94 lb., with the waffle iron nozzle, 4.54 lb.; front end draft with the circular nozzle and splitter was 8.91 and with the waffle iron nozzle 8.63 in. of water, and the locomotive under the decrease in back pressure developed approximately 140 additional horsepower. Using the very conservative figure of 5½ lb. of coal per indicated horsepower per hour, this shows a possible saving of 770 lb. of coal per hour, while the locomotive is working at the rate maintained during the test runs.

Mr. Coddington very recently advised us that the front end arrangement described has been applied to the U. S. R. A. Mountain type locomotives, N. & W., class K-2, with as great resultant benefit as was observed in the K-1 class.

The Theory of Draft Action

Supplementing the conclusions on this subject, as stated by the Committee on Fuel Economy and Smoke Prevention, it seems that any change from the plain circular periphery of the steam jet increases its efficiency in producing draft; one reason for this is that a circle being the shortest possible boundary for any given area, if the cross section of the steam column between the nozzle and stack is circular, the column will have less surface area than it would have if its cross section was any other form. The gas "entrainment" theory is supported by all investigation. However, during the Norfolk & Western tests it was found that the best results were obtained when the exhaust steam column struck the

sides of the stack 38 in. or 70 per cent of the length of stack, including the extension, below its top. Every traveling engineer knows that when the exhaust does not essentially fill the stack at the top there is a down draft at the locality not filled and therefore both the so-called "entrainment" and piston action assumptions must be considered when studying this most interesting and important matter.

The expulsion of air and gases from the smoke-box by means of a steam jet directed up the stack is accomplished by the steam jet, either blower or exhaust, forcing (not pulling) air and gases through the stack. A steady flow of steam out the exhaust nozzle or blower will produce draft because the outside surface of the expanding column is broken up irregularly into numerous sections or jets which engulf within the column as a whole and pocket against the sides of stack many small portions of the gases in smoke-box or stack, and thus by pushing innumerable small quantities of smoke-box gases out the stack in this manner reduce the smoke-box pressure.

The Multiple Nozzle and Stack

It appears that the Norfolk & Western has gone farther in the right direction than the other experimenters, at least in so far as applications in service is concerned, but in stack investigation they varied only the diameter of the stack and extension and the length of stack extension inside the smoke-box, and they got best results from the longest extension used. Developments made by William Elmer of the Pennsylvania are therefore of special interest. He found by a long series of tests that best results in draft production, by means of a steam jet issuing from a circular nozzle tip, were obtained when the diameter of conduit or stack was 3.1 times the diameter of nozzle and when the length of conduit or stack is from five to six times its diameter and when the jet first filled the conduit at about the center of the conduit. Obviously, it is impracticable to provide a modern locomotive with a stack from 10 to 12 ft. long, but by exhausting through several nozzle tips suitably placed below a stack containing a nest of conduits he was able to accomplish a working basis for the desired dimensions within clearance limits and to increase the effective nozzle opening 30 per cent as compared with that of the largest single circular nozzle which it had been possible to use. The multiple nozzle and stack also materially increase the draft.

It does not require exhaustive thought to determine that a stack can be too short and that a stack can be so long that friction of gases and steam within it will detract from the benefits derived by having just enough stack length. The multiple nozzle and stack design provides a method for equipping modern locomotives with stacks of sufficient diameter and length and it also provides for an extensive increase in the surface of the exhaust steam column between the nozzle tip and stack as well as for a very material increase in effective nozzle opening.

Some most interesting experiments conducted by the mechanical department of the Big Four during the past year indicate the advisability of maintaining the same average exhaust pressure while a locomotive is operating at maximum capacity during the entire range of speeds, and they have equipped at least one locomotive with apparatus which automatically adjusts the cut-off so as to maintain a predetermined exhaust pressure at all speeds. It is not the intention to discuss this invention, but we urge the installation of back pressure gages on all road locomotives, as knowledge of this pressure will not only aid greatly in improving draft conditions and apparatus, but will enable the engineers to operate locomotives more efficiently.

Distribution of Draft Through the Grates

Even a most efficiently developed draft in the smoke-box will only partially obviate some of the present losses and inefficiency, unless that draft is most advantageously distributed throughout the fire-bed. Use of the so-called checkered arch appeared to be a move in the right direction, but difficulties have arisen in connection with its general use. The standard arch, as usually applied, causes the draft to be applied most severely through the back grates and, to avoid the ill effects of excess air through this section of the fire-bed, firemen have resorted to excessively heavy firing on the back gates. We have decried such practice as wasteful—perhaps without entire justification under the existing unequal distribution of draft.

Draft deflector plates below the grates or variations in air inlet openings through the grates so as to equalize or properly distribute the draft through the fire, seem to be required when the standard arch is used, but because of the difficulties which would be encountered in following either of these suggestions, suitable changes in the location of arch bricks or the reduction of air openings through the rear grates are recommended—preferably the former, for we fully appreciate that the best performance demands the maximum possible opportunity for air to pass through the grates.

The report was signed by H. C. Woodbridge (Loco. Stoker Co.), chairman; W. G. Tawse (Loco. Superheater Co.), W. M. Cooper (Grand Trunk), H. L. Harvey (C. & N. W.) and T. L. Kenney (Big Four).

Discussion

Referring to the use of the checkered arch several members were disposed to question the statement that the standard arch as usually applied is the cause of the apparently heavier draft at the back end of the grate. In some cases this was considered to be due to the tendency for a heavier fire to accumulate at the front of sloping grates, thus leaving less resistance to flow of air through the rear portion of the grate. Another reason suggested was that the openings at the back end of the ash pan through which the grate rigging passes increased the air admission under the rear grate sufficiently to reduce the resistance to the flow of air through the grates at this point. There was some difference of opinion as to the advantage of the checkered grate, although in one case, where comparative tests had been made in which the coal was measured, the coal consumption had been found to be less with the checkered arch than with the standard arch. It had also been found of advantage in reducing smoke on switch engines in a terminal where attention to the prevention of smoke was necessary.

It was brought out in the discussion that the basket bridge in use on the New York Central had made it possible on one class of engines to increase the nozzle opening from 5½ in. to 6⅝ in.

In closing the discussion Mr. Woodbridge called particular attention to the use of a back pressure gage, installed in the cab and connected through branch pipes to the exhaust pasages of the cylinders, which has been found of value in comparing the efficiency of the draft conditions on different engines and providing the engineman with a check both on these conditions and on his handling of the engine.

Other Papers and Addresses

Papers and reports were also presented on the following subjects:

By-Pass, Relief and Drifting Valves; Effect of Slack Wedges on Side Rods and Knuckle Pins; Effect of Different Fuels and Their Preparation on Operating Costs, and The Nicholson Thermic Syphon.

A. G. Pack, chief of the locomotive inspection bureau of the Interstate Commerce Commission, also presented a paper on "Locomotive Boiler Explosions," accompanied by slides, in which he set forth the various causes of boiler explosions. He also dealt at length with the investigations which have

been conducted by the Locomotive Inspection Bureau on the effect of various locations and methods of connecting water glasses and gage cocks, on the water level reading.*

Association Business

The Committee on Amalgamation reported favorably on accepting the invitation of Section III—Mechanical—to become a division of that organization. Action on the matter, however, was deferred until the next convention.

The following officers were elected for the coming year: President, W. E. Preston (Southern); first vice-president, J. H. De Salis (N. Y. C.); second vice-president, F. Kerby (B. & O.); third vice-president, T. H. Howley (Erie); fourth vice-president, W. J. Fee (Grand Trunk); fifth vice-president, J. N. Clark (Southern Pacific), and treasurer, David Meadows (M. C.). J. D. Heyburn (Frisco), J. P. Russell (Southern), and V. C. Randolf (Erie) were elected to succeed the three retiring members of the Executive Committee.

State Commissioners to Fight

Washington, D. C.

The state railroad commissioners, through the National Association of Railway and Utilities Commissioners, are preparing for a "last ditch" fight against the efforts of the railroads to establish for intrastate traffic the percentages of increase in freight and passenger rates which were recently allowed by the Interstate Commerce Commission. They take the position that if the efforts of the carriers are successful in the proceedings that have been instituted before the Interstate Commerce Commission and the courts, they will have succeeded in stripping the state commissioners of all effective power over state rates.

At a meeting of members of the National Association of Railway and Utilities Commissioners held in Chicago on September 11, a committee of five was appointed to follow all litigation in which carriers attempt to secure an interpretation of the transportation act, "which will diminish the powers of the states to control intrastate rates and regulations of carriers." Under the resolutions adopted, this committee is to co-operate with the officers of the association, communicate with all state commissions, and may file a brief or briefs on behalf of commissions authorizing it to do so; but no commission is to be precluded thereby from taking such separate action as it may desire. President W. A. Shaw of the association appointed as the members of this committee Fred W. Putnam of Minnesota, H. G. Taylor of Nebraska, R. Hudson Burr of Florida, Joseph A. Kellogg of New York, and Joshua Greenwood of Utah. The committee has sent a letter from Washington to all the state commissions, as follows:

"The situation is serious. The state commissions generally have allowed freight rate advances upon intrastate traffic corresponding to the advances allowed upon interstate traffic by the federal commission. The Illinois commission has, however, allowed 33⅓ per cent, the Texas commission the same per cent, and the Nebraska commission 25 per cent. Several commissions have restricted the advances on particular commodities. In states where passenger fares are limited by statute, they have refused to sanction the proposed passenger advance.

"Acting under paragraph 31 of section 13 of the Interstate Commerce Act as amended, the carriers have begun proceedings before the federal commission asking that commission to substitute rates made by it for the rates prescribed by state authority. These so-called Shreveport petitions filed by carriers attack not only the statutory passenger rates, but attack also freight rates in practically every case where the state commission has found occasion for denying any part of the increase asked for. The carriers generally, if not uniformly, have taken the position before state commissions that a state commission has no option but to allow the same increases on state traffic as have been allowed by the federal commission on interstate traffic, even though in a particular state lower rates on state traffic may yield a full fair return on the value of the property devoted to such traffic. In other words, carriers maintain that the value of property devoted to state traffic and the net revenues therefrom are immaterial, and that the determining factor is the percentage of advance allowed for interstate traffic by federal authority.

"At the hearing in Chicago before the federal commission in the Illinois Shreveport case, no other evidence of discrimination was offered by the carriers than that the Illinois commission had allowed a less percentage of increase than the federal commission. The carriers have chosen to rest upon the proposition that whatever action the federal commission takes as to interstate rates must be also taken by every state as to intrastate rates, without consideration of the question of the reasonableness of the same as to state traffic, and even though it may be destructive of such traffic.

"Upon this proposition it was the unanimous opinion of the conference that we have no alternative but to fight. If the Transpartation Act is correctly interpreted, it does not strip the state commissions of all power over state rates, but carefully preserves the same. We owe it to the people of our respective states to defend our proper powers against destruction by any such misconstruction of the Transportation Act as carriers are now attempting to secure. We should do this first before the federal commission, and then in court if need be.

"In this action it was felt that the state commissions should stand united, regardless of the action they have taken upon the recent applications of carriers for rate advances. The question is not whether advances ought now to be allowed, or whether rates fixed by statutes or otherwise by state authority ought not to be changed if shown to be discriminatory within the proper meaning of section 13 of the Interstate Commerce Act as amended, but it is whether such an interpretation ought now to be given to that section as will take away from the state commissions any effective power whatever over state rates. If it be established that any variation is a discrimination, then so far as rates are concerned, it is obvious that the state commissions have no vestige of power left.

"Acting under the authority contained in the vote whereunder we were appointed, it is our intention to appear before the Interstate Commerce Commission in the pending Shreveport cases, and argue for a construction of the Act in conformity with its plain meaning, and in conformity with prior decisions of the United States Supreme Court. We are also instructed to file a brief upon the legal questions involved. We desire to do this in the name of all commissions that approve such action. Will you please advise us, directing your reply to the office of our association in Washington, as to the attitude of your commission? In the preparation of this brief we shall be glad to have the aid of such assistance or suggestions as the legal representative of your commission may be prepared to give."

The Interstate Commerce Commission has announced that oral arguments in the New York case, which was heard before Chief Examiner La Roe on September 13, will be heard before the commission at Washington on October 11. The commission has also announced a hearing before Examiner Flynn on October 4 at St. Paul, on petition of the railroads because of an order of the Minnesota Railroad and Warehouse Commission denying the request for permission to make increases for intrastate traffic similar to those permitted by the federal commission for interstate traffic; and a similar hearing on Wisconsin passenger fares will be held on September 27 before Examiner Healy at Madison, Wis. Examiner Flynn will also hold a hearing in the Iowa case at Des Moines on October 8. Oral arguments in the Illinois case will be heard before the commission at Washington, on October 11.

* An abstract of Mr. Parck's report of these investigations appeared in the *Railway Age* for August 27, 1920, page 359.

John E. Benton, general solicitor of the National Association of Railway and Utilities Commissioners has issued the following supplemental bulletin regarding the status of advanced rate proceedings in the various States:

Arkansas. On August 20 the commission authorized a 35 per cent increase, corresponding to the increase allowed by the I. C. C., in all intrastate freight rates, except carload rates on sand, gravel and crushed stone for roadbuilding purposes

On September 8 the commission denied carriers' application for authority to increase passenger and excess baggage rates, for lack of jurisdiction. Passenger rates are fixed at 3 cents per mile by statute in Arkansas, and baggage rates are also fixed by statute. The 50 per cent surcharge on Pullman rates was allowed, and also the 20 per cent increase in rates on milk and cream moved on passenger trains. On September 7 the commission granted the American Railway Express Company's petition for authority to increase its rates 12½ per cent, as allowed by the I. C. C.

Colorado. On August 25 the commission authorized increases in freight and passenger rates conforming to the increases allowed by the I. C. C., except that no increase was allowed in rates on milk and cream on passenger trains. The commission's report accompanying its order contained the following paragraph: "Owing to the incompleteness of the record in this proceeding as to the percentage of revenues required by applicants properly assignable to intrastate traffic in Colorado, the finding as to increases hereinafter allowed must be understood to have been made upon authority and weight of the evidence presented to the I. C. C., as applied to the respective groups, and the applicants and the public will understand that such increases are authorized temporarily and may be made subject to readjustment or modification at any time application is made in that behalf, and that upon such application being made the carrier or carriers will be required to justify such increase." Upon a separate application the Denver & Salt Lake was permitted to increase its freight rates 35 per cent in Mountain-Pacific territory, instead of the 25 per cent allowed on interstate traffic, and an additional 1⅔ per cent on joint rates on state traffic, and an additional 1⅔ per cent to accrue wholly to the Denver & Salt Lake.

Connecticut. Under the laws of Connecticut steam railroad carriers were not required to obtain approval of recent increases in rates. Increases in passenger and freight rates on intrastate traffic were accordingly put into effect without action by the commission, but are subject to review by the commission on petition of aggrieved patrons. No complaints or protests against the increased rates have thus far been presented to the commission.

Kentucky. The Kentucky commission has no power to suspend rates, and may only pass on any rate upon complaint of a shipper that the same is extortionate and excessive. Accordingly the commission did not exercise jurisdiction in the matter of recent increases in freight and passenger rates. This was upon the authority of Siler v. Railroad, 213 U. S., 175.

However, the commission has taken the position that rates heretofore fixed by the commission remain effective until changed by the commission. Accordingly it holds an increase in the Louisville interurban passenger rates from 2½ cents to 3 cents per mile, without application to the commission for authority, illegal, and has directed the commonwealth attorneys in districts through which the lines of the company run to secure indictments of the company, and has also instructed the attorney general to restrain by injunctive process the further charging of the increased rate until the same has been authorized by the commission. Upon the application of the American Railway Express Company for leave to file tariffs advancing express rates on less than statutory notice, the commission held that "the commission had no jurisdiction upon the blanket application to determine whether such rates are reasonable."

Louisiana. The Commission, on September 16, authorized a general advance in freight rates on October 1, equal to the interstate advance, but with numerous exceptions, and denied the carriers' application as to passenger fares. Gravel and other road material must not be advanced; cotton rates are conditional on a concession as to compressing; on rice, sugar cane and milk the case is held open; on excess baggage the increase is allowed. The whole case is held open for any and all complaints.

Montana. On August 31 the commission entered an order denying carriers' proposed increase in passenger rates, upon the ground that passenger rates in Montana are limited to 3 cents per mile by statute. Excess baggage rates, newspaper handling charges, milk and cream rates on passenger trains, and charges for parking special baggage cars, and for movement of special passenger and baggage cars and special trains were denied for lack of evidence to sustain the proposed increase, but without prejudice to the renewal of carriers' application. The proposed surcharge on sleeping, parlor and observation car rates was denied on its merits. In its report concerning this proposed increase, the commission said in part: "We decide against this increase on the merits.

To us it seems subversive of the fundamentals of sound rate-making, and we are at a loss to understand why the Interstate Commerce Commission ever approved the invention. * * * The passenger who travels in a car other than furnished by the Pullman Company, has a single relation, i. e., with the railway company, with the corporation agreeing to transport him. The Pullman car passenger has two relations, one with the railway corporation concerning transportation, and one with the Pullman Company, concerning quarters and personal attention. Whatever the relation between the Pullman Company and the railway company, *inter se,* it does not diminish the duty each owes to the public, nor does it blend their services. And while the ownership of the special service cars may be a matter of indifference to the traveler, as long as the service may be had, it cannot be said that he is indifferent to paying unreasonable rates for either service, no matter who owns the cars. The traveler's obligation is to pay to the Pullman Company a rate that will provide its costs of operation and a reasonable return on the property it devotes to its particular service, and likewise to pay to the railway company a similar rate for the service furnished. But he is not obliged to pay any more. * * * The Pullman Company asks for no increase; on the other hand, it resists the imposed charge. * * * The traveler is paying for a service already fully compensated. * * * The surcharge is nothing more or less, than a tax. As such, the federal government had power to levy it during federal control, but no government now, state or federal, can levy it for the corporate treasuries of the carriers' stockholders. Needed revenues must be raised by constitutional process. The 14th amendment protects the public from confiscation as well as the carriers."

Nevada. The application of the American Railway Express Company for authority to increase its rates on intrastate traffic was heard September 3. No decision has yet been rendered.

South Dakota. The hearing ordered for September 10, to fix intrastate rates on a substantial parity with interstate rates on commodities excepted from the increase allowed August 19, has been postponed until September 22.

West Virginia. The commission has disposed of carriers' application for an increase in freight rates. As stated in my bulletin of August 14, however, West Virginia has a 2-cent fare law, and its effect after September 1 is under consideration. As to passenger rates, Pullman charges, excess baggage and milk rates, the Commission will require each carrier to present data from its traffic records to support its claim that an increase is needed. The next hearing will be held on September 28. The three-cent fares continue in effect for the present. Reference to the action of the West Virginia commission in bulletins subsequent to August 14 should have been restricted to freight rates.

Shreveport cases are commonly understood to have been instituted by carriers before the I. C. C. against the following states: Illinois, Iowa, Michigan, Minnesota, Nebraska, New York, South Carolina, Texas and Wisconsin. Petitions to the I. C. C. are not treated as public when filed, but only after they have been set for hearing and docketed.

Intensive Methods of Speeding Up Operations

New York Railroad Club Meeting Discusses Program for Increased Car Efficiency

THE MEETING of the New York Railroad Club in New York on September 17 was devoted to a consideration of the best methods of bringing about the improvement in railway service called for by the program adopted by the Association of Railway Executives at its meeting in New York on July 16. There were five speakers. Each of the first four discussed one of the respective standards in the program. The fifth speaker, Dexter C. Buell, director of the Railway Educational Bureau, discussed the relation of the program to the public and the employees.

Thirty Miles Per Car Per Day

"There should be an average daily minimum movement of freight cars of not less than 30 miles per day." This part of the program to improve railroad operation was discussed by A. J. Miller, chairman of the New York Committee on Car Service. Mr. Miller considered the subject under 12 heads, as follows:

First: Co-operation of the shipping public is necessary. The railroads cannot function 100 per cent without the co-operation of the consignors and consignees. We can get this co-operation in nine cases out of ten if we ask for it in the proper manner.

Second: Build up solid trains for one destination. This method of handling will stimulate the average miles per day materially and I am satisfied that many more solid trains can be made by carefully analyzing the freight for movement at originating points.

Third: Avoid accumulation by the use of embargoes and the permit system. This can be avoided in many instances by keeping a close check on the business for principal stations and terminals and by taking prompt action when traffic arrives faster than it can be absorbed. We have found the permit system very effective in avoiding accumulation of export freight; also lumber, hay, cement and other commodities.

Fourth: Cars without waybills are frequently seriously delayed and these delays have an adverse effect on the average miles per car per day. This is a railroad disability which can be avoided if conductors are made to understand that they cannot handle cars in road haul movement without waybills.

Fifth: Improper and illegible billing as well as failure to show final destination on waybills results in delays to equipment. The remedy in this case is to refuse to accept from connections cars billed in this manner.

Sixth: Cars loaded with railroad company material, including fuel coal, are sometimes delayed more seriously than cars loaded with commercial business. These delays can be avoided or materially reduced by providing facilities for storing fuel coal that is now held in cars and by making the station agent responsible for failure to unload other company material promptly.

Seventh: Idle freight cars will retard progress and nothing should be left undone to keep all freight equipment working. Refrigerator cars when not needed for freight requiring refrigeration should be used for other loading. Ice cars can be dried out and used for loading merchandise, produce, etc., and stock cars can be used for handling rough freight.

Eighth: Distribute empty cars economically. Provide adequate help for this very important work and insist on reliable reports and records.

Ninth: Move empty cars promptly from terminal, team tracks, private sidings, etc. Where possible, arrangements should be made to move at night the cars that are unloaded during the day to points where they can be loaded the following day.

Tenth: Get the habit of breaking records. Some very good results have been secured by ascertaining what the average unloading of cars has been at certain stations and urging the agents and all concerned to exceed the past performances. At one station the average unloading was increased in this manner from 125 cars to 165 cars per day.

Eleventh: Send freight not accepted promptly to public warehouse. Gratifying results have been obtained by handling shipments in this manner and our observations have been that in most cases it was not necessary to send more than one or two shipments to the warehouse for the same consignee. This method of handling makes it expensive for the owner of the freight and usually results in arrangements being made for prompt acceptance of future shipments.

Twelfth: Constant checking is necessary to keep freight cars moving. On hand reports from each station should be checked daily and the delayed cars followed up for release and movement. If conductors' wheel reports are properly checked they will often reveal cases of gross movement of empty cars, etc. By checking loading reports it will sometimes develop that two cars were used where one would have sufficed. Check yards for cars without billing. Check bill racks for delayed cars. Check tonnage reports for light trains. Check station reports to ascertain if agents are ordering empty cars for loading when loaded cars on hand can be made empty and applied on orders. Check loading by industries to develop if freight is being sent to transfers when sufficient tonnage could be assembled for through cars.

The latest mileage figures available show that good progress has been made on a number of the railroads. Some of the increases of July, 1920, compared with July, 1919, are:

July, 1920	July, 1919	July, 1920	July, 1919
37.2	29	44.6	24.9
24.9	19.1	32.8	21.5
42.4	39.8	44.2	34.1
28.9	22.6	63.6	54.8
41.5	31.1	32	27.7
47.1	33.8	32	27.9
47.4	36.9	44.9	27.9

Thirty Tons Per Car

"Freight cars should be loaded to an average of not less than 30 tons per car." This standard was discussed by J. W. Meredith, general superintendent of the Central of New Jersey. Mr. Meredith said in part:

Frankly, I have nothing startling to suggest that will revolutionize car loading or enable us, in a bound, to have each car loaded to its capacity. This does not mean that I am doubtful about the railroads' ability to achieve the goal of 30 tons per car. On the contrary, I think it can be done, but I believe we will arrive at it by more intense application of the now current practice rather than by revolutionary or visionary changes of method.

I was much surprised a short time ago to receive a coal tariff in which the minima was placed at 15 gross tons. Upon inquiry I learned that the minima for many other commodities was also ridiculously low—for example, cement 50,000 lb., sugar 40,000 lb., pig iron 50,000 lb., scrap iron 36,000 lb., ore 50,000 lb., crushed stone 40,000 lb. I can see no good reason why cars carrying these commodities should not be loaded to full capacity, axle or cubic as the case may be.

I am aware that trade customs enter here but we can do

much, by moral suasion, to persuade shippers to load heavily. This should be supplemented by another revision of the minima provided in tariffs which should be raised to a point as high as practical conditions permit.

As to less carload traffic, we can increase the loading in some directions, but I do not believe it practicable to do so to the same extent as in carloads, and I am not in favor of loading cars with miscellaneous merchandise so heavily as to seriously damage the lading. This has been done many times in the past and where we saved at the spigot we lost at the bung.

Again, there is no ultimate economy in loading peddle cars so heavily that way freight crews are grossly delayed in sorting out and delivering the freight.

Conversely, at large stations and transfers where cars to direct destinations are made and sufficient space is available to load the light and fragile packages on top, the car can usually be loaded to its cubic capacity. This is a fertile field for securing heavier l. c. l. loading.

Another step in the right direction is to watch carefully the assigned cars at transfers and large freight stations. When assigned cars are authorized there is, of course, sufficient traffic to warrant them, but the volume varies with the changed conditions and seasons and it frequently happens that a check shows a number of these assigned cars running too light. The assignment should be checked up frequently and light cars cut out by doubling up with other cars or holding freight over and making a straight car every other day.

In addition to the efforts of our trainmasters, yardmasters, agents, we employ six traveling men who report to the car service department; we keep them on the road practically all the time. One of their major duties is to secure heavier loading of cars. They visit shippers, consignees, foremen, agents, station employees, way freight conductors, talk heavier loading to each and all, pointing out the urgent need of getting maximum transportation. In many cases, following a visit of one of our men to a heavy shipper, we have checked up his loading and almost invariably found it increased. While it is not possible to measure the actual increase accomplished by this method, there is no question in my mind but what the results have been very material.

I do not believe that radical changes in our practice are necessary to accomplish what we are after. What is needed is to keep eternally after the question of heavier car loading and with everybody who has to do therewith. We must keep up the agitation, keep up the interest in the work, teach and preach car loading to the shipper, to the agent, to the consignee; even the way freight conductors can help out and save a car here and there, which automatically increases car loading. Our agents can accomplish a great deal, but the character of their duties and their relations with the shippers are such that their efforts are not all-sufficient. We should supplement them by special men who specialize on this particular feature. Our traffic people should become imbued with the thought of getting heavy carloads and forget if they can the pleadings of the shipper which have in the past so often resulted in establishing bad practices, amongst the worst of which is their unwarrantably low tariff minima. It is along these lines that we will raise the average carload, not to 30 tons but to well above 30 tons, if we eternally keep after it.

Bad Order Cars Should Be Reduced to Four Per Cent

This subject was assigned to J. C. Fritts, master car builder, Delaware, Lackawanna & Western, who outlined the difficulties that are being encountered and made the following suggestions which he believed would relieve the situation:

First: During the last two and a half to three years the number of cars retired from service or dismantled has been very much less as compared with the practice of former years, and as a result we now have a large number of cars operating in interchange or revenue service that are either too light, or worn out, or both. These cars should, as far as the requirements demand, be assigned to special home line service and any that cannot be utilized in this manner should be dismantled. The salvage value can then be used in connection with the purchase of new equipment. This light-constructed or wornout equipment does not only fail frequently in itself, but very often causes heavy damage to other good cars that are being handled in connection with it at the time failures occur.

Second: Formerly the majority of freight cars were on the owner's rails. This condition began to change during the early part of 1918, and by July of that year cars on owner's lines had been reduced to about 12 to 15 per cent, and in spite of all efforts that have been made to return cars home, 20 per cent is a very conservative average of cars on home rails at the present time. The effect of such a condition is that very little material standard to the car outside of couplers, wheels, axles and a few M. C. B. parts can be used, and this has resulted in a large amount of temporary repair or patchwork being done in order to keep cars in service. I would offer as a relief to this problem, returning cars to owners, where standard material and reinforcements can be applied. Unless these cars can be moved to the owners and proper reinforcements applied, I am of the opinion that the General Committee of the Mechanical Section of the A. R. A. should appoint a committee to investigate and work out certain standards that may be used to repair and strengthen these cars. These standard parts should be available in all of the larger car shops throughout the country; and when cars of weak construction come in for repairs, they should be applied in lieu of repairing them in kind.

Third: In the fall of 1918, piecework was abolished generally throughout the country in railroad shops and standard rates of pay for all employees for the various crafts adopted. In the equalization of rates, the benefits derived from the incentive of the individual to increase his income (and at the same time the output) by his own efforts was lost, and the most competent mechanic today feels that he should not turn out more work than one of lesser skill because he is receiving the same rate of pay. I believe a piecework schedule that is eminently fair to the employees and railroad company should be worked out and inaugurated, as the principles surrounding the piecework system are the same as the rights that every citizen of the country demands; i. e., that he should be given equal opportunity to advance on his individual efforts. This feature alone would increase the shop output at least 30 per cent, which in my opinion is a very conservative figure.

Fourth: Inspection of cars sent to shops for repairs indicates that a great many are being damaged at loading and unloading points on acount of improper handling. Side doors, tracks, and parts of roofs are torn off by bars or derrick blocks; lining is being removed and floors broken; crossties removed and torn out by clamshell unloaders and not replaced, and in many instances cars are cornered by another car in order to move them in to clear the adjoining track. The majority of this damage could be avoided if the importance of maintaining cars in service was realized and proper supervision maintained at the various unloading points. This would result in keeping thousands of cars away from the shops and repair tracks that are now in bad order; this would assist in increasing the car-mileage, as well as reducing the total number of cars in bad order.

Fifth: Due to labor troubles and the great demand for manufactured products of all kinds, railroad shops have experienced difficulty in maintaining on hand sufficient material to meet the demands; in fact, there has been a general shortage. Manufacturers have been unable to fill all of the orders placed with them, and those they have filled have been retarded by embargoes and slow movement in and around

terminals and interchange points. I believe that all embargoes placed on shipments of material for repair to rolling stock should be lifted and special efforts made to forward it to destination, as the question of material for repairs to cars is almost as important as fuel for locomotives.

Reduction of Locomotives Unfit for Service

"There should be an early and substantial reduction in the number of locomotives now unfit for service." This standard was discussed by F. H. Hardin, chief engineer of motive power and rolling stock of the New York Central. Mr. Hardin outlined briefly the motive power situation as it exists today and spoke in regard to the general policy that should be adhered to towards restoring the condition of locomotives to a point where they would be capable of meeting the demands of traffic. He referred to the fact that there are at present less than 1,000 stored locomotives in the country as serious. Normally, it is customary to repair large numbers of locomotives during the summer months and to store these locomotives as a reserve available during the severe winter months. It is obvious that, with no greater reserve than is indicated by these figures, the railroads are not as well equipped for the coming winter as they should be.

Increased serviceability for locomotives now in service will, Mr. Hardin believes, do more than anything else to help the present situation. If the work accomplished by each locomotive can be increased, this will accomplish more than placing additional locomotives in service. Mr. Hardin believes that an increase in the ton-miles per hour will further improve the motive power situation.

As a practical means for increasing the work accomplished by each locomotive, Mr. Hardin suggested the advisability of operating all freight as well as passenger trains on scheduled speed. That is, there should be a time interval schedule prepared for every freight train and the delays reported should be carefully checked. As a further means for improving the performance of locomotives, it was stated that elimination of terminal delays by speeding up terminal operation would accomplish more than any other factor towards increasing the availability of locomotives for active service.

With reference to locomotive repairs, Mr. Hardin stated that shop repairs should be 100 per cent, even at the expense of output. Thorough work in the back shop will reduce locomotive failures and it is of the utmost importance that these be reduced to a minimum. Where it is impossible to turn out 100 per cent work in sufficient quantity, the railroad should arrange to have repairs to locomotives made in outside shops.

Competent inspection at terminals is highly essential to maintaining power in suitable condition for service. It is also necessary that supervision in the terminal be ample to insure the work reported on incoming locomotives being properly attended to. The organization for each terminal should be studied and adjusted to the requirements of the individual terminal. Foremen should not only have the capacity to arrange their organization to the best advantage but should have the ability to study the men under their direction with a view to developing in these men ability for more important positions. Foremen should endeavor to train their subordinates so that they will be able to take their places whenever the occasion may arise.

Mr. Hardin spoke of the necessity of educating locomotive engineers to submit intelligent work reports that would indicate the most important things requiring attention about the locomotive. Many enginemen, he said, were extremely careless in this particular and often reported trivial matters in place of serious defects. It is not unusual for a locomotive to be reported as not steaming when the real defect lies in broken cylinder packing.

The segregation of power by classes on divisions was referred to as one of the best means of getting improved service out of the locomotives. As stated by Mr. Hardin, this would enable each division to deal with a uniform class of power and simplify the work of maintaining these locomotives at terminals. There would be a very great advantage in the matter of despatching freight trains and securing maximum tonnage loading if all the locomotives on each division were of the same class.

"The public is now solidly with us," said Dexter C. Buell, director of the Railway Educational Bureau. "It is not criticizing as it did in the past, but it is now, instead, making excuses for us." Further than that, he continued, the press is behind the railways and what the railways accomplish in improving service or the records they make is good news. There is also a good opportunty to get the employees interested.

The items in the local papers will incur their incentive, and it is a fact that because of recent developments they are willing to know more about railway operations. This is not necessarily due, Mr. Buell said, to a desire to become more efficient, nor is it necessarily a resurrection of loyalty. It represents, rather, a result of the Plumb plan agitation. Nevertheless, there is a better opportunity than ever to get new ideas before the men and there is a good chance to get back the old morale.

Colonel Charles Hine, now on the staff of the Erie, was one of those who discussed the papers. He questioned the value of loading trains solid to destination and said that probably more was lost than gained by this practice. He added, one of the biggest handicaps was the fact that only 10 per cent of the freight yards were properly laid out. He agreed with Mr. Hardin's view that scheduling freight trains would help considerably in improving operation.

C. & N. W. Reconsignment and Tracing Bureau

In order to increase the efficiency of transportation to better meet the demands of the public and to give the traffic department current knowledge of traffic movements over the Chicago & North Western, a bureau for the handling of freight reconsignment, diversion, tracing and passing records has been established in the general freight department. The bureau is a distinct organization fully equipped to function under the direct jurisdiction of S. F. Miller, general freight agent.

Heretofore, these matters have been handled in several departments, particularly under the jurisdiction of the freight claim agent and of the superintendent of car service. But as the proper handling of most of the subjects, particularly diversions and reconsignment, must be with the knowledge of freight tariff provisions, more expeditious and proper handling is possible when under the jurisdiction of the department having the construction and issuance of tariffs, to which reference must be made. Under federal control, this class of work was discontinued to a considerable extent and it is believed that this has tended to restrict somewhat the many requests formerly made by shippers, who did not necessarily require information as to movements of cars so long as they reached destination within a reasonable time. It is believed that in future requests from shippers for tracing and passing records will be confined more to the actual necessities of the case, hence the requests received should be given prompt and careful attention. This bureau is organized to execute promptly reconsigning or diversion instructions covering movement of traffic enroute, particularly carload shipments, to advise the interested parties so that they may know the diversion has been accomplished and to get the traffic to the new destination or consignee as expeditiously as possible, so that it may be anticipated and promptly accepted, with early release of equipment.

Consignees are frequently disappointed by manufacturers

or jobbers, who are unable to make shipment as soon as expected, and there are cases where construction material enroute may be the cause of delay or suspension of work at destination. This makes information as to the movement enroute and anticipated delivery of such traffic most valuable. The purpose of this bureau is to locate and assist in seeing that cars move on schedule. If a shipment is delayed on account of equipment getting in bad order the bureau will see that it is returned to schedule movement with as little delay as possible.

Passing reports of time freight, which may be enroute from coast to coast, if furnished to representatives of the company located at the point of origin or destination and to connecting lines, enables inquiries to be answered so that the interested parties may be prepared for prospective arrival or delivery. Such inquiries regarding the movement of long haul traffic are particularly frequent.

It is the general rule for patrons to communicate with the traffic department on matters of all kinds, leaving it to this department to see that their inquiries or complaints reach the proper department. This bureau is expected to further that contact and to result in better understanding with the shippers, who will thus be enabled to get satisfaction direct from the traffic department. The work outlined will in no way conflict with the car service department in the equalization and distribution of equipment, or with the car accountant, with reference to records of car movements.

Administration of Loan Fund Complicated

WASHINGTON, D. C.

THE SLOW PROCESS of obtaining loans from the $300,000,000 fund provided by the transportation act "for the purpose of enabling carriers properly to serve the public during the transition period immediately following the period of federal control," has encountered further complications to cause delay in a difficulty as to the interpretation of the words in the law requiring the Interstate Commerce Commission to certify to the Secretary of the Treasury "that the applicant, in the opinion of the commission, is unable to provide itself with the funds necessary for the aforesaid purposes from other sources." The commission has issued several certificates signifying its approval of loans to various carriers, including the Illinois Central, Chicago, Burlington & Quincy, Atchison, Topeka & Santa Fe, Great Northern, Ann Arbor, Delaware & Hudson, and Chicago Great Western, the certificates including a statement such as is required by the law, with the addition of the words "except at excessive rates of interest." The Treasury Department officials have returned the certificates as not being in the proper form and have held up the loans on the ground that to say that a road cannot borrow from other sources than the government at reasonable rates of interest is not a certification that it is impossible for it to borrow at all.

There is no controversy between the commission and the Treasury Department on this point and the commission has readily conceded the correctness of the department's view that it must furnish an unqualified certificate, but a previous clause in the same sentence of the law requires it also to certify "that the prospective earning power of the applicant, together with the character and value of the security offered, furnish, in the opinion of the commission, reasonable assurance of the applicant's ability to repay the loan within the time fixed therefor and reasonable protection to the United States."

The commission is reluctant to say that a company that complies with these requirements cannot borrow money from other sources, without some such qualification as it had inserted with reference to the rate of interest, actuated by a belief that Congress had intended to loan money under the terms of the law, had endeavored to give it a practical construction by inserting the qualification. In the case of the Great Northern it has since issued a "clean" or unqualified certificate and the company has got its money, but before proceeding further the commission is seeking further advice.

It therefore announced a hearing before Division 4 at Washington on September 23 on the question of the interpretation and construction of Paragraphs a, b and c of Section 10 of the transportation act as amended by Section 5 of the sundry civil appropriation act of June 5, and particularly the concluding clause in paragraph b, as thus amended, "and that applicant, in the opinion of the commission, is unable to provide itself with the funds * * * from other sources." Notice of the hearing was served upon the railroads mentioned, upon such other carriers or persons as appeared at the hearings heretofore had on the general question of loans from the revolving fund, and upon the Association of Railway Executives, the American Short Line Railroad Association and the Secretary of the Treasury. The Commission has thus far announced its certification of only about $60,000,000 of loans from the $300,000,000 fund and it now appears that some of the most important of the loans which the commission has approved have been held up in the Treasury Department. Most of the delay thus far experienced in the administration of the fund has been caused by the necessity of formulating some plan for apportioning the fund among the various roads and for various purposes. Further delays were caused by the desire of the commission to make the available sum go as far as possible by requiring various roads which were to receive assistance from the fund to finance a part of their requirements from other sources, and its certifications were made contingent upon the various carriers complying with such requirements. In many cases the commission has also imposed a requirement that the additional money thus raised should be procured at not to exceed a specified rate of interest.

The process of collecting the six-months' guaranty provided by the transportation act is also not without its complications and it now appears that a large part of the money will not be released from the treasury in time to accomplish much toward the purpose for which it was intended. The Interstate Commerce Commission had issued certificates up to September 1 for some $234,000,000 of advances on account of the guaranty, which has been roughly estimated at about $600,000,000, but it could not give certificates for amounts in excess of what it was perfectly safe to assume the railroads were entitled to and the exact determination of the amounts due is likely to be a long and tedious process. Officials of the Interstate Commerce Commission had suggested a plan by which partial payments on account might be made, after the period within which advances as authorized by the law might be made had expired on September 1, with the idea that the final payments might be gradually anticipated as the railroads had urgent need of the cash. The Treasury Department, however, is inclined to be technical and to take the position that the law did not contemplate any advances under any name after September 1 and that no more money can be paid out until the final settlement is reached. The final settlement involves many complicated questions of adjustment and also the big question as to how much the commission may allow for maintenance, which involves a determination of the main question between the railroads and the Railroad Administration as to the interpretation of the standard contract provisions as to the government's obligation to maintain the roads. As the commission was not operating the roads, however, it is not interested to the same extent that the Railroad Administration is, and it is possible that if the roads get their claims in early enough it may be able to settle the point in less time than will be required for the negotiations with the director general.

Painters Hold an Unusual Convention in Boston

Addressed by Charter Member Who Helped to Organize the Association in Boston Fifty Years Ago

On September 14, the former Master Car and Locomotive Painters' Association met for the first time under the auspices of the American Railroad Association as the Equipment Painting Division of Section III, Mechanical. While it was natural that some regret was to be expressed over the lost individual identity of the old association, this was more than compensated for in the broader scope attained in the work and the more definite objective demonstrated through affiliation with the American Railroad Association.

While much depends upon the leadership of the presiding officers that are annually elected to associations of this character, the real burden and responsibility for the continuance of a fixed policy usually falls upon the secretary, who holds office over a tenure of years. The painters are fortunate through their affiliation with the American Railroad Association in securing the services of V. R. Hawthorne, who deserves much of the credit for the excellent work accomplished at the meeting, particularly for the framing of the resolutions adopted at the close of the convention expressing the attitude of the association toward the many important matters which were the subject of committee reports and much discussion.

The attendance was not large, probably due to the fact that a more central point was not chosen for the meeting. The selection of Cleveland for the next convention was doubtless made in consideration of this fact, and the choice of a centrally located point may be commended to other railroad associations for the same reason. Despite the fact that there were seldom over 100 members participating in the meetings, the discussions following most of the papers were excellent and served to add much to the information contained in the reports submitted by the committees.

An Eventful Meeting

It is probable that in selecting Boston for this convention the association had in mind the fact that it organized in that city just 50 years ago. Associations specializing on certain phases of railroad work and devoted to promoting improved methods in their special lines have played a very important part in the development of American railroads, and of these associations the Master Car and Locomotive Painters' has one of the longest records of useful service. The painting of railroad cars was a very different proposition in 1870 from what it is today, but the work of this convention proves that the association is still taking the lead in recommending economical and otherwise satisfactory equipment painting methods.

The most interesting event that occurred during the convention was the address of Warner Bailey of the Boston & Maine. Mr. Bailey took a prominent part in the organization of the association in 1870, and is still actively interested in the work of the association, although he is now over 80 years old.

Warner Bailey's Address

The following extracts from Mr. Bailey's address at the opening of the convention disclose an interesting chapter in the history of the association and define in simple terms a splendid standard for railroad association work:

"In the summer of 1870, Hill of the Portland & Kennebec Railroad; Cox of the Eastern Railroad; Scott of the Boston & Lowell; Lunt of the Fitchburg; Platt of the Old Colony; Ford of the Boston & Worcester; and Bailey of the Boston & Maine, met together by previous arrangement and talked over the question of forming this association. I was chosen for the task of addressing a circular letter to be sent to foremen painters and the only guide I had was 'Poor's Railroad Manual.' In most cases only the president's and superintendent's names were there given and the call was sent to them with a request that it be handed to their foreman painter. On November 6, 1870, when the meeting was called, 16 members responded. Hill of Augusta was made chairman of the meeting. After appointing a committee to draw up a constitution and by-laws and selecting a few subjects to be discussed at our next meeting we adjourned to meet in New York City the following year.

"For many years we as an association struggled along without much increase in numbers, and little encouragement from any source, until we added to our numbers by taking in foremen locomotive painters and foremen of car manufacturing shops, both steam and street car. Also Canada was admitted with this addition, and today we number about 300 members.

"We have always kept in mind the object of this association, as stated in the circular letter issued for the first meeting; and that was to perfect ourselves in our trade, that we might be of more benefit to corporations employing us."

"What is the prospect for our association? I can safely say that this association will keep on indefinitely in its career of usefulness if the same principlse actuate you as moved the founders of it; and this was to perfect themselves in their trade. If you know it all, then there is nothing for you to do but quit these assemblies, unless you come together wholly for a good time; and in this you might well consider whether or not it might better be spent in other ways and places. We do not know it all yet. New kinds of equipment and new ways of doing things are constantly developing and you will always want to keep these meetings going to discuss them.

"A year ago you dropped your name and entered the American Railroad Association as a unit in that great and useful organization. Let us hope this will widen the scope of your usefulness as doubtless it will."

Endorses Uniform Stencilling

Foremost among the subjects considered at the convention was the question of uniform stencilling for freight cars. The committee assigned to this subject submitted a very thorough report including exhibits designed to show the expense of carrying the large variety of stencils as required at present. It was ascertained that many of the members represented railroads that were already using the uniform stencilling in accordance with the recommendations of the American Railroad Association and the following important resolution was adopted in favor of uniform stencilling:

"Whereas a large proportion of freight equipment cars in service bear markings not conforming to the American Railroad Association recommended standards as shown on drawings 26, 26-a and 27, thereby making necessary the use of an endless variety of sizes and types of letters and figures; And whereas the condition greatly increases the cost of repairs to foreign line cars, due to the necessity of applying markings by hand, or the making of numerous stencils for temporary use; And whereas the condition is frequently the cause of wrong numbers being recorded by transportation department employees, causing confusion and needless correspondence; Be it therefore resolved that *this division recommends any action necessary to urge all railroads to follow a uniform*

practice and use markings as recommended by the American Railroad Association, also that a rule be adopted making it permissible to use such markings, disregarding the manner in which the cars were previously stenciled, and making all marks of an advertising character billable against the owners."

Favors Use of the Best Materials

The Committee on Tests submitted several individual reports dealing with linseed oil and the use of substitutes, but which did not disclose any very new or original data relating to the subject. The desirability of finding a substitute for linseed oil at its present price was admitted, but on the other hand the inadvisability of using other than the very best materials with the prevailing high labor costs was emphasized.

In this connection the following is taken from a paper submitted by B. E. Miller (D. L. & W.) as typical of the attitude of this association toward the purchase of painting materials on the basis of quality rather than price.

"Use only good, serviceable materials. As a rule, it doesn't pay to bother with anything else. The present high cost of labor and the difficulty of securing it, demand that money shall not be thrown away, partly at least, in the direction of applying paints and other materials which lack efficiency and durability. It requires no mathematician to figure out that as a rule, the higher priced material proves itself to be the cheapest in the end. This has been said so often and evidently with so little effect, that we almost hesitate to repeat it.

"Purchasing agents, unless strong pressure is brought to bear, are inclined to invite ruinous competition when placing orders for supplies. In the matter of paints, as with other materials, they are apt to purchase solely on price, unless they can be successfully convinced that in some cases at least, it is rank folly to do so. Happy indeed ought the painter to be, whose complaints when made to the proper official, receive the attention they merit and eventually reach the person responsible for the placing of orders. His duty and aim is to save money. If he can be thoroughly convinced that paying more for material means in the end true economy, he will often be persuaded to buy the higher priced goods."

Other Work of the Association

Among the other reports admitted at the convention which came in for considerable discusion were: Committee on Classification of Painting, Repairs and Shopping of Equipment; Committee on Shop Construction and Equipment; Committee on Safety and Sanitation, and Committee on Maintenance and Care of Paint and Varnish at Terminals.

In connection with the last mentioned report, Mr. Hammond of the Soo Line, explained his method of painting steel passenger cars wherein a single application of paint followed by three coats of varnish produced a satisfactory surface at reduced cost. Other speakers questioned the desirability of this method in mountainous sections of the country where tunnels were frequent or in a desert section where alkaline dust was encountered.

The convention adjourned after electing the following officers for the ensuing year: B. L. Younger, Missouri Pacific, chairman; J. G. Keil, N. Y. C., first vice-chairman, and J. R. Ayers, Canadian Pacific, second vice-chairman.

THE SUPREME COURT of the District of Columbia has refused the request of the Interstate Commerce Commission to dismiss the suit filed last May by the Western Union Telegraph Company asking for a mandamus to compel the commission to value the telegraph lines along the rights of way of the railroads as the property of the telegraph company. The commission is allowed 30 days to answer the petition for mandamus.

Railway Business Association Meeting

THE QUARTERLY MEETING of the Railway Business Association was held at Chicago on September 14. The meeting discussed the policies to be carried out by the association and the reports were submitted which will be sent out later to the members. One of the important decisions made was to move the offices of the association from New York to Philadelphia.

Report on Adequate Facilities

Knox Taylor, chairman of the Committee on Adequate Facilities, presented a report suggesting that the time has come to "seek among ourselves an outline of objects toward which our work should be aimed on the long view," and that there are certain conceptions "which we believe the whole public must understand and accept if the railways are to be assured a successful future." The conceptions suggested are these:

"1. Heavy investment in additions and betterments, with rates temporarily even higher than now, may be the only means of getting ultimately to a lower rate level or even avoiding in the future a chronic condition of indefinitely rising rates.

"2. Great need for investment in railway stocks, which should in the aggregate amount to at least half of the total railway capitalization.

"3. Citizens in the communities have a facilities stake, in addition to any investment stake, in buying securities of their railroads.

"4. Citizens will most fully benefit from the lessons of current car shortage if they provide effective means of insuring that their enterprises and agencies automatically and continuously perform the citizen's part."

The report concludes: "On these several conceptions your committee on adequate facilities hopes to arrange in due course for making available to our members the views of authorities specially qualified to aid the members of our association in reaching sound conclusions."

Report on Equipment Policies

E. B. Leigh, chairman of the committee on equipment policies, presented a report which will also be sent to members.

The text gives "a summary of the provisions of the new law in relation to character of railway equipment and other facilities" and a condensed series of statements setting forth "the conditions and principles which in our judgment should in the public interest be permitted or encouraged by the government." The policy recommended is that the Interstate Commerce Commission adhere to "regulation without undertaking management," leaving each road free "to adopt such designs as are suited to its conditions," the concern of the commission then being "not what the appliance is but what it does."

Frequency of Exhibits

Authorization was given for the appointment of a committee to confer with officers and committees of railroad associations and manufacturers' associations conducting convention exhibits concerning the proposals now under discussion for consolidation of exhibitions. The suggestions relate to railroad associations other than those at whose conventions held at Chicago in March and Atlantic City in June which are now negotiating with a view to so dating their meetings that the same exhibit can be seen by each of them in turn before dismantling. The committee has been instructed to offer its co-operation in these negotiations and also to officers and committees concerned in the mechanical convention at Atlantic City in June and the engineering convention at Chicago in March.

Roadmasters Hold Thirty-Eighth Annual Convention

Meeting at St. Louis Well Attended—An Excellent Program Presented—Large Exhibit

THE THIRTY-EIGHTH ANNUAL CONVENTION of the Roadmasters' and Maintenance of Way Association was held at the Statler hotel, St. Louis, Mo., on September 21, 22 and 23. In spite of the fact that this was the first convention following the end of government control, during the course of which the Railroad Administration took an active interest in the association and its meetings, a large attendance and keen interest in the proceedings characterized all of the sessions. The total attendance exceeded 600.

The officers of this association during the past year were: President, J. W. Powers, supervisor, New York Central, Rochester, N. Y.; first vice-president, W. P. Wiltsee, principal assistant engineer, Norfolk & Western, Roanoke, Va.; second vice-president, L. M. Denney, supervisor, Cleveland, Cincinnati, Chicago & St. Louis, Indianapolis, Ind.; secretary, P. J. McAndrews, roadmaster, Chicago & North Western, Sterling, Ill.; treasurer, Coleman King, supervisor, Long Island Railroad, Jamaica, N. Y.

Over 450 roadmasters were in the room when the convention was called to order promptly at 10 o'clock by the president. F. A. Jonah, chief engineer, St. Louis-San Francisco, and president of the St. Louis Railway Club, welcomed the convention to St. Louis. Colonel Jonah traced the early development of the railways through their pioneer days to the present time, when the need is for more permanent construction. He contrasted conditions in this country with those on French railways. There is not a single wooden bridge or a wooden building in service there today. All track is ballasted with rock, with 80-lb. rail, creosoted ties and screw spikes. Nearly all grade crossings have been eliminated, while the few remaining are protected with gates. The roadmasters in America are confronted with the necessity of working towards this condition of permanency.

H. J. Pfeiffer, chief engineer, Terminal Railroad Association of St. Louis, also welcomed the meeting to St. Louis. He pointed out the improved outlook for track work now, with the increased revenues and improving labor conditions. He emphasized the necessity of improving the physical character of the roads if they are to cope with the demands of traffic successfully.

In his address, J. W. Powers, president, referred to the necessity for the exchange of information and the co-ordination of effort if the maximum results are to be secured. The attendance at these conventions is regarded by most men as seriously as any other work of investigation for their companies. Abstracts of papers and committee reports presented at the meeting appear below:

Economic Weights of Rails

The various elements which enter into the annual cost of rail maintenance are: (1) First cost of rail in tracks—to be stated in terms of an annual charge which, allowing interest at six per cent compounded annually, will be sufficient to yield the original cost of the rail in track at the expiration of the life of the rail, whatever its life may be (this first cost of rail in track is determined from the cost of the rail new, cost of its delivery to the work, laying the new rail, the removal and disposition of old rail, and the salvage value of the rail removed); (2a) interest at six per cent on the first cost of rail in track; (b) taxes at one per cent on the first cost of rail in track; (3) interest at six per cent and taxes at one per cent on such scrap value as the rail in track will have when taken up; (4) the annual labor cost of maintaining rail of various sections in one mile of track, under like conditions of traffic, subgrade, ballast, ties and tie plating, and represents the variation in cost of track maintenance due to different weights of rail sections. Such a figure as this must, of course, be determined on the ground and the values assigned here are based on the records and observations made on selected stretches of track, some miles of selected stretches of track having been under observation for a period of one year, supplemented by such other data as could be obtained.

One detail in connection with the cost of rail maintenance which should be mentioned is the relative costs of laying heavy and light section rail. Our investigation of this phase of the subject developed that costs are apt to be raised by the general use of a heavier section of rail and we have considered the cost of installation to be a flat rate per ton, the difference in tons of rail of various sections per mile of track indicating the effect of the heavy rail on the costs of installation.

With this study of the elements involved, we have developed the annual cost of maintaining rail of various weights of sections, per mile of track, which cost includes interest, taxes, depreciation and labor, and is determined on basis of the life of rail.

The details of costs used in arriving at the annual cost of rail maintenance are given below. The costs refer particularly to the latter part of 1918 and the early part of 1919, and are as follows:

Cost per ton of new rail	$41.00
Cost to lay new rail, including delivery to work, removing and disposing of old rail, per ton	20.00
Salvage value of old rail, per ton, full tonnage allowed	18.00
Net cost per ton of new rail in track	43.00
Average labor cost of rail maintenance per mile of track per year—85-lb. new rail—labor at 40 cents per hour	135.00
100-lb. new rail	114.00
130-lb. new rail	86.00
Tons of rail per mile of track, 85 lb	133.57
Tons of rail per mile of track, 100 lb	157.14
Tons of rail per mile of track, 130 lb	204.29

The details of arriving at the annual maintenance cost of 130-lb. rail are as follows—and we will consider the annual maintenance cost when the average life of rail is 10 years.

The first cost of rail in track is stated in terms of an annual charge, which, allowing interest at six per cent compounded annually, will be sufficient to yield the original cost of the rail in track at the expiration of the life of the rail, which in this case is 10 years.

This annual charge at $43 per ton is		$3.077
2. (a) Interest at 6 per cent on first cost in track—$43..	$2.58	
(b) Taxes at 1 per cent on first cost in track at $43..	0.43	
		3.010
3. Interest at 6 per cent and taxes at one per cent (total 7 per cent) on $18 salvage value per ton when removed..		1.260
First cost (10 year life), per ton		$7.347
Tons of rail per mile of track (130-lb. rail)		204.29
Annual charge per mile of track based on 10-yr. life of 130-lb. rail		$1,501
Annual cost (labor 40 cents per hour) of maintaining 130-lb rail in one mile track		.86
Annual cost of maintenance, including interest, taxes, depreciation and labor		$1,587

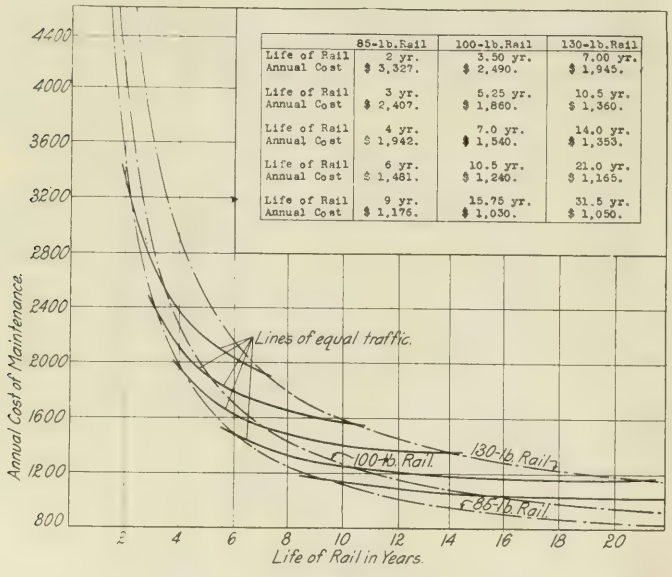
These costs for 85-lb., 100-lb., and 130-lb. rails are given by the superimposed curves in Fig. 1.

The next problem is to determine the relative life of the various sections of rail under similar conditions of traffic. Such a problem may apply to the relative life of rail for an

entire railroad, for a division or for merely a stretch of track. The results which were obtained for use in this report are based as far as possible on actual data, supplemented to such extent as was necessary by individual observations and conclusions. The units here used are fairly representative of conditions involving on one extreme—tracks in which the life of, say, 100-lb. open hearth rail is approximately four months, to the other extreme of where the life of this same rail is practically indefinite, the average life of such rail in all main tracks being from 15 to 16 years. It is essential that the relative life of rails of different weights be determined for each railroad or division, as the case may be, as closely as possible based on available data. The conclusions of the committee in the cases under discussion are—that under similar conditions of traffic, the life of 100-lb. rail is 1¾ times that of 85-lb. rail, and that the life of 130-lb. rail is double that of 100-lb. rail. The relative life of over 100,000 tons of 130-lb. rail compared to the life of 100-lb. rail in the same tracks was actually determined, based on four years' experience with the heavy rail, during which time over 4,300 tons of the heavy rail were actually removed from tracks on account of being worn out.

To allow for the comparatively short period of time for which the data concerning heavy sections was taken, the relationship between the average life of heavy section rail and 100-lb. rail was taken to be 2 to 1. The data concerning the relative life of 100-lb. and 85-lb. rail was of a more extended and broader nature but had not been kept in as detailed a manner.

Fig. 1 also shows the influence of the relative life of 85-lb., 100-lb., and 130-lb. rail under similar conditions of traffic, that is, lines representing the life of various sections of rails under similar conditions of traffic, from which can be determined the difference in the annual cost of main-



	85-lb. Rail	100-lb. Rail	130-lb. Rail
Life of Rail	2 yr.	3.50 yr.	7.00 yr.
Annual Cost	$ 3,327.	$ 2,490.	$ 1,945.
Life of Rail	3 yr.	5.25 yr.	10.5 yr.
Annual Cost	$ 2,407.	$ 1,860.	$ 1,360.
Life of Rail	4 yr.	7.0 yr.	14.0 yr.
Annual Cost	$ 1,942.	$ 1,540.	$ 1,353.
Life of Rail	6 yr.	10.5 yr.	21.0 yr.
Annual Cost	$ 1,481.	$ 1,240.	$ 1,165.
Life of Rail	9 yr.	15.75 yr.	31.5 yr.
Annual Cost	$ 1,176.	$ 1,030.	$ 1,050.

Fig. 1.—The Total Annual Maintenance Cost for Three Weights of Rail

tenance due to different rail sections. For example, suppose 85-lb. rail gave a life of two years—the average maintenance cost is $3,327—then 100-lb. rail should give a life of 3½ years, with an average maintenance cost of $2,490, while 130-lb. rail should give a life of 7 years with an average maintenance cost of but $1,945—clearly a case where heavy section rail could be used economically from a maintenance point of view.

There remains the problem of developing a measure for wear of rail based on various conditions of traffic. To accomplish this, it is first necessary to fix some unit of traffic which will readily adapt itself to such a problem and which also can readily be determined under conditions of actual operation. The number of cars per day passing over a stretch of track was finally selected as the measure of traffic conditions. Such a unit closely reflects the locomotive tons and gross tons; the average weight of cars, the average cars per train and average locomotive miles per train mile ordinarily varying between narrow limits from month to month. Also the average number of cars passing a particular point over a stretch of track during any period can readily be determined at any time without elaborate machinery or organization.

To determine the proper life to assign to 100-lb. rail under various traffic conditions, 14 stretches of track were selected

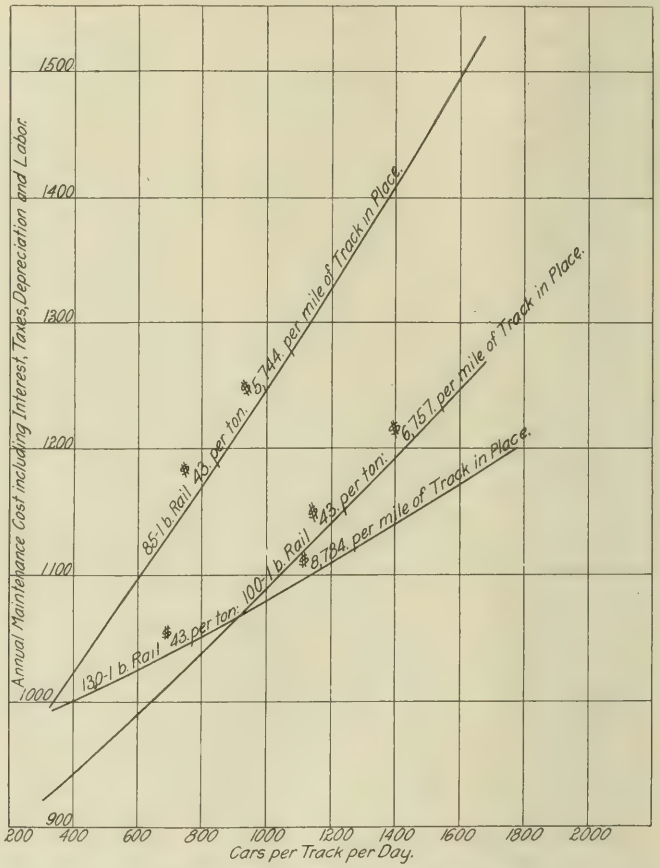


Fig. 2.—Comparative Annual Cost of Three Weights of Rail with Varying Density of Traffic

for which information concerning the car movement and rail renewals was available. From this information was determined the average life of 100-lb. rail in each stretch of track. This data varied from 417 cars per track per day to 1,697 cars per track per day.

With these data and the computed costs of rails for various weights Fig. 2 was developed, showing the relation of traffic to the annual cost of the three weights of rail. These curves show that the 100-lb. rail is economical for a traffic of not over 900 cars per track per day and that for a greater car movement the 130-lb. rail is economical. As between the 100-lb. rail and 85-lb. rail, the data would indicate that, on railroads using heavy power and having a wide range of physical characteristics, the 85-lb. rail is no longer economical, but that modern railroading demands a 100-lb. rail. When traffic reaches 1,800 cars per day over a double track railroad, the point is reached to consider increasing the weight of section to about 130-lb.

In conclusion, it is desired to point out, first, that the pur-

pose here has been to develop a method by means of which the economic weight of rail for various classes of traffic may be determined. The actual values used in this discussion are not at all theoretical but are based on performance. However, it must be understood that these values actually represent what must be accepted as a particular problem and that if the method here developed is applied it should be done with values determined to fit the particular case in question.

J. B. Baker, engineer maintenance of way, Pennsylvania System, Cleveland, Ohio (Chairman).

Equation of Track Values

It having long been recognized that the old-established practice of making the track sections a standard length, irrespective of the amount of side tracks, railroad crossings or other extraordinary conditions, was an improper method of allotment. For the past several years this matter has been given a great deal of thought for the purpose of finding some way of accurately measuring the different units of work with a view to equalizing the sections. To this end information was secured by a questionnaire containing 22 questions, addressed to about 200 railroad officers, to which 57 answers were received, which have been summarized in the following tabulated statement. The replies were generally uniform:

Subjects:	Replies	Average
1. How many miles average passing siding equal one mile of main line?	57	2.75
2. How many average miles of storage, industrial or commercial sidings equal one mile main line?	57	3.84
3. How many average main line turnouts equal one mile main line?	56	15.3
4. How many average siding, yard or other inside turnouts equal one mile of main line?	56	16.77
5. How many average main line railroad crossings equal one mile of main line?	56	10.95
6. How many average siding railroad crossings equal one mile of main line?	55	19.18
7. How many heavy-traffic, important city street crossings equal one mile of main line?	56	9.20
8. How many (medium) important city street crossings equal one mile of main line?	57	14.00
9. How many light traffic street crossings or outlying highway crossings equal one mile main line?	57	20.90
10. How many average farm crossings or other unimportant crossings equal one mile of main line?	57	46.58
11. How many average stock chutes and pens equal one mile of main line?	45	17.00
12. How many average re-icing stations equal one mile of main line?	37	4.15
13. How many average water stations equal one mile of main line?	46	5.50
14. How many average interlocking plants equal one mile of main line	51	3.40
15. How many average cattle guards equal one mile of main line?	48	48.00
16. How many average feet of track in tunnels equal one mile of main line outside?	38	28.48
17. How many average coaling stations equal one mile of main line?	47	3.82
18. How many average fire or cinder cleaning stations equal one mile of main line?	47	2.47
19. How many average station grounds equal to one mile of main line?	52	5.68
20. How many average automatic signals and incidental fixtures equal one mile of main line?	27	20.74
21. How many miles of average fencing equal one mile of main line?	48	15.07
22. How many feet of ordinary average ditching will equal one mile of main line?	42	101.60

L. C. Ayers, assistant superintendent Norfolk & Western, Crewe, Va. (chairman).

Increasing the Efficiency of Track Labor, by F. G. Jonah, chief engineer St. Louis-San Francisco, St. Louis, Mo.

The first thing necessary in considering the efficiency of workmen is to know accurately what they are doing now and what they are capable of doing, and that gets down to a basis of unit costs. In the past, we have known the total expenditures for various subdivisions of track work, but we have known comparatively little of the amount or quantity of work done for this expenditure.

It is possible for one to measure the results of his track gangs, and various railroads are now beginning to undertake it. It is proposed to describe the system which we have started on our road, and I will say that we regard it as well worth the cost, and believe we are getting some results. The basis of this information is the time book. Heretofore men have reported the amount of time that they put in on different kinds of work, but said nothing about the quantity of work done, and we have provided a time book in which these data can be kept.

We provide, first, a small pocket time book, which the foreman on the job keeps at all times, and in which he enters the names of men employed. During the day he notes in his own language what they are doing, and how much they have done. This is transferred at the close of the day's work to the monthly time book for the half of the month in which the distribution is made.

It was desired to get cost data on the essential work of track maintenance and, after all, this work falls under comparatively few heads. It was deemed advisable to print the heading for the distribution of time and to make it so plain that the foreman would have no difficulty in transferring from his pocket time book to the distribution sheet correctly. For accounting purposes it was necessary to group work under various account numbers.

These books go to the Bureau of Accounts, where the pay rolls and distribution are made up and where the statistical data relating to unit costs are compiled. The figures are made up in sheets covering definite territory. There is, first, a grouping of all the sections on a roadmaster's territory, the costs of the various kinds of work on each section, and an average for the whole territory; next, a grouping of the average of the roadmasters on a division; next, the average of all the divisions in a district, and finally, the average for the whole system. The figures are reviewed by the district engineers and attention directed to work on any territory or section which seems out of line.

Knowing the cost of work, steps can be taken to keep a good average up or to raise a low one, and a few practical hints as to what may be done along this line may be helpful. A few years ago many roads bought power cars for their section forces and, on the assumption that a man could cover so much more territory, lengthened the sections and cut out a few foremen, thus apparently trying to figure sufficient saving in foremen to pay for the gasoline cars. This was at a time when men worked 10 hr. per day. Shortly thereafter the 8-hr. day became general, and the long section is a mistake, as too big a percentage of the day's work is taken up in the time of moving to and from work; and, further, increased traffic, increased number and increased weight of trains all demand more intensive work and supervision, and many sections should be shortened, instead of lengthened. The motor car will be found economical, even on short sections. Wherever a power appliance can be used it should be to reduce manual labor to a minimum.

With increased wages a better personnel can be secured. All sections should be allowed to carry a force the year round, say, of at least a foreman and four men, expanding to a greater number at times in the summer. Steady em-

ployment the year round will hold good men on the sections and give the road a chance to develop good foremen for section and extra gangs.

Consideration should next be given to proper housing facilities. Clean, efficient labor demands a comfortable, commodious, healthful domicile, and it will pay to establish these. Extra gangs should be housed in clean bunk cars. A bunk car train should carry a car equipped with shower bath. Cars should be screened and the commissary should be clean and a substantial, nourishing meal served.

Next, after good men have been secured, see that they are fully equipped with a complete outfit of tools. That should be your personal business. Men should have all the tools they need to do any kind of work at any time.

Next is material. Money is wasted if extra gangs and section labor is waiting for material.

Do not undertake too much work by doubling up section gangs. It destroys the morale of a section foreman to take him off his own territory to help somebody else out, and the practice should be resorted to only in emergencies—wrecks, washouts, etc. Organize extra gangs to do extra work.

Discussion

This paper brought out a lengthy discussion which consisted of criticism of the particular values given in some of the items submitted in the table. This was particularly true of crossings with other railroads, it being the contention that crossings resulted in a proportionately greater amount of work than the committee suggested. The answer given to all of these objections was that the table assumed average conditions and could not be expected to cover all possible cases.

The relation of the motor car to the equation of track values and the length of sections was also considered at length, but nearly all were agreed that the introduction of the motor car can be justified without any attempted economies by reducing force or lengthening sections. It was the opinion that the doubling up of sections sometimes undertaken when motor cars were introduced was ill-advised. The character of the labor now available necessitated more supervision rather than less.

Supervision

It is the opinion of the different members of the committee, based on years of experience under varied conditions, that there is no fixed standard by which the length of a roadmaster's or supervisor's territory should be measured. On an average, the proper length should be 100 miles of main line or a freight train engine district. It should at least be sufficiently short to enable the roadmaster or supervisor to see all of his main line in any one day from a passenger train. Every roadmaster should be furnished with a motor car to enable him to see his men often and work with them on all important jobs.

On account of there being so many different systems on the various railroads we would recommend a general roadmaster on each superintendent's division who should have charge of maintenance of track, the roadmaster or supervisor to report to him. On the larger lines there should be a general roadmaster on each general superintendent's district.

As regards training foremen, one system now being worked very satisfactorily on several roads is to have a small extra gang of 10 to 15 men on the division under the roadmaster, with a first-class foreman in charge. This gang is called the "school gang," and the laborers receive five cents per hour more than other laborers on the division. Each laborer in this gang is to be given his turn at supervision under the direction of the foreman.

The members of this committee are of the opinion that it is not good policy to place young men in soft jobs, such as timekeepers, clerks, flagmen, etc., expecting them to eventually turn out as track foremen and roadmasters. We feel that the severity of our apprenticeship is a very necessary evil to the education of good foremen or roadmasters.

William Shea, general roadmaster, Chicago, Milwaukee & St. Paul, Chicago, chairman.

The discussion brought out the fact that supplying competent foremen is the most serious problem, consequently the plan proposed of training men for these positions was received with favor.

Repair of Frogs, Switches and Crossings by Welding

Proper welding is an art and requires experience and knowledge in operation. If the welded switch point chips readily, breaks off, or otherwise proves defective, the economy of the process is lost. It is, therefore, essential that proper material be used to make the weld and that a thoroughly experienced man be employed. If too much oxygen is used in the flame, it will lead to the metal becoming overheated and cause a burning of the welding seam, while if too much acetylene is used it will cause carbonization of the iron and a hardening of the metal seam. Both of these results cause a condition commonly known as brittleness and is very undesirable in a switch point.

Steel, when subjected to heat, changes its composition. This is especially true when subjected to the oxy-acetylene flame, so in order to get the best results it is necessary that the material used in welding be of a proper composition for the purpose intended. A composition steel put up in rods, and commercially known as "No. 2 rods," should be used for welding frogs and switches.

Claims have been made that welded switch points have outlasted new ones; and also that they have chipped, broken off and proven entirely unsatisfactory. Both of these contentions have a basis of fact, but the conclusion of this committee is that a properly welded switch point is not quite as lasting as one of perfect, new material.

M. Lipman, division engineer, Pennsylvania System, Philadelphia, Pa., chairman.

Other Subjects Discussed

The Committee on the Relative Economy of Treated and Untreated Ties and the Various Kinds of Wood and Their Treatment presented a summary of best practice in the handling of treated ties, including the cutting, storage, adzing and boring and insertion in the track. The committee also presented conclusions favoring the use of treated timber, including a table of the average life secured from treated and untreated ties of various kinds of wood.

Questions raised in the discussion of this report concerning the effect of winter and summer cutting of tie timber were answered in a short talk by John Foley, forester, Pennsylvania system, who showed that environment of the tie after it is made is more important than the amount of sap present. The Committee on the Construction of Street, Highway and Farm Crossings presented a progress report elaborating on the work of the last year's committee, which was devoted almost entirely to a study of macadam crossings impregnated with oils or bitumen compounds. Cost data were submitted on the basis of 1920 prices.

A paper by R. H. Howard, engineer maintenance of way, Wabash, St. Louis, Mo., reviewed the various rules of practice designed to obtain the best results in the maintenance of joints, laying special stress on supervision and efforts made to help the supervisor carry out his work. A note of caution was given on the over-tightening of bolts, pointing to the advantage of heat-treated bolts. Reference to the oiling of track fastenings led to a large amount of discussion of this particular phase of the subject, indicating that it is a matter of live interest. Various speakers outlined their

practices in applying oil either by hand or by machine, including one who told how a special nozzle was applied to a snow melter or other torch to enable such equipment to be used in summer time for spraying oil. There was a general agreement that the use of oil effected a pronounced saving in the material by decreasing the corrosion and also reducing the labor cost of tightening bolts.

The program Tuesday evening included a picture film entitled "The Americanization of Tony" and a reception and dance.

Doctor Hermann Von Scheienk, consulting timber engineer, St. Louis, presented an analysis of the supply of tie timber for American railroads, referring to the recent report on substitute ties and the findings of the United States Forest Services. He believed that while the present relation of growth and consumption points to the end of supply, changes in methods of use and reforestation will definitely postpone depletion.

Enormous stands of timber still remain untouched in central and South America, but the present obstacles to its use are great. Superior practices in the conservation of ties in Europe point to the need of much improvement in this country.

Banquet Well Attended

A banquet tendered the roadmasters, their families and friends by the Track Supply Association was attended by over 500. The speakers of the evening were C. E. Johnston, general manager of the Kansas City Southern, and Colonel F. W. Green, vice-president of the St. Louis Southwestern, both of whom directed their remarks toward those practices in the art of supervising the work of others which would restore the esprit de corps and reduce the nonproductive work, which is the potent source of inefficiency. A man-to-man contact with the foreman is an essential to this end

Telegraph and Telephone Division

THE TELEGRAPH AND TELEPHONE DIVISION of the American Railway Association opened its third session at Winnipeg, Manitoba, on Thursday morning of this week. There were over 200 members and guests present, making it one of the largest meetings in several years.

The meeting was opened with an address of welcome by Charles Gray, mayor of Winnipeg. Chairman J. S. Caskey (Lehigh Valley), in his opening remarks, outlined the work which had been accomplished by the committees and dwelled on the importance of the future work.

Following the chairman's address, the report of the Committee of Direction was read covering the activities since the last session of the division. The report gave a list of the specifications and drawings approved by letter ballot and contained information with reference to the negotiations with the Bureau of Standards regarding wire line crossings. A manual for office use and a pocket handbook for the use of the field men has been decided on, adopted and will be issued at any early date. Attention was called to the fact that several specifications covering the same class of material have been adopted by different divisions and sections of the American Railway Association and that it is desirable for these specifications to be harmonized. Provision has been made whereby the division may be informed of any action taken by state public utility commissions toward the promulgation of rules inimical to the interests of the division through the appointment of special state and regional representatives whose duty it will be to keep the division informed.

A. E. Stevens, general superintendent, Canadian Pacific, addressed the Wednesday afternoon session of the meeting on the work being accomplished by the division.

New Service Orders Issued by I. C. C.

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION, Division 5, on September 17, gave its first official and public recognition of the improvement in transportation conditions in an announcement of the suspension until further notice of its Service Order No. 11, which gave preference in car supply and transportation for the shipment of 1,250,000 tons of coal monthly to New England through tidewater ports from Hampton Roads to New York, inclusive. The order was recently suspended for a period of five days. "The action of the commission," its statement says, "is based upon a full review of the coal situation and was taken with the acquiescence and consent of the New England coal committee, and because the coal situation in New England had improved sufficiently, so that the present continuance of this emergency order is regarded as unnecessary. Whether the order giving preference will later be revived, will depend upon the further course of coal production and movement." The order of suspension says that "the emergency which caused the commission on the 26th day of July to make and enter its Service Order No. 11 has been measurably relieved."

At the same time, the commission issued Service Orders Nos. 15, 16 and 17, which continue in effect until further order, but with several modifications, the general orders previously issued giving priority to bituminous coal in the use of open-top cars and providing for the assignment of cars to coal mines for public utilities, east of the Mississippi river, and restricting the supply of cars to wagon mines.

These orders recognize the continuance of the emergency as to the transportation of coal, but by definition restrict the number of public utilities which are given preference and also allow a share of the car supply to wagon mines which are able to load cars within 24 hours. The commission declined, however, to grant the request of the steel companies that it modify its definition of coal cars in order to exempt from the order giving priority to coal, cars with sides less than 42 inches in height. By a previous order the definition was changed to exempt cars with sides less than 38 in. in height, whereas, the original order exempted cars less than 36 in. in height. Service Orders Nos. 15 and 16 supersede Service Orders Nos. 7, 9 and 12 as amended and supplemented, while Service Order No. 17 rescinds Service Order No. 14. Service Order No. 7 was entered on June 19, 1920. By Order No. 12, which contained amendments to the previous orders, the priority was continued for a period of 90 days beginning with June 21. In stating that in the opinion of the commission an emergency exists "because of shortage of equipment and congestion of traffic within the territory east of the Misssissippi river," the commission in the new orders omits the words "aggravated by unfavorable labor conditions."

Service Order No. 15 is practically the same as the previous orders which it supersedes. Service Order No. 16, contains new language restricting the definition of public utilities entitled to preference so as to include only those which directly serve the general public, in order to correct certain abuses which have occurred under the previous order. It also fails to take cognizance of the recent complaint made by the packing and live stock interests asking for equal consideration with public utilities for the packers' refrigeration plants. The order provides:

"That effective September 19, 1920, and until further order of the commission, all common carriers by railroad within said territory to the extent that may be necessary in order that public utilities which directly serve the general public under a franchise therefor with street and interurban railways, electric power and light, gas, ice, water and sewer works; also ice plants which directly supply the public generally with ice; also hospitals, schools, and other public institutions of the United States, state or municipal govern-

ments, may be kept supplied for current use, but not for storage, exchange, or sale, be, and they are hereby, authorized to place, furnish and assign cars to coal mines for the transportation of such coal in addition to and without regard to the existing ratings and distributive shares for mines upon said railroads; provided, no cars shall be so placed, furnished or supplied by any such carriers without written application therefor, showing that such coal is needed solely for the current use of the applicant and not for storage, exchange, or sale, in order that applicant may continue its public service in daily operation; which application, in the case of public utilities not owned by some governmental agency, shall be approved by the public service commission or railroad commission of the State in which said plant is located if there be one; and all such applications shall be concurred in by the delivering railroad; and provided further, that such coal shall not be subject to reconsignment except to public utilities or public institutions as above described, and that a written report of the cars placed hereunder shall be made to the Interstate Commerce Commission by the railroad placing the cars, as often as once each week."

Service Order No. 17 directs the carriers to establish and observe the following rule in the supply and distribution of open top cars to wagon mines:

"Upon any day when a common carrier by railroad is unable to supply any mine upon its line with the required open-top cars, open-top cars shall not be furnished or supplied by it to any other mine which customarily does not load or is unable to load such open-top cars with coal within 24 hours from and after the time of placement for loading by the carrier, until all other mines have been fully supplied with open-top cars."

The National Coal Association has issued a statement saying in part:

"With the temporary suspension of the New England priority order, the entire soft coal situation throughout the country is appreciably improved. The suspension of the New England priority makes it possible for a substantial quantity of coal, released from tidewater shipments, to be diverted to other points in the East and in the middle West. The diversion of this coal can be made, it is stated, without prejudice to the supply which New England will need to fill its winter requirements.

"Although the New England order is only temporarily suspended, every evidence is at hand to indicate that the New England demands for the remainder of the year will be met without further resort to preferential shipments. The estimated requirements for New England for the calendar year of 1920 are 22,000,000 tons of soft coal. From January 1 up to September 11, 15,450,000 tons had been shipped into New England. Of this, 8,094,000 tons went all-rail and 7,386,000 tons by way of tidewater. It is expected that the remaining 6,520,000 tons needed to supply the 22,000,000 tons for the winter will be shipped into New England before the middle of December. The railroads have signified their ability to handle this tonnage in the ordinary way, in tidewater and all-rail movements.

"Evidence of how effectively the New England priority worked is found in official figures submitted to the U. S. Geological Survey, showing recent movements of coal for New England. Under the program agreed upon by the bituminous coal operators and New England coal distributors early in July a movement of 2,000,000 tons of coal a month, all-rail and through tidewater was set down. Of this, 1,250,000 was to go to tidewater, the balance all-rail. In July, 2,573,000 tons of soft coal were shipped to New England, 1,566,000 all-rail and 1,007,000 through tidewater. In August, 2,458,000 tons were shipped in the New England movement, of which 1,048,000 were dumped at tidewater and 1,410,000 went all-rail. The all-rail shipments are estimated from reports of the American Railroad Association on the number of cars moving through the Hudson River gateways.

"The fact that New England, at the beginning of last week, had all the coal at disposal that could be immediately absorbed in the tidewater and all-rail movements was the factor that induced the New England Coal Committee to advise the Interstate Commerce Commission that the priority order was no longer necessary.

"With the New England situation now admittedly improved so that special relief is no longer necessary, efforts are being redoubled by the operators, railroads and shippers to clear up the shortage in the Northwest, where the situation has been even more acute. While there has been a slight decrease in the last three weeks in the Great Lakes movement under priority order No. 10, the railroads are endeavoring to make up the deficiency, with the announced expectation of fully meeting the requirements before the close of navigation, about December 1. Up to this week the lake movement for the year aggregated approximately 13,900,000 tons, out of a scheduled movement of approximately 24,000,000 tons. The remaining tonnage must be shipped before the lakes become unnavigable, entailing a movement of over 1,000,000 tons a week. This the railroads promise to accomplish.

"As soon as the Northwest program is cleared up ample coal will be released for the balance of the country, with every assurance that all the wants of the big and small consumers will be adequately met before winter sets in."

Chief Interchange Inspectors' and Car Foremen's Convention

The Chief Interchange Car Inspectors' and Car Foremen's Association held its twentieth annual convention at the Windsor Hotel, Montreal, P. Q., September 14-16. At the session on Tuesday morning President J. J. Gainey emphasized the benefits derived from the activities of the association in advancing knowledge regarding car construction and maintenance and promoting a uniform understanding of the A. R. A. rules and interchange matters in general. At this session there was also presented a paper by J. M. Gitzen on Transfers and Adjustments of Lading under the A. R. A. Rules for Mechanical Defects.

The meeting on Tuesday afternoon was devoted to a discussion of the A. R. A. Rules of Interchange with particular attention to the changes adopted at the June convention. This discussion was continued on Wednesday morning and at the conclusion a paper on the Transportation of Explosives was read by J. E. Grant of the Bureau of Exposives. An address on the same subject was given by J. O'Donnell, also representing the bureau. The influence of the work of the car department on the elimination of loss and damage to freight was discussed by E. Arnold, freight claim agent of the Grand Trunk.

Two papers were presented at the meeting on Wednesday afternoon, the first on the Lubrication of Freight and Passenger Equipment, by M. J. O'Connor; the second on the Best Methods of Repairing Cars in Train Yards, by O. E. Sitterly. An interesting feature of this session was the showing of moving pictures illustrating proper and improper practices in designing and maintaining brake beams and brake shoes, prepared by the Chicago Railway Equipment Company. The meeting on Thursday was devoted to the reports of committees, the election of officers and miscellaneous business.

The officers chosen for the year 1920-1921 are as follows: President, E. Pendleton, C. & A.; first vice-president, A. Armstrong, Atlanta, Ga.; second vice-president, W. F. Westall, N. Y. C.; secretary-treasurer, W. R. Elliott, T. R. R. A. of St. L. Members of the executive committee: W. H. Sherman, Grand Trunk; and A. Herbster, N. Y. C.

American and European Railroad Conditions*

Comparison Shows Fortunate Position of This Country; American Labor the Best in the World

By S. M. Vauclain
President, Baldwin Locomotive Works, Philadelphia, Pa.

EVERY RAILROAD organization is simply an organization for the manufacture of transportation. The locomotive business over which I preside is merely a manufacturing institution for the production of locomotives, which today are the principal requisites for transportation throughout the entire world.

After the war was over, I went abroad to see in just what condition the various countries might be.

Arriving in France, a country supposed to have been devastated by the war, I found no devastation except in a small portion of the country over which the Germans had traveled. The houses were all shot to pieces, but the battlefields about which we have read so much, and which the pessimists of the world had prophesied would never again bear fruit, had been cleaned and restored to normal condition. Grain was growing in the fields; the vineyards were just as they always had been, most carefully taken care of. Every vine was in its place, or a new vine where the old one had been, and in all that country supposed to have been devastated, where people were satisfied to live in their cellars. I did not see one sorrowful, scowling face. No matter what these people had, they were thankful that there was at least something left them and they were cheerful with each other. They said, "We have much work to do, but we will do it; all we need now is material with which to work, and machines to work with. But without means of transportation it is impossible for us to secure either."

Passing through Vienna, across through Czecho-Slovakia and into Poland, everything seemed to be in fair order. But as we went on and on transportation became more and more difficult. The trains were slower and the delays were great. Transportation seemed to be everything. If only transportation could be provided to these countries, not long would be required to bring them back once more to their original condition, and prosperous people would result.

After reaching Warsaw, we passed up to Danzig, where nearly all the German submarines had been constructed. All the grounds and buildings which had been provided for that work were being used to put together 150 Baldwin locomotives that had been supplied to the government of Poland on faith that the government would some day pay the bill. A visit there confirmed what had been said, that if these locomotives could be made to run, the country would be made to grow. The food that was rotting in the fields in some places could be distributed, and there would be no starvation.

I soon made up my mind that, instead of hundreds of millions of money to be sent to these countries from the United States to feed the people, all that was needed was a few millions in locomotives so that transportation would be at their command; with transportation they could rescue themselves.

Leaving Danzig and going down from Warsaw to Cracow, Lemberg, and Czernowitz, transportation was more and more difficult. The patience of this people was remarkable; the traveling public was jammed in the cars. It was impossible to find standing room for another person.

We hear all sorts of criticisms of the services rendered by the railroads in this country. God forbid that we ever have to undergo transportation difficulties such as I underwent on my way to Bucharest. The bumpers of the cars were crowded; in some inconceivable way men locked themselves to the long buffers with their legs so intertwined that it was impossible to drop on the track. Two men would sit that way, sometimes holding their wives on their laps. The cars were fitted with ladders, and there were resting places for people, and the roofs actually afforded seating capacity. After leaving Czernowitz, there were twenty-five people, men, women and children, on the roof of my car, leaving in the dead of night. They had their belongings with them. I counted seven pigs and many chickens, all carried under the owners' arms, while waiting for the train to move.

But what impressed me was that they enjoyed the transportation that they had. They were satisfied with it, because they had nothing better. I did not hear a single grumble. I did not hear a man swear. I saw plenty of people cry because they could not get a place to stand on the train or another square foot to sit down on top of the roof. Arriving in Bucharest I went to see the Minister of Public Works. He said, "We must have locomotives, and we have no money. Unless we get transportation we are doomed. Now, how are you going to help us?" I suggested that we would swap locomotives for oil. He did not think they could get the oil to Constanza, the seaport. But the old gentleman who had charge of the railroads was an army man. He said, "I think that is the right plan, and I will get a little oil down." I said, "All right. We will start with a little oil, and by the time we get these locomotives over you can haul more oil, and I will get paid some day, somehow."

The next morning the King sent for me, and he said, "You must find some way to sell us locomotives." "I have suggested to your ministers that they buy them with oil." He said, "I will see what I can do."

The next morning the Queen sent for me, and I found the Queen the best business man in Rumania. She said, "You tell me how we must buy the locomotives and I will see it is done." I told her. She said, "It will be done." And it was done.

And that is what we need in the United States—transportation. We are rich in transportation compared to those people, and we have got to lend a helping hand to them.

Transportation has recovered in France probably sixty-five per cent. In England they really need fifty per cent greater efficiency. I was tempted to say they would have to do double what they have now. Their deficiency is not only in locomotives and cars, but in man power.

I have heard it said by some very prominent railway men: "It is up to labor. If labor will only do this or if labor will only to that, we can get this transportation in shape."

I don't like to hear that. We don't work for labor. Our shops are not here for the benefit of labor. Our locomotives, our railway transportation, our passenger stations, are not here for the benefit of the men who do the work. They are here for the benefit of the people of the United States. We are here to operate these railroads and to provide and

*From a talk before the Western Railway Club, Chicago, September 21, 1926.

build the motive power for them, and we must find a way to get along with American labor, which is the best labor in the world. I have twenty thousand men working for me in Philadelphia today, and I cannot find a single fault with those men. It is immaterial to me what nationality a man is. All I care for is that he works as hard as I do—and he has got to.

It would be a calamity if transportation could be restored tomorrow morning, because there would be nothing else in shape for transportation to take care of. It has got to move with everything else. Don't be discouraged if you don't make the headway that your ambitions cause you to try to make. I heard a railroad man say, "We can't hire any locomotive machinists." Of course you can't. A great many who used to be in the railroad shops are automobile machinists today, making more money. But you are going to get some of them back and the situation is going to equalize itself. So don't be discouraged.

But men who employ men must set the example. They must develop an interest in front of the man they are going to command, to show his interest in his work.

I find it not at all difficult to be at my office at seven o'clock in the morning. I go because my men go to work at seven o'clock in the morning, and we have an iron-clad rule that every foreman must be there at seven o'clock in the morning. He must have a cheerful face; he must welcome the men with a smile.

Suppose a man comes down to work in a rainstorm and he cannot get in except at Number Seventeen gate. He passed all the way down from Number One gate to Number Seventeen gate, perhaps a block away. Then he goes in and punches a clock. Before he gets to his work he is soaked. I would not have a time clock in my shop. If a man asked me to punch a time clock I would tell him that I would get a job some place else. I won't punch a time clock, but I will be there at seven o'clock. If the men come at half-past six they can get in. If they come in at Number One door they can walk through the shops until they get where they belong. If a man comes in late, he goes to the Late Ticket office, where he gets a late ticket. The watchman takes the late ticket and sends it to the foreman. The man does not get fined for being late. We fine the foreman for having a man that won't come in on time. The foreman pays the fine; but the man knows he is paying the fine, and he will work harder than any day he came in promptly at seven o'clock.

So-called union labor can be handled, but it can't be handled the way some people try to handle it. In a shop there is no obligation on the part of the workman to do a certain amount of work in a day, unless he is working piece work, and I understand that piece work has been ruled out of the railway shops. But piece work is going to come back again, and all kinds of task work that honest men impose upon themselves is going to come back if we have patience, and only set an example. But we cannot tell men these days to "be there," and "do this." We must be there with them, and say, "Come on, boys, this has got to be done," and it will be done.

We have everything to be thankful for. Our transportation today is at least eighty per cent normal. Let us not think that we must have a whole lot of new locomotives and new cars. Let us make the best out of the locomotives we have. If a man comes to me to buy locomotives I say, "Get along with as few as you can. Next year buy more. After that help yourself." Now is the time to economize, to take up what we have and be satisfied with it, to get things in shape. If these railway clubs are persisted in, if men speak in the proper temper at these clubs and get everybody interested in setting him the example, we are not going to have trouble with the laboring man of this country, and the transportation problem will be solved.

Prompt Handling of Refrigerator Cars Urged

WASHINGTON, D. C.

COMMISSIONER AITCHISON of the Interstate Commerce Commission, has issued the following circular letter to its terminal committees.

"Your attention is directed to the urgent necessity for the prompt handling of refrigerator cars. Strong representations have been made to the commission as to the enormous volume of highly perishable foodstuffs which must be moved by the railroads during the remainder of the year. If these commodities are not transported promptly and efficiently, a double loss will incur, and the producer and consumer will both suffer.

"Please immediately inaugurate a campaign and secure the co-operation and support of all carriers and all shippers and receivers of perishable freight in your territory to the following:

"To the Shippers—Order cars only as required for immediate loading. Endeavor to load so that car may go forward on *first* train after placed.

"To the Consignees—Give order for delivery in advance of arrival. Unload car with all possible speed and in every case so that empty car may be taken out on *first* switch following placement. Consider the handling of these cars in terms of *hours, not days.*

"To the Carriers—Handle refrigerator cars, either loaded or empty, in preference to any other class of car.

"When in bad order, have them prepared in preference and as quickly as possible. See that cars are placed promptly for unloading and when empty, started to loading point on first train.

"See that the use of refrigerator cars is confined to appropriate commodities, and that they are not abused.

"Kindly report to the undersigned the degree of success which attends your efforts to relieve this acute and dangerous situation."

In a similar letter to all state railroad and public service commissions, Commissioner Aitchison asks them to lend their active influence and support to this important matter and, through their inspectors or by other means, assist in the prevention of delays to refrigerator equipment.

Transportation Conditions

WASHINGTON, D. C.

AS INDICATING THE FACT that the congestion of freight resulting from the switchmen's strike has been nearly cleared up, the weekly report of freight car accumulation compiled by the Car Service Division of the American Railroad Association for the week ended September 10 shows the greatest reduction made in several weeks, to 50,737 cars, as compared with 64,060 the week before. For several weeks there has been a reduction of about 5,000 cars and a special drive was conducted during the week of September 10. An accumulation of 50,000 cars is very little above what is to be expected under normal conditions when the volume of traffic is heavy. Large decreases were made during the week in the number of cars held for local destinations and on account of connections' inability to accept. A total of 25,808 cars was held for export and coastwise movement. There were 8,387 cars held on account of inability of connections to accept, 4,372 for local destinations, 2,553 for disposition other than reconsignment, 3,039 for reconsignment, 4,369 on account of consignees' inability, and 2,209 on account of embargoes.

Revenue freight car loading for the week ended September 4 failed to continue the gains that had been shown for several previous weeks, but the total was 947,743, as compared with

904,393 in 1919, and 872,560 in 1918. For the previous week the total was 985,064, which was within 15,000 of a record. The large increase as compared with the corresponding week of 1917 is accounted for by the fact that the Labor Day holiday occurred in that week that year. For the five weeks ending September 10, the loading has been greater than for the corresponding period of 1918. The report compiled by the Car Service Division of the American Railroad Association is as follows:

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

Summary—All Districts: Comparison of Totals This Year, Last Year, Two Years Ago. For Week Ended Saturday, September 4, 1920

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year 1920	Corresponding year 1919	Corresponding year 1918	Received from connections: This year 1920	Corresponding year 1919	Corresponding year 1918
Eastern	1920	7,079	3,043	48,562	3,366	8,353	11,279	46,908	98,410	227,000	.....	.....	270,565	.....	.....
	1919	7,158	2,609	44,098	3,309	7,013	6,782	20,247	112,599	.....	203,815	201,877	.....	244,067	242,436
Allegheny	1920	2,973	3,728	61,143	6,372	3,245	15,675	39,811	74,517	207,464	.....	.....	145,410	.....	.....
	1919	3,401	3,403	55,246	3,519	3,387	14,164	40,855	74,499	.....	198,474	199,841	.....	139,551	176,564
Pocahontas	1920	170	247	23,916	711	1,875	205	3,074	6,799	36,997	.....	.....	21,014	.....	.....
	1919	253	355	21,606	626	2,195	294	120	9,017	.....	34,466	38,542	.....	20,120	19,105
Southern	1920	3,261	2,124	24,875	1,640	18,293	3,026	33,355	38,292	124,866	.....	.....	74,858	.....	.....
	1919	3,362	2,410	23,991	402	18,363	2,316	18,508	50,886	.....	120,238	114,698	.....	71,481	68,473
Northwestern	1920	13,092	7,147	12,268	1,488	15,831	43,613	27,490	38,884	159,813	.....	.....	63,251	.....	.....
	1919	14,766	9,484	8,198	1,181	15,543	42,066	20,285	48,883	.....	160,406	157,362	.....	65,834	71,199
Central Western	1920	11,125	10,534	23,166	470	6,282	2,962	31,621	43,290	129,450	.....	.....	74,114	.....	.....
	1919	12,947	12,272	18,909	713	6,035	3,429	21,666	51,651	.....	127,622	109,524	.....	68,265	66,244
Southwestern	1920	4,153	2,379	5,419	121	8,516	500	16,804	24,261	62,153	.....	.....	53,433	.....	.....
	1919	5,295	2,767	6,503	106	8,342	353	12,430	23,576	.....	59,372	50,716	.....	50,561	41,230
Total all roads	1920	41,853	29,202	199,349	14,168	62,395	77,260	199,063	324,453	947,743	.....	.....	702,645	.....	.....
	1919	47,182	33,300	178,551	9,856	60,878	69,404	134,111	371,111	.....	904,393	.....	.....	659,779	.....
	1918											872,560			685,251
Increase compared	1919	.....	.....	20,798	4,312	1,517	7,856	64,952	.....	43,350	.....	.....	42,866	.....	.....
Decrease compared	1919	5,329	4,098	.....	.....	.....	.....	.....	46,658	.....	.....	.....	.....	.....	.....
Increase compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	75,183	.....	.....	17,394	.....	.....
Decrease compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

The report of deferred car requisitions for the week ending September 8 has been held up for correction. It has become apparent that a number of roads have been reporting the accumulated shortage for a week instead of the average daily shortage, as indicated by the fact that some roads have reported a shortage considerably in excess of their daily loading capacity. Therefore, telegraphic requests have been made for a correction of the figures and it is believed that the investigation will show that the figures which have been reported are too high.

Reports of the local car service committees for the weeks ending September 11 and September 18 show continued and marked improvement in transportation conditions at almost all points and a general freedom from congestion. In many cities business offered is still greater than the railroads can handle currently, but at many points covered by the reports all business is being handled currently. Generally speaking, switching service and interchange are on a normal basis. A shortage of cars is reported for most terminals, but there are also some reports of comparatively light business attributed to some extent to the uncertainty of future business conditions. Special efforts are being devoted to the repair of bad order cars and continued progress is reported in the campaign for heavy loading and prompt release of equipment.

The Pittsburgh committee for the week of September 11 reports that rearranged crew and locomotive runs which admit of skipping one or more classification yards compared with the former practice, and the movement of cars with shipments for one consignee or destination in solid trains or blocks, has enabled the railroads to surpass previous records as to volume handled. The labor situation is reported as normal. Industries report cancellations and suspension of orders to some extent but orders still remain on the books representing a volume of production estimated about 40 per cent in excess of the transportation capacity available.

At Milwaukee 7,434 cars were repaired during the week as compared with 6,417 the previous week. The grain loading Buffalo lake boats for the week of September 10 was 164,250 bushels, as compared with 347,875 bushels the preceding week.

The St. Louis committee reports that 459 embargoed cars were released during the week of September 11. During the week 18,840 cars were repaired and the switching force is normal.

At Buffalo 200 embargoed cars were disposed of during the week of September 17. The normal switching force at this terminal is 2,004 and 1,850 men were working. A large number of former switchmen have applied for reemployment, but with other lines than those with which they were employed. The grain movement has started and there were 1,411,737 bushels of grain in the elevators. The labor situation is reported as practically normal. 889 cars of grain were loaded out during the week of September 15, as compared with 686 the week before.

The Washington committee reports that interchange, industrial and train switching are being handled currently and promptly.

At New York many solid trains have been made up to speed up the operation of the terminal. All lines have modified embargoes to allow practically a free flow of freight into the terminal with the exception of freight handled on a permit basis. Switching is normal on all roads. Six hundred and seventy bad order cars were repaired on Sunday. Good results are being obtained through the efforts of special representatives in checking the prompt release and heavier loading of equipment. One line handled 4,000 more tons of freight at one of its New York stations during August than ever before in the history of the road. Reports from another line indicate an increase of 33 per cent in the loading per car as compared with last year. 18 cars of New York pier freight and 20 tons of l. c. l. freight were placed in storage, due to slow acceptance by consignees.

The Philadelphia committee, reporting for the week of September 17, said that all embargoes affecting the terminal had been removed. Switching service at Philadelphia and at Camden is normal. A total of 19,962 cars was unloaded at Philadelphia during the week, as compared with 17,051 cars the week before.

The Cleveland committee reported that the practice of solid movement to breakup points outside the city is being continued and it is necessary to reroute traffic. Switching service is about 95 per cent normal. All lines are repairing an average of about 1,600 cars a day. An average of 1,482 men were at work on car repairs, as compared with an authorized force of 1,795. The switching force was 348 men,

as compared with a normal of 372. The Cleveland Yardmen's Association, after a vacation of 22 weeks, voted to return to service without the restoration of seniority rights.

The committee has inaugurated a special campaign to expedite the release of refrigerator equipment. A special check by the committee covering 10 days in August showed 3,214 cars held over the free time, a total of 12,100 car days, by the receivers, while 1,108 cars were delayed for a total of 3,062 car days by shippers for loading.

The Cincinnati committee reported labor as practically 100 per cent as to numbers, but only 75 per cent in efficiency.

The Chicago committee for September 11 reported switching as being performed generally on a normal basis. The number of cars held on account of accumulations had been reduced from 1,545 on September 4 to 793 on September 11.

The St. Paul committee reports that terminal transportation conditions are efficient on all lines, including the interchange of cars, switching to and from industries and the movement of trains in and out.

New York Central Bond Issue

After having issued its formal order approving the $25,000,000 bond issue as noted in last week's issue the Commission on September 21 issued a report of Division 4 on the railroad's application which discusses some of the points raised at the hearings, particularly the question as to the amount of the Commission allowed to the bankers that handled the issue. The report says in part:

"It developed at the hearing that the proposed collateral trust bonds had been sold on August 20, 1920, subject to our authorization. While the law does not prohibit such a conditional sale in advance of approval of an issue of securities, carriers should realize that we shall not be controlled in our action by representations that failure to accord approval of issues conditionally sold will result in disturbance or disarrangement of plans based upon anticipated approval.

"The facts in regard to the sale are briefly these: It was made without competition. Applicant dealt only with J. P. Morgan & Co., and accepted that firm's agreement to endeavor to form a syndicate to purchase from ourselves and associates at 97 per cent and accrued interest and offer for public subscription at par and accrued interest. If this endeavor proved successful J. P. Morgan & C., agreed to buy the bonds at 96.5259 per cent of par and accrued interest, or, in other words, upon a 7½ per cent basis. The associates mentioned in the agreement were eventually the National City Company and the First National Bank of New York. The evidence shows that on August 18, 1920, J. P. Morgan & Co., by wire and letter, invited various dealers in investment securities throughout the country to become members of the syndicate, notifying them of the amounts of their participation, to which they were to signify their assent by 10 o'clock on the morning of August 20, when the subscription books were to be formally opened. Out of 428 dealers to whom the invitation was sent, including J. P. Morgan & Co., 403 accepted. The subscription books were closed within two hours of their opening, and there were 6,473 subscriptions, at par and accrued interest totalling $39,393,500, an oversubscription of more than 50 per cent. The evidence shows that the contract of conditional sale between J. P. Morgan & Co., and applicant was not consummated until after the formation of the syndicate on August 20.

"The entire cost to the applicant of marketing the issue was the difference between the par value of the bonds and the sale price to J. P. Morgan & Co., this difference being $868,525, plus small amounts for taxes, legal services, and the engraving of the certificates. J. P. Morgan & Co., received as syndicate manager $118,525, which was divided with its associates, and out of which it paid certain clerical expenses, but none of the other expenses of the syndicate. The syndicate members who placed the bonds with investors received from the syndicate for such services a commission of 1½ per cent on all sales within the amounts allotted to them and a commission of 2 per cent upon sales in excess of the allotments. After deducting these commissions and the expenses of the syndicate, the portion of the $750,000 remaining was distributed to members of the syndicate in proportion to their allotments. This profit amounted to about 1.1 per cent. Out of the 403 syndicate members, 26 sold no bonds. The distribution of the $750,000 is shown in the following table:

Gross profit of 3 per cent		$750,000
1½ Per cent straight selling commission on $25,000,000	375,000	
½ Per cent extra selling commission on $10,026,000	50,130	
		425,130
		$324,870
Legal expenses, advertising, etc.		50,000
Net profit, or 1.09948 per cent of $25,000,000		$274,870

It appears that the main items of expense comprising the $50,000 were approximately $27,000 for advertising and $15,000 for legal services.

"Conditions arising out of the war have radically changed the character of the investment market. Evidence was offered to the effect that owing to the heavy income tax the tendency of large individual buyers is to purchase taxfree securities. High returns promised in competing lines of investment deter some investors from investing freely in railroad securities. Higher margins on the placement of certain competing investments also incline distributors to prefer the placement of the latter. The banks moreover find it necessary to use their funds chiefly for commercial purposes. To a much greater extent than heretofore railroad securities must, therefore, be sold to small buyers, and this makes necessary more comprehensive and expensive machinery of distribution. Applicant testified that it had no means of effecting such distribution upon its own account, and that it resorted to J. P. Morgan & Co., because of that firm's prestige and experience, and established connections with investment houses all over the country. In other words, Morgan & Co. acted as middleman between the corporation and the distribution machinery necessary to place so large an issue of securities, and in the opinion of applicant the issue could not have been effected in any other way! Evidence was also offered by representatives of investment houses as to the greatly enhanced cost at the present time of distributing securities, because of increased salaries, higher rents, the necessity of appealing to a wider field of investors, and other factors entering into the conduct of the business.

"We have thought it necessary to set forth in detail the circumstances and cost attending the marketing of the proposed issue, because the assurance of reasonable terms afforded by competitive bids was not present. In saying this we realize that, under the conditions prevailing in the financial world, applicant probably could not have obtained the advantage of open competition; but this fact merely emphasizes the necessity of our considering in this and all similar cases the terms of sale which we are asked to approve. In the present instance, in view of the small financial risk and the apparent ease with which the subscriptions were obtained, we think the discount at which the bonds were sold was liberal. The evidence, however, is not sufficient to justify a conclusion that the cost of floating the issue was such that we ought, under all the circumstances, to withhold approval of the terms and conditions set forth in applicant's petition.

"The subject matter is plainly one deserving of attention, and it is desirable that carriers intending to present applications for the approval of security issues should appreciate that the proposed terms and conditions will be the subject of our careful consideration."

General News Department

William C. Hopson, airplane mail carrier, made the trip from Cleveland, Ohio, to Mineola, N. Y. (New York City), on September 18, in three hours, one minute, or at the rate of about 141 miles an hour. The usual time for this 425-mile trip is over four hours.

A fine of two thousand dollars was imposed on the Lehigh Valley Railroad in the United States District Court at New York City on September 20, for wilful departure from legal freight tariffs. The indictment dealt with overcharges on shipments of hay made in 1916 and 1917.

The Railway Association of Canada, in Circular 9, dated September 17, referring to the present shortage of cars, calls upon all railways to apportion available cars among shippers on an equitable basis. Industries emptying cars on their sidings are not entitled to any more favorable treatment than that accorded other shippers. In cases where a shipper empties a larger number of cars than he is entitled to for loading on an equitable distribution basis, he must be called on to turn back the excess.

The Southern Railway has put in service 1,093 freight cars since March 1, when the railways were returned to their owners; and new cars are being completed at the rate of eight cars a day. This equipment consists of 555 new steel underframe box cars and 538 steel frame coal cars, rebuilt from bad-order cars which were totally unfit for service and past the stage for economical repair. The cars now being turned out are coal cars. The 1,093 cars were all built at the Lenoir Car Works, Lenoir City, Tenn.

Franklin K. Lane, former Secretary of the Interior, summarizing a survey of transportation conditions throughout the country, made through 900 field representatives of the Fidelity & Deposit Company of Maryland, reports a marked improvement. "Transportation conditions are improving everywhere," the statement says, "and substantial reduction in the freight-car shortage is reported in every district except in the Rocky Mountain states, in the Southwest and in the district including Kentucky, Tennessee, Alabama and Mississippi. An improvement is noted in the latter district. There is no shortage of raw material sufficient to curtail production reported from any of the nine geographical districts into which the country was divided for the purpose of the survey. In no section of the country did the investigators find sentiment in favor of government ownership of railroads, and everywhere better transportation conditions are reported."

R. R. Y. M. C. A. International Conference

The fifteenth international conference of the Railroad Young Men's Christian Associations of North America will be held in Richmond, Va., November 18-21, 1920. It has been the custom to hold these conferences at three-year intervals, but the world war has interfered with this arrangement and this will be the first conference for a number of years. It is expected that about 1,200 railroad men will be present, representing every section of the country and every department of railroad service. The program is being prepared under the direction of Dr. John P. Munn, chairman of the Transportation Committee of the International Committee of the Y. M. C. A., and E. L. Hamilton, senior transportation department secretary.

B. & O. Spans Rolled Into Place

Two trusses with a total length of 410 ft. were rolled out and a double track deck plate girder span 97 ft. long and a double track through truss span 261 ft. in length were rolled into place in the bridge of the Baltimore & Ohio across the Allegheny river at Pittsburgh in 17 min. on September 1. Because of the heavy traffic passing over this bridge and the necessity of maintaining practically continuous service the new spans, which were of a total weight of 1,100 tons, were erected on falsework on the downstream side of the existing structure. Another span 434 ft. long is now being erected and will be moved into its final position in a similar manner late in the fall, at which time the new spans referred to above will be raised approximately 15 ft. vertically to bring them to the new level of the bridge. This work as projected was described in detail in the *Railway Age* of May 28, 1920.

A Parting Shot

John Grunau, head of the "outlaw" switchmen's organization, issued the following announcement at Chicago on September 13:

"In the Chicago switching district it is now declared fair to work on any railroad on and after September 13. We also advise that our members in other districts resume work on the best terms possible in their respective divisional points.

"With reference to seniority rights, though we have lost our seniority we have won one of the greatest battles in the history of the railroads by forcing the government to appoint the United States Railroad Labor Board.

"We believe that every railroad man in this country is in sympathy with the so-called outlaw organization whether he has been on a vacation or not. We feel that they know we were instrumental in getting the recent increase.

"But with half of the industries of the country running on a 50 per cent normal basis and our fellow workmen who are engaged in capacities other than railroading being laid off because of the congested condition of the country's transportation facilities, we must take humanity into consideration and relieve the suffering this winter in preference to remaining out on vacation fighting for our seniority rights, and go back to work and concede our seniority."

Short Lines Want Per Diem Rate and Practices Restored

The Interstate Commerce Commission, Division 4, has undertaken an investigation of the refusal, since the termination of federal control, of a number of trunk line roads which connect with short lines to allow a reclaim allowance of two day's per diem charge to roads of 100 miles or less in length, in accordance with a practice established during the period of federal control by the director-general of railroads, and it will also look into the increase in the per diem rate charged to the short line roads. The per diem rental established during the period of federal control was 60 cents a car, but this was increased on March 1 by the American Railroad Association to 90 cents, over the protest of the short lines. The objection is made particularly by those short lines which did not accept the government's guarantee for the six months' period from March 1 to August 31.

A hearing was held before Division 4 of the commission on September 20, at which officers of the American Short Line Railroad Association asked the commission to enter an order requiring the continuation of practices established during federal control as to per diem and the two days' reclaim for the six months' guarantee period for the benefit of lines which did not accept the guarantee. It was stated that there was no desire to complicate the question by discussion of the practice to be established after September 1. Bird M. Robinson, president of the American Short Line Railroad Association, pointed out that the failure of many of the short lines to accept the guarantee was not because they expected to earn more, but because the time allowed them within which to accept was so short, and he said that their revenues had been very seriously affected by the increased car-service costs. The short lines take the position that under Section 208 of the transportation act the former practices were expected to be continued.

Daniel Willard, chairman of the advisory committee of the Association of Railway Executives, said that the per diem rate was increased because it was unremunerative, but that his committee had counselled a continuance of the two-day reclaim.

Counsel for the Association of Railway Executives does not share the opinion that the short lines have a legal right to the continuance of the former practice, but the advisory committee believes that it would be only fair that it should be continued during the six months' period. He thought that Congress had not provided for this, but that it would have done so if its attention had been called to the matter, and that the law would not prevent the commission from continuing the previous arrangement for the guarantee period. He had not formed an opinion as to the practice after September 1. It was pointed out that to order the 60-cent rate and the two-day reclaim restored as of March 1 would be at the expense of the United States Treasury, as most of the lines that have collected the higher rate are protected by the government guarantee.

American Engineering Council

The American Engineering Council of the Federated American Engineering Societies announces that its first meeting is to be held at the New Willard Hotel, Washington, D. C., on November 18 and 19. Temporary officers and committees will be chosen on Thursday morning, the 18th, and in the afternoon of that day there will be an address by J. Parke Channing, of New York, followed by a discussion of the field of activity for the Federated American Engineering Societies.

On Friday morning permanent officers will be elected and a constitution and by-laws will be presented for adoption. A committee on plan and scope will also report and general business will be transacted. In the evening there will be an address by Herbert C. Hoover.

The organization of the "Federated American Engineering Societies" was effected at Washington last June (*Railway Age*, June 11, page 1667). It includes civil, mining, metallurgical, mechanical, electrical, testing, railway, highway, municipal hydraulic, sanitary, water works, bridge, agricultural, illuminating, heating, ventilating, refrigerating, safety, radio, fire protection, automotive, industrial, military, marine, naval and chemical engineers, and architects, naval architects, chemists and geologists.

Sixty-six societies were represented at the June meeting and the action then taken was unanimous. The Joint Conference Committee of the four leading societies (29 West 39th street, New York) has issued a bulletin explaining the purpose of the federation, and, from responses received, states that American Engineering Council will have a greater number of member societies than Engineering Council, and will represent an agggregate membership in excess of 60,000.

Railway Fire Protective Association

This association will hold its seventh annual meeting at the Southern Hotel, Baltimore, Md., on Tuesday, Wednesday and Thursday, October 19, 20 and 21.

The program for Tuesday morning includes the address of the president, the report of the executive committee and the following four committee reports: On statistics, George R. Hurd (I. C.), chairman; on protection of bridges and trestles, De Witt Rapalje, chairman; on oil-burning locomotives and hazards incident to storage and supply of fuel oil, J. L. Durand (S. P.), chairman; on the use of inflammable and explosive compounds and liquids in shops, C. P. Beistle (Bureau of Explosives), chairman.

For Tuesday afternoon there are four items, viz.: Report of committee on freight car heaters, E. A. Ryder (B. & M.), chairman; report of committee on hand book (merchandise in transit), W. S. Topping (Bureau of Explosives), chairman; illustrated talk on construction and operation of oil-burning appliances, by James Lalor; report of committee on fire protection of passenger train cars, E. W. Osborne (N. P.), chairman.

On Wednesday morning the discussion will be on the report of the committee on fire prevention and protection of shop plants, J. R. Peters (Penn.), chairman.

On Wednesday afternoon there are four items, viz.: Address by C. W. Galloway, vice-president of the Baltimore & Ohio; a paper on "Moral Hazard Involving Personal or Individual Responsibility for Fire Losses," by W. S. Wollner (N. W. P.); report of committee on storage and handling of gasoline and electric motor trucks in freight depots and terminals, E. W. Reilly (Erie), chairman; paper by W. F. Hickey (N. Y., N. H. & H.) on hazards incident to the location of industries on railroad rights-of-way.

On Thursday morning there will be a symposium on practical problems of field engineers (a) Special shop hazards—discussion directed by P. A. Bissell; (b) special hazards incident to transportation and terminal operation—discussion directed by E. W. Osborne (N. P.); (c) how to obtain personal recognition of individual responsibility for fire loss—discussion directed by E. Williamson (Southern).

This will be followed by unfinished business, new business and the election of officers.

Members are requested to reserve their rooms direct with the hotel management. The Southern Hotel has quoted rates ranging from $3.50 for a single room with shower bath, up to $7 for a double room, with bath, and twin beds for two persons.

The chairman of the committee on arrangements for this meeting is B. S. Mace. The president of the association is E. B. Berry (Southern), Washington, D. C., and the secretary is R. R. Hackett (B. & O.), Baltimore, Md.

Track Supply Exhibit at Roadmasters' Convention

With some 56 exhibitors of railway track materials, supplies and appliances on display, the efforts of the Track Supply Association were fully rewarded, for the ninth annual exhibit held in connection with the Roadmasters' convention at St. Louis was an entire success. The exhibitors were at some disadvantage because the show had to be held on the third floor, whereas the convention was on the sixteenth. A further handicap lay in the fact that the exhibits had to be divided up in a number of small rooms. Notwithstanding these difficulties, the attendance at the show was large.

The officers of the Track Supply Association for the past year were: President, W. H. Armstrong, manager, tie tamper department, Ingersoll-Rand Company, New York; vice-president, David T. Hallberg, assistant general sales agent, The P. & M. Company, Chicago; secretary-treasurer, W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y.; directors, E. T. Howson, western editor, *Railway Age*, Chicago; Alexander Chapman, western sales manager, The Rail Joint Company, Chicago, and H. T. Potter, sales manager, Wyoming Shovel Works, Wyoming, Pa.

Following is a list of the exhibitors with the supplies displayed and representatives:

Air Reduction Sales Company, New York—Oxygen, acetylene, welding and cutting apparatus. Represented by R. T. Peabody, F. L. Nix, J. Sewings and B. A. Eliason.

American Hoist & Derrick Company, St. Paul, Minn.—Transparencies and photographs of railroad ditcher. Represented by J. J. Cox, J. L. Hickey, Miss Helen Hoeller, W. B. Maurer, Daniel O'Brien, Howard Johnson and C. T. Hook.

American Steel & Wire Company, Chicago—Railroad fence, woven wire fence, rail bonds, concrete reinforcement and American steel fence posts. Represented by L. B. Shanahan, John Alexander, J. W. Collins, A. N. Frouds and M. E. Evans.

American Valve & Meter Company, Cincinnati, Ohio—Switch stands. Represented by J. T. McGarry and F. C. Anderson.

Anchor Company, Milwaukee, Wis.—Anti-rail creepers. Represented by Orlando Metcalf and George H. Chadwell.

Balkwill Manganese Crossing Company, Cleveland, Ohio—Models of articulated cast manganese railway crossing. Represented by S. Balkwill.

Bethlehem Steel Company, Bethlehem, Pa.—Switch stand model 51-A, switch stand model 1217, positive switch stand model 52-A, switch stand model 1222 with and without target. Represented by R. E. Belknap, R. W. Gillispie, Neil E. Salsich, J. F. Hennesy, E. D. Cabpbell, J. H. Budd, E. B. C. Goyne, J. H. Riddle, C. S. Jordan and C. A. Alden.

Buda Company, Chicago—No. 19 free running section car, jacks, No. 9 "C" switch stand, track drill, tool grinder. Represented by M. A. Evans, C. H. Bull, S. F. Francks, T. L. Hall and Geo. W. Hoover.

Bucyrus Company, South Milwaukee, Wis.—Slides showing steam shovels and spreader plow. Represented by E. G. Lewis and Mark J. Woodhull.

Carbic Manufacturing Company, Duluth, Minn.—Flare lights and cakes and oxy-acetylene cutting and welding equipment. Represented by C. H. Bolinder.

Chamberlain, M. E., St. Louis, Mo.—Forms and reinforcement for concrete ties, posts, poles and buildings. Represented by M. E. Chamberlain.

Chicago Malleable Casting Company, Chicago—Rail anchor tie plates. Represented by W. M. Osborn.

Crerar, Adams & Co., Chicago—Eureka bonding drills, Calumet track drills, jacks, shovels, brooms, die starters, oil cans and emery grinders. Represented by Russell Wallace, G. B. Bassett, J. A. Martin, E. W. Koon, K. D. Begeman and W. I. Clock.

Diamond State Fibre Company, Bridgeport, Pa.—Fibre for insulated joints. Represented by G. Swallow.

Duff Manufacturng Company, Pittsburgh, Pa.—Track jacks, square and round socket levers and automatic lowering geared ratchet. Represented by C. N. Thulin and E. E. Thulin.

Elliot Frog & Switch Company, East St. Louis, Ill.—Guard rail clamp,

adjustable switch stand and bridle rods. Represented by W. F. Fairback, W. H. Elliot and D. Fairback.

Fairbanks, Morse & Co., Chicago—No. 41 light inspection car, equipped with two cylinder kerosene engine; No. 40 heavy section and extra gang car, No. 32 section car and No. 36 maintainer's car. Represented by E. C. Golladay, A. A. Taylor, F. M. Condit, Charles Wilson, G. Howard, D. K. Lee, E. J. Coverdale, L. H. Matthews, E. E. Pendray, H. L. Hilleary, H. J. Beckers and L. Norvell.

Fairmont Gas Engine & Railway Motor Car Company, Fairmont, Minn.—EZ-QH 6-hp. ball-bearing motor and EZ-PH 4-hp. ball-bearing motor road-masters' inspection car, hand car engine. Represented by H. E. Wade and W. D. Brooks.

Friction Car Stop Company, Cleveland, Ohio—Model track and car stop. Represented by J. H. Duffy.

Hauck Manufacturing Company, Brooklyn, N. Y.—Kerosene burner thawing outfits. Represented by Willis C. Squire and G. A. Nelson.

Hayes Track Appliance Company, Richmond, Ind.—Derails and stands. Represented by S. W. Hayes and H. J. Mayer.

Industrial Track Construction Company, St. Louis, Mo.—Car bumpers.

International Bituconcrete Company, New York City—Bituminous floors, platforms and crossings. Represented by G. A. Henderson.

Ingersoll-Rand Company, New York City—Tie tampinug equipment and air-operated track tools. Represented by William H. Armstrong, C. S. Kulp, J. N. Thorp, Jr., and C. H. Dougherty.

Kalamazoo Railway Supply Company, Kalamazoo, Mich.—No. 16 inspection car, No. 17 motor car, electric tie tampers, supervisor's combination gage and level. Represented by J. B. McKinnon, D. A. Stewart and H. R. Miller.

Lackawanna Steel Company, Lackawanna, N. Y.—Rail joints, safety head angle bar, joint plates, hook shoulder tie plates, track bolts and spikes, deseamed rails, steel sheet piling. Represented by G. O. Benson, H. G. Austin, C. M. Cuthbert and C. C. Holmes.

Lundie Engineering Company, New York City—Tie plates. Represented by C. Z. Moore, Eugene Brandeis, W. Brooke Moore and L. B. Armstrong.

Maintenance Equipment Company, Chicago—Illustrations of the three-man rail layer, photographs derrick truck car, ballast screen, models of a switch point straightener, blue flag derail, fence posts, tie spacer and models of unloading hooks. Represented by W. W. Glosser.

Mudge & Company, Chicago—Class E-6-K kerosene inspection motor car, ES-2-K standard section car, GS-4-K section car, E-4 gasoline inspection motor car. Represented by Burton W. Mudge, Robert D. Sinclair, Karl J. Eklund, L. O. Stratton, C. P. Benning, J. M. Mulholand and W. F. Baker.

National Lock Washer Company, Newark, N. J.

Oxweld Railroad Service Company, Chicago—Oxy-acetylene welding and cutting apparatus. Represented by W. H. Kofmehl, C. M. Marshall, L. C. Ryan, A. W. Whiteford, R. C. Kohn and F. C. Tichen.

P. & M. Company, Chicago—Anti-creepers and bond wire protectors. Represented by D. T. Hallberg, J. E. Mahoney, F. W. Reeve, P. V. Samuelson and P. Hamilton.

Positive Rail Anchor Company, Marion, Ind.—Rail anchors, girder type guard rail brace and plate, guard rail. Represented by Arnold H. Told and L. C. Ferguson.

Q. & C. Company, New York City—Rail joint, guard rail clamps, snow melting track device, rolled steel step or compromise joint, derails, rail bender and car replacers. Represented by L. T. Burwell, J. L. Terry, R. J. McComb and Louis Thomas.

Ralo Supply Company, New York City—Track mover.

Rail Joint Company, The, New York City—Standard, compromise, frog and switch joint, insulated rail joints. Represented by W. S. Boyce, Alex. Chapman, Charles Jenkinson, R. W. Payne, G. T. Willard, J. N. Mead and C. B. Griffin.

Railroad Supply Company, Chicago—Tie plates. Represented by H. G. Van Hostrand, E. P. Gowing and R. H. Bell.

Railway Review, Chicago—Copies of paper. Represented by W. M. Camp and C. L. Bates.

Ramapo Iron Works, Hillburn, N. Y.—Manganese switch point, rolled steel double-shoulder switch slide plate, special switch slide plate, ¾ in. by 7 in. machined heel plate, switch stands, guard rail clamps. Represented by Thomas E. Akers, J. B. Strong, Robert J. Davidson, Jr., and W. C. Kidd.

Reade Manufacturing Company—Motion pictures showing application of weed exterminator. Represented by R. H. Bogle.

Reading Specialties Company, Reading, Pa.—Guard rail clamps, rail benders and rerailers with clamps, compromise joints. Represented by J. J. O'Connell and J. N. Lee.

Ruby, E. L., Philadelphia, Pa.—Portable rail milling machine. Represented by E. L. Ruby.

Sellers Manufacturing Company, Chicago—Anchor-bottom, wrought-iron tie plates. Represented by G. M. Hogan, R. A. Van Houten and T. D. Crowley.

St. Louis Frog & Switch Company, St. Louis, Mo.

Simmons-Boardman Publishing Company, Chicago—Copies of Railway Maintenance Engineer and *Railway Age*. Represented by E. T. Howson, W. S. Lacher, B. J. Wilson, M. Moore, R. H. Smith and J. M. Rutherford.

Templeton, Kenly & Co., Ltd., Chicago—Track jacks. Represented by H. B. Burlow and L. S. Allen.

Track Specialties Company, New York City—Guard rail clamp, compromise rail joints, tie plates and rail braces, guard rail brace adjustable track shim, side plate and switch brace, rail joints, anchor plate. Represented by J. A. Bodkin.

Union Switch & Signal Company, Swissvale, Pa.—Insulated rail joint. Represented by J. J. Cozzens.

U. S. Switch Company, Eau Claire, Wis.—Model of automatic switch lock. Represented by J. W. Hubbard.

Verona Tool Works, Pittsburgh, Pa.—Track tools, track jacks, levels, gages, nut locks, rail joint spring and bonding strips and portable milling machine. Represented by H. C. Mull, E. L. Ruby, L. Woodings and A. T. Palmer.

Wambaugh, M. W., St. Louis, Mo.—Model of steel I-beam track tie. Represented by M. W. Wambaugh.

Wharton, Jr., & Co., Inc., William, Easton, Pa.—Guard rail clamps, insulated switch rod and seamless steel cylinders for oxygen and hydrogen gas. Represented by H. F. McDermott, Charles M. Griffith and V. Angerer.

Werner Machine Company, West Allis, Wis.—Spike straightener. Represented by A. W. Tabert.

Woolery Machine Company, Minneapolis, Minn.—5-hp. hand-car motor. Represented by H. E. Woolery.

Wyoming Shovel Works, Wyoming, Pa.—Track shovels. Represented by H. T. Potter, Lou Braden and G. E. Geer.

Exhibits at Chief Interchange Car Inspectors' and Car Foremen's Association

The companies represented in the Chief Interchange Car Inspectors' and Car Foremen's Supply Men's Association held an exhibit in connection with the convention of the railroad organization in the Hotel Windsor, Montreal, P. Q., September 14-16. The companies exhibiting, the products shown and the representatives are listed below:

American Brake Shoe and Foundry Company, Chicago—Brake shoes for freight and passenger service.

American Steel Foundries, Chicago.—Davis steel wheels, truck side frames, bolsters, draft arms, brake beams, steel casings and clasp brake. Represented by J. H. Tinker.

Bettendorf Company, Bettendorf, Ia.—Truck side frames, bolsters, underframes and freight cars. Represented by J. Brady.

Boss Nut Company of Canada, Montreal, P. Q.—Lock nuts. Represented by L. E. W. Bailey and F. W. Moore.

Bradford Draft Gear Company, Chicago.—Bradford three-spring draft gear and rocker draft gear. Represented by J. C. Keene and M. J. Miller.

Buckeye Steel Castings Co., Chicago.

Camel Co., Chicago.—Car door fixtures. Represented by H. H. Hendricks.

Canadian Grip Nut Co., Montreal, P. Q.—Grip nuts. Represented by H. C. Harrigan.

Canadian Car and Foundry Co., Montreal, P. Q.—Freight and passenger cars. Represented by H. P. Lamoreux.

Canadian Gold Car Heating and Lighting Co., New York—Steam heat couplings and gaskets, end valves, vapor valves and thermostatic control. Represented by J. O. Brumbaugh and G. E. A. Letourneau.

Canadian Johns-Manville Co., Montreal, P. Q.—Asbestos pipe insulation, steel car insulation, J-M air brake packing cup and expander. Represented by K. E. Munro, J. R. Myles and R. A. Hamaker.

Canuck Supply Co., Montreal, P. Q.—Represented by E. L. Foley and W. H. Robb.

Chicago-Cleveland Car Roofing Co., Chicago.

Chicago Railway Equipment Co., Chicago.—Brake beams. Represented by F. T. DeLong.

Columbia Nut and Bolt Co., Bridgeport, Conn.—Lock nuts and cotters. Represented by H. P. Cook.

Paul Dickinson, Inc., Chicago.—Cast iron smoke jacks for camp and caboose cars, car ventilators. Represented by D. B. Wright.

Duff Manufacturing Co., Fittsburgh, Pa.—Screw and lever jacks. Represented by E. A. Johnson and C. A. Methfessel.

Flower Waste and Packing Co., Bayonne, N. J.—Journal box packing. Represented by F. F. Clair.

Galena Signal Oil Company of Canada, Montreal, P. Q.—Lubricating oils. Represented by J. P. Ferguson, E. Hawker and R. McVicar.

Griffin Wheel Co., Chicago chilled iron car wheels.

Holden Co., Montreal.—Barco flexible joints, Chicago pneumatic tools, Stucki side bearings, weather stripping, pinless brake hanger brackets. Represented by M. J. Miller and H. J. Dyke.

Independent Pneumatic Tool Co., Montreal, P. Q.—Pneumatic and electric drills, electric screwdrivers, pneumatic hammers and hose couplings. Represented by W. H. Rosevear.

Imperial Appliance Co., Chicago.—Coupler carry irons and uncoupling connection. Represented by F. Bergen.

Imperial Belting Co., Chicago.—Fabric belting for transmission, conveying and elevator service. Represented by W. G. Willcoxson.

Liberty Tool Co., Baltimore, Md.—Portable drill presses, rivet heaters, heating torches, holding-on bars and heading attachments. Represented by H. J. Wilson and M. C. Fearrell.

Mahr Manufacturing Co., Minneapolis, Minn.—Oil burners. Represented by H. H. Warner.

McCord & Co., Chicago.—A. R. A. journal box with pinless lid. Represented by F. W. Craig.

W. H. Miner, Chicago.—Friction draft gear, draft gear side castings, coupler yokes, bolster locking center pin, side bearings and lever hand brakes. Represented by W. H. Miner and J. R. Mitchell.

National Malleable Castings Co., Cleveland, O.—National journal boxes, A. R. A. standard couplers, Goodman wrecking hook, and National friction draft gear. Represented by George V. Martin and L. S. Wright.

National Railway Appliance Co., New York.—Represented by W. C. Lincoln.

A. O. Norton, Inc., Boston, Mass.—Ball bearing jacks. Represented by Harry A. Norton, C. J. Bracken and G. R. Law.

Oxweld Railroad Service Co., Chicago.—Cutting and welding torches and pressure regulators. Represented by H. V. Gigandet and R. Rivett.

Pyrene Manufacturing Company of Canada, Montreal, P. Q.—First aid kits, fire extinguishers and fireklok. Represented by J. M. Philion.

Railway Review, Chicago.—Represented by C. L. Smythe.

Robinson Connector Co. and Robinson Connector Company of Canada, New York.—Automatic connectors for freight and passenger service. Represented by Joseph Robinson, J. A. Cameron, J. L. Hagar, W. W. Norcross and J. P. Kenney.

Union Draft Gear Co., Chicago.—Cardwell friction draft gear. Universal cast steel draft arms. Represented by L. T. Canfield, H. Barnard, J. W. Hathaway and W. G. Krauser.

Westinghouse Air Brake Co., Wilderming, Pa.

Exhibitors at the Traveling Engineers' Convention

Eighty-seven of the 102 members of the Railway Equipment Manufacturers' Association were exhibitors at the Hotel Sherman, Chicago, during the convention of the Traveling Engineers' Association held on September 14 to 17, inclusive. The list of the companies, their representatives, and the products exhibited is as follows:

American Arch Co., New York—Represented by J. P. Neff, A. W. Clokey, R. J. Himmelright, W. L. Allison, F. G. Boomer, J. D. Brandon, E. H. Cook, T. M. Ferguson, E. T. Mulcahey, W. W. Neale, T. Mahar, T. Kilcoyne and E. W. Salisbury.

American Flexible Bolt Co., Pittsburgh, Pa.—American flexible bolt, reduced body staybolt, marine hollow bolt, hollow staybolt iron, and rivets. Represented by R. W. Benson, W. F. Heacock, L. W. Widmeier and W. W. McAllister.

Air Reduction Sales Company, New York—Oxy-acetylene welding apparatus and gases. Represented by R. T. Peabody and H. Melville.

American Locomotive Company, New York—Locomotives, Alco reverse gear, throttle lever, trailing truck, lateral motion box, rotary snowplow and flexible staybolt. Represented by G. G. Jones, Arthur Haller, C. O. Rogers and G. P. Robinson.

American Steel Foundries, Chicago—Simplex couplers, Simplex shelf coupler pocket, Economy draft arm and steel side frames. Represented by W. G. Wallace and W. C. Walsh.

Ashton Valve Company, Boston, Mass.—Ashton safety valves, pressure recording gages, locomotive steam and air gages, test gages, dead weight and gage tester, wheel press recording gage and whistles, protected dial gages. Represented by J. W. Motherwell, H. O. Fettinger and J. F. Gettrust.

Baldwin Locomotive Co., Philadelphia, Pa.—Locomotives. Represented by W. H. Evans, F. A. Neely and C. H. Gaskill.

Barco Manufacturing Company, Chicago—Engine tender connections, car steam heat connections, coach yard steam heat connections, feright train departure yard air connections, air reservoir joints, Barco crosshead and shoe, automatic smoke box blower fitting, Barco power reverse gear, roundhouse blower and blow off connections. Represented by F. N. Bard, C. L. Mellor, A. S. Lewis, W. J. Behlke, Jr., F. H. Stiles and F. S. Wilcoxen.

Bigelow, G. F., St. Louis, Mo.—Car replacer. Represented by G. F. Bigelow.

Bird-Archer Company, New York—Blow off valve, water chemicals, polarized locomotive compound, anti-foaming compound and furnace cement. Represented by L. F. Wilson, C. W. McGurn, C. J. McGurn and J. L. Callahan.

Boss Nut Company, Chicago—Boss lock nuts, bolts and rivets. Represented by J. A. MacLean, J. W. Fogg, G. A. MacLean and A. W. MacLean.

Bradford Draft Gear Company, Chicago—Rocker type draft gear. Represented by H. C. Priebe and W. A. McWhorter.

Buda Company, Chicago—Model G. W. headlight equipment. Represented by H. P. Bayley, M. A. Ross, W. F. Davis and E. E. Eberhardt.

Chamber Valve Company, New York—Throttle valve. Represented by F. H. Clark.

Chicago Pneumatic Tool Company, Chicago—Pneumatic tools, electric drills and Boyer speed recorder. Represented by C. W. Cross, R. C. Black, John D. Crowley, James L. Crowley, C. E. Lowrenz, J. L. Canby and T. J. Hudson.

Commonwealth Supply Company, Richmond, Va.—Lewis power reverse gear. Represented by S. H. Lewis and J. M. Perdue.

D & M Cleaning Process, Chicago—D & M cleaning process. Represented by F. M. Hilgerink.

Dearborn Chemical Company, Chicago—Water treatment for locomotive boilers. Represented by G. R. Carr, J. D. Purcell, W. S. Reid, I. L. Beebe, O. H. Rehmeyer, I. H. Bowen, L. P. Bowen, C. H. Everett, C. S. Murray, J. F. Roddy, H. Ross and J. Arn.

Detroit Lubricator Company, Detroit, Mich.—Three-feed Detroit standard lubricator with transfer filler attachment, one U. S. standard three-feed lubricator and Detroit automatic flange oiler. Represented by A. G. Machesney.

Double Seal Ring Company, Chicago.—Double Seal piston rings. Represented by C. B. Toppan.

Duff Manufacturing Company, Pittsburgh, Pa.—Jacks for trucks, cars, etc., and high speed ball bearing screw jacks. Represented by C. N. Thulin.

Edna Brass Mfg. Company, Cincinnati, Ohio—Lubricators, injectors, water glasses, coal sprinklers, boiler checks, line checks, locomotive appliances. Represented by E. O. Corey and H. A. Glenn.

Electric Service Supplies Company, Philadelphia, Pa.—Locomotive headlight equipment. Represented by J. W. Porter, M. A. Burg, L. J. Kirby, T. M. Childs and B. D. Barger.

Elvin Mechanical Stoker Company, New York—Stoker drawings. Represented by John S. Yardley.

Flannery Bolt Company, Pittsburgh, Pa.—F. B. C. flexible staybolt universal sleeve, Tate flexible staybolt. Represented by W. M. Wilson and E. I. Dodds.

Franklin Railway Supply Company, New York—Franklin butterfly fire door, Franklin lateral preventer, buffer, locomotive booster, No. 9 firebox door, power grate shaker, automatic driving box lubricator, automatic driving box wedge, Economy engine truck, tender truck, McLaughlin flexible joints, Unit safety bar, Universal valve chest, Ragonnet power reverse gear. Represented by J. L. Randolph, C. W. F. Coffin, J. L. Bacon, H. F. Ball, W. H. Coyle, R. F. de Mott, H. M. Evans, T. L. Reed, S. D. Rosenfelt, J. Sinkler, P. Weiler and P. Willis.

Fuller Engineering Company, Fullerton, Pa.—Photos and literature on pulverizer mill. Represented by W. H. Searight.

Galena-Signal Oil Company, Franklin, Pa.—Represented by C. McNair, W. J. Walsh, W. F. Walsh, D. L. Eubanks, A. J. Poole, C. B. Royal, J. E. Linahen, J. A. Graham, B. P. Corey, W. L. Trout, F. Smith, R. E. Webb, P. H. Stack, W. O. Taylor, M. M. Meehan, J. S. Brown, G. W. Buckpitt, A. J. Hawley, G. E. McVicar, L. H. Palmer, L. G. Sprague, A. J. Harner, D. J. Justro, I. T. Burney and J. W. Burnn.

Garlock Packing Company, Palmyra, N. Y.—Packings. Represented by C. W. Sullvan and S. MacDole.

Garrett-Callahan Company, Chicago—Magic boiler preservative. Represented by A. H. Hawkinson, W. Rollinson, J. G. Barcley and George J. Clyde.

Gill Railway Supply Company, Peoria, Ill.—Hot box cooling compound. J. Q. Gill, S. S. Pinkney, E. H. Hartenstein and William O'Brien.

A. W. Gillespie & Company, Chicago—Economy locomotive fire door. Represented by A. W. Gillespie, J. S. Seeley and E. H. Bauer.

Hanna Locomotive Stoker Company, Cincinnati, O.—Locomotive stokers. Represented by W. T. Hanna, W. A. Benson and F. E. McCown.

Gold Car Heating & Lighting Company, New York—Car heating appliances, reducing valves for locomotives for car heating purposes, thermostatic control apparatus, electric heaters and ventilators. Represented by Allen Sheldon and A. D. Stuver.

Hattiesburg Valve Stem Packing Company, Hattiesburg, Miss.—Valve stem and packing. Represented by J. W. Dyess.

Hauck Manufacturing Company, Brooklyn, N. Y.—Hauck burners and thawing outfits. Represented by G. A. Nelson.

Hoofer Manufacturing Company, Chicago.—Pneumatic flange oiler. Represented by Charles F. Hoofer.

Hulson Grate Company, Keokuk, Iowa—Locomotive grate. Represented by A. W. Hulson and J. W. Hulson.

Hunt-Spiller Manufacturing Corporation, Boston, Mass.—Piston valve bushings, piston valve packing, piston valve bull rings, cylinder packing, crosshead shoes, driving box shoes and wedges, knuckle pin bushings, side rod bushings, cylinder bushings, pistons and piston bull rings. Represented by J. G. Platt, V. W. Ellet, E. J. Fuller, C. Galloway and F. Hartman.

International Correspondence Schools, Scranton, Pa.—Correspondence courses. Represented by E. M. Sawyer, H. T. Pottinger, C. Z. Meyers, F. S. Powell and J. W. Harding.

Imperial Belting Company, Chicago—Power transmission and conveyor belts. Represented by A. G. Pickett, W. D. Otter and E. H. Willard.

Jenkins Bros., New York—Valves and packing. Represented by George Royal.

H. W. Johns-Manville & Company, New York—Air pump and throttle packing, industrial and brake cylinder packing sets, insulation for pipes, boiler and locomotive lagging and brake slack adjuster. Represented by J. E. Meek, J. C. Younglove, P. C. Jacobs, P. R. Austin, L. S. Wilbur, H. M. Butters, G. Christenson, J. H. Trent, H. Flannagin and W. J. Stewart.

The Leslie Company, Lyndhurst, N. J.—Pressure regulators and removable coupling nuts. Represented by S. I. Leslie and J. J. Cizek.

Lewis Valve Company, New York—Lewis automatic drifting valve. Represented by F. M. Patterson.

Liberty Steel Products Company, Inc., Pittsburgh, Pa.—Davis solid truss brake beam, Liberty built-up brake beam for freight and passenger cars, Rees car and journal jacks. Represented by S. W. Midgley, J. M. Borrowdale, W. E. Fowler, Jr., and A. W. Preikschat.

Lima Locomotive Works, Inc., Lima, Ohio—Photographs of latest types of locomotives. Represented by M. K. Tate and W. E. Woodard.

Locomotive Appliance Company, Toledo, Ohio—Loco sleeve valve and steam chest. Represented by C. J. Pilliod.

Locomotive Feed Water Heater Company, New York—Diagram of feedwater heater and pump on a locomotive. Represented by W. L. Allison, E. A. Averill, W. H. Lovekin and H. V. Jones.

Locomotive Firebox Company, Chicago—Nicholson thermic syphons for locomotive fireboxes. Represented by J. L. Nicholson, Leslie R. Pyle, C. M. Rogers and J. T. Anthony.

Locomotive Lubricator Company, Chicago—Schlacks' system of force feed lubrication for locomotive valves and cylinders. Represented by C. W. Rudoph, O. H. Neal and W. J. Schlacks.

Locomotive Stoker Company, Pittsburgh, Pa.—Duplex stokers. Represented by W. S. Bartholomew, J. J. Byrne, O. B. Capps, W. G. Clark, D. F. Crawford, J. J. Hannahan, E. Prouty, L. V. Stevens, H. C. Cale, A. N. Willsie, I. C. Jordan, T. L. Capps, E. Capps, H. C. Woodbridge, H. C. Mastin, H. B. Gardner, C. F. Kahler, P. H. Philbrick, K. M. Stoller, H. Malette, E. R. Funk, C. E. Peterson, F. E. Ainsworth, E. F. Milbank, R. G. Kelley, J. M. Jordan, G. Reid, L. E. Osborne and N. W. Sower.

Locomotive Superheater Company, New York City—Pyrometer for superheater locomotives. Represented by G. E. Ryder, R. R. Porterfield, R. M. Osterman, K. E. Stillwell, G. Fogg, G. E. Crisp, B. R. Bristol, B. G. Lynch, H. Spicer, J. E. Monroe, H. B. Oatley, R. J. Van Meter, F. Schaff, W. Boughton, A. C. Louden, W. A. Buckbee, B. Browne, A. C. McLaughlin, C. Wickham, W. Tawse, H. C. Bell and G. L. Dolan.

Long, Chas. R., Jr., Company, Louisville, Ky.—Railway paints, locomotive black varnish, Staybrite front end paint, Lo-kost front end paint, Lovico process freight car paints, passenger car and locomotive enamels. Represented by Harry Vissering, G. S. Turner, W. H. Heckman, A. G. Hollingshead and J. M. Monroe.

Manning, Maxwell & Moore, New York—Ashcroft Manufacturing Co. gages, Hancock inspirator, Hancock boiler tester, boiler checks, appliances, Consolidated safety valve. Represented by Charles L. Brown, J. Soule Smith and C. M. Freeman.

Metal & Thermit Corporation, New York—Thermit and alloys, compounded with chromium, nickel, iron, titanium and manganese; thermit process for pipe welding, thermit welding equipment. Represented by W. H. Moore, H. S. Mann and C. D. Young.

W. H. Miner, Chicago—Draft gears, side bearings, friction buffers and ratchet brakes. Represented by J. R. Mitchell, G. Q. Lewis, George A. Johnson and B. S. Johnson.

Nathan Manufacturing Company, New York—Injectors, lubricators, boiler checks, gage cocks, water gages, boiler washer and tester. Represented by O. Best, W. R. Walsh, W. E. Brumble, J. Lemley, F. C. Davern and R. Welsh.

National Boiler Washing Company, Chicago—National hot water locomotive boiler washing system. Represented by D. Anderson.

National Malleable Castings Company, Cleveland, Ohio—Couplers, hand brake apparatus, coupler pockets and journal boxes. Represented by G. R. Rasmussen, C. H. Krakan and T. W. Aishton.

National Railway Devices Company, Chicago—Shoemaker vertical fire doors. Represented by Jay G. Robinson, E. J. Gunnison and A. F. Lind.

National Tube Company, Pittsburgh, Pa.—National pipe and tubes. Represented by Geo. N. Riley, B. J. Conrath, J. T. Goodwin and R. J. W. Kelly.

New York Air Brake Company, New York—Represented by G. Kleifges, W. J. Elliot, H. Yohn, W. Owens, N. A. Cambel and L. W. Sawyer.

Ohio Injector Company, Chicago—Chicago lubricator, flange oiler, non-lifting injector, U. S. Standard special B injector, automatic drifting valve, Ohio water glass protector, and lifting injector. Represented by A. C. Beckwith, F. W. Edwards, W. S. Furry, W. H. Malone and F. B. Farnsworth.

Okadee Company, Chicago—Okadee front end hinge, locomotive blow-off valves, tender hose couplers, automatic cylinder cocks, water gage, water glass protector and round house washout valves. Represented by A. G. Hollingshead, G. S. Turner, W. H. Heckman, F. G. Zimmerman and J. M. More.

O'Malley-Beare Valve Company, Chicago—Multiplate valves, Perfection self-grinding gage cocks, water glass drains, special locomotive valves, engine bearings. Represented by T. O'Malley, E. O'Malley, J. E. Brown, J. N. Gallagher, Jas. M. Pigott, F. Hitesman and W. Morris.

Paxton-Mitchell Company, Omaha, Neb—Paxton-Mitchell piston rod packing and air pump packing. Represented by J. L. Paxton, E. L. Choolman and J. J. Keliher.

Pyle-National Company, Chicago—Cast headlight cases with blown glass reflectors, K.2-generator, E.2-generator, 1450 lampstand, Young valve gear, 32 U. and 33 E. connectors, type "M" d.c. turbo-generator and a.c. turbo-generator. Represented by J. W. Johnson, W. Smith, J. Reese, C. LeFevre, R. L. Kilker, T. P. McGinnis, C. P. McGinnis, G. Haas, A. R. Allen and R. L. McIntosh.

Pilliod Company, Swanton, O.—Baker valve gear. Represented by E. J. Barnett, W. H. Bellmain, Frank Fisher, K. J. Eklund and R. H. Weatherly.

Railway Review, Chicago—Represented by J. L. Lammedee and A. E. Hooven.

Sargent Company, Chicago—Ironclad water glass protector, Sargent safety water gage, E. S. E. reflex gage, E. S. E. water glass cocks, Renn gage cock, Loodige quick acting valves, E. S. E. automatic feed grease cup, grease plug and water columns. Represented by G. S. Garren.

Simmons-Boardman Publishing Company, New York City—*Railway Age*, Railway Mechanical Engineer. Represented by C. B. Peck, J. M. Rutherford and B. W. Meisel.

Sellers, Wm., & Company, Inc., Philadelphia, Pa.—Injectors and special feed water devices. Represented by P. E. Raymond and J. R. New.

Smith Locomotive Adjustable Hub Plate Company, Chicago—Adjustable locomotive hub plate. Represented by A. J. Sams.

Southern Valve Gear Company, Knoxville, Tenn.—Southern valve gear. Represented by R. M. Cook and H. A. Kibby.

Standard Stoker Company, New York—Locomotive stokers. Represented by J. A. Carey, H. L. Walker, C. T. Hansen, H. R. Warnock, F. P. Roesch, Frank Hopper and J. L. Thompson.

Sunbeam Electric Manufacturing Company, Evansville, Ind.—Headlight with switch lens and special lens for diffusing light on yard and switch engines. Represented by J. H. Schroeder, A. H. Varney, C. E. Kinnaw and E. W. Edmunds.

Swain Company, Chicago—Grease lubricants and cups for shafting, grease lubricator for car journal boxes. Represented by T. J. Holmes and J. H. Wise.

Torchweld Equipment Company, Chicago—Welding and cutting apparatus. Represented by W. A. Slack, H. R. Fenstemaker, R. B. Scharff and Geo. Smedley.

United States Metallic Packing Company, Philadelphia, Pa.—King type single and tandem piston packing, air pump packing. Represented by M. B. Brewster, H. E. Hyslop, L. B. Miller, J. Luscombe, Frank Orland, R. R. Wells and J. S. Mace.

Universal Packing & Service Company, Chicago—Spring journal box packing. Represented by L. Rowe, J. P. Landreth, Walter M. Gibbs and G. H. Green.

Vapor Car Heating Company, Chicago—Locomotive cab heating arrangement, pressure reducing valves, steam gages, traps and metallic straight port steam joints. Represented by E. C. Post and H. F. Burns.

Vincent-Nagel Appliance Company, Chicago—Drain valves and grease cups. Represented by Frank Gilliland.

Vissering, Harry, & Co., Chicago—"Velco" and "Leach type" sanders, Crescent metallic piston rod and valve stem packing, duplex engine valves, bell ringers and locomotive cylinder head crane. Represented by G. S. Turner, J. M. Monroe, W. H. Heckman, Harry Vissering and F. G. Zimmerman.

Western Railway Equipment Company, St. Louis, Mo.—Linstrom syphon, Western M. C. B. malleable iron journal wedge and Security dust guard. Represented by R. M. Hoerr, R. L. Langtim and S. H. Campbell.

Westinghouse Air Brake Company, Pittsburgh, Pa.—H.-6 brake valve with collapsible equalizing piston, No. 4 brake pipe vent valve, M. C. B. hose couple gage, hose coupling packing ring gages, triple valve shipping caps, auxiliary devices governor, freight brake cleaners and testing outfit, brake cleaning tools, air compressor strainer. Represented by W. S. Bartholomew, C. J. Ohlmstead, J. S. Y. Fralich, J. B. Wright, L. Wilcox, L. M. Carleton, A. K. Hohmyer, F. H. Parke, A. L. Berghane, W. Sleet, A. G. Houston, H. H. Burns, J. C. McCune and F. B. Johonson.

White American Locomotive Sander Company, Roanoke, Va.—"Graham-White" sander, "Loco" sander. James Frantz and W. L. Ranson.

The following are the officers elected by the Railway Equipment Manufacturers' Association to serve for the coming year: President, D. L. Eubank, Galena Signal Oil Company; vice-president, F. W. Venton, Crane Company; secretary, R. J. Himmelright, American Arch Company, and treasurer, M. P. Brewster, U. S. Metallic Packing Company. R. W. Ellet, Hunt-Spiller Company; J. W. Fogg, Boss Nut Company, and George Haas, Pyle National Company, were elected members of the Executive Committee to serve for three years.

Traffic News

Members of the Transportation Club of Louisville (Ky.) were the guests of the Standard Oil Company of Kentucky on September 24, when an inspection was made of that company's new riverside refinery.

The Chicago & North Western has re-established its own ticket offices in Milwaukee, Wis., and Sioux City, Ia. The consolidated ticket office at Milwaukee has been discontinued, while the company has withdrawn from this office at Sioux City. The North Western has also opened an office at Toronto, Ont.

J. M. O'Day, superintendent of transportation of the Sinclair Refining Company, has been appointed general traffic manager, effective September 3, succeeding F. S. Gibons, who has resigned on account of ill health. W. C. Steffans succeeds Mr. O'Day, with headquarters in the Conway building, Chicago.

Improved conditions at terminals are reported by all Western railroads as a result of the return of many veteran switchmen who have been on strike since last April. The "outlaw" movement was definitely ended on September 13 and many former switchmen who were engaged in other industries returned to railroad service. Material progress in cleaning up the car accumulations is now expected.

Officers of the Chicago, Milwaukee & St. Paul, the Great Northern, the Northern Pacific, the Union Pacific, and the Seattle, Portland & Spokane, as well as the Industrial and agricultural representatives of the systems attended the irrigation and development conference held at Seattle, Wash., under the auspices of the Chamber of Commerce of that city, on September 16 and 17. The colonization agents of the railroads interested presented exhibits in the Forestry building.

Fred Larkins, who has been assisting the directing manager in organizing the forces and other details of the American Wholesale Lumber Association since that organization was formed on May 20, 1920, has been appointed assistant secretary of the association. He will be in charge of the Arbitration and the Traffic departments and in connection with the latter department will direct the policy of the Association in seeking elimination of the $10 a day penalty charge on lumber and other forest products.

The Northern Pacific announces the establishment of a new department of immigration and industry to co-operate with federal and state authorities, agricultural colleges, farm bureau organizations, county agents, farmers' clubs and other agencies in promoting the development of the northwest. E. F. Benson, now commissioner of agriculture of the state of Washington, is to be manager with headquarters at St. Paul, Minn. Mr. Benson has railroad experience and is an authority of international repute on immigration and reclamation work.

Freight Commodity Statistics

The Interstate Commerce Commission has issued a summary of freight commodity statistics of Class I roads for the quarter ending March 31, the first compilation under the order of the commission of December 1, 1919, prescribing a new classification of commodities and requiring quarterly reports. It analyzes by classes of commodities the tons and numbers of carloads. In former summaries of revenue tonnage the analysis included but 38 classes of commodities, while the present one deals with 70. During the quarter the revenue freight originating amounted to 8,007,435 carloads (275,931,603 tons) and the total revenue freight carried was 15,115,677 carloads (511,699,501 tons). There are no comparisons with previous years.

Contracts for Airplane Mail Service

The Postoffice Department announces that contracts amounting to $685,000 a year have been let for the transportation of mail by airplane. The contractor is the Lawson Air Line Company of

Chicago. The contracts call for service from Pittsburgh to St. Louis by way of Columbus, Cincinnati and Indianapolis, at $147,000 a year; between New York and Chicago, via Harrisburg, Pittsburgh and Fort Wayne, for $238,000 a year, and for service between New York and Atlanta, via Washington, Raleigh and Columbia, at a cost of $300,000. The first service will start between Pittsburgh and Indianapolis in November. The contract provides that each plane must carry 1,500 lb. of mail. In addition the contractor announces that accommodations will be provided for 16 passengers, the latter end of the business being a private venture. Three hundred and six round trips are to be made yearly on each route.

Coal Production

The total output of soft coal for the week ending September 11 is estimated at 10,566,000 net tons, according to the weekly bulletin of the Geological Survey, a decrease as compared with the preceding week of 605,000 tons, attributed to the Labor Day holiday. The observance of the holiday, however, acted to improve the car supply on the remaining working days of the week and the average rate per day worked rose to 1,994,000 tons, the largest attained in any week since last January. Production during the first 217 working days of the year was 369,143,000, which is 42⅓ million tons less than for 1918, but 50¾ million tons ahead of 1919. Judged by the test of production, the bulletin says, the anthracite strike closed about 70 per cent of the capacity of the anthracite region of Pennsylvania during the week. The estimated production for the week was 546,000 tons and for the calendar year to date 59,160,000. For the week ended September 4 the bulletin reports a slight reaction in the progress recently made toward improved car supply at the mines. Transportation disability became again overwhelmingly the dominant factor limiting production. Losses attributed to transportation averaged 27.4 per cent.

The Labor Day holiday cut heavily into both dumpings at the lake ports and shipments from the mines for lake account. The total tonnage dumped into vessels at Lake Erie was 884,989 net tons, a decrease of 18 per cent. The cumulative lake movement from the opening of the season now stands at 12,969,000 tons as against 19,255,000 in 1918, and 17,255,000 in 1919. Loadings at the mines for shipment to the lakes increased slightly over the preceding week. Total dumpings at tidewater during the week ended September 11 also showed a decrease due to the observance of Labor Day. However, August established a new record for the tidewater movement. The total dumping at the four North Atlantic ports and Charleston is reported as 5,352,000 net tons, an increase over July, hitherto the maximum, of 437,000 tons. Shipments of cargo coal to New England increased slightly, amounting to 1,048,000 tons. Exports rose to a new record, 2,295,000 net tons. A recovery during the week of September 11 again carried the movement of bituminous coal by rail through the New England gateways above the level of 1919.

The Geological Survey, the Bituminous Coal Commission and the Council of National Defense have issued a joint statement estimating the commercial stocks of bituminous coal in the United States on June 1 at 20,000,000 net tons, considerably less than the stocks carried on October 1 of the years 1916 and 1917 and very much less than the stocks accumulated at the close of 1918. In the three months from March 1 to June 1 stocks decreased 4,000,000 tons. A statement giving an estimate of the supply of soft coal in the hands of various classes of consumers places the railroad fuel supply as enough for one week and three days at current rate of consumption. Stocks of railroad fuel were far below those held by the railroads at any time during the last four years, the period over which the records extend. The decrease was most marked in the Eastern district, particularly New England. The statement says that the depleted stocks of railroad fuel are significant because they indicate that the roads may have to confiscate coal or assign cars freely, measures which necessarily interfere with regular deliveries to other consumers. On January 1, 1919, according to the table, the railroads had a supply adequate for four weeks and six days.

Foreign Railway News

New Railways for French West Africa

LONDON.

The Board of Trade Journal states that the French West African Government is authorized, under a law of August 12, to contract for a loan of 167,000,000 francs ($22,000,000, present rate of exchange) for the construction of railways and improvement of port works in the French West African colonies.

Roumanian Railways Short of Rolling Stock

LONDON.

A news item in Modern Transport states that the Roumanian railways are suffering from a serious shortage of locomotives and rolling stock and large numbers are on hand awaiting repairs. With a view to the installation of plant for the carrying out of the necessary repairs, Roumania has approached Germany, and, according to reports, the Overstein and Koppel Actiengesellschaft is engaged at the present time in drawing up plans for the erection of large locomotive shops in Roumanian territory.

Coal Production in Devastated Areas of France

LONDON.

A report in the Board of Trade Journal states that the production of the coal mines of the western basin of the Pas-de-Calais for the months of June and July, after making allowance for wastage in sorting and washing, amounted to 736,600 and 747,000 tons, respectively. This shows an increase of 322,200 tons over the production for the month of May. The production of the mines in the Department du Nord for the months of June and July was 146,010 and 176,154 tons, respectively, after making allowance for consumption at the mines and loss by sorting and washing.

Electrification of Brazilian Railroads

Consul A. T. Haeberle, Rio de Janeiro, in writing to Commerce Reports, quotes a report which appeared in the Jornal do Commercio of Rio de Janeiro on July 14, 1920, to the effect that the Commission of Finance of the Federal Congress of Brazil has signed the proposal of Sampaio Correa regarding the electrification of some lines of the Estrada Ferro Central do Brazil, a government-owned railroad. The following resolution was unanimously adopted: The executive committee has been authorized to open a credit of about $11,000,000 to cover the cost of changing the railroad system from steam to electricity on the suburban lines from the central station in Rio de Janeiro to the following stations: Deodoro, Barra do Pirahy, Santa Cruz, Paracamby and Maritima. The executive committee is also ordering the plans for the prolongation of some or all lines to the center of the city, if possible to the Praca Mauá, having authorized the opening of the necessary credit, if the project is approved by the prefect of the federal district.

Electrification of Italian Railways

According to an announcement in the Weekly Bulletin of the Canadian Department of Trade and Commerce, a new government decree, substituting the one published last August, unfolds the lines along which the electrification of the Italian railways is to take place. In short, the scheme as now outlined includes the electrifying of 2,750 miles and the laying of 6,070 miles of new rails. The plan calls for (1) the immediate electrifying of 803 miles and the laying of 1,780 miles of rails; (2) the electrifying of 635 miles and the laying of rails over 1,410 miles in the period immediately following the execution of the first group; (3) the electrifyiyng of 1,080 miles and the laying of rails over 2,640 miles by private industry; and (4) the electrifying of 158 miles and the laying of rails over 242 miles, in which group experiments will be made with new methods of electric traction. The government for this work has apportioned about $154,000,000 to be distributed over eight periods, about $11,600,000 to be expended in the current financial year.

Equipment and Supplies

Locomotives

THE GULF COAST LINES are inquiring for 3, 4-6-0 type locomotives.

THE ST. LOUIS SOUTHWESTERN is inquiring for 10 Consolidation type locomotives.

THE NEW YORK CENTRAL is having repairs made to 13 locomotives at the Brooks works of the American Locomotive Company.

THE BALTIMORE & OHIO, reported in the *Railway Age* of July 2 as inquiring for 50 Mikado type locomotives, has ordered this equipment from the Baldwin Locomotive Works.

THE WESTERN MARYLAND, reported in the *Railway Age* of August 6 as inquiring for 20 locomotives for freight service, has ordered this equipment from the Baldwin Locomotive Works and may increase the order to 40 locomotives.

THE STANDARD OIL COMPANY OF NEW YORK has ordered one four-wheel tank locomotive from the American Locomotive Company. This locomotive will have 16 in. by 24 in. cylinders and a total weight in working order of 99,000 lb.

THE LAKE SUPERIOR PAPER COMPANY, Sault Ste. Marie, Ontario, has ordered from the American Locomotive Company one six-wheel tank locomotive, with 19 in. by 24 in. cylinders and a total weight in working order of 123,000 lb.

THE FOUNDATION COMPANY, Atlanta, Ga., has ordered one Mogul type locomotive from the American Locomotive Company. This locomotive will have 16 in. by 24 in. cylinders and a total weight in working order of 85,000 lb.

MITSUI & Co., 65 Broadway, New York, reported in the *Railway Age* of August 27 as being in the market for 3 Consolidation type locomotives and 3 Pacific type locomotives for the Shantung Railway, have ordered 3 Consolidation and 4 Pacific type locomotives from the American Locomotive Company.

Freight Cars

THE GREAT NORTHERN is asking prices on 400 refrigerator cars.

THE FLORIDA EAST COAST is inquiring for 10, 8-wheel caboose cars.

THE EL PASO & SOUTHWESTERN is inquiring for 75, 10,000-gal. tank cars.

THE ATLANTIC COAST LINE is inquiring for 100 phosphate cars of 50 tons capacity.

THE RHODESIAN RAILWAYS are inquiring for 100 high side gondola cars of 43 tons' capacity.

THE UNION RAILROAD will convert 450 high side all steel 50-ton capacity cars to low side gondolas.

THE BALTIMORE & OHIO has ordered 215 hopper cars of 50 tons capacity from the Pressed Steel Car Company.

FOX BROTHERS & CO., 126 Lafayette street, New York, are inquiring for 15 tank cars of from 2,500 to 4,000 gal. capacity for export.

THE CHAMPLIN REFINING COMPANY, Enid, Okla., has ordered 100 tank cars of 8,050 gal. capacity, with 40-ton trucks, from the Pennsylvania Tank Car Company.

THE NATIONAL LAMP COMPANY, Cleveland, Ohio, has ordered 8 tank cars of 8,050 gal. capacity, with 50-ton trucks, from the Pennsylvania Tank Car Company.

THE PITTSBURGH CRUCIBLE STEEL COMPANY, Pittsburgh, Pa., has ordered 25, 70-ton hopper cars, and 10, 50-ton gondola cars, from the Pressed Steel Car Company.

THE CENTRAL ARGENTINE RAILROAD, reported in the *Railway Age* of September 10 as inquiring for 194 four-wheel cars, of 20 tons capacity, has ordered this equipment in England.

THE MAINE CENTRAL is inquiring for 300, 40-ton box cars; 150, 40-ton rack cars; 50, 50-ton general service cars; and 50, 50-ton gondola cars. All of these cars are to be equipped with steel underframes.

THE INDIAHOMA TANK CAR COMPANY, Tulsa, Okla., reported in the *Railway Age* of September 17 as inquiring for 50 tank cars of 10,000 gal. capacity, with 50-ton trucks, has ordered this equipment from the Standard Tank Car Company.

THE CENTRAL OF GEORGIA, reported in the *Railway Age* of July 9 as inquiring for 500 ventilated box and 300 gondola cars, is now inquiring for 500 ventilated box cars of 40 tons' capacity, 200 flat-bottom cars of 50 tons' capacity and 100 stock cars of 40 tons' capacity.

Passenger Cars

THE LOS ANGELES & SALT LAKE is inquiring for 6, 69-ft. steel baggage cars equipped with turbo-generator system; also for 2, 69-ft. steel baggage cars without generators; 2, 60-ft. steel baggage cars without generators, and 8 steel chair cars with smoking room.

SPAIN.—Commerce Reports, published by the Bureau of Foreign and Domestic Commerce, in a recent issue, gives the following trade opportunity:

A railway company in Spain desires to receive catalogues, prices and specifications for the purchase of 5 railway coaches, accommodating 90 passengers, equipped with gasoline or benzine engines capable of driving cars at a speed of approximately 50 miles per hour. These cars are for operation over a railroad having a gage of 914 millimeters. Also, 5 coaches without power units, to be used as trailers. The cars must be luxuriously appointed, with best of springs and trucks, have a heating system on the thermosyphon principle, and be electrically lighted throughout. Interior seating arrangement must provide a center aisle, with upholstered seats facing forward and reversible. Quotations should be given c. i. f. Spanish port. Correspondence should be in Spanish. Cash to be paid. Reference.

Iron and Steel

SOPHUS BERENDSEN, 15 Broad street, New York, is inquiring for from 20,000 to 30,000 tons of rails of 70, 80 or 100-lb. sections and the necessary accessories, for export.

Signaling

THE ILLINOIS CENTRAL has authorized the installation of automatic block signals on 20 miles of road, single track, between Princeton, Ky., and Ilsley.

TRANSPORTATION IS A NATIONAL MATTER.—There are various ways of developing new forms of transportation by earth, air and water, but primarily the railroads must be relied upon. This means that obstructions should be removed and every facility provided for enlarging the equipment and the trackage of the roads everywhere. A general policy of helpfulness must be adopted, a policy of fostering instead of repressing. The farmers need it; the miners need it; the industrial workers need it; the commercial workers need it; the homekeepers need it; the whole country needs it regardless of distinctions of class or employment. Rescuing the railroads from their present congested and inefficient condition and supplementing them with development of other means of transportation is not exceeded in importance by any domestic need.—*St. Louis Globe-Dispatch.*

Supply Trade News

Morton C. Andrews, vice-president of the **Unit Construction Company,** St. Louis, Mo., died at Fall River, Mass., on August 9.

Agnew T. Dice, Jr., railroad sales manager of the **Reading Iron Company,** Reading, Pa., has been placed in charge of the cut nail business of the company.

Benjamin M. McDade, formerly sales manager of the Detroit Red Lead Works, Detroit, Mich., has become associated with the railway sales department of the **Sherwin-Williams Company,** with headquarters at Detroit, Mich.

L. R. Day has succeeded **W. E. Allison** as representative in the railroad department of the Western Electric Company at Milwaukee, Wis. **E. B. Dennison** has been appointed manager of the new branch office at Nashville, Tenn.

C. E. Neubert, assistant district manager of the Chicago office of the **Warner & Swasey Company,** Cleveland, Ohio, has been promoted to district manager of the company's office in Buffalo, N. Y., to succeed W. E. Marshall, deceased.

The H. K. Ferguson Company, Cleveland, Ohio, has transferred its Indianapolis, Ind., office to the Rookery building, Chicago. **Major O. C. F. Randolph,** who has been district manager at Indianapolis, becomes district manager at Chicago.

Preparations are being made at St. Louis, Mo., for the first annual railway exhibition, which will be held during the week of October 25 under the auspices of the **Railroad Y. M. C. A.** and the **St. Louis Railway Club** at the Railroad Y. M. C. A. building.

J. H. Cain, formerly with the Shore Line Electric Railway Company of Connecticut, has become connected with the **Railway Audit & Inspection Company,** of Philadelphia, Pa., as its general representative for New York State and New England. Mr. Cain's headquarters for the present will be at Philadelphia.

At the annual meeting of the **Canadian Locomotive Company, Limited,** Kingston, Ontario, on September 16, the board of directors was increased by two new members, William Harty, Jr., and William Casey having been elected to the board. The other members of the board were re-elected. J. H. Birkett, formerly secretary and treasurer, is now treasurer and has been succeeded as secretary by William Harty, Jr. William Casey, who was formerly general manager, has been appointed a vice-president. The other executive officers were re-elected.

Dwight P. Robinson & Co., Inc. (with which Westinghouse, Church, Kerr & Co., Inc., was recently consolidated), engineers and constructors, of New York, has established a new branch office in the Home Savings & Loan building, Youngstown, Ohio, in charge of **C. I. Crippen.** The company recently moved its Cleveland office from the Leader News building to the Citizens building, and **H. P. Clawson,** who was for several years a member of the Chicago staff, has been transferred to Cleveland to take charge of this office. The company now maintains branch offices in Pittsburgh, Youngstown, Cleveland, Chicago, Dallas and Los Angeles, and Sao Paulo, Brazil.

W. H. S. Bateman, trading as **W. H. S. Bateman & Co.,** Philadelphia, Pa., who for the past six years has been the eastern representative of the Canton Sheet Steel Company, has severed his connection with that company and has been appointed eastern sales agent of the **Superior Sheet Steel Company,** Canton, Ohio, with offices in the Commercial Trust building, Philadelphia, Pa., and 30 Church street, New York. **Joseph R. Wetherald** will continue as sales manager at the Philadelphia office, and **Richard J. Sheridan** at the New York office. Mr. Bateman will continue as resident sales manager of the **Parkesburg Iron Company** and eastern and southern sales agent of the **Champion Rivet Company,** at Philadelphia.

J. A. Houston, trainmaster on the Dakota division of the Chicago, Rock Island & Pacific, has resigned, effective September 15, to become associated with the **Westinghouse Electric & Manufacturing Company** in the engineering department, where he will handle questions pertaining to the mechanical design of the electric locomotives for heavy freight and passenger service. Mr. Houston was born at Springfield, Mo., in 1886. After receiving the degree of mechanical engineer at Purdue University in 1911, he continued his studies at the University of Illinois, where he specialized in railway mechanical engineering for two years. He entered railway service with the St. Louis-San Francisco as a machinist's apprentice at Springfield, Mo., in 1904. While there he won the Ryerson Scholarship of the American Railway Master Mechanics' Association and in 1907 started on these studies. He continued with the Frisco during his vacations and in 1910 became assistant chief draftsman, handling test matters in the mechanical department. After graduating he entered the mechanical department of the Chicago, Rock Island & Pacific, eventually becoming special engineer on the staff of the general mechanical superintendent. In 1916 he left the mechanical department to enter the operating department as trainmaster on the Dakota division, which position he held at the time of his recent change.

Trade Publications

LOCOMOTIVE SHOPS.—Dwight P. Robinson & Co., New York, consolidated with Westinghouse, Church, Kerr & Co., has issued a folder containing 13 photographs of the Baltimore & Ohio locomotive shops at Glenwood, Pa., and Cumberland, Md., which were built by Westinghouse, Church, Kerr & Co.

TIMBER PRESERVATION.—The Allis-Chalmers Manufacturing Company has reprinted its bulletin No. 1439-B which was issued originally in October, 1916, containing detailed information concerning the treatment of timber by the various processes and the equipment which it makes for that purpose.

THE STORY OF GASOLINE.—In a 40-page pamphlet issued by the Atlantic Refining Company, Philadelphia, many useful and interesting facts concerning the properties of gasoline have been presented in an attractive manner. A chapter on carburization discusses the effect on efficiency and power brought about by variations in the gas mixture. Six pages at the end of the booklet are devoted to a classified list of engine troubles with the remedies.

PRUDENTIAL STEEL BUILDINGS.—The Blaw-Knox Company, Pittsburgh, Pa., has issued a 32-page catalog illustrating and describing the line of portable steel buildings manufactured by that company. There are photographs and short accounts of the use of these buildings for a number of different purposes, including labor camps, field offices, watchmen's shanties, industrial buildings, etc. The latter part of the catalog is devoted to general plans for the various standard structures.

STATIONARY BOILERS.—An interesting and well illustrated 86-page catalog, entitled Boiler Logic, has been issued by the Heine Safety Boiler Company, St. Louis, Mo. It contains a large amount of valuable information regarding boiler design, such as proper mixture of the gases, heat transmission by radiation, by convection and by transmission through the tubes to the water. Practical methods of baffling water tube boilers are described, with emphasis laid on flexibility of design, prevention of leakage, active and inactive surfaces, and ease of cleaning. Illustrations and descriptions are given of Heine boilers arranged for hand firing with bituminous or anthracite coal. Various kinds of stokers, including chain grate, side feed and underfeed stokers, are described. The catalog illustrates different arrangements for burning fuels, including oil, shavings, bagasse and gas. Several pages are devoted to the overloading of boilers and a chart shows the relation between boiler load and excess of flue gas temperature over steam temperature. The last pages of the catalog consider the design, construction and methods of shipping of Heine boilers.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company is accepting bids for the construction of a machine shop at Albuquerque, N. M. This shop, which is to be 240 ft. by 604 ft., will be the central structure in a group of six other buildings, including a flue shop, pattern shop, cab painting shop, waste cleaning shop, fire department building and babbitt shop. The construction will cost approximately $2,000,000, and it is understood that the bids will be closed about the last of September.

CANADIAN NATIONAL RAILWAYS.—Plans have been made to build a new bridge at a point 1.4 miles from Salisburg, New Brunswick, over the Petitcodiac river. It will consist of four pony truss spans 104 ft. 7 in. long. Work on the substructure will be carried out by company forces; the contract for erecting the steel spans has not yet been let.

CHICAGO, BURLINGTON & QUINCY.—This company has awarded a contract to D. J. Jobst, Lincoln, Neb., for the construction of a new passenger and freight station at Seneca, Neb. The building will be 24 feet by 100 feet and will be of brick veneer, stucco and tile construction.

This company has awarded a contract to E. J. Claffey & Co., Chicago, for the installation of a complete heating and washout system in the new 16-stall roundhouse now under construction at Galesburg, Ill. It is understood that the work will be completed about December 1.

CHICAGO GREAT WESTERN.—This company is accepting bids for enlarging its passenger station at South St. Paul, Minn. The building will be lengthened approximately 50 feet, and is to be equipped with a complete steam heating plant.

CHICAGO & NORTH WESTERN.—This company has awarded a contract to Peppard & Burrill, Minneapolis, Minn., for the construction of an 840 ft. extension to ore dock No. 3 at Ashland, Wis. The entire construction, including the materials, will cost approximately $1,250,000.

ILLINOIS CENTRAL.—This company expects to complete the construction, of a second track from Clinton, Ill., to Heyworth, Ill., a distance of approximately 8½ miles, about November 1. The cost will be $300,000. The second track, which this company is constructing from Amboy, Ill., to Sublet, a distance of 5½ miles, will also be completed November 1.

This company is extending its yard trackage at Freeport, Ill., at a cost of approximately $175,000.

This company began work September 1 on a frame passenger station at Newbern, Tenn. The structure, which will be 24 feet by 80 feet, will cost approximately $30,000 and will be completed November 15.

OGDEN UNION DEPOT.—This company will make improvements in the railroad yards at Ogden, Utah, at a cost of $1,000,000. The work will include the construction of a new ice manufacing plant of 250 tons daily output, a storage house of 20,000 tons' capacity, and an increase in the trackage in the yards. The new ice plant and storage house will replace and occupy the site of an ice plant which was destroyed by fire. The yard tracks will be extended to the west of the present freight tracks, and the old Union Pacific roundhouse will be removed.

ST. LOUIS-SOUTHWESTERN.—This road plans to spend approximately $5,000,000 within the next 12 months on the improvement of its properties. Among the larger items are, more than $1,000,000 for 21,000 tons of steel rails which will be used to relay 157 miles of track; $755,000 for widening cuts and fills and filling in trestles; $500,000 for ballast (750,000 cu. yd. of washed gravel having already been contracted for); $459,000 for betterments to bridges, trestles and culverts; $300,000 for additional side tracks, and over $170,000 for additions to and enlargement of existing station facilities, water stations, shop buildings, etc. In addition, $1,250,000 will be spent for locomotives, delivery on 21 large consolidation type engines having begun, while $573,000 has been appropriated to improve existing equipment and provide new freight cars.

Railway Financial News

CAPE GIRARDEAU NORTHERN.—The Missouri Public Service Commission has issued an order directing J. W. Fristoe, receiver of this railroad, to resume operations of the line between Cape Girardeau and Jackson, 10 miles, not later than September 27.

CHICAGO & NORTH WESTERN.—This company has applied to the Illinois Public Utilities Commission for permission to issue $10,000,000 in 7 per cent certificates under an equipment trust agreement of 1920, the funds to be used in purchasing additional rolling stock.

DELAWARE, LACKAWANNA & WESTERN.—The plan for the segregation of this company's coal properties is covered in an article in this issue entitled "Lackawanna Proposes a Stock Distribution."

DENVER & RIO GRANDE.—A protective committee to represent the common and preferred stockholders has been formed with Daniel W. Blumenthal, of the law firm of Maurice B. & Daniel W. Blumenthal, 35 Nassau street, New York City, counsel, and Jefferson M. Levy, chairman. The stockholders' protective committee is preparing a petition to be forwarded to the United States District Court at Denver for the purpose of gaining a stay of the hearing on a decree for the sale of the road. The hearing on the decree has been set for September 25.

DETROIT, TOLEDO & IRONTON.—This company has answered the suit of 2 per cent of its security holders to set aside the lease of the line, stating that the road was near bankruptcy when taken over by Henry Ford, and that 98 per cent of the security holders have agreed to the lease.

GULF, MOBILE & NORTHERN.—This company has effected a final settlement with the Railroad Administration of the various accounts arising from federal operation of its property, by which the company agrees that it owes the government a lump sum of $100,000. It was stated at the Railroad Administration that this sum represents a compromise and that it could not be stated exactly to what class of accounts it should be attributed.

ILLINOIS SOUTHERN.—This road, which was declared insolvent and placed in the hands of a receiver in September, 1918, was sold at public auction for $725,000 to the Chicago Clearing House at Salem, Ill., on September 15. The property was bid in by W. B. Abbott, vice-president of the Central Trust Company, Chicago, representing the Chicago Clearing House, which held 90 per cent of the Illinois Southern bonds.

NEWFOUNDLAND.—The Newfoundland Legislature has authorized the loan of $1,000,000 to the Reid Newfoundland Company, which operates the railway on the Island. Even before the war this road was not profitable and the loss on operation for the six years, 1908 to 1913, was $363,057. Passenger and freight rates have been increased, but the deficit for the year 1919 was $645,549. The government program was adopted in the face of considerable opposition. The money will be spent for the purchase of locomotives and freight cars, for a freight house at Port aux Basques, for freight house at St. John's, and to the amount of $300,000 for new fish plates for track in the main line, the fish plates now in use being too weak.

This money is to be regarded as a loan and is to stand as an offset against any claims the company might have at the end of 1951, when the operating contract terminates. Further it is stipulated that it must be expended by a commission of seven persons; the chairman, who is to be an expert American or Canadian railroad executive, three other commissioners to be appointed by the government, and three by the Reid Company. This Board is also to study the general features of the operation of the railway with a view to further measures being taken during the next session. Coal for the locomotives is now costing $12 a ton.

NEW YORK CENTRAL.—The underwriting charge on this company's $25,000,000 bond issue has been approved by the Inter-

state Commerce Commission. See article on another page of this issue.

New York, New Haven & Hartford.—This company has applied to the Interstate Commerce Commission for authority for the execution of its promissory notes to an amount not exceeding $2,000,000 for six months, with privilege of renewal at 7 per cent, to cover a loan to the applicant of $2,000,000 in order to provide funds in part payment for 30 freight and 10 switching locomotives, 8 multiple-unit cars and 14 trailers, the balance of the cost to be supplied, if the commission shall so certify, by a loan from the revolving fund. The company also desires authority for an issue of $2,800,000 equipment trust notes, of which $2,000,000 are to be pledged with bankers as collateral security for the $2,000,000 of notes. The equipment trust notes will be entitled to a first lien on the equipment and will bear interest at 7 per cent. The company also asks authority for the execution of its promissory demand note or notes to a total amount of not exceeding $8,130,000, to be issued in anticipation of an advance of a like amount from the revolving fund and secured by a certificate from the United States government covering that amount. The $2,000,000 of promissory notes are to be given to five Boston banks. No arrangement has yet been made in connection with the $8,000,000 issue.

A special meeting of the stockholders will be held at New Haven, October 11, to act on proposed issue of indebtedness for funding or refunding indebtedness, providing funds for additions, etc., act on proposed issue of notes, debentures certificates or other indebtedness for acquiring new equipment by means of equipment trust or otherwise, and on proposition to amend vote at annual meeting by extending term of loan to be obtained from United States under Section 210 of Transportation Act from 5 not to exceeding 15 years. Stockholders of record September 30 will be entitled to vote.

Paris & Mt. Pleasant.—The receiver has been authorized by the Interstate Commerce Commission to issue $100,000 of receivers' certificates for one year at 8 per cent, for the purpose of making necessary repairs to the roadway, station buildings and equipment.

Seaboard Air Line.—The Interstate Commerce Commission has granted the authority asked by this company to issue a series of three-year, 7 per cent, extended, secured gold notes in an amount not to exceed $1,000,000, for the purpose of extending or paying $1,000,000 of the applicant's two-year, 6 per cent, secured gold notes which were outstanding in the amount of $4,000,000 maturing September 15, and to deposit and pledge with the Guaranty Trust Company of New York first and consolidated mortgage gold bonds, due 1945, as security for the proposed issue of three-year extended notes. The company is also authorized to issue $1,184,000 of first and consolidated mortgage gold bonds, to be pledged with the Secretary of the Treasury as part of the security for a loan of $6,073,400 from the United States, or as part of the security for the three-year gold notes; to pledge with the Secretary of the Treasury as part of the security for the loan, from among any nominally issued first and consolidated mortgage gold bonds, due in 1945, not exceeding $7,771,000, together with certain nominally issued preferred and common stock and certain stock of the Fruit Growers' Express Company; to renew, in whole or in part, 90-day notes dated May 20, 1920, pledging as security for the renewal notes a part or all of the collateral securing the existing notes, which are as follows: Note to Guaranty Trust Company for $500,000; note to National City Bank for $500,000; and note to the Chase National Bank for $250,000; and to issue and pledge and repledge securities of the applicant for the purpose of securing present and future obligations.

Virginia Blue Ridge.—This company has been authorized by the Interstate Commerce Commission to issue one promissory note for $8,500, payable to the Riggs National Bank, Washington, D. C., to be used for the purpose of paying or taking up a note for $8,500 which matured on September 15.

Wisconsin & Northern.—This company has applied to the Interstate Commerce Commission for authority to issue $500,000 of six months' notes at 8 per cent, to be used in part in extending its line from Appleton, Wis., to West Neenah, Wis., 5½ miles, and to acquire additional equipment.

Railway Officers

Executive

H. L. Traber, traffic manager of the Kansas City, Oklahoma & Gulf, with headquarters at Muskogee, Okla., has been elected vice-president and general manager, with the same headquarters, succeeding H. C. Ferris, resigned.

Financial, Legal and Accounting

C. F. Krebs, general auditor of the Chicago Great Western, with headquarters at Chicago, has been appointed controller, with the same headquarters, effective September 15. The office of general auditor has been abolished.

J. E. Murphy, statistician of the New York, New Haven & Hartford, has been given charge of the general books and accounts of that road, the Central New England and the New England Steamship Company, effective September 20, the position of general accountant having been abolished; effective the same date, **F. H. Palmer,** auditor of miscellaneous accounts, with headquarters at New Haven, Conn., assumed charge of all traffic accounts of the same roads. **C. H. Nero,** auditor of passenger receipts, with headquarters at New Haven, has been appointed auditor of freight accounts, with the same headquarters, succeeding **C. E. Hendrickson,** assigned to special duties, and **A. R. Down** has been appointed auditor of passenger receipts to succeed Mr. Nero, effective September 20.

Operating

J. E. Roberts, superintendent car service of the Delaware & Hudson, with headquarters at Albany, N. Y., has been appointed superintendent of transportation, with the same headquarters, effective September 1.

W. A. Kirkpatrick, trainmaster on the Canadian National, with headquarters at Neepawa, Man., has been promoted to superintendent of transportation, with headquarters at Saskatoon, Sask., effective September 1.

E. A. Sollitt has resumed his duties as superintendent of the Peru division of the Wabash, with headquarters at Peru, Ind., succeeding C. B. Davidson, acting superintendent, assigned to other duties, effective September 15.

C. H. Brown, assistant superintendent on the Grand Trunk Pacific, with headquarters at Edmonton, Alta., has been appointed superintendent of transportation of the western lines of the Canadian National, with the same headquarters, effective September 1.

T. P. White, superintendent of car service of the Grand Trunk Pacific, with headquarters at Winnipeg, Man., has been appointed superintendent of transportation of the Western lines of the Canadian National, with the same headquarters, effective September 1.

J. V. Nevins has been appointed chief despatcher on the Oregon Short Line, with headquarters at Pocatello, Idaho, with jurisidiction over the first, second and third subdivisions, main line and branches, effective September 9, succeeding **R. E. Brooks,** who has been promoted.

F. A. Winterson, assistant superintendent of the Quebec district of the Canadian Pacific, with headquarters at Montreal, Que., has been transferred to the Farnham division, with headquarters at Farnham, Que., effective September 13, succeeding **H. J. Main,** appointed car service agent, effective September 1.

O. C. Castle, assistant superintendent of transportation of the Texas lines of the Southern Pacific, with headquarters at Houston, Tex., has been appointed superintendent of

transportation, with the same headquarters, effective September 1, succeeding **F. M. Lucore,** resigned. **R. R. Unzicker** succeeds Mr. Castle.

L. F. Muncey, assistant superintendent on the Canadian National, with headquarters at Vancouver, B. C., has been promoted to superintendent, with headquarters at Kamloops Junction, B. C., having jurisdiction over the lines from Red Pass Junction to Vancouver, effective September 1. Mr. Muncey succeeds J. E. Nelson, who has been transferred.

Officers of the Canadian National, with headquarters at Winnipeg, Man., have been given jurisdiction over the lines of the Grand Trunk Pacific in addition to their former duties, effective August 24, as follows: **A. A. Tisdale,** assistant to the general manager; **E. Crawford,** superintendent car service; **W. Pratt,** superintendent sleeping cars, dining cars and hotels.

W. C. Steffa, superintendent of car service of the Chicago & Alton, with headquarters at Chicago, has resigned, effective September 15, to become superintendent of transportation of the Sinclair Oil Company at Chicago. The office of superintendent of car service has been abolished and Mr. Steffa's duties have been taken over by **C. W. Bearden,** superintendent of transportation, with headquarters at Chicago.

N. B. Walton, superintendent of the Grand Trunk Pacific, with headquarters at Edmonton, Alta., has been promoted to assistant general superintendent of the Canadian National, with headquarters at Prince Rupert, B. C., and with jurisdiction over the Grand Trunk Pacific lines from Edmonton to Prince Rupert, effective September 1. The positions of general superintendent and assistant general superintendent at Vancouver, B. C., have been abolished.

C. E. Maxfield, trainmaster of the New York, Chicago & St. Louis at Cleveland, Ohio, has been appointed assistant superintendent, with the same headquarters; **J. M. Crouch,** assistant trainmaster at Bellevue, Ohio, has been appointed to succeed Mr. Maxfield and **A. T. Hixon** has been appointed assistant trainmaster at Bellevue, succeeding Mr. Crouch, effective September 10. **M. J. Nolan** has been appointed terminal trainmaster of the Buffalo terminal territory, with headquarters at Buffalo, N. Y., effective September 16.

Coincident with the consolidation of the Canadian National and Grand Trunk Pacific, extensions and rearrangements of territory have been made, effective September 1, as follows: **W. A. Brown,** general superintendent of the Canadian National, with headquarters at Edmonton, Alta., has been given jurisdiction over territory extended to include the following Grand Trunk Pacific lines: Edmonton to Biggar, Tofield to Calgary, Biggar to Loverna, Oban to Battleford, Battleford to Carruthers. **A. Wilcox,** general superintendent of the Canadian National, with headquarters at Winnipeg, Man., has been given jurisdiction over territory extended to include the following Grand Trunk Pacific lines: Watrous to Winnipeg (including Watrous), Melville to Canora. **B. T. Chappell,** general superintendent on the Canadian National, with headquarters at Saskatoon, Sask., has been given jurisdiction over territory extended to include the following Grand Trunk Pacific lines: Biggar to Watrous, Young to Prince Albert, Melville to Regina, Regina to Riverhurst, Regina to Northgate, Talmadge to Weyburn. **W. I. Munro,** superintendent of the Canadian National, with headquarters at Saskatoon, Sask., has been given jurisdiction over the following lines: Saskatoon to Prince Albert, Prince Albert to Big River, Shellbrook to Denholm, Humbolt to North Battleford (including Humbolt), Saskatoon to Kindersley, Delisle to Lucky Lake, Elrose Junction to Eaton, Dalmeny to Carlton, Watrous to Biggar, Young to Prince Albert (including Prince Albert).

Coincident with the consolidation of the Canadian National and Grand Trunk Pacific lines, appointments and territorial rearrangements have been made as follows, effective September 1: **J. Irwin,** superintendent of the Canadian National, with headquarters at Edmonton, Alta., will retain his present headquarters temporarily, and will have jurisdiction over the lines from Edmonton to Biggar, Tofield to Calgary, Biggar to Loverna, Oban to Battleford, and Battleford to Carruthers; **M. D. Thompson,** assistant superintendent on the Grand Trunk Pacific, with headquarters at Regina, Sask., has been appointed superintendent of the consolidated lines, with the same headquarters, with jurisdiction over the lines from Regina to Saskatoon, Moose Jaw to Moose Jaw Junction, Avonlea to Gravelbourg, Regina to North Gate, Talmadge to Weyburn, Regina to Riverhurst and Regina to Melville; **G. A. Cuncliffe,** superintendent of the Canadian National, with headquarters at Brandon, Man., has been given jurisdiction over the lines from Brandon to Regina, Maryfield to Radville, Luxton to Estevan, Radville to Bengough, Virden to Belmont and M. & B. Junction to Hartney Junction; **M. B. Murphy,** superintendent of the Winnipeg terminal division of the Canadian National, has been given jurisdiction over territory from Carman Junction and west of the east yard limit at Transcona and Paddington; from Mileage 4.1 on the Emerson subdivision to the north yard limits at Westside on the Oak Point subdivision; Beach Junction and south on the Victoria Beach subdivision; east of St. James on the Grand Trunk Pacific; and all intermediate and diverging tracks between the limits above specified.

Traffic

T. C. Frew has been appointed general freight and passenger agent of the Newaukum Valley, with headquarters at Onalaska, Wash.

C. B. Sexton, general agent of the Northern Pacific, with headquarters at Chicago, has been transferred to New York in the same position.

E. E. Harold has been appointed general agent in the freight department, of the Chicago Great Western, with headquarters at Seattle, Wash., effective September 1.

W. M. Hough, whose appointment as general freight agent of the Mississippi-Warrior Service, with headquarters at New Orleans, La., was announced in the *Railway Age* of September 3 (page 426), was born at Kansas City, Mo., on November 5, 1887. He entered railway service as a station baggage agent for the St. Louis-San Francisco at Carthage, Mo., but was soon transferred to the commercial office of these lines at Dallas, Tex., where he served as a stenographer. In 1907 he entered the general freight office of the Frisco South Texas-Louisiana line, now the Gulf Coast lines, and during the next eleven years he served successively on that road as rate clerk, division clerk, chief rate clerk, chief clerk and assistant general freight agent. In 1918 he resigned to become chief clerk in the general traffic department of the Inland Waterway Service, with headquarters at New Orleans, La. He was promoted to chief of the tariff bureau in 1919 and in that position had charge of the promulgation of the waterways joint rail and river rate.



W. M. Hough

C. L. Senter has been appointed traffic manager of the Georgia, Florida & Alabama, with headquarters at Bainbridge, Ga., effective August 1, succeeding **C. J. Acosta,** appointed traffic manager of the Macon, Dublin & Savannah, effective same date.

R. C. Dearborn has been appointed traffic manager of the Pacific Fruit Express, with headquarters at Chicago, effective

September 1, succeeding **E. S. Briggs**, who has been appointed chairman of the National Perishable Freight Committee; **E. S. Norris** has been appointed assistant traffic manager, with headquarters at San Francisco.

J. R. Scott has been appointed assistant general freight agent of the Canadian National, the Grand Trunk Pacific and the Grand Trunk Pacific Coast Steamship Company, with headquarters at Vancouver, B. C.; **G. A. McNicholl**, assistant general freight and passenger agent of the Grand Trunk Pacific, with headquarters at Prince Rupert, B. C., has been appointed assistant general freight agent of the three companies, with the same headquarters. Other appointments are as follows: **W. A. Whyte**, division freight agent in charge of rail traffic, and **Albert Davidson**, division freight agent in charge of Grand Trunk Pacific Coast Steamship traffic, with headquarters at Vancouver, B. C.; **H. A. Stuart**, division freight agent, with headquarters at Victoria, B. C.; **F. L. Norman**, commercial agent, with headquarters at Seattle, Wash. All appointments effective September 10.

W. D. McVey, whose promotion to assistant general freight agent of the Michigan Central, with headquarters at Buffalo, N. Y., was announced in the *Railway Age* of September 3 (page 426), was born on October 23, 1881, at Perth, Ont. He entered railroad service in 1898 as a messenger boy in the telegraph office of the Michigan Central at Detroit, Mich. After serving in various clerical positions in the office of the general freight traffic manager of the Michigan Central, he was transferred to Bay City, Mich., in October, 1904, as rate clerk in the office of the assistant general freight agent. In May, 1907, he was appointed commercial agent at Bay City, which position he held until February, 1909, when he left to become chief clerk to the general freight traffic manager of the New York Central, with headquarters at Chicago. After a year with the New York Central, Mr. McVey was appointed commercial agent of the Ontario Central Despatch, at Toledo, Ohio. In April 1917, he returned to the Michigan Central as commercial agent, retaining his headquarters in Toledo. At the time of his recent promotion to assistant general freight agent Mr. McVey was general agent of that road at Toledo.

Mechanical

E. Hacking, master car builder of the Grand Trunk Pacific, with headquarters at Transcona, Man., has been promoted to assistant master car builder on the Canadian National, with headquarters at Winnipeg, Man., effective September 1.

C. L. Emerson, division master mechanic of the Chicago, Milwaukee & St. Paul, with headquarters at Perry, Iowa, has been transferred to the Chicago terminal, with headquarters at Chicago, succeeding F. Hopper, who has resigned. **E. L. Notley** succeeds Mr. Emerson.

Andrew McCowan, master car builder of the Canadian National, with headquarters at Winnipeg, Man., and **S. J. Lupton**, chief boiler inspector, with the same headquarters, have had their jurisdiction extended to the lines of the Grand Trunk Pacific, effective September 1.

A. H. Eager, mechanical superintendent of the Canadian National, with headquarters at Winnipeg, Man., has been given jurisdiction over the lines of the Grand Trunk Pacific, in addition to his former duties, effective August 24. He will retain his former headquarters.

Laird W. Hendricks, superintendent of shops of the New York, New Haven & Hartford, with headquarters at New Haven, Conn., has been appointed mechanical superintendent of the Bangor & Aroostook, with headquarters at Derby, Me., succeeding H. Shoemaker, resigned, effective September 17.

R. M. Brown has been appointed engineer of motive power of the New York Central, and **F. S. Gallagher** engineer of rolling stock, with headquarters at New York, effective September 1. **G. E. Doke**, engineer of materials, with headquarters at Collinwood, Ohio, has been appointed engineer of tests, with headquarters at New York, effective same date. The position of engineer of motive power and equipment has been abolished.

R. D. Hawkins, equipment engineer of the Great Northern, with headquarters at St. Paul, Minn., has been appointed general superintendent motive power of the Atlantic Coast Line, with headquarters at Wilmington, N. C. **Willard Kells** will be superintendent motive power, with the same headquarters, effective September 15.

Engineering, Maintenance of Way and Signaling

H. A. Dixon, chief engineer of the Canadian National, has been given jurisdiction over the lines of the Grand Trunk Pacific, in addition to his former duties, effective August 24. He will retain his headquarters at Winnipeg, Man.

H. M. Lull, division engineer of the Southern Pacific, with headquarters at Portland, Ore., has been promoted to succeed **E. B. Cushing**, engineer maintenance of way, with headquarters at Houston, Tex., who has resigned, effective September 15, but Mr. Lull's title will be chief engineer instead of engineer maintenance of way, although his duties will be the same.

T. Turnbull, engineer maintenance of way of the Canadian National and the Grand Trunk Pacific, with headquarters at Winnipeg, Man., has been given jurisdiction over all Canadian National lines west of Armstrong, Ont., west of and including Port Arthur, Ont., to and including Edmonton, Alta.; the Stony Plains, St. Albert, Athabaska, and the Onoway subdivision and all Grand Trunk Pacific lines east of and including Edmonton, Alta., effective September 1.

Purchasing and Stores

W. C. Livingstone has been appointed division storekeeper of the Pittsburgh division of the Pennsylvania, with headquarters at Derry, Pa., effective September 1.

George W. Grossner has been appointed purchasing agent of the New Orleans Great Northern, with headquarters at New Orleans, La., succeeding William Grentzenberg, resigned, effective September 16.

A. E. Cox, general storekeeper of the Canadian National, and **F. W. Tisdale**, general purchasing agent, have been given jurisdiction over the lines of the Grand Trunk Pacific, in addition to their former duties, with headquarters at Winnipeg, Man., effective August 24.

Railroad Administration

E. M. Alvord, assistant to the director general of railroads, has been appointed director of the Division of Liquidation Claims of the Railroad Administration, with offices at Washington, D. C., succeeding Max Thelen, who has resigned to engage in the practice of law in California. Mr. Alvord will continue to act as assistant to the director general until his successor is appointed. Mr. Alvord has been engaged in railroad service for about 46 years. He entered railway service as telegraph operator for the Ohio & Mississippi and was for three years agent and operator, followed by three years during which he was engaged in the construction of railroads in Texas. He has had a varied experience on many different roads, holding positions up to the rank of vice-president. He was the first official appointed on the Fort Worth & Denver and was later connected with the International & Great Northern, Sherman, Shreveport & Southern, Missouri, Kansas & Texas, Midland Valley and Pittsburgh & West Virginia, of which he was general superintendent. He entered the service of the Railroad Administration in April, 1918, as special representative of the Division of Operation. He was later a member of the compensation committee and of the committee on claims and on May 18, this year, was appointed assistant to the director general. **Max Thelen** was formerly president of the California Railroad Commission. He became connected with the Railroad Administration as director of the Division of Public Service and after the termination of federal control he was appointed director of the Division of Liquidation Claims. He was given a farewell luncheon by officers and employees of the division at Washington on September 21 and members of his department presented him with a chest of silver.

EDITORIAL

Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

The Executive Turn-Over

The labor turn-over is a well-defined problem. Many industries are spending money to investigate and to correct causes that lead to unstable labor conditions. Why not investigate the executive turn-over? Why not determine why foremen and superintendents are forever changing, why these men are attracted elsewhere or why it is thought necessary to supplant them with men from the outside? The demoralizing effect of the labor turn-over is not a circumstance compared to that of the executive turn-over. Consider the effect on every subordinate employee whenever a new superintendent of motive power or even a general manager is recruited from outside the ranks. Does it tend to inspire loyalty or enhance such incentive as may be found in the hope of advancement? The management may feel that the property is in a rut, that it needs an outsider to wake them up. Fortunately, the "boomer executive" who bumps from road to road in this waking-up process is almost a thing of the past. The railroads have discovered that it is safer, though it may be slower, to develop executive timber from within.

Steam vs. Electric Locomotives

Elsewhere in this issue is a notice of a joint meeting of the New York Section of the American Institute of Electrical Engineers, the Metropolitan Section of the American Society of Mechanical Engineers and the Railroad Section of the A. S. M. E., to be held on October 22. The relative advantages of modern steam and electric locomotives will be outlined by four able speakers and discussed by others who are well acquainted with steam and electric equipment. This program will undoubtedly attract much attention. The subject of electrification has grown in general interest until it has been made a part of the proceedings of societies not originally interested in anything pertaining to railroads. A large amount of good material has been prepared on the subject, but it has lacked in cohesion and specific facts and has been tempered by manufacturers lauding their favorite type of equipment. The relative merits of alternating and direct current equipment have long been a bone of contention. This time the electrical manufacturers will probably be obliged to get together and the meeting will bear the official stamp of two of our best engineering societies. The Railroad Section of the A. S. M. E. is to be commended for arranging a meeting which should be one step toward the crystallizing of a mass of unassimilated claims and data.

Seventh Fuel Commandment: Distribution

One of the most practical ways in which any railroad can apply itself to the fuel problem is through the more effective distribution of fuel. The variety of service, the various types of power and the numerous grades of fuel afford an opportunity for good judgment in the distribution of fuel that is not always exercised. Wherever coal can be thoroughly inspected some effort should be made to grade it with respect to its relative steam producing qualities and there is no reason why it cannot be so conspicuously carded that no yardmaster can be excused for placing on the chute a string of cars containing coal classed as "poor" when he could have alternated these with cars containing coal described as "good." Wherever mechanical facilities are such as to affect the character of coal issued to individual locomotives it is well to bear in mind that passenger locomotives are often better able to cope with inferior coal than locomotives assigned to difficult freight runs. The proper distribution of fuel cannot be prescribed by any formula. As with each operation outlined in the preceding commandments relating to fuel conservation, good judgment, which implies a broad consideration of all factors and avoidance of extremes, must be relied upon.

Post-Graduate Courses for Trainmen

A small percentage of our conductors and enginemen can be classed A-1. As to the large remaining percentage their general mental capacity needs to be elevated, and their mental habits directed and regulated. This is one of the salient passages in a letter on train rules which is printed in another column. The title of this note is suggested in the letter. Is it too fanciful? Is the education of trainmen unnecessary? Is it impracticable? Have reports of collisions become so common that their force is lost? Recall the lessons of Bertha, Harlan, Huntsville, Riverside, South Chicago, Trussville and other equally conspicuous illustrations of failure to conform to the first principles of safety. Is it possible to define any tangible benefit from the publication of these government reports? If so, what is it? The Interstate Commerce Commission says that the introduction of the block system is the remedy for this collision scandal. The railroads, by their action, not perhaps by specific avowal, say that no such radical change is needed. If the railroads' position is consistent, then the same can be said of the position taken by our correspondent. A great improvement in efficiency is needed. His suggestion that the proper education of trainmen calls for a marked accession of courage on the part of trainmasters will be endorsed in many places. Trainmasters, like some other classes, often seem to possess a lot of knowledge which is in need of propelling power.

"Speed Wars" Are Undesirable

Announcements of changes and improvements in passenger train schedules have recently been made by several of the larger western lines. In several cases schedules have been re-arranged so as to shorten the time of "de luxe" trains between large terminals. Coincident with these announcements, there appeared in Chicago newspapers, stories of the institution of a new "speed war." A perusal of the schedule changes which have so far been made, fails to substantiate the newspaper statement, although it does indicate that competition is again becoming keen between the transcontinental carriers. It has not been the policy of the *Railway Age* in the past to decry keen competition, nevertheless, it should be pointed out at this time that it should be kept within reasonable bounds.

The traveling public has a right to, and is demanding, efficient, adequate passenger service, but on the other hand, it has been so thoroughly informed regarding many of the wasteful practices resulting from intensive competition before the period of government control, that it is not improbable that any revival of these conditions will lead to extensive criticism. The safest policy and the only policy which should be followed in this period of reconstruction and trial, is to make those schedule and time changes which are necessary to serve the public adequately and satisfactorily. Certainly every effort should be made to avoid the heralding of "speed wars" and extravagant competition.

Car Building Picks Up

The latest report of the United States Bureau of Labor Statistics on employment in selected industries shows a promising advance in activity on the part of the car building and car repair establishments in August, 1920, as compared both with August, 1919 and July, 1920. The report covers 13 manufacturing industries and coal mining, and for both the comparisons made the car building industry shows the largest increases in activity of any of the industries mentioned. The figures showing this pronounced increase are as follows:

Comparison of Employment, Car Building and Repairing Establishments

August, 1919, and August, 1920—Figures for 41 identical establishments.

	August, 1919	August, 1920	Per cent of increase
Number on payroll	36,900	45,162	22.4
Amount of payroll	$1,883,439	$3,292,706	74.8

July and August, 1920—Figures for 41 identical establishments

	July, 1920	August, 1920	
Number on payroll	44,101	45,639	3.5
Amount of payroll	$2,741,614	$3,325,250	21.3

It will be noted that in the comparison between August, 1919, and August, 1920, covering 40 establishments, an increase is shown of 22.4 per cent in the number on the payrolls and of 74.8 per cent in the amount of the payroll. The comparison between August, 1920 and July, 1920, covering 41 establishments, shows similar increases in the number on the payrolls of 3.5 per cent and in amount of payroll, 21.3 per cent. It is true that increases in payrolls in this day and year may not always mean increased activity; we shall have to wait until we see the August figures of production to be absolutely sure on that point. Nevertheless, we feel optimistic enough to presume that increased activity is indicated and to reproduce the figures quoted as encouraging information.

T. & T. Division Meeting

Modern railroad work could not be carried on successfully without a means of rapid communication between various places on a system. The efficiency and despatch with which such work is handled depend largely on the superintendent of telegraph and his organization. The telegraph department is one of the oldest departments of the railroad and few realize the changes which have occurred and the developments made in the apparatus employed in recent years, many still thinking of the telegraph as a simple circuit consisting of a sounder, key and battery. The development of wireless telegraphy and telephony and a study of their application to railway service, the use of the multiplex and printer systems and the possibilities of wired-wireless indicate the growth of the art and the necessity of attracting properly and technically trained men into this field of railway service. That the Telegraph and Telephone division recognizes the importance and necessity of considering and applying improvements to the railroad telegraph and telephone service for its betterment was well demonstrated by the excellent reports presented at the annual meeting of the division at Winnipeg, Manitoba, on September 22, 23, and 24. Particular attention was called to the necessity of educating and holding desirable men in service, this being one of the greatest problems confronting this in common with other departments at the present time. A long step towards the solution of this problem will have been made when railroad officers become able to interest their men in the department's work. This can be accomplished through proper educational methods. One means which will produce results is the formation of local regional committees of the division to reach and interest the man in the field who has little or no opportunity to attend the regular sessions of the division.

Loan Fund Delays

A careful analysis of the orders for cars and locomotives reported in the Equipment and Supplies column in the issues of the *Railway Age* for the first nine months of 1920 shows that in that period orders were reported as placed by the Class I railroads of the United States for only 1,403 locomotives, 40,254 freight cars and 814 passenger cars. The interesting details of the analysis itself will be covered at greater length in next week's issue. There are many reasons for the failure of the railroads to place orders for cars and locomotives, but there is no doubt that the slowness with which certifications of loans from the revolving fund have been made is one of them. This loan fund of $300,000,000 was meant to assist the railroads in rehabilitating their physical property. Among other things it was intended to enable the roads to finance their orders for new equipment and to assist in getting the orders placed and under way in the shortest possible time. Alfred P. Thom, general counsel of the Association of Railway Executives, referred to this at the hearings on the loan fund applications in Washington on September 23 when he asked whether a wholesome situation was represented by the fact that so little of the money has been put to work in the seven months since the law was passed. It is not the purpose of this editorial to criticise the finance division of the Interstate Commerce Commission which undoubtedly has been hurrying the certifications as much as is possible with the complicated nature of the subject. Nor is it meant in criticism of the officers of the Treasury who have held up a number of the certifications. It is meant rather to emphasize the importance of putting this money "to work" at an early date and to express the regret that working out the details of making it available has had to take so much valuable time.

Keep the Cars Out of the Yards

It is trite to say that the problem of securing the maximum mileage from cars resolves itself into that of keeping them moving. Yet if this is done the goal of maximum car mileage will be attained. One of the principal points of delay is in the yard; therefore, if the cars can be kept out of the yards their movement will be expedited. Switching is, of course, necessary to consolidate cars into trains for movement. On some roads it is the practice to make up trains at each terminal for the next terminal only, leaving it to the forces at that point to do the same work again. On other roads, it is the practice to group cars into solid trains for movement to remote points, thereby reducing the switching at intermediate terminals to the minimum. This latter practice makes it necessary to hold cars somewhat longer in the first terminals

and also adds to the cost of switching at that point. However, this added delay and expense are usually more than offset by the savings affected in passing through intermediate terminals. No new idea is involved in this suggestion for it has been in operation on certain roads for years. However, a study of the practices prevailing over the country will show that this method is not followed to nearly the extent that present conditions justify. A plan such as this must necessarily be spread over a system or a district. It is therefore a problem for the general officers. No such officer can say that he has done his utmost to speed up the movement of cars until he has analyzed the operation of those terminals under his supervision critically to ascertain whether he has not been doing more switching and thereby delaying cars more seriously than is really necessary.

State Commissions Preventing Adequate Advances in Rates

A VERY IMPORTANT problem which must be solved soon has arisen as a sequel to the granting of increased interstate freight and passenger rates by the Interstate Commerce Commission. The nation's elaborate network of rates and differentials is in danger of being thrown into chaos. Where two months ago discrimination in transportation charges between cities, states and sections was negligible, it is now grossly apparent. This condition has arisen because some of the state railroad commissions are refusing the lead of the Interstate Commerce Commission in readjusting rates.

When the Interstate Commerce Commission began consideration of the carriers' applications for increased rates, the National Association of Railway and Utilities Commissioners, composed of the members of the state regulatory commissions, appointed three representatives to sit with the Commission and subsequently to formulate recommendations to the various state organizations. On July 31 the Commission announced its decision and the three authorized representatives of the state commissioners' association issued a formal statement recommending the granting of rates on state freight and passenger traffic corresponding with those fixed by the Interstate Commerce Commission on interstate traffic.

What has been the result? Of 36 state commissions by which action has so far been reported, only 19 commissions have granted increases in state freight rates corresponding with the increases granted by the Interstate Commerce Commission in the same territory. Seven state commissions have granted corresponding state freight rate increases but have denied or modified the increases on many commodities. Six commissions have allowed the carriers to file tariffs and place the new rates in effect subject to review upon complaint. One commission has denied the carriers' applications upon technical grounds. Two commissions, both in territory in which an interstate freight increase of 35 per cent has been made, have granted state increases of 33½ per cent, and another commission in the same territory has granted a state increase of but 25 per cent.

In regard to the increases in passenger fares, 16 state commissions have allowed advances in state rates corresponding to the interstate advances, 13 have denied applications for increases, 6 have allowed tariffs to be filed and the rates placed in effect subject to review, and one has denied the application for advances on technical grounds.

Similar differences have resulted from the consideration by state commissions of the increases allowed by the Interstate Commerce Commission in excess baggage rates and milk and cream rates, and its allowance of surcharges on sleeping and parlor car rates.

The result of this chaotic condition has been the establishment of flagrant rate discriminations throughout the country. For instance, a shipper in Council Bluffs, Iowa, has markets within the state of Nebraska. His freight rate to those markets, being interstate, has been increased 35 per cent by the Interstate Commerce Commission. The shipper of a similar commodity located at Omaha, Neb., across the Missouri river from Council Bluffs, can ship to the same markets at an increase of only 25 per cent because the Nebraska commission has granted an increase in rates of only that amount. The same condition prevails at many points throughout the West.

In regard to passenger traffic, the passenger fare from Chicago to St. Louis, Mo., is 3.6 cents per mile, in accordance with the ruling of the Interstate Commerce Commission. The fare from Chicago to East St. Louis, Ill., just across the Mississippi river, is but 3 cents per mile, in accordance with the ruling of the Illinois commission. The surcharge on Pullman and parlor car fares cannot be collected on the latter trip, whereas it can on the former.

Such conditions cannot continue to exist without nullifying the attempt of the Interstate Commerce Commission to grant the railroads adequate revenues with which to restore their properties and render satisfactory service. The percentage increases allowed by the Commission were based on total figures for all roads in each group. These include, of course, figures for state traffic. If part of the traffic is to be carried at different and lower rates, it is evident that the increase in earnings that will occur will fall far short of the estimates of the Commission and will fail to accomplish its object of putting the railroads on their feet financially.

The rehabilitation and expansion of the railroads are not primarily of local or state interest. The problem is national and one which uniform national treatment alone will solve. If the state commissions are to be allowed to prevent the railways from earning adequate net returns they will defeat all the efforts which have been made by Congress and which are now being made by the Interstate Commerce Commission to deal with and solve the railroad problem as a national problem.

New Books

Tin, Sheet Iron and Copper Plate Worker. By Leroy J. Blinn. 334 *pages, 5 in. by 7 in., illustrated, bound in cloth. Published by Henry Carey Bird & Co., 2 West Forty-fifth street, New York.*

This book can best be classed as a reference volume for engineers, foremen and mechanics who have to do with sheet metal working of any description. It could also be made use of as a text book on this subject and will afford interesting reading to anyone versed in the manipulation of sheet metals, but it is primarily a handbook designed for the guidance of workers in sheet metal. As such it is eminently practical and deals most thoroughly with every phase of this work. Particular attention is given to the rules for laying out work of all descriptions, the composition of metallic alloys and solders, recipes for varnishes, lacquers, cements and so on. All the manipulations encountered in the work shop are described quite definitely. As this book is a revised edition of an earlier publication it may be added for the benefit of those who are familiar with the previous edition that the new edition contains all the fundamental subject matter appearing in the original publication, augmented by data on the modern system of triangulation as related particularly to skylight work. Moreover, that portion of the earlier edition treating on metallic alloys and solders has been entirely rewritten so as to incorporate the best modern practice. The subjects are systematically grouped and a complete alphabetical index adds to the value of the book as a reference volume.

Letters to the Editor

What is the Matter With Our Train Rules?

PHILADELPHIA, Pa.

TO THE EDITOR:

Excessive worship of train rules is one of our sins that does not seem to get cured very fast; worship of words instead of deeds, or, of printed words as against incisive oral lectures by an officer who compels responses. When are we going to see a change? The work which has been expended during the past 25 years in committee rooms on revisions of the Standard Code might, if it had been employed in real education of live men, have elevated our practice quite materially.

I have been re-reading the government reports on the butting collisions at Riverside, Vt., on March 14, reported in the *Railway Age* of June 4, page 1572, and at Trussville, Ala., on February 15, reported in the issue of June 11, page 1662. At Riverside, five or more plainly-worded and well-understood rules were violated or ignored. At Trussville, one standard and one time-table rule were disobeyed. At both places important fundamental principles, which we call unwritten rules, were violated.

At Riverside there was disobedience of Rules 105 and 107; the former making both conductor and engineman responsible for the safety of the train, and the other requiring everybody, in case of doubt, to take the safe course. These might be called the most general and the least specific of any of the rules in the book; but what are they there for? As to 107, the conductor explicitly admitted that he was in doubt as to the safety of proceeding; and he was held grossly negligent for not having stopped at Chester to have his doubts cleared up. If this rule is to have any value for a conductor it can have it only as it is imbedded in his consciousness so that it will make itself prominent in his mind when an occasion comes up like this. The same is true of 105. Now, in behalf of the trainmaster it may be said that to thus fix rules of this kind in men's minds is out of the question; but that is the issue, plainly. If the trainmaster cannot do better it must be admitted either that the rules are useless, or the trainmaster is not up to his tasks; either give up the rule or find better men or better methods for enforcing it.

Rule 221, requiring the issuance and delivery of clearance cards, was ignored by the operator; and the engineman was held equally blameworthy. This rule is more specific; and the lesson that there should be persistent checking, all the time, to stop such negligence, is too obvious to need comment. Rule 507, requiring brakes to be tested at Summit, was ignored by both conductor and engineman.

The rule requiring fireman and brakeman to read train orders is of the same nature, but harder to enforce because it often requires a man to be more punctilious than his boss; to be careful in matters which an irresponsible mind can easily assume to be unimportant.

A special bulletin limiting speeds of all freight trains evidently had been ignored habitually.

At Trussville there was similar disregard of a rule imposing a maximum rate of speed; and the despatcher was censured for using Form 19 in circumstances where, under time-table Rule B-9, only Form 31 was permissible.

But these acts or omissions which relate to written rules are no more important—it is easy to regard them as less important—than the glaring instances of contempt for unwritten rules, which we see in these cases. My question, "What is the matter with our train rules?" may be answered, "Nothing; only enforce them."

These derelictions are of a kind that are a disgrace to an American railroad under any system. There are important rules, written and unwritten, to be observed whether we use the block system or no system; and the really significant lesson of these and other collisions is that the general mental capacity of trainmen needs to be elevated, and their mental habits directed and regulated. The enforcement of written rules is about the only means we have of enforcing those which are unwritten; and the education of men under those old methods is not by any means wasted if the old are superseded by new methods.

If a conductor or a brakeman neglects an unwritten rule, he needs a lecture, perhaps a private lecture filling an hour; or possibly several lectures; but lectures are liable to develop into vague talks which lose strength as they increase in length; and, unless the trainmaster is a genius, he is likely to find that he cannot give useful lectures except as he makes them concrete, by basing them on a written rule, and illustrating them by cases of actual recent disobedience of that rule.

At Trussville the conductor and the rear brakeman were held at fault in not discerning the situation *nearly a mile ahead;* they ought to have noticed the light on a signal at that distance by looking out of the side of their caboose, and they ought to have quickly sensed the fact that the opposing train was not on the side track, at the north end, when they came to the south end; sensing the fact with alert minds they would have realized that they were running past their meeting point and would have stopped their train at once. The engineman, running at night, had gone all day without sleep; disregarding the unwritten rule that he, himself, not his employer, was responsible for keeping his mind and body fit for his duties. No one has done much to educate enginemen in this direction; but everybody knows that educating them in written rules tends to cultivate in them a disposition to heed the unwritten—unwritten rules which they well know. In the Vermont case the operator neglected a most vital unwritten rule, namely: that his handwriting must be legible. If we credit his statement that his train-orders had been accepted by enginemen for years without protest, the conclusion must be that his superiors had neglected the unwritten rule to require operators' work (including penmanship) to be kept up to a reasonable standard.

This partial recital of the misconduct or negligence of a few men is a sufficient reminder that the training of trainmen ought to be improved about 500 per cent. Every operating officer of experience must realize this need. If to accomplish such a degree of improvement implies the dismissal of some of your men and the appointment of others in their places, then it may be that the need on your road is for a large improvement in the quality of the trainmasters—mainly in their courage.

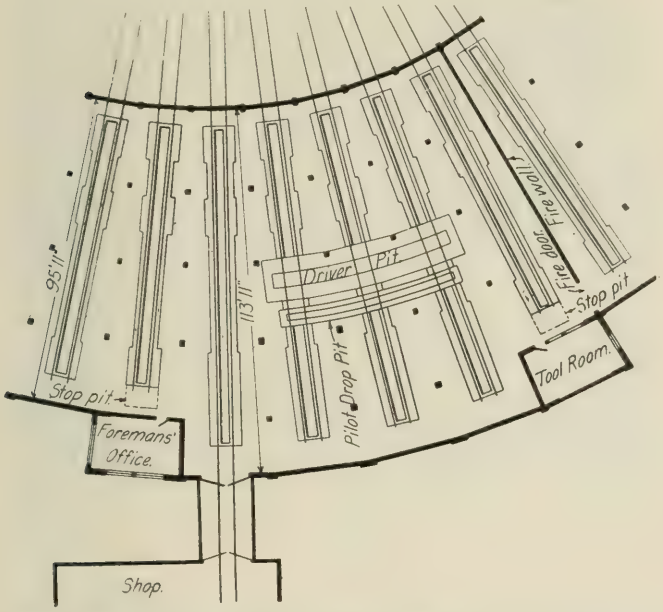
The operating officer who (because of lack of time, or of money, or of the strength and patience to get some higher officer to provide for those lacks) seeks to evade the issue presented in the foregoing argument, must comfort himself as best he can with the assurance that his record is as good as that of the next fellow. Taking things as they are, it is impossible not to sympathize with such a man. In the great unorganized university of railroading he thinks that his men come as near deserving diplomas as any that he knows of; and very likely he is right. But he must admit that there is a crying need for a few thousand post-graduate courses. Only by some such thorough means can the "average" man—or even a fraction of our thousands of average men—be put on an equality with the small percentage of conductors and enginemen who have put themselves in the A-1 class by their own efforts.

V. P. SMITH.

The Union Pacific Overhauls Its Engine Terminals

Builds Six New Roundhouses and Enlarges Others— Shop Facilities Also Increased

LIKE OTHER ROADS enjoying large proportionate increases in traffic during the last decade, the Union Pacific has been forced to make important extensions of facilities for the care and repair of locomotives. To meet a growth in traffic which is indicated by an increase in freight traffic from 10,551,296,989 gross ton miles in 1911 to 20,-



Part Plan of the Council Bluffs Roundhouse Showing the Six Long Stalls

112,270,846 gross ton miles in 1918 and an increase in passenger traffic from 66,714,000 passenger car miles in 1911 to 75,605,000 passenger car miles in 1918, this road has carried out improvements in the last three years which include 216,000 sq. ft. of new locomotive repair shops, 166 new roundhouse stalls and proportionate additions to auxiliary facilities.

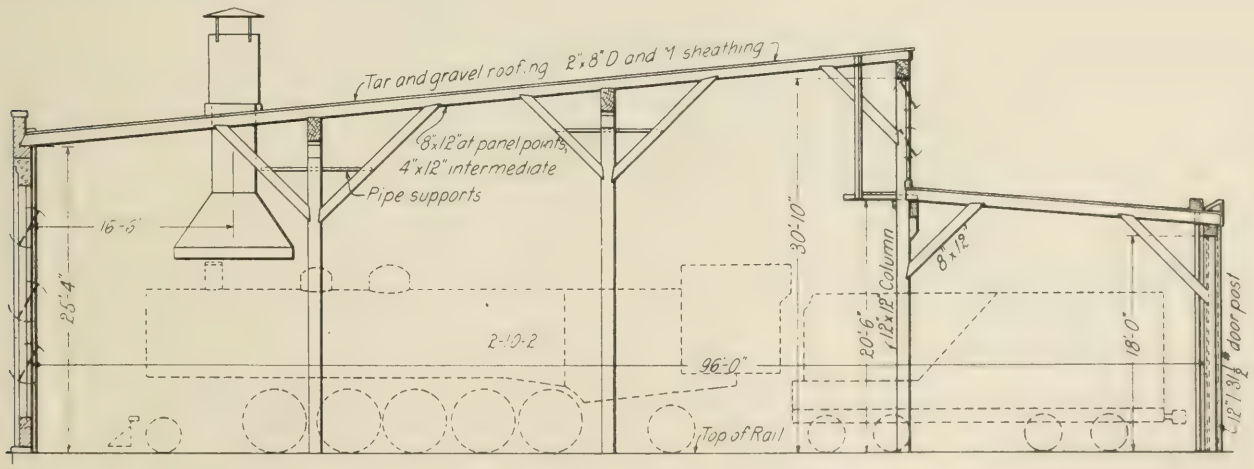
This program for improvements was started on a large scale in 1917. In the following year, under federal control, large additional authorizations were made, a considerable part of this work being carried over into 1919. In general, the program was divided between two classes of improvements: Additions and betterments to the two existing repair shops at Omaha, Neb., and at Cheyenne, Wyo., respectively, and extensions or renewals of engine terminal facilities including roundhouses, power houses, storehouses, coaling stations, cinder pits, water service stations, locomotive repairs shops, etc.

The extension of the shop facilities at Omaha consisted in the construction of additions to the existing shop building so that the work was essentially a continuation or enlargement of a plan previously outlined. The improvement at Cheyenne consisted in the construction of an entirely new machine and erecting shop to replace one that had become inadequate and the remodeling of the latter for use as a boiler and tin shop. As a consequence, while the plant at Omaha was and still is the principal system shop of the Union Pacific, the completion of the new building at Cheyenne has resulted in making the Cheyenne shop a much more important factor in general locomotive repairs on the road.

Each of these projects involves provision for additional power plant capacity and some rearrangement of existing facilities to make room for the improvements. In the case of the Omaha improvements, which are described at the end of this article, the power plant was the most important feature. The Cheyenne shop will be made the basis of a separate article in a later issue.

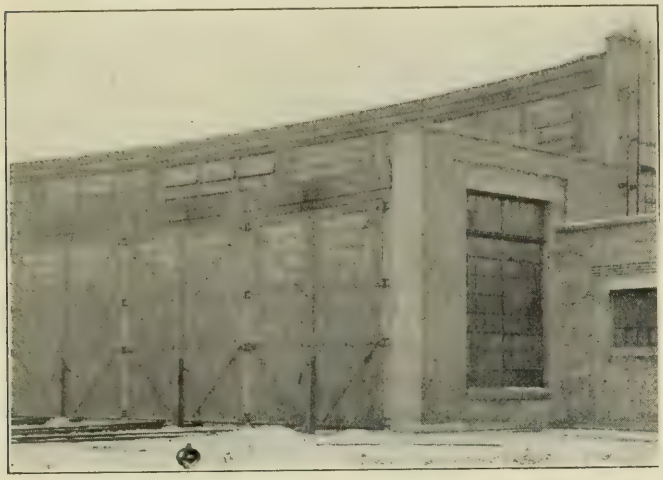
The engine terminal program was directed largely toward providing more adequate facilities along the two main traffic routes of the Union Pacific, namely, the Omaha-Ogden line and the Kansas City-Denver line. Additions to roundhouse facilities included 40 stalls at Council Bluffs, Iowa, 15 at Grand Island, Neb., and 28 at Green River, Wyo., on the first-named line and 35 stalls at Kansas City, Kan., 20 at Junction City and 14 at Ellis on the Denver line. Further improvements were made also at Hastings, Neb., and Marysville, Kan., to provide for the through traffic routed from the Ogden-Omaha line at Gibbon, Neb., to the Kansas City-Denver line at Topeka, Kan.

One interesting fact in connection with the terminal work



Longitudinal Section of a 96-ft. Stall in the Council Bluffs Roundhouse

is the number of essentially new terminals built either on entirely new sites or at least embodying complete new engine houses rather than extensions of the old ones. The improvements at Council Bluffs, Kansas City, Junction City, Ellis, Hastings and Marysville, all included entirely new engine houses. As a consequence, it was possible to adopt standard designs, modified as necessary to meet the local conditions yet maintaining the same idea throughout. The same is true of the coaling stations and auxiliary shop buildings. The coaling stations built at Council Bluffs, Grand Island, Sidney (Neb.), Junction City and Kansas City, all follow the same general design, the first two having 650 tons storage capacity, the second two, 400 tons and the one at Kansas City, 500 tons capacity. The shop buildings have steel frames, brick walls, wooden roof purlins and roofs,



One Corner of the Council Bluffs Shop

with large window areas using fenestra sash. The floors with few exceptions are of the mastic type.

Another interesting feature of the general program for improvement is the generous provision made for running repair shops at the different engine terminals. At Council Bluffs, Ellis and Green River, machine and erecting shops approximately 70 ft. by 200 ft. have been provided which will take care of practically all running repairs, thereby relieving the roundhouses very largely of this work. In 1917 a new machine and erecting shop was erected at Evanston, Wyo., that is 100 ft. by 150 ft. and in 1918 one at Junction City, 108 ft. by 209 ft.

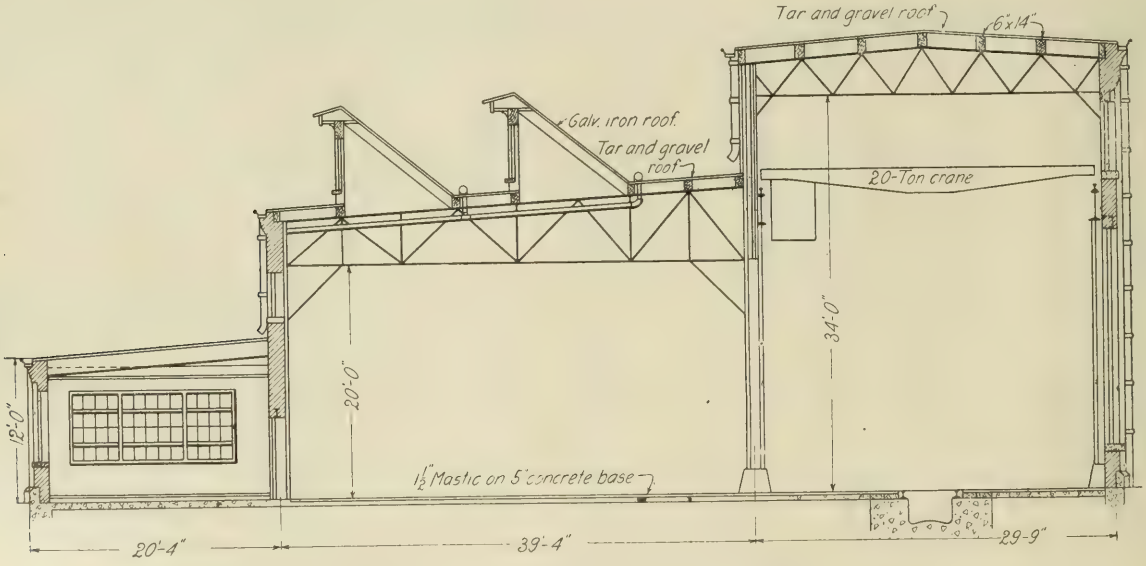
The Council Bluffs Terminal

The new engine terminal at Council Bluffs is the largest improvement of this character undertaken and is described here for that reason. The details, however, can be taken also as indicating the character of work carried out on a smaller scale at the other terminals.



The Council Bluffs Coaling Station

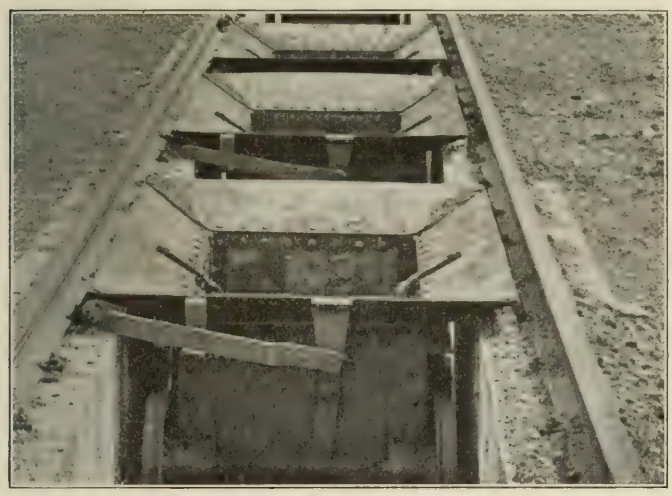
The longitudinal section through the roundhouse stall shows that the frame of the building is typical of western practice with wooden posts and girders supporting a wooden roof that is flat enough to take a tar and gravel covering, brick outer wall and end walls with large areas of fenestra sash glazed with factory-ribbed wire glass. The floor is concrete covered with Johns-Manville mastic, the smoke jacks are "J M" transite asbestos. Four fire walls divide the house into five rooms of eight stalls each, each fire wall being provided with automatic fire doors. The track doors are of wood with 24 10-in. by 16-in. window lights in the upper panel of each leaf. The door posts are composed of 12-in. 31½-lb. I-beams incased in concrete.



Cross Section of the Shop at Council Bluffs

The standard roundhouse stall is 96 ft. deep but special stalls 114 ft. deep are provided for Mallet engines. In the house at Council Bluffs there are six of these long stalls,

but only four of them are arranged to give the additional locomotive space, the other two having the added length on the outside taken up by a tool room and a foreman's office, respectively. In this connection an interesting feature has been introduced because of the more serious consequences attending the failure to stop an engine coming into either of these two stalls. To preclude any possibility of an engine going into the tool room or the office, buried concrete bumpers have been provided at the ends of the pits in these two stalls. These consist of blocks of concrete with the tops level with the floor, but provided with recesses or pockets in the line of each rail into which the leading wheels of the engine will drop in case they pass the regular stopping blocks attached to the rails. These



Hopper Cars for Handling Cinders in Track Pits at the Coaling Station

recesses are covered with plank flooring so as to introduce no obstruction in the floor but this will not prevent the locomotive wheels from breaking through and dropping into the pits.

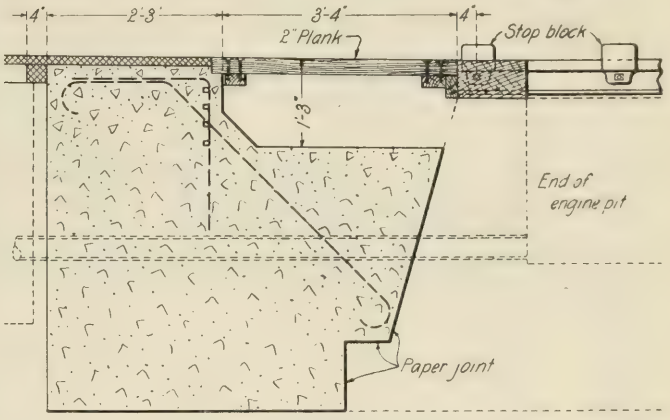
Driver and pilot wheel drop pits are installed so as to embrace the engine pits in three of these long stalls. These special pits are of the type in which the wheel jacks raise and lower the rail girders on which the wheels rest, instead of having a saddle to engage the axles of the wheels to be lifted. As a consequence, the operation of shifting out the rail girders before the wheels can be lowered into the pit is eliminated.

Contrary to the practice on many of the roads with respect to the newer engine houses, the Council Bluffs roundhouse is heated by direct radiation in the engine pits and along the rear walls. The coils in the pits are protected from falling objects by an angle-iron shelf attached to the pit wall directly above them. Toilets and locker rooms for roundhouse employees and engine crews are provided in an annex abutting against one of the end walls of the house. In accordance with demands of the enginemen, these facilities for engine crews are entirely independent of those for the roundhouse employees.

Washout, filling, blowout, cold water air and steam service lines are carried around the house on overhead supports with service cocks on each lines of posts. The Council Bluffs terminal and several of the others are equipped with washout systems occupying an independent structure adjacent to the roundhouse. The National system is used at Council Bluffs, while the F. W. Miller Heating Company's system was installed at Junction City. Artificial illumination is provided by three 60-watt lamps in each stall, two on the outer wall on either side of the windows and one on the inner wall at the door posts. These are fitted with reflectors so as to direct the light in the spaces between the locomotives. In addition to this illumination, extension chord outlets are provided on each line of posts. Other electrical service is supplied in the form of three-phase power outlets with an electric welding circuit having service stations at several positions in the house.

The Coaling Stations

One of the distinctive features of the engine terminal improvement is the standard design of coaling stations, of which five were built in the course of the last three years. The station at Council Bluffs is combined with a cinder disposal plant, whereby a portion of the equipment is used for handling both cinders and coal. This station is entirely of structural steel and spans five tracks, one coal-receiving track and four coaling tracks. The superstructure contains coal storage bins totaling 650 tons capacity over the coaling tracks and an ash storage bin over the coal receiving track. The coal and ash conveying system consists of an endless bucket conveyor with an upper leg across the top of the bin, a lower leg in a tunnel beneath the tracks and ascending and descending legs at opposite ends of the structure. This conveyor is used to carry coal from the track hopper underneath the receiving track to the coal storage bins or to take cinders from six cinder pits under three of the coaling tracks. These cinder pits are each 82 ft. long, so that the handling of the cinders from any point in the length of these pits to the hopper over the conveyor tunnel involves an additional operation, namely, small hopper cars running on tracks in the pits, these cars being equipped with a



Section Through One of the Stop Pits at the Ends of Two of the Engine Pits

bottom dump for discharge on to the conveyor. These cars and the pits are shown in one of the photographs.

A wet sand storage bin and a sand dryer house are located adjacent to the coaling station. Three coal burning sand dryer stoves are provided, together with three compressed air delivery pipes which discharge the sand into three separate bins in the superstructure over the coaling tracks.

Engine Terminal Machine Shop

The machine shop at Council Bluffs is duplicated at Green River and may be said to be typical of the machine and erecting shops provided at the new engine terminals. This building is 72 ft. wide by 209 ft. long and consists of an erecting bay 29 ft. wide and 34 ft. high, and a machinery bay 39 ft. wide, and 24 ft. high, together with an annex 20 ft. by 78 ft. for a foreman's office, toilet, locker room and tool room. The erecting bay is served by a 20-ton traveling crane and has a single track with track pit extending nearly the full length and intersected by a drop pit, thus affording relief to the drop pits in the roundhouse.

This track in the erecting bay communicates with one of the tracks in the engine house, so that engines may be moved readily from the roundhouse into the shop. The other bay of the building is used as a machine shop, blacksmith shop and tin shop. It is equipped with a 42-in. planer, 36-in. drill press, two 16-in. engine lathes, 44-in. boring mill, 24-in. by 36-in. punch and shear, a 36-in. engine lathe, a 24-in. universal grinder, a 1,500-lb. hammer and a 500-amp. welder, etc.

The Power House

The power house is located in a separate building and accommodates seven 256-hp. Babcock & Wilcox boilers with Laclede-Christy stokers. The building is designed to allow space for one additional boiler. The stokers are served by Link Belt coal handling machinery from a track hopper outside the building. A steam jet conveyor is provided for the removal of the cinders. One distinctive feature of this powerhouse which has been carried out also on other Union Pacific installations is the substitution of induced draft through the use of a blower for the usual tall chimney. The engine room equipment consists essentially of an air compressor and a motor-generator set for converting high-tension electric current purchased from the city.

The Omaha Shop Project

The Omaha shop project was carried out in two stages; one undertaken in 1917 and the other carried out in 1918 and 1919. The existing shops in Omaha included a machine shop and boiler shop built in 1904 and 1905 of the same cross section, 150 ft. wide, but in separate buildings, the former 400 ft. long, the latter 311 ft. long, the two being separated by a gap of 100 ft. The work in 1917 consisted in building an extension to the machine shop that filled this gap between the two old buildings, in addition to the construction of an entirely new power plant. The work commenced in 1918 comprised an extension of 200 ft. on the opposite end of the machine shop, so that these two extensions gave a shop structure 150 ft. wide by 1,011 ft. long, of which 700 ft. comprises a machine shop and 311 ft. a boiler shop.

The two extensions to the shop structure followed closely to the design of the old building erected in 1904 and 1905. An illustration shows a typical cross section of the shop which has two bays of equal width, one to serve as an erection bay and the other for the machine operations. The erecting bay has three longitudinal engine pits covering the length of the shop, except for 100 ft. at the north end. This bay also has a crane runway of 69 ft. 9 in. span and was originally equipped with two 100-ton Niles-Bement-Pond

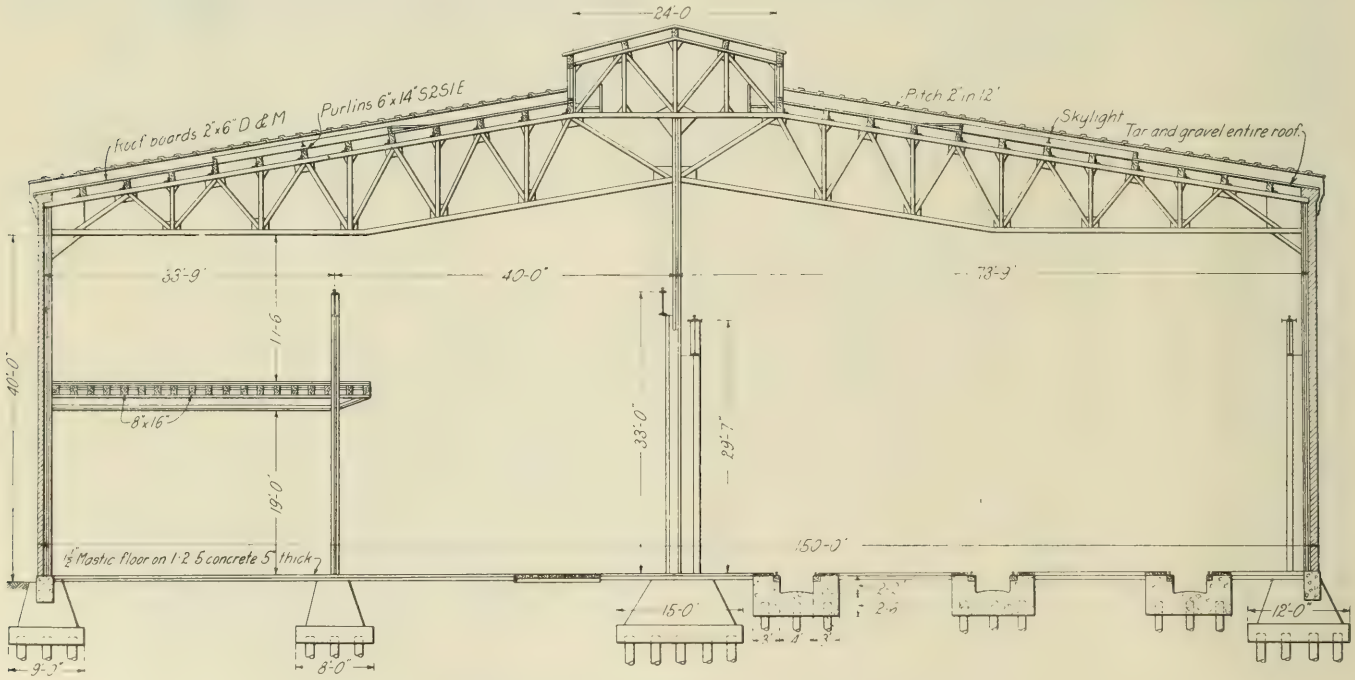


One End of the Omaha Shop

traveling cranes. In 1917 two Whiting cranes of the same capacity were added. The machinery bay has a mezzanine floor along the side next the outer wall extending the entire length of the building. The portion of this bay not occupied by the mezzanine floor is served by two 10-ton Niles traveling cranes operating on a crane runway of 38 ft. 8 in. span.

The distribution of machine tools follows the usual arrangement with light machine work, pipe work, air brake repairs, etc., handled either on the mezzanine floor or underneath it, while the open space under the cranes is occupied by the larger machine tools. The space on or under the mezzanine floor is also devoted to toilet rooms, lockers, heating plant, tool room, office, etc.

Each extension to the machine shop involved the addition of new heating units designed to serve as additions to the existing system which is of the indirect radiation hot air type. The hot air delivery pipes are carried in the roof



Typical Cross Section of the Omaha Shop

trusses with laterals extending down the walls to the floor level.

The Power House

The power house for the Omaha shop not only provides compressed air and heat for the various buildings in winter, but also produces electrical energy for lighting and the shop operations. The installed boiler capacity is 3,250 hp. provided by eight units of Sterling water-tube boilers of 406 hp. each, equipped with Green stokers. The induced draft system is used here also for which purpose the boilers are grouped in two sets of four boilers each, which are served by Sturtevant No. 200 fans operated by steam engines. Both coal and cinders are handled by a Jeffery bucket conveyor to overhead bins. This conveyor is located in a transverse position at one end of the boiler room and delivers coal from a track hopper to a conveyor belt, which in turn delivers the coal to the bunkers over the boiler room. The cinders are handled from the cinder pockets under each of the boilers to the Jeffery conveyor by means of hopper cars operated on a 24-in. gage track in the basement of the boiler house.

The engine room of the power plant contains a 750-hp. Curtis General Electric turbine generator; two 500-hp. Westinghouse-Parsons turbine generators, two 250-hp. Westinghouse vertical compound engine generator sets and also two two-stage compound engine air compressors of 3,500 cu. ft. of free air capacity each. All steam lines are carried to the various units in the basement of the engine room.

The power house is on pile foundation, the boilers being carried by the structural frame of the building, but each of the engine units in the engine room is carried on a pile foundation independent of the building.

All of the engine terminal and shop improvements were designed and constructed under the direction of the engineering department of the Union Pacific. The 1917 work at Omaha, including both the power plant and the shop extension, were built by the Westinghouse, Church, Kerr Company, New York City. The subsequent extension to the machine shop building was built by the Home Builders, Inc., Omaha. The terminal improvements at Council Bluffs, Iowa, and at Green River, Wyo., were made under contract by the Lynch-Cannon Engineering Company of Salt Lake City, Utah.

Rates on Articles in Common Use

THAT THE INCREASE IN FREIGHT RATES recently authorized by the Interstate Commerce Commission, when applied to most articles of food or clothing or other things in common use, in the quantities in which they are ordinarily purchased, are so small as to have a very slight effect on retail prices, is shown most clearly in figures just compiled by the Bureau of Railway Economics showing the old and the new rates on the ordinary retail sales unit of typical commodities transported from their principal sources of supply to various points of destination throughout the country.

The bureau has compiled a series of tables showing the actual rates, the distance, the shipping weight and the increase for about 20 commodities in common use, to a dozen or more of the principal cities. These have been distributed to the railroads and examples applying to the different localities are being given wide publicity.

As an illustration, the table showing the rates to Chicago is as follows:

RELATION OF RECENT FREIGHT RATE INCREASE TO RETAIL SALES UNIT OF TYPICAL COMMODITIES TRANSPORTED FROM THEIR PRINCIPAL SOURCES OF SUPPLY TO CHICAGO, ILLINOIS

Commodity	From	Distance	Retail sales unit	Average shipping weight sales unit (Pounds)	Freight rates in cents per retail sales unit from point of origin to point of consumption — Old rates — Carload (Cents)	Old rates — L. C. L. (Cents)	New rates — Carload (Cents)	New rates — L. C. L. (Cents)	Freight rate increase in cents per retail sales unit — Carload (Cents)	Freight rate increase in cents per retail sales unit — L. C. L. (Cents)
		(Miles)								
Clothing, men's	New York, N. Y.	955	Suit	4.0	4.500	4.500	6.300	6.300	1.800	1.800
	Rochester, N. Y.	581			3.160	3.160	4.420	4.420	1.260	1.260
	Philadelphia, Pa.	880			4.260	4.260	5.960	5.960	1.700	1.700
Shoes	Boston, Mass.	1,014	Pair	3.75	4.219	4.219	5.906	5.906	1.687	1.687
Hats, felt	New York, N. Y.	955	One	0.8125	0.914	0.914	1.280	1.280	0.366	0.366
	Philadelphia, Pa.	880			0.865	0.865	1.211	1.211	0.346	0.346
Beef	*a*	...	Pound	1.0	.....	.....	.....	.....	.....	.....
Flour	Minneapolis, Minn.	525	Sack	10.0	1.250	3.150	1.700	4.250	0.450	1.100
	Kansas City, Mo.	518			1 500	4.000	2.050	5.400	0.550	1.400
Sugar	New York, N. Y.	955	Pound	1.0	0.450	0.600	0.630	0.840	0.180	0.240
	Philadelphia, Pa.	880			0.430	0.585	0.600	0.820	0.170	0.235
Potatoes	Maine	1,110	Peck	15.0	6.750	7.875	9.450	11.025	2.700	3.150
	New Jersey	954			6.750	7.875	9.450	11.025	2.700	3.150
Tea	New York, N. Y.	955	Pound	1.0	1.125	1.125	1.575	1.575	0.450	0.450
	Boston, Mass.	1,014			1.125	1.125	1.575	1.575	0.450	0.450
Oranges	California	2,222	Dozen	6.0	8.640	25.500	11.670	34.440	3.080	8.940
Milk	Chestertown, Ind.	41	Quart	*c*	*b*	0.900	*b*	1.075	*b*	0.175
				d	*b*	0.734	*b*	0.875	*b*	0.141
				e	*b*	0.650	*b*	0.775	*b*	0.125
Pianos	New York, N. Y.	955	One	825.0	816.750	928.125	1.142.625	1,299.375	325.875	371.250
	Boston, Mass.	1,014			816.750	928.125	1.142.625	1,299.375	325.875	371.250
Automobile tires	Akron, Ohio	388	One	22.0	9.900	14.850	13.860	20.790	3.960	5.940
	New England	1,014			16.509	24.750	23.100	34.650	6.600	9.900
Sewing machines	South Bend, Ind.	86	One	121.0	25.410	50.820	35.695	71.390	10.285	20.570
Typewriters	New York, N. Y.	955	One	45.0	50.625	50.625	70.875	70.875	20.250	20.250
	Ilion, N. Y.	635			40.506	40.500	56.700	56.700	16.200	16.200
Paint	Cleveland, Ohio	340	Quart	4.5	1.058	2.025	1.485	2.835	0.427	0.810
Vacuum cleaners	*a*	...	One	26.0	.....	.....	.....	.....	.....	.....
Ford cars	Detroit, Mich.	298	One	1,580.0	1,098.100	2,488.500	1.540.500	3,483.900	442.400	995.400
Plows	South Bend, Ind.	86	One	69.0	10.005	20.700	14.145	28.980	4.140	8.280
Newsprint paper	Watertown, N. Y. dist.	916	Pound	1.0	0.300	0.690	0.420	0.965	0.120	0.275
	Maine	1,142			0.330	0.750	0.460	1.050	0 130	0.300

a Also originated at Chicago.
b Rates not reported.
c Basic rates quoted in cents per 5 gallon can.
d Basic rates quoted in cents per 8 gallon can.
e Basis rates quoted in cents per 10 gallon can

The Association of Railway Executives has authorized a statement in which it explains that:

"The above figures do not represent all the transportation costs. In shoes, for example, there is the cost of carrying the hide from the slaughter house to the tannery, from the tannery to the shoe factory, from the factory to the shoe store, as well as the freight on linings, thread, etc., but all these charges are in small fractions of a cent and the sum of all of them is very small in proportion to the final value of the finished product. The increased freight rate on a trainload of wool, for example, becomes very trifling when divided among thousands of suits of clothes. In the case

of heavy commodities such as coal and steel, where labor and transportation are the most important items in the cost of production, the increase would naturally be larger."

Inspection of Shadle Automatic Train Signal and Stop

On September 22, the Cincinnati, Indianapolis & Western conducted an inspection and series of tests of the Shadle automatic train signal, control and stop, which has been in service on one passenger engine and in the process of development for several years. The purpose of this inspection was not to demonstrate a final or finished automatic train control installation, but to show how commercial appliances that are now used by the mechanical, signal and electrical departments may be applied to a scheme of this kind; and also to demonstrate that the present arrangement will perform the functions that are considered necessary and desirable.

This automatic train signal, control and stop system was designed and is being developed by C. F. Shadle, efficiency engineer of the C. I. & W. It is of the intermittent electrical contact type with 60 ft. ramp rails located in advance of automatic or other signals and controlled by the track circuits of the automatic block system. The installation is on the Indianapolis division of the C. I. & W. in single track automatic block signal territory east of Indianapolis, Ind.

The equipment on the engine and tender is briefly described as follows: The ramp shoe is mounted on the side of the rear truck on the tender and in passing over a ramp picks up the current from the wayside circuits. It also operates a circuit controller mounted above the ramp shoe. The electrical energy for operating the engine equipment is obtained from storage cells mounted on the tender. The signal lights are located on the tender back of the engineman and a release switch which is used in connection with the automatic control equipment is mounted on the tender next to the signal lights.

This switch is operated by a cord which is carried into the cab just above the engineman's head. Three iron-clad electro-magnets, which operate circuit controllers, are suspended under the tender. One of these magnets operates in conjunction with a tachometer which is mounted on the front bumper of the locomotive. The tachometer is driven by a flexible connection attached to one of the axles of the engine truck. This combination is used to operate the automatic speed control features. Another magnet picks up when ramp contact is made. The third magnet is used for operating signal lights, besides controlling an electro-pneumatic valve for maintaining the feed valve of the air brake system in the normal position; it also controls the automatic service brake valve. The two valves which are used in connection with the automatic control system are located under the cab in the standard airbrake equipment.

A special train was provided for the tests. It included a passenger locomotive which is in daily service between Indianapolis and Cincinnati, equipped with the automatic train signal, control and stop appliances, two mail cars, a dining car and a business car. The train, including the engine, weighed about 407 tons. All the cars had six-wheel trucks equipped with clasp brakes. The engine was provided with E T-6 Westinghouse brake equipment. The reservoir pressure was 110 lb. and the brake pipe pressure was 90 lb. The day was clear, hot and dry. A speed indicator and air gages for indicating brake pipe, brake cylinder and auxiliary reservoir pressures were provided for the observers' information in the business car attached to the rear of the train.

The special train left the Union Station about 1:30 p. m. and proceeded eastward to the east end of Indianapolis yard, from which point it continued through the protected territory, under test, to New Palestine, 12 miles east. The train then backed up about two miles to an eastbound signal at Julietta, where the party had an opportunity of inspecting and investigating the engine and roadside equipment. Following this inspection the remaining tests of the series were made. The automatic block signals were set by signalmen located at the various signals that were to be operated.

The first test was made to show the behavior of the apparatus when the special train followed an imaginary local train that stopped at all stotions. The wayside signals were set to indicate alternately, clear and caution. The second test was conducted to demonstrate the results that would be obtained if the special train followed another train through a caution block into an occupied block and then into a caution block.

The third test was to show the behavior of the apparatus when the special train entered a caution block from a clear block at high speed and then from the caution block at limited speed into a clear block. The fourth test was conducted to determine the maximum speed of the train when the brakes released after an automatic application had been made through the control equipment. The fifth test was conducted to show the behavior of the automatic control equipment if the train proceeded at high speed over a caution ramp with the release switch held in the releasing position.

In all of these tests the signal lights on the locomotive operated as intended when the train passed over the ramps and when the enginemen operated the release switch. Upon entering a clear block the signal lights showed green and in a caution or occupied block the yellow light appeared. Following the display of a yellow light, if the engineman operated the release switch, both the green and yellow lights appeared, thus indicating a limited speed block.

The automatic control apparatus operated when the train passed over a ramp into caution or occupied block and the brakes were set in very much the same manner as would be the case if the application were made by an engineman. When the release switch was operated in a caution block the apparatus provided for the release of brakes and if the train operated in a caution block at a speed greater than that for which the equipment was adjusted the brakes were set and the speed reduced.



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Locomotive Formerly Used on the Brooklyn Bridge Now Seeing Service in the Adirondacks

Two Great Problems Before American Railroads*

Will a Six Per Cent Income Attract New Capital?; Can Pre-War Efficiency be Re-established?

By Brigadier General W. W. Atterbury
Vice-President, Pennsylvania Railroad

THE RAILROAD situation is, as I can well appreciate, of paramount interest to the business men of Harrisburg. Unfortunately, however, the subject is so broad that I cannot attempt a general discussion, but will endeavor to clarify the most vital and essential of the unsolved problems which at present affect our railroads.

The speaker presented a brief summary of recent railroad history, explaining that the Transportation Act has created no guarantees whatever, save the temporary one which expired on September 10. At the freight and passenger rates fixed by the Commission, the railroad are left to compete with each other for the traffic which their district affords, and to sink or swim as best they may. It is the express purpose of the Transportation Act to retain competition and the spirit of enterprise which it engenders. There is no coddling of the railroads in the Act. There are no charities or subsidies. There are no comforting guarantees for weary or discouraged managements to fall back upon.

If, under the new law, the railroads of this country are able to give satisfactory service, progressively extend their facilities so as to keep abreast of the times and provide their owners with a just and reasonable return upon the savings which build these great properties, an achievement will have been recorded second to none in American business history.

The public and the press I feel we have with us in sympathy and good will. The Interstate Commerce Commission feels its responsibility and is most constructive in its policy. The state commissions, with a few exceptions, are going along with the new spirit of constructive public regulation. Congress, for the first time in the history of American railroad legislation, sincerely threw the weight of the law-making power upon the constructive side.

The 26 months of actual federal possession and operation, plus the six months of guarantee, which was really a transition period, make altogether a period of 32 months, in which a great deal has happened. Roughly speaking, railroad wages have been doubled. Efficiency of employees, measured by production per hour, has fallen seriously; it can be conservatively stated now not to exceed 75 per cent. Material prices have been doubled and trebled. Freight rates have been advanced a total of about 70 per cent and passenger rates about 40 per cent. During the period we are considering, rates for transportation on American railroads have advanced less than other prices. America's railroad transportation is today its cheapest commodity, gaged by a day's labor, a bushel of wheat or a ton of coal; for each will buy more miles of transportation, either passenger or freight, than ever before in our history. To complete our survey we must consider that roadbed and rolling stock are worn and depreciated by the stress of war traffic and undermaintenance, and that urgent needs for more transportation than the railroads have ever given, are now pressing everywhere.

This survey brings me to a statement of the two great problems into which the situation seems to resolve itself: (1) whether the 5½ to 6 per cent return on railroad valuation provided by the Transportation Act will be sufficient to attract new capital, and (2) can the pre-war efficiency be accomplished. As to the adequacy of the 5½ or 6 per cent average return, it is obvious that the earnings of the railroads must be sufficient to do two things: one is to properly maintain the railroads in their present condition, the other to provide credit sufficient to attract new capital necessary to furnish facilities to meet the growing requirements of our country. By careful and efficient management we hope to be able to maintain our property and to continue our record of 74 years of uninterrupted dividends. I must confess that, for the present time at least, I am not optimistic as to attracting new capital.

The highest credit in the world today is that of the United States government, and it is on about a 6 per cent basis. The Republic of France, with the greatest reputation for thrift of any of the large nations, has just floated a loan which cost her about 9 per cent. The securities of Great Britain, the head of the world's greatest empire, can be bought to return 8 or 9 per cent. Switzerland and Belgium have each put out loans on close to a 9 per cent basis, while our great transportation systems like the New York Central, The Pennsylvania and the Southern Pacific have each had to pay close to 7½ per cent.

In view of these facts, how can we find a real credit basis for our American railroad companies, competing with each other for a 5½ to 6 per cent return and forced to divide with the government anything that any individual company, by good management, luck or favorable location, may be able to earn above the latter figure? The stock of our own company, paid in dollar for dollar and some of it issued at premiums, and representing, owing to the "ploughing in" of earnings during the past years, perhaps two dollars of equity in invested value for every dollar face value of the shares, is selling on the market at 16 per cent below par.

Many other conservatively capitalized and efficiently managed railroad companies are in the same position. We cannot sell new stock at par with old issues below par. The bond market for the best corporate securities is far above 6 per cent, so we can today raise no money at rates which the Transportation Act permits us to earn. We may be forced to pay on a 7 per cent basis for refunding; but where is the money to come from for improvements?

The present provisions of the Transportation Act regarding the average rate of return remain in force until March 1, 1922. After that date, the Interstate Commerce Commission is empowered to fix such rate of return as the circumstances may justify.

Meantime we must live under the provisions of the Act and strive, by care and economy, to give as satisfactory service as possible with the existing plants, while protecting existing investments. For such improvements and extensions as it is imperative to make in the near future, the best solution would seem to me to be that advocated last week in Washington by our president, Mr. Rea, before the Interstate Commerce Commission, namely, a more liberal policy with regard to government advances at interest rates which the provisions of the Transportation Act give reasonable assurance of ability to earn. Certainly, with an average earning power of 6 per cent. we cannot go on indefinitely bor-

*Abstract of an address before the Harrisburg (Pa.) Chamber of Commerce on September 29.

rowing at 7 per cent. or 8 per cent without inviting financial disaster; and that would be far more harmful to the country as a whole than even a continued shortage of railroad facilities.

The Problem of the Personnel

So much for financial matters. When we come to the second of our great problems—namely, that of restoring prewar efficiency, we find ourselves facing a situation of a very different nature. We are confronted, not with the rigid terms of a government statute, but with the most complex questions of human relationship—the aftermath of the great war.

There was a time when the vast majority of the men on the Pennsylvania Railroad were genuinely proud of the company for which they worked. It was a distinction to be known as a "P. R. R. man." We had what we called the Pennsylvania Railroad standards and believed, and were proud of the belief, that they were the highest of any railroad. The men were just as proud of those standards as were the officers, and just as jealous in preserving and safeguarding them. There was a spirit from top to bottom of the organization that united in their purpose our officers and men. This is the spirit that we must re-establish.

There are still many thousands of men on the payrolls of our railroad and on other roads of the country who, I am most happy to say, continue to take the old-time pride and satisfaction in their work. They are largely the older employees and it is hard to see how we could get along if we did not have them with us now. They deserve and have our sincere gratitude. But I regret that there are also on our road, and on the others too, large numbers of men—mostly younger and less experienced—who have never known the pleasure that comes from a job well done, nor the satisfaction that comes from loyalty. These are the men whom we must educate.

In general, the principal contributing causes of the present situation were: The inevitable contact with political influences during government control: The adoption of a policy under the railroad administration which, unintentionally perhaps, established the closed shop in railroad work through the enforcement of national agreements, the consolidation of control of all labor matters in Washington and the intentional abolishment of piece-work in railroad repair and construction shops; The elimination of all incentive to individual effort by (in effect) placing all men in their individual crafts all over the country under similar working conditions and wages; The establishment of national boards of adjustment, to which the final settlement of local grievances and cases of individual discipline could be appealed.

There are thousands of men on the railroads today who believe, with more or less conviction, as a result of the propaganda put forth by the leaders of the labor organizations, that the interests of capital and of labor, of employer and of employee are opposite and hostile and not mutual and supplementary; that the worker owes no loyalty to his job; that his proper attitude, until capital and property can be destroyed, is to demand as much money as it is possible to exact and do as little work as he can "get away with."

A saner and more American view of life and duty must be realized. The public should unitedly support the railroad managers in their endeavor to bring this about. The sure way to accomplish this result is to carry out the spirit of the Transportation Act and restore each railroad system completely to the status of an individual operating unit, each road dealing with its own men independently and free from interference by political influence. Among the most important questions pending in this connection is whether we shall perpetuate national agreements and national boards of adjustment, established under Federal Control; or whether we shall, in accordance with the provisions of the Transportation Act, establish our own set of working conditions by and between our own officers and men, which will meet our own situation, with local boards of adjustment for the individual railroad to interpret its own schedules of wages, and to settle differences or grievances arising between the officers and the men.

If we have local boards of adjustment we shall be complying with the general theory of the Transportation Act, which is to perpetuate the identity of the different railroad systems.

If we have national boards of adjustment, we shall inevitably return to political domination in railroad labor matters, permanently impair the disciplinary powers of the officers, and force the closed shop on all the railroads. The latter result will come about at once from the fact that the labor representatives on the national boards of adjustment would be union men, and none but union men would hope to receive consideration at their hands. The inevitable outcome would be nationalization of the railroads.

This nationalization of the railroads, through the national agreements and national boards of adjustment, is on the cards at the present moment; and to my mind it is one of the most important questions now before the public. The labor leaders themselves do not deny what they have in mind; in fact, they are perfectly frank about it. I quote from Foster's book on the great steel strike, as follows:

"When the steel unions launch the next big drive to organize the steel workers (which should be in a year or two) they ought to be prepared to meet the formidable employer combinations, sure to be arrayed against them, by opposing to them still more formidable labor combinations. The 24 unions should by then be so allied with the miners' and railroad men's organizations that, should it come to a strike, these two powerful groups of unions would rally to their aid and paralyze the steel industry completely, by depriving it of those essentials without which it cannot operate, fuel and rail transportation. How effective such assistance would be was well indicated by the speedy and wholesale shutting down of steel mills, first during the general strike of bituminous miners in November and December of 1919, and then during the 'outlaw' railroad strike in April, 1920."

Why cannot we, as a country, learn the lesson of events in England, France, Italy and Denmark, without the misery of learning by our own experience?

Good Service; Good Results Already

There is another thought which I wish to leave with you and which should be clearly grasped by the general public and by railroad employees. It was expressed in these words by the president of our company in a recent general notice to the working forces:

"We should never forget that railroad wages are paid by the people who use the railroads; there is no other source from which they can come. Satisfied patrons, receiving good service and counteous treatment, are far more likely to continue willing to pay the rates necessary to maintain generous wage levels than are patrons who are poorly served or discourteously treated."

I trust that nothing that I have said will lead you to believe that no progress has yet been made toward a better state of affairs since the termination of Federal control.

Very material betterment has been accomplished since March 1, and results are becoming more clearly visible every day. On our own road, here are a few of the things we have been able to do: In six months, from March to August inclusive, we reduced, by 40 per cent, the average number of engines daily held out of the service for repairs. In the same period, we put in order 38 per cent more engines than were repaired in the corresponding months of 1919. We cut down "bad order" freight cars between March and Sep-

tember by two-thirds, and as compared with the high record for "bad order" cars in 1919 we have reduced by four-fifths the number of cars unavailable for use on account of poor repair.

At the opening of the present month, we had cut "bad order" cars down to exactly 3 per cent, which is 1 per cent under the mark (4 per cent) set for attainment by the Association of Railway Executives. In August we delivered more coal to New York Harbor than was ever before hauled to that port by a single railroad in any month; and we made new high marks at Philadelphia and Baltimore. We set new records in the average loading per car for both bituminous and anthracite coal, thus economizing in the use of equipment.

In four months, from May to August, we nearly tripled the total tonnage of coal delivered to the tidewater and lake ports.

Between April and August, we increased by 43 per cent the average number of freight cars of all kinds daily despatched. In the same period we increased by 27 per cent the volume of passenger train service rendered and brought up the number of trains on time from 77 per cent of the total operated, to more than 85 per cent; and the number making schedule time from 88 per cent, to more than 93 per cent.

Lastly, since July, we have cleared our yards, tracks and terminals, by getting out of the way and back to the companies which own and need them, more than 50,000 empty cars which were clogging our tracks, and we have thereby put the Pennsylvania Railroad in much better shape to handle fall and winter traffic.

We feel that we have made a real beginning toward getting back to our old standards. What we have up to this time accomplished is still far short of the mark, but nevertheless, it is a start. To complete the work we need that genuine co-operation of all our own men, of which I have been speaking, and of the public. Public sentiment, properly expressed, can probably do more than any other single thing in helping us to accomplish this end.

I am optimistic. I am sure that through the continued earnest work of our loyal officers and men the high standards of the Pennsylvania Railroad will again be achieved, and the people of Pennsylvania again be proud of the railroad which now carries the name of the State through 12 other great commonwealths.

But, with all our efforts, this cannot be accomplished without the continued support, confidence and sympathy of the Harrisburg Chamber of Commerce and similar organizations throughout the country, which we seek and urge.

Loans from the Revolving Fund

WASHINGTON, D. C.

THE INTERPRETATION of the provision of the Transportation Act which requires the Interstate Commerce Commission, in approving a loan to a railroad from the revolving fund, to certify that the applicant, in the opinion of the commission, "is unable to provide itself with the funds necessary from other sources" than the government, was the subject of a hearing before the commission at Washington on September 23.

The Treasury Department had returned to the commission a number of certificates because the commission in making its certifications appended the qualifying words "except at excessive rates of interest." Alfred P. Thom, general counsel for the Association of Railway Executives, and others who appeared on behalf of the railroads, argued that the commission, in administering the provisions of the act relating to the loan fund, must interpret them in the light of the declared policy of Congress in favor of fostering and preserving in full vigor the instrumentalities of transportation. Chairman Clark stated that the attitude taken by the Treasury Department that the commission must issue an unqualified certificate had led the commission to give further consideration to the questions raised.

Mr. Thom said that there was no doubt that the original intent of Congress was that preference should be given in the making of loans to the weaker roads, but that there had been no demand from the so-called weaker roads for loans to anywhere near the amount of the fund. He agreed with the Treasury Department that it is entitled to an unqualified certificate that the carrier is unable to provide itself with funds elsewhere, but said that if a wholly technical construction of the law were used the fund would not be used and the purpose of the law would be defeated. He pointed out that Congress, by an amendment of the law adopted on June 5, had taken discretion away from the Treasury as to the making of loans and that the entire responsibility was with the Interstate Commerce Commission.

Mr. Thom argued that an inability of a railroad to borrow money did not necessarily mean a physical impossibility but a business inability to borrow at any rate of interest it could afford to pay. A carrier might get money at 20 or 50 per cent in the open market, but it was of the highest importance to the public that the carriers' financial transactions should not be such as to cripple them in the future, and if a carrier could not borrow money except at such a rate as would affect its future credit, the commission would, under the circumstances, be justified in certifying a loan in the language of the law.

In reply to a question by Mr. Thom as to how much of the revolving fund had been used, W. A. Colston, director of the Bureau of Finance, said that loans aggregating approximately $60,000,000 had been certified to the Treasury, including those which had been held up, but that within the next two weeks the loans certified probably would amount to $100,000,000. Mr. Thom asked whether a wholesome situation is represented by the fact that so little of the money has been put to work in the seven months since the law was passed.

A. H. Harris, vice-president of the New York Central, said that his company had borrowed as much money as it regarded proper from other sources and that it needs additional money from the revolving fund.

George Whitney, of J. P. Morgan & Co., said that the New York Central had already obtained $61,000,000 in recent months and that his company did not feel it could advise the road to attempt the sale of another issue of securities at this time, as such a course would hurt the general market.

Samuel Rea, president of the Pennsylvania, which has already issued $50,000,000 of 7 per cent bonds, also pointed out that it would be impracticable for his company to attempt to borrow in the market the additional sums which it needs and that as a practical matter it is dependent upon the revolving fund.

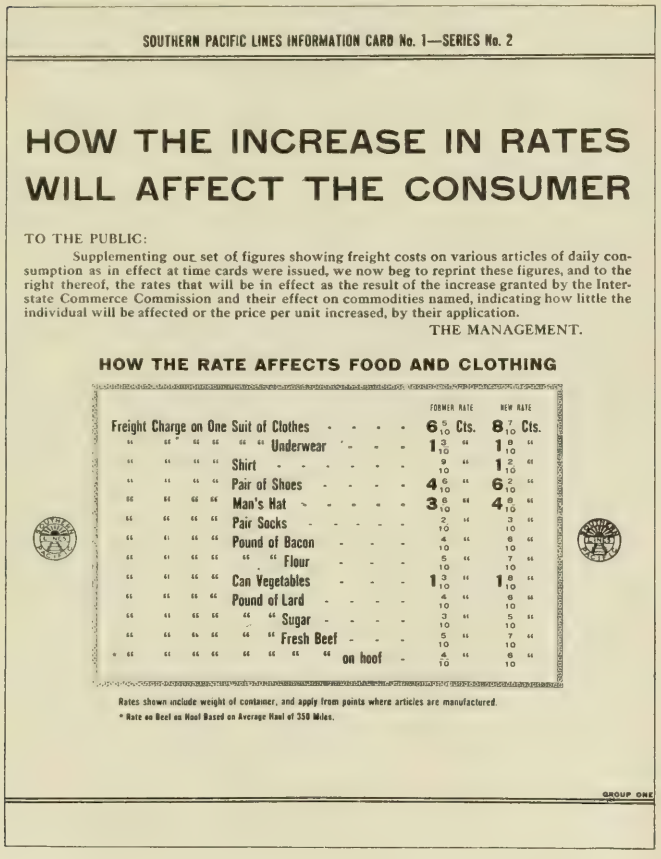
The commission on September 27 announced that it had certified loans to the Virginian, Ann Arbor, Western Maryland and Maine Central, as noted in our financial news columns.

The certificates issued in these cases were unqualified in the statement that the carrier is unable to provide itself with the funds necessary from other sources, and it is understood that whenever the commission does give its approval of loans it will do so in this form. If it is unable to satisfy itself that the rate of interest which the carrier will be required to pay elsewhere is sufficiently high to make it practically impossible for the road to borrow money with reasonable prudence, it probably will not issue the certificate at all.

Southern Pacific Continues Rate Information Campaign

"How the Increase in Rates Will Affect the Consumer" is the headline of one of the new information cards which the Southern Pacific Lines in Texas and Louisiana are now posting at stations. There are six cards in all, the others being headed respectively—"Homely Necessities, How the New Freight Rates Will Affect Them," "Home Building Not Interfered With by New Rates," "The Farmer Interested, New Freight Rates Affect Him Slightly," "Service and Rates, Railroads Better Enabled to Fulfill Obligations," and "Ratio of Freight Rates to Commodity Values."

This campaign supplements a previous one carried out before the recent increase in freight rates which was intended to show the relation of freight charges to the cost of living. Like the previous campaign, which was described in the *Railway Age* of July 16, 1920, page 98, the present campaign is intended to show how slight the increase in rates is when worked out to a unit of the commodity in question. Thus the card dealing with service and rates, showing the old and new rates on various home luxuries, reads: "That the increase in freight rates authorized by the Interstate Commerce Commission will add slightly to the cost of certain articles goes without saying, yet even as affecting commodities ordinarily classed as luxuries it may be seen from a comparison of the old and new rates, as shown here, the increase is trifling when compared with the cost and importance of the article itself. Service, after all, is the great necessity and the new rates will permit the railroads to meet their obligations to the public in this respect."



SOUTHERN PACIFIC LINES INFORMATION CARD No. 1—SERIES No. 2

HOW THE INCREASE IN RATES WILL AFFECT THE CONSUMER

TO THE PUBLIC:

Supplementing our set of figures showing freight costs on various articles of daily consumption as in effect at time cards were issued, we now beg to reprint these figures, and to the right thereof, the rates that will be in effect as the result of the increase granted by the Interstate Commerce Commission and their effect on commodities named, indicating how little the individual will be affected or the price per unit increased, by their application.

THE MANAGEMENT.

HOW THE RATE AFFECTS FOOD AND CLOTHING

	FORMER RATE	NEW RATE
Freight Charge on One Suit of Clothes	6 9/10 Cts.	8 7/10 Cts.
" " " " " Underwear	1 3/10 "	1 8/10 "
" " " " Shirt	9/10 "	1 2/10 "
" " " " Pair of Shoes	4 6/10 "	6 2/10 "
" " " " Man's Hat	3 8/10 "	4 8/10 "
" " " " Pair Socks	2/10 "	3/10 "
" " " " Pound of Bacon	4/10 "	6/10 "
" " " " " " Flour	5/10 "	7/10 "
" " " " Can Vegetables	1 3/10 "	1 8/10 "
" " " " Pound of Lard	4/10 "	6/10 "
" " " " " " Sugar	3/10 "	5/10 "
" " " " " " Fresh Beef	5/10 "	7/10 "
" " " " " " " " on hoof	4/10 "	6/10 "

Rates shown include weight of container, and apply from points where articles are manufactured.

* Rate on Beef on Hoof Based on Average Haul of 350 Miles.

GROUP ONE

The cards, as noted above, are six in number. They are of different colors and about 11 in. by 14 in. in size. They are meant to follow in succession at intervals of about two weeks. As in the previous campaign, the rates are worked out for certain groups of stations, there being five groups in all. The card reproduced here shows old and new rates for group one and is No. 1 of the six to be posted at stations on the Texas & New Orleans main line and Galveston division, covering stations Orange, Beaumont, Sabine Pass, Houston, Galveston and stations between.

The Coal Miners in England

By Robert E. Thayer,
European Editor of Railway Age

London, September 14, 1920.

The question of the hour in England today is "Will there be a coal strike?" The answer is that it is impossible to believe such a thing possible:—Look at the distress it would cause—Think of what it would do the English industry which has made such a splendid record in re-establishing itself. A coal strike would severely cripple Great Britain. Even the talk of a strike has greatly interfered with business. The rate of exchange reflects the seriousness of the situation. To-day the pound sterling is quoted at less than $3.50. Must the miners have their "fling" as the railway men did a year ago? It certainly looks that way.

England's coal industry is still in the hands of the government. On May 12 last, the price of household coal was increased 14 shillings 2 pence (about $2.80) per ton bringing the total cost up to about $11.

At that time the Labour Party challenged the decision to the increase in the House of Commons and lost by a vote of 185 to 49. Later Robert Smillie, the head of the Miners' Federation said: "The question of coal prices is our business." The miners now demand that the 14 shillings 2 pence increase be removed. At the same time they demand an increase in wages of two shillings (40 cents) per shift for men, with corresponding increases for youths and boys. The government wants to submit this demand to independent arbitration by the Industrial Court but the miners refuse.

The miners claim that yearly profits for the industry under existing rates will be £66,000,000 ($264,000,000 at a $4 rate of exchange) and the government claims only £32,000,000 ($128,000,000). The government shows further that the output for the second quarter of this year, as compared with the first, has decreased while the earnings per person employed has increased as follows:

	1st quarter.	2nd quarter.
Tonnage mined	62,057,000 tons	58,144,000 tons
Tonnage mined per employee	53 tons	49.33 tons
Earnings per person employed	£54. ($216)	£56. 9. 8. ($226)

Further, the two-shilling increase demanded by the miners would cost the industry £27,000,000 and the reduction in the price of household coal demanded would amount to £36,000,000—a total of £63,000,000. With an estimated profit of £32,000,000 there would be a deficit of £31,000,000 ($124,000,000) if the miners' demands were acceeded to.

The stand taken by the miners is most arrogant and egotistical. They are attempting to dictate to the government as the railwaymen never did. History records the fate of the railwaymen and the character of the Britisher has not altered during the past year. The government has taken a firm stand and the people are behind it. Eleventh hour concessions are expected from the miners. Meanwhile extensive preparations are being made by the government to combat the effects of the strike. The nation is promised even better emergency service than obtained last year during the railway strike.

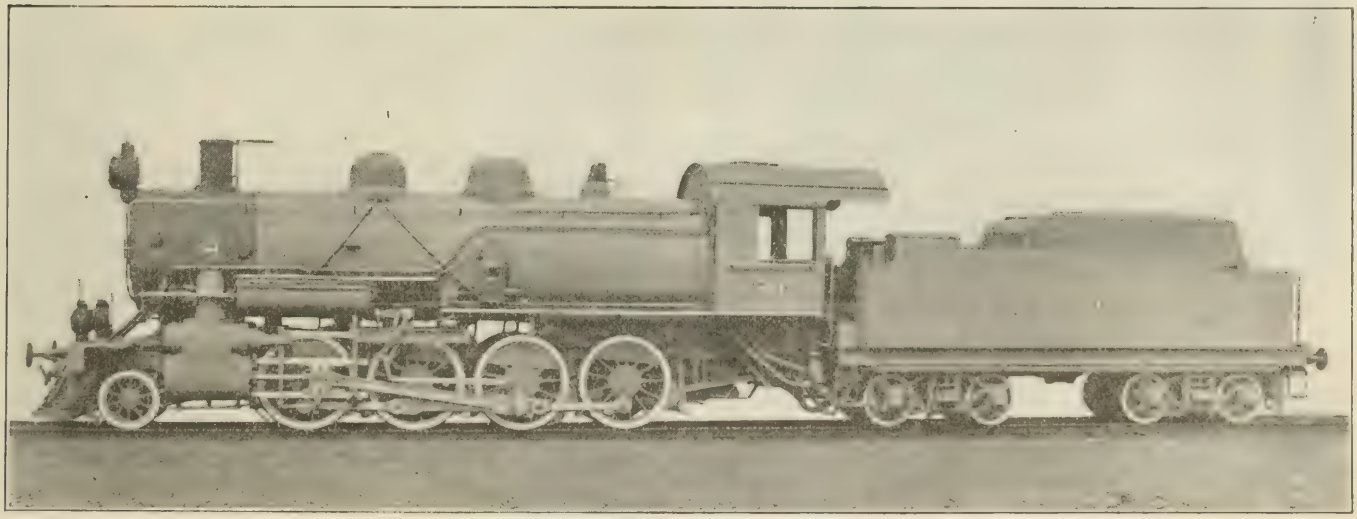


Long Lines of Disabled Locomotives Await Repairs in the Balkan States

Locomotives Recently Exported to Roumania

Some Interesting Details in Regard to the Locomotives That Are Being Traded for Oil

A FEW MONTHS AGO, Samuel M. Vauclain, president of the Baldwin Locomotive Works, visited Bucharest and closed a contract with the Roumanian Government for 50 locomotives. It was an unusual contract for the reason that the locomotive builders agreed to accept oil in payment for the locomotives and the transaction has been widely commented on as an exposition of unusual initiative in the development of foreign trade. The contract for these locomotives was signed on April 5 and on August 22 the Baldwin Locomotive Works completed shipment of 25 of these locomotives. The other half of this order was assigned to the American Locomotive Company. This portion of the order is now being completed at the Montreal plant of that company.



"Pershing" Type Locomotive for Roumania

The situation in Roumania at the time Mr. Vauclain visited the country has been described as desperate so far as motive power was concerned. There appeared to be an abundance of cars but it was estimated that at least 70 per cent of all the locomotives in Roumania were awaiting repairs and a majority of those running were unfit for service. It should be stated in this connection that in addition to arranging for the delivery of new locomotives the builders will co-operate with the Roumanian government in a survey of approximately 3,500 locomotives with a view to supplying the spare parts needed for the rehabilitation of these locomotives.

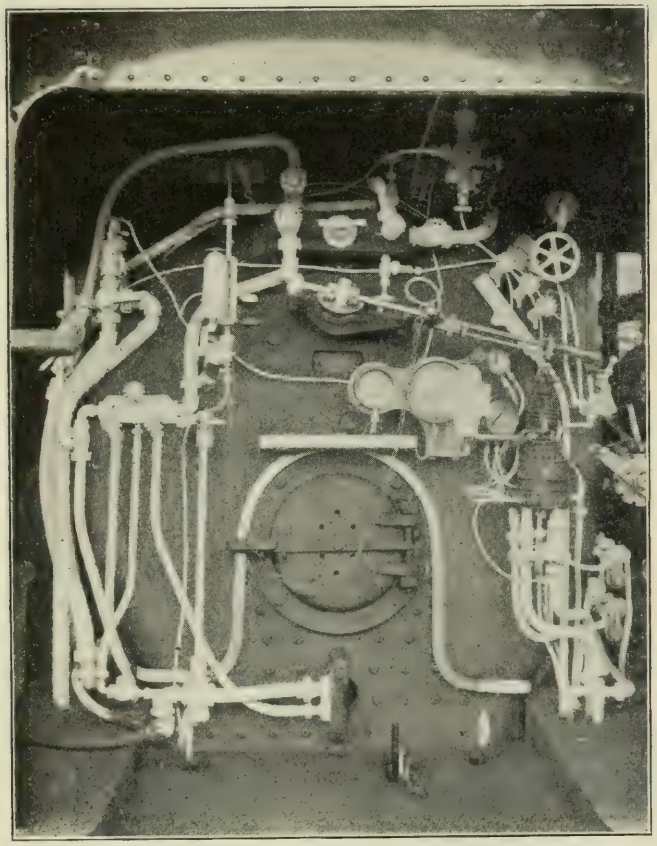
It was strongly realized that without locomotives, Roumania could not go forward. It was also appreciated that Roumania had no money and apparently no credit but that the country was rich in resources and that the people were honest and industrious. If means were provided to increase production, the country's debt could be reduced, but as mat-

ters stood it was useless to raise more grain, or produce more oil, or lumber, or salt, as it was impossible to move what was then being produced and in many cases it was spoiling, thus discouraging the producers. It was apparent that the Roumanians must not only find some way to repair their own locomotives, but that they would have to secure a few new locomotives to tide them over until the repairing of these locomotives could be accomplished.

Conditions Affecting Shipment

This is the situation that led to the acceptance of oil in exchange for locomotives. The oil is to be delivered at Constanza commencing at once and this form of payment will extend over a number of years. Constanza, their chief port on the Black Sea, is also the port through which the locomotives will be received.

There is sufficient depth of water at the Constanza docks to take care of ocean steamers but the unloading facilities



View Showing Combination Oil and Hand Firing Arrangements on Roumanian Locomotives

were carried away by the Bulgarians and are therefore inadequate for shipments of such weight. This fact was known and to overcome it a forty-ton crane was included in the first shipment which will be installed on the docks to unload the cargo.

Another difficulty in shipping by way of Constanza was the partial destruction by the Austrians and Bulgarians of the long bridge over the Danube at Cernovoda. Unless this bridge was rebuilt, it would have been impossible to get these locomotives into Roumania through one of their own sea ports and thereby permit the shipment of the immense stores to points of distribution from Transylvania, Bukovina and Bessarabia, now parts of new Roumania. It was, therefore, decided that the bridge would be rebuilt immediately and by the time the first locomotives are received, the bridge will be entirely reconstructed.

Details of Locomotives

All of the locomotives ordered on this contract are the Consolidation type, following the "Pershing" type of which large numbers were supplied to the American Expeditionary Forces by the same builders. All of the specialties on these engines such as lubricators, injectors, headlights and air brakes are of American manufacture.

The principal specifications for these locomotives are as follows:

Gage	4 ft. 8½ in.
Cylinders	21 in. by 28 in.
Valves	Piston
Boiler	
Type	Straight top
Diameter	70 in.
Working pressure	191.71 lbs.
Fuel	Lignite and oil
Firebox	
Material	Copper
Staying	Radial
Length	122½ in.
Width	37¾ in.
Tubes	
Diameter	2 in.
Material	Steel, copper ends
Number	165
Length	13 ft. 9⅛ in.
Flues	
Diameter	5¾ in.
Number	26
Heating Surface	
Tubes	1,182 sq. ft.
Flues	500 sq. ft.
Firebox	180 sq. ft.
Total	1,862 sq. ft.
Wheels	
Driving, outside diameter	56 in.
Engine truck, diameter	33 in.
Wheel Base	
Driving	15 ft. 6 in.
Total engine	23 ft. 8 in.
Total engine and tender	57 ft. 4⅝ in.
Weight	
On driving wheels	148,400 lb.
On truck, front	18,700 lb.
Total engine	167,100 lb.
Total engine and tender	287,100 lb.
Tender	
Tank capacity	4,630 Imp. gal.
Fuel	4 metric tons and 1,320 Imp. gal.

Unusual Fuel Features

Five of the locomotives included in this shipment were equipped with oil burning apparatus for the exclusive use of oil as fuel, this being the first instance of the use of any American system of oil burning locomotives on the railways of Southeastern Europe.

The remainder of the locomotives will be equipped for burning a combination of native lignite and oil. This is not an unusual practice on Roumanian locomotives and the manner in which it is accomplished has been described as follows:

All the oil burners are attached to the back head and the jet enters the firebox about six inches below the fire door opening. Ordinary coal grates are used and for all Roumanian locomotives a drop plate must be used in front because the lignite clinkers badly at times, and the drop plate must be let down and the clinkers pushed out the front of the firebox into the ash pan. The drop plate is then pulled up again, live coals are spread over it, fresh lignite is thrown in, and the oil is sprayed over the top of it. The native lignite is very poor, being a reddish brown; comes in blocks or cakes resembling brown slate more than anything else, but it burns well under the influence of oil. The fireman has very little to do, except now and then to throw in 300 lb. or 400 lb. of lignite, burning it up before a new lot is put in, somewhat similar to the firing of anthracite coal.

THE FIRST-CLASS seating accommodation in English railway trains on December 31, 1919, represented 12.45 per cent of the total, while of the receipts from all passengers carried during 1919, 14.68 per cent came from first-class passengers.

Statistics Show Increased Efficiency

WASHINGTON, D. C.

CONSIDERABLE PROGRESS in the campaign to speed up the movement of freight cars and to increase the average tonnage of freight per car, in order to increase the efficiency of the available car supply, is shown in a table of operating statistics for July and the first seven months of 1920 made public by the Interstate Commerce Commission. The table covers 44 roads having annual revenues in excess of $25,000,000, of which 29 show increases in the average miles per car per day for July as compared with July, 1919, and 28 show increases for the seven months. Practically all roads show an increase in the average car load, ranging from one to five tons. The roads have conducted a campaign to induce shippers to load cars to capacity, saying that an addition of two tons in the amount of freight loaded in each car is equivalent to a saving of 150,000 cars. An increase of one mile in the average daily car movement is equivalent to an addition of 100,000 cars to the available supply.

The railroad executives at a meeting in New York on July 16 adopted resolutions pledging themselves to make

		Net ton-miles (millions)		Net ton-miles per loaded freight car-miles		Car-miles per car day		Net ton-miles per car day	
		1920	1919	1920	1919	1920	1919	1920	1919
NEW ENGLAND REGION:									
New York, New Haven & Hartford	July	296	319	24.6	23.0	12.7	14.4	221	249
	7 months	1,618	1,768	23.0	22.9	9.2	14.2	160	246
Boston & Albany	July	169	134	28.0	22.2	32.1	35.1	599	530
	7 months	921	747	24.4	21.4	25.3	31.6	439	480
Boston & Maine	July	372	307	24.9	23.2	19.3	17.8	344	290
	7 months	2,176	1,880	24.0	23.9	15.1	17.5	267	306
GREAT LAKES REGION:									
Delaware & Hudson	July	423	334	35.9	35.4	29.4	28.3	698	621
	7 months	2,506	1,981	34.8	35.5	26.7	24.9	638	575
Delaware, Lackawanna & Western	July	520	431	30.0	28.9	32.1	26.8	669	551
	7 months	2,851	2,857	28.7	30.0	26.1	26.4	537	548
Erie (including Chicago & Erie)	July	1,146	882	30.2	27.8	26.8	29.8	552	570
	7 months	6,592	5,718	29.5	28.6	22.9	29.8	487	565
Lehigh Valley	July	670	529	33.4	31.0	25.1	22.7	589	507
	7 months	3,502	3,137	31.2	30.0	19.0	22.1	425	454
Michigan Central	July	482	393	25.4	20.4	22.3	23.6	408	352
	7 months	2,785	2,431	24.3	20.8	17.5	26.1	326	379
New York Central	July	2,408	1,901	30.2	26.2	25.0	25.1	495	442
	7 months	13,450	11,577	27.7	25.9	21.0	23.4	398	393
Pere Marquette	July	260	204	27.7	24.1	16.4	16.5	356	295
	7 months	1,695	1,395	26.2	24.1	14.6	18.4	300	326
Pittsburgh & Lake Erie	July	198	210	44.1	42.3	6.7	9.0	210	257
	7 months	1,112	1,219	42.2	40.8	7.2	8.5	206	229
Wabash	July	465	366	25.7	23.0	26.6	27.7	521	465
	7 months	2,642	2,302	24.8	23.2	25.4	27.8	500	463
OHIO-INDIANA-ALLEGHENY REGION:									
Baltimore & Ohio	July	2,000	1,697	35.6	34.7	25.4	24.9	600	574
	7 months	11,904	9,244	33.8	33.3	24.1	22.1	559	469
Central of New Jersey	July	259	214	34.6	32.3	15.2	13.4	336	268
	7 months	1,452	1,321	34.1	33.1	13.2	12.7	286	259
Philadelphia & Reading	July	590	575	35.0	38.1	17.7	19.6	485	496
	7 months	3,976	3,454	37.9	37.7	19.0	18.2	494	450
POCAHONTAS REGION:									
Chesapeake & Ohio	July	1,096	1,001	41.9	40.7	37.2	27.8	944	693
	7 months	6,990	5,656	40.8	40.3	36.5	24.4	915	588
Norfolk & Western	July	1,087	988	42.0	40.8	38.1	31.4	1,006	807
	7 months	6,504	5,738	41.3	39.6	34.5	26.6	920	654
SOUTHERN REGION:									
Atlantic Coast Line	July	295	283	20.9	19.9	25.1	21.2	354	308
	7 months	2,321	2,187	21.0	21.6	22.6	21.1	325	304
Illinois Central (including Yazoo & Miss. Valley)	July	1,469	1,157	28.8	26.7	44.2	34.1	816	617
	7 months	9,864	7,376	28.5	26.7	40.2	30.4	787	560
Louisville & Nashville	July	847	834	28.8	28.0	34.9	29.0	646	576
	7 months	5,690	5,085	29.6	28.9	31.5	24.1	628	479
Seaboard Air Line	July	239	189	23.6	21.3	23.3	21.0	399	344
	7 months	1,717	1,380	22.7	21.9	21.4	20.2	349	310
Southern Railway	July	808	632	22.9	21.2	24.8	23.1	409	369
	7 months	5,616	3,946	23.2	22.2	22.9	19.6	397	317
NORTHWESTERN REGION:									
Chicago & North Western	July	1,079	951	27.3	25.6	22.8	21.2	414	364
	7 months	6,421	5,644	25.4	25.0	20.7	19.6	362	325
Chicago, Milwaukee & St. Paul	July	1,091	1,107	25.2	23.9	29.9	31.5	498	503
	7 months	7,567	7,051	25.3	24.9	28.2	25.8	423	449
Chicago, St. Paul, Minneapolis & Omaha	July	158	138	23.7	22.6	22.4	19.1	379	309
	7 months	1,069	907	23.7	23.6	21.7	18.9	391	303
Great Northern	July	836	888	31.2	29.1	28.3	31.3	582	560
	7 months	5,256	4,907	28.1	29.0	25.7	20.9	525	420
Minneapolis, St. Paul & Sault Ste. Marie	July	290	285	22.8	21.9	27.8	30.0	458	477
	7 months	2,075	1,785	23.2	22.5	26.0	21.9	470	364
Northern Pacific	July	655	661	26.9	25.7	33.1	29.4	625	502
	7 months	5,176	4,675	27.2	27.5	33.1	24.6	684	485
Oregon-Washington R. R. & Navigation Co.	July	176	145	28.4	26.0	35.7	27.9	752	500
	7 months	1,247	936	28.1	26.2	27.2	21.7	601	439
CENTRAL WESTERN REGION:									
Atchison, Topeka & Santa Fe	July	1,120	946	22.8	21.8	37.0	24.4	579	383
	7 months	7,412	6,118	22.9	22.2	30.8	25.4	492	396
Chicago & Alton	July	198	197	26.9	25.3	20.7	22.9	367	361
	7 months	1,306	1,206	26.6	26.2	20.8	22.3	369	365
Chicago, Rock Island & Pacific	July	783	685	24.2	23.3	26.4	27.7	458	452
	7 months	5,158	4,075	23.9	22.8	25.0	25.0	437	399
Chicago, Burlington & Quincy	July	1,328	1,145	28.7	26.5	32.0	27.7	605	473
	7 months	9,325	7,500	28.1	26.7	29.9	24.6	592	445
Denver & Rio Grande	July	191	160	29.9	29.3	20.8	14.7	445	290
	7 months	1,223	976	30.4	30.1	18.8	12.6	399	260
Union Pacific	July	816	699	23.9	22.1	81.7	54.7	1,319	834
	7 months	5,239	4,668	24.5	24.2	63.8	52.1	1,227	913
Oregon Short Line	July	287	251	29.8	27.1	54.1	32.2	1,064	584
	7 months	2,052	1,558	29.7	27.7	45.3	30.0	984	591
Southern Pacific	July	918	850	25.1	25.1	36.5	36.0	630	601
	7 months	5,757	5,286	25.3	26.6	34.3	31.6	618	567
SOUTHWESTERN REGION:									
Missouri, Kansas & Texas	July	212	180	22.9	22.1	30.7	22.2	425	313
	7 months	1,291	1,124	23.5	23.1	27.8	22.9	403	316
Missouri, Kansas & Texas of Texas	July	120	98	24.7	23.4	19.7	12.2	315	173
	7 months	766	684	24.0	23.4	19.5	12.2	258	174
Missouri Pacific	July	762	269	26.7	25.3	33.5	21.9	466	401
	7 months	5,213	4,081	26.7	25.2	22.3	20.0	447	366
St. Louis-San Francisco	July	429	395	26.5	24.4	21.9	18.6	383	312
	7 months	2,864	2,459	25.7	24.9	20.3	18.4	362	307
Texas & Pacific	July	177	145	23.4	22.3	30.1	18.2	492	284
	7 months	1,104	1,044	23.1	23.6	20.5	19.8	334	312

every effort to attain an average of 30 tons per car and 30 miles per car per day. The commission's report shows that for July, 12 of the large roads had exceeded this standard for car loading, while 9 had exceeded it for the seven months, and 15 roads had attained an average of over 30 miles per car day for July, while 9 had exceeded that average for seven months.

Varying conditions on different lines of course make comparisons between individual roads unfair, but it is interesting to note the improvement shown by most roads this year as compared with the period when they were under government operation.

The best car movement average is shown by the Union Pacific, which in July had an average of 81.7 miles per car day, as compared with 54.7 in July, 1919. For the seven months its average was 65.8 as compared with 52.1. The general average for all roads for July was about 26 miles.

Some of the larger increases for July are as follows: Delaware, Lackawanna & Western, 26.8 to 32.1; Chesapeake & Ohio from 27.8 to 38.1; Illinois Central, 34.1 to 44.2; Atchison, Topeka & Santa Fe, 24.4 to 37; Oregon Short Line, 32.2 to 52.6; Texas & Pacific, 18.2 to 30.2. The Oregon Short Line increased its seven months' average from 30 in 1919 to 45.3 in 1920. Other roads that exceeded an average of 30 miles for July were the Boston & Albany, Louisville & Nashville, Soo, Oregon-Washington, Burlington, Southern Pacific and Missouri, Kansas & Texas.

Some considerable increases are also shown in the average loading per car. The roads which exceeded 30 tons for July were the Delaware & Hudson, Delaware, Lackawanna & Western, Erie, Lehigh Valley, New York Central, Pittsburgh & Lake Erie, Baltimore & Ohio, Central of New Jersey, Philadelphia & Reading, Chesapeake & Ohio, Norfolk & Western, Great Northern, and Denver & Rio Grande.

The commission's figures for net ton-miles, average carload, miles per car day and net ton-miles per car day are given on the preceding page.

Locomotives for China

THE FOLLOWING analysis of the market for locomotives on the railways of China is an editorial which appeared in the August 20 issue of the Engineer of London. American readers may not agree with the comments made concerning locomotives of American design, but they will no doubt be interested in seeing how this important British engineering publication regards our competition in the Chinese market.

An abstract of the editorial from the Engineer follows:

There is every probability that for many years to come China will require great quantities of railway material of all kinds. That British makers hope to enjoy the lion's share of the trade goes without saying. At the present moment they are fully engaged on orders for home, European, and Indian markets. But today's pressure will not last for ever. In a few years the arrears will have been overtaken and British manufacturers will be scouring the world for orders. They must keep an eye on the leaner years ahead of them. The future never looks after itself. It cannot be left to chance. It is only by making provision now, at the present moment, that one can avoid disappointments hereafter. It is necessary to say this, and to say it forcibly, for we have received within the last few days convincing proofs that British engineers engaged in the manufacture of railway materials, and particularly of locomotives and signaling plant, are not making all the exertions in China that are needed. A short time ago a conference of Chinese railwaymen was convened to consider the standardization of certain parts of locomotives. Representatives of British and American firms were present. The Americans showed by their zeal and the thoroughness with which they had "gotten up" their subjects that they were very dangerous competitors. They left no stone unturned to make themselves conversant with the influence of the conference nor to get into touch with the engineers and commercial people connected with the railways. It is probable that the British representatives know more about work for Chinese railways and the railways of China than the American representatives, but in the face of such active competition the straining of every nerve is demanded.

There is a feature about locomotives for China that is disturbing. There is no engine made by British engineers which is constructed with greater care than the locomotive. Our makers rejoice in having every part of the very best, in imparting a high degree of finish, and in assuring themselves by steaming tests that all the organs are in proper adjustment. The Americans, as is well known, are not nearly so particular. They consider our degree of finish an expensive luxury; they are content to use material that we object to using—cast iron wheel centres and steel fire-boxes, for two examples—they do not take the same care with their adjustments, and in many cases, we believe, give, if they give at all, a very perfunctory steaming trial. It is common knowledge that, by contrast with British locomotives, American engines are crude and unfinished. We should be very sorry indeed to see any lowering of the British standard of excellence, for we are convinced that good mechanical engineering not only pays in the long run, but by encouraging a higher sense develops the engineers, mechanics, and artisans of the country in the right direction. But how we are to maintain the same standards of workmanship and the same excellence of material and yet compete with the Americans is a problem for the British manufacturer. It could be done fairly well in the old days, when the output per man was greater than it is now and the wages far less. But that advantage has practically disappeared, and America is prepared to offer locomotives to Chinese railways for less money than we. It is, we are assured, no use to tell the Chinese director that the British product is a great deal the better of the two, that it may go into service at once, that repairs and modifications will not be necessary for a long time, and that it will still be serviceable long after the American engine has been replaced. He does not care. The American engine is cheaper and that is all that matters to him. The cost of modifications, renewals, and repairs will come into another account. The capital cost is his concern, and the British engines are too dear. Here, as we have said, is a very serious problem for the British manufacturer. How can he so cheapen the production of the locomotive that, whilst still maintaining the excellence to which he has been brought up, he can compete with the cheaper and rougher American product? If it be impossible then he must consider which of the refinements he now puts into his work he can surrender without jeopardizing its merits.

We shall be deeply grieved indeed if the magnificent reputation which has always been enjoyed by British locomotives abroad has to be sacrificed to meet price competition in an open market. But we see all too clearly that that is not an improbable result of the present high cost of labor. When £2 ($10) a week of 50 hours represented about the average wage for mechanics refinements were not very costly. With wages standing where they do now, at least twice what they were before the war and with hours reduced to 48, refinements have become expensive, and we may find concerns absolutely forced to abandon them. We may be constrained to follow the American example and turn out engines finished in no respect as carefully as of yore. But even then, let not the British manufacturer, be he one of the old and famous firms or one of the new firms, imagine that orders for railway material in China will flow in without trouble. He has to meet there very active, very intelligent, very astute competition.

Meeting of Telegraph and Telephone Division

Message Traffic, Pole Lines and Inductive Interference Have Important Bearing on Efficiency

One of the best attended and most important meetings which the Telegraph and Telephone division, Section I—Operating, of the American Railroad Association, has ever held convened at the Fort Garry hotel, Winnipeg, Manitoba, on September 22, 23 and 24, with Chairman J. F. Caskey (Lehigh Valley) in the chair. About 225 members and guests were present. After the opening business and the report of the Committee of Direction (given in the *Railway Age* of September 24, page 535) the different committee reports were presented for consideration. During the various sessions, the members were addressed by Charles Gray, mayor of Winnipeg; A. E. Stevens, general superintendent, Canadian Pacific, and S. O. Scott, general passenger agent of the Canadian Government Railways.

Following the Committee of Direction's report, the special committee on Future Activities presented the results of its deliberations and recommendations, formulated at a meeting held on June 11, 1920. This committee recommended the appointment of a special committee to consider the question of technical training in the art of communication for employees entering the railroad field and to consider methods to induce young persons to enter the service and the opportunity afforded them to qualify in the several branches; careful study also being given to guard against the threatened depletion of aspirants.

It was suggested that a special committee to study the development of radio service and to determine whether it may be adapted to railroad work.

Construction and Maintenance of Outside Plant

G. A. Cellar (Pennsylvania System), chairman of the committee, presented a resume of the work done by the four sub-committees. Referring to the report of Sub-Committee A—Construction and Maintenance of Pole Lines—attention was called to the changed conditions, brought about by advanced methods of operation and by property congestion, which make necessary a higher quality of insulation and a re-arrangement of line form, involving the use of a greater proportion of cables and a lesser use of separate wires than has heretofore been standard practice. The rapidly diminishing supply of wooden poles indicates early resort to artificial poles or structures. This will add to the already high cost of construction with wooden poles. All of these reasons emphasize the necessity of minimizing the number of poles or structures, wherever possible consistent with the tensile strength of wires and the known storm stresses to which the line is exposed and point to the very considerable and laborious new work to be undertaken by this sub-committee.

E. C. Keenan (N. Y. C.), chairman of the sub-committee submitted for discussion, basic rules and pole tables for the construction and maintenance of wooden pole lines along railroads for telegraph and telephone service. The basic rules presented are:

(1) For Construction or Reconstruction: Wooden pole lines shall be designed so that the poles shall be of sufficient strength to carry the ultimate number of wires to be located upon them.

(2) For Maintenance or Renewals: Wooden pole lines shall be so maintained that the poles shall be replaced when the pole circumference is reduced to the figures given in the replacement tables.

(3) In arriving at the proper assumed loading, the experience of the railroad concerned, weather bureau wind velocity records, local records of ice coating, direction of the line, direction of prevailing winds, shelter, and such other features of protection as may be found to exist shall be considered.

Five tables were presented giving classes and numbers of new wooden poles required per mile for the construction or reconstruction of pole lines under various wind loads and five different loading assumptions based on 8 lb. (72 mi. velocity); 6 lb. (61½ mi. velocity); 5 lb. (55 mi. velocity); 4 lb. (49 mi. velocity) and 2 lb. (33½ mi. velocity) wind with a ½ in. coating of ice occurring on the wires simultaneously or for an equivalent loading. A replacement table for the maintenance and renewal of wooden poles carrying 10 wires located in territory where records and experience show that an 8 lb. wind and a ½ in. coating of ice occurs on wires simultaneously was presented or an equivalent loading was also given.

This table indicates the ground line circumference below which deterioration should not be permitted. It was recommended in the report that no line be built with less than 30 poles per mile, and where No. 9 A.W.G. copper wire is to be carried in sleet territory, the minimum should be 41 poles per mile.

In the discussion, attention was called to the fact that actual and indicated wind velocities were different and that it would be advisable to add a note to that effect. The effect of different climates and soils on various kinds of timber was discussed and called to the attention of the committee. Consideration was given to the use of creosote as a preservative for increasing pole line life and the development and use of the concrete pole to replace the present wood pole line was discussed to some extent.

Sub-Committee "B" Wire Crossings, H. J. Shepard (N. Y., N. H. & H.), chairman, reported on the Bureau of Standards revised rules for signal line (telegraph, telephone and other similar wires) crossing over railroads. The sub-committee had objected to certain proposed changes in the National Electrical Safety Code rules on the basis that they were inadequate to protect the public and railroad service. It was the feeling that if the Bureau of Standards should issue the revised code without accepting many of the important changes recommended by the Telegraph & Telephone division it would be necessary for the division to get up specifications based upon what is considered the proper fundamental engineering principles generally applied in railroad work. The report on this subject was presented as information.

During the discussion it was the feeling of the division that it should endeavor to comply, insofar as practicable, with the specifications of the Bureau of Standards and the Canadian Commission.

Particular attention was also called to the fact that the important point in the Safety Code is to determine what is the degree of hazard at the particular point of construction. It was pointed out that under the proposed ruling of the Bureau of Standards a wire line crossing with a lower factor of safety than was desirable could be constructed in certain cases across railroads of one to four tracks equipped with block signals, and this would be very objectionable.

The sub-committee also submitted a formulation of rules to cover the proper routine for handling wire crossing matters, as attention had been called to the fact that this routine was not uniform. On some railroads the telegraph department takes the initiative and has general charge, while on other

railroads the engineering department is in full charge and takes the initiative.

Thursday's Session

Committee No. 2—Construction and Maintenance, Inside Plant, R. F. Finley (N. Y. C., Lines West), chairman, submitted a specification for the installation of telegraph and telephone equipment in railroad offices. This specification is a revision of the preliminary draft submitted at the June and December, 1919, meetings. The specification is divided into six sections under the headings of: General; Planning; Locations and Layouts; Apparatus and Material; Circuits; and Installation. In addition drawings for test panels and terminal cabinets, circuits, patching cords, switchboards, wiring, methods of running wires to desks or tables and various construction and installation details were shown. It was moved and adopted that the specifications be accepted for submission to letter ballot for inclusion in the Manual.

Committee No. 4—Protection Against Lightning or Electric Light and Power Circuits, I. C. Forshee (Pennsylvania System), chairman, submitted revised specifications for telegraph and telephone line fuses and for telegraph and telephone office arresters for discussion. Additional specifications for telegraph and telephone cable arresters, telegraph and telephone instrument fuses and telegraph and telephone heat coils were prepared and also submitted for discussion. The committee also has in the course of preparation specification for telegraph and telephone protector mountings. The chairman stated that these specifications had been sent to twelve protector manufacturers by the general secretary and comments have been received from them. These comments have been given careful consideration in the revision of the specifications and subsequent meetings of the committee.

Some discussion occurred on the specification for telegraph and telephone office arresters with reference to a paragraph on electrical requirements as to whether the air gap should be used as a breakdown method of test or whether it should be stated that the arresters would operate on a certain voltage. The specifications presented to the meeting were accepted for discussion.

Committee No. 5—Telegraph and Telephone Developments, J. A. Jones (Southern, Lines East), chairman, submitted a report on new, useful and interesting developments in connection with the telegraph and telephone which was accepted as information. This report contained a brief discussion of new equipment and apparatus or developments that have been made recently in the science of telegraphy and telephony and included reference to sending machines; welding iron wire joints; emergency lamp; portable dry battery lamp; motor-generator bench; visual signal box; alternating current sounder; telephone operator's new receiver; the Potts simplex printer; automatic telegraphy; phantom wiring; telephone repeaters; audion bulb; mechanical belt conveyors; submarine cable telegraphy; non-insulated conductors, and inductive interference. E. C. Keenan, general superintendent telegraph, New York Central, described the experiments with wired-wireless which had been conducted by the United States signal corps in co-operation with the Pennsylvania, the New York Central, the Boston & Albany and the New York, New Haven & Hartford, over a distance of 110 miles by means of a pair of No. 9 copper wires used for long distance telephone circuits and two composite telegraph circuits. The transmission was excellent and the tests showed the practicability of these circuits. The tests were conducted over open wiring, there being but little cable in the circuit.

Committee No. 6—Message Traffic—H. Hulatt (Grand Trunk), chairman, submitted reports recommended practices for handling of traingrams; numbering of messages; message classification; dictating, transcribing and filing time; and rules covering the use and adjustment of semi-automatic sending keys. P. F. Frenzer, superintendent telegraph, Union Pacific, stated that this system has been put into effect with decided improvement over older methods of handling messages, the messages being marked preferred, day or night as necessary, the preferred messages being sent first, these being followed by day and night messages. The sender indicates the service desired. A check is made and the message is sent afterward and if it is found that messages are being marked "preferred" or "day" when some other classification should be used, corrective action will be taken.

Committee No. 7—Inductive Interference, E. L. King, (S. P.) chairman, was assigned three subjects: (1) A study of inductive interference on telegraph and telephone circuits as caused by power circuits. (2) Description of causes and effects of inductive interference. (3) Recommended rules for the construction and operation of power and communication lines for the prevention or mitigation of inductive interference. Under the first subject the committee submitted for discussion the theory of inductive interference, which was accepted for submission to letter ballot for inclusion in the Manual. Under the second subject, the committee presented a description of causes and effects of inductive interference which was accepted for submission to letter ballot for inclusion in the Manual. Under the third subject, recommended rules were presented which were also accepted for submission to letter ballot for inclusion in the Manual. During the discussion a motion was made and carried that Committee No. 7 prepare a summary based upon the report presented at the meeting giving concise statements of the reasons for objecting to supply lines located close to telegraph and telephone lines along railroad rights-of-way from a telegraph and telephone standpoint.

Officers Elected

The officers of the division chosen for the ensuing year are as follows: Chairman, H. Hulatt (Grand Trunk); first vice-chairman, W. H. Hall (M. K. & T.); second vice-chairman, E. L. King (Southern Pacific). The six members elected to the Committee of Direction were: G. A. Cellar (Pennsylvania System); E. A. Chenery (Mo. Pac.); E. E. Dildine (Nor. Pac.); G. D. Hood (C. R. I. & P.); J. McMillan (C. P. R.); C. S. Rhoads (C. C C. & St. L.). The nominees for the Committee on Nomination elected consisted of: H. C. Chace (A., T. & S. F.); P. F. Frenzer (Union Pacific); J. A. Jones (Southern); J. McMillan (C. P. R.); and J. C. Rankine, (Great Northern).

T. & T. Appliance Association

Officers of the Railway Telegraph and Telephone Appliance Association were elected for the ensuing year at the Fort Garry Hotel on September 23. The officers are: chairman, W. T. Kyle (Page Steel & Wire Company); vice-chairman, J. Warren Young (Kerite Insulated Wire & Cable Company); secretary and treasurer, G. A. Nelson (Waterbury Battery Company). The members elected to the executive committee were: B A.. Kaiser (American Telephone & Telegraph Company); E. E. Hudson (Waterbury Battery Company); A. D. Smith (Northern Electric Company, Ltd.); Wallace L. Cook (Reliable Electric Company); G. K. Heyer (Western Electric Company); F. W. Bayles (New York Telephone Company).

The Plumb Plan is well calculated to appeal to the superficial reasoning of the half-informed or those who are perfectly sincere in their ignorance of the simplest and most elementary knowledge of economics and political science. It also appeals to their cupidity, for it comes near the human weakness of getting something for nothing, especially with little responsibility attached thereto.—*N. Y. Journal of Commerce.*

South America Invites American Rail Construction

Fifth Article by South American Correspondent Quotes a Suggestion as to Lines in Colombia

By John P. Risque

THERE DWELLS in the imagination of some of our countrymen a "bogie." They call it "Latin-American prejudice" and delight in applying this expression to all of South America in reference to an alleged unfriendliness to the Yankee and his products. Some there are who, in order to gain a point of some kind, will set about to demolish this bogie in long dissertations founded mostly upon ancient history.

Colombia has been accused, perhaps more frequently than any of the other countries, of harboring a grudge against us.



The Present and Proposed Railways of Colombia

There was, possibly, a keen sense of Colombian disappointment at one time, growing out of the Panama canal issue, but the alleged sentiment against us on that score does not seem to be apparent in the mind of the representative Colombian of 1920. Such a prejudice may exist in some quarters, but, if it does, it is conceded, by those who are informed on the subject, to be inspired by unfriendly competitors in a market in which we have long exhibited, until recently, little more than a casual interest.

The following letter, written by a resident of Manizales, one of Colombia's important commercial cities, can be said to be typical of Colombia's frame of mind toward the American. Despite its inviting friendliness, it contains, between the lines, a hint of our apathy towards the greatest need of this republic—new railway lines to contend with its growing trade. Manizales, lying in what is known as the Caldas section, is the most southernmost town in the province of Antioquia. The eastern boundary of this province is formed by the celebrated Magdalena river, which stream is the country's north and south artery of traffic between the port of Barranquilla, at the mouth of the river on the north coast, and Bogota, the chief city and capital of the republic, 500 miles south. The letter is as follows:

Mr. John P. Risque: Manizales, Colombia.

Aware of the interest taken by your paper in general railway progress, combined with the fact that American capital is said to be interested in the construction of new railways in the various countries of South America, I am taking the liberty of writing you with respect to the railway situation in my own country.

Although Colombia has about 480,000 sq. m. of area and more than 6,000,000 inhabitants, it has only 738 miles of railways. Its storehouse of coffee, sugar cane, tobacco, cocoa, rice, corn and other numerous products of the soil, is immense. It is capable of increasing its exports of meats tenfold. The richness of its mineral deposits is well known and its latest probable contribution to the wealth of the world is claiming the attention of petroleum interests.

It is more or less generally known that Colombia's exports and imports have managed with some difficulty to find their way into and out of the country via the Magdalena river, a semi-navigable stream which practically bisects the country from Barranquilla to Bogota. This river, for lack of sufficient water, frequently twice in a summer and occasionally at other unexpected times, has to be aided in its traffic by short railway lines to convey freight up and down in spots where the water is at no time of sufficient depth to float the shallow draft steamers used. The transportation of freight by means of this route is obviously slow, expensive and extremely unreliable. To those who are basing their hopes of a solution of our transportation problem on the final completion of the Pacifico line from Buenaventura to interior points, thereby providing a rail outlet for Colombia's interior to the Pacific ocean, I would point out that we believe that our front door should be in the front of the house, not at the back. In a commercial and economic sense, with relation to trade with North America, our front door should open to the Atlantic ocean, since we seek trade with the ports of the United States via the shortest route.

Via the Pacific outlet referred to, traffic will be subjected to the relatively increased delays of the Panama canal, its taxes, and, in times of war, probable interruption.

Colombians believe that the most important lines for their country would constitute a road similar to what the Chileans call their longitudinal; a north and south line starting at Barranquilla or Cartagena on the north coast and following the Magdalena river south to join the Giradot Railway near Bogota. Tributary to it, and, as short feeders, should be constructed various branch lines from important districts on either side of this 748 miles north and south trunk line. It is understood that the larger part of the construction of such a project would be comparatively easy, as it would traverse a great deal of level country. A branch line of importance would be one to Cucuta, passing through Bucaramanga. It would cross two of our richest coffee-producing provinces, whose products, under present handicaps, must find their outlet to the Gulf of Maracaibo via Venezuela which imposes the usual taxes for the privilege. The completion of the 156 miles of the Pacifico line between Buenaventura and Bogota not yet completed will also tap a rich province and the Pacifico is expected to connect eventually with the Antioquia and the Caldas lines projected by the government.

For the benefit of those who are not posted on the subject, I

would point out that with the exception of the Dorada, Calamar and Puerto Colombia, three short lines owned by British capital, whose combined lengths do not exceed 187 miles, all of Colombia's railways are built and operated by the government.

The government of Colombia, convinced that the country's progress is measured by her ability to transport freely in all directions, and particularly between the interior and the mutually desirable front door to America, referred to, invites propositions from your countrymen, leading to the realization of her greatest needs—the construction of new railways. Colombia is ready to give careful consideration to the plans of those who are interested and offers guarantees and facilities for the safeguarding of the investments of those who mean business.

GUILLERMO GUTIERREX VÉLEZ.

Freight congestion in the Caldas section is somewhat relieved by a partly finished aero-trolley line, an elevated endless cable system between the town of Manizales and the line of the Dorada Railroad, thus giving the latter town and its surrounding section a somewhat restricted outlet to the Magdalena river.

Other lines now under operation in Colombia include: a 45-mile line from Cucuta (the coffee district referred to above) and the Venezuelan frontier; an 18-mile line between Barranquilla and Puerto Colombia; 57 miles of line between the provinces of Cundinamarca and Boyaca; the Sabana Railway of 25 miles; the 82-mile Giradot line between Bogota and Giradot; the Tolima Railway of 27 miles between Giradot and Ibague; the Pacifico with 135 miles from Buenaventura to Cali; the Dorada line of 69 miles from the river port of that name and Beltran, connecting the two water levels of the Magdalena river; the Antioquia Railroad from the river port of Berrio to Medellin, 108 miles distant; a line of 13 miles under construction from Bucaramanga to Puerto Wilches and known by the latter name; the Cartagena Railway 65 miles from the port of that name to the river port of Calamar; the Amaga Railway 26 miles in length in the Antioquia section; and the Caldas Railway, 9 miles under construction from Port Caldas along the Cauca river to Manizales.

Supplemental Increase in Express Rates

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION on September 24 announced its decision on the supplemental application of the American Railway Express Company for further increase in express rates to meet the increases in wages recently allowed by the Railroad Labor Board. The company's proposal for an additional increase of 15 per cent in class and commodity rates is found by the commission not to have been justified, but it allows an additional increase of 13½ per cent to the rates in effect at the date of its preceding decision, in which an increase of 12½ per cent was allowed, making a total increase of 26 per cent, with the exception that rates on milk and cream are limited to those contemporaneously applied by the railroad lines between the same points. The company will be permitted to make the increased rates effective upon not less than one day's notice. The company in its supplemental petition filed August 19 estimated that the wage increases, together with those incident thereto and those resulting from increased working forces, would aggregate $44,258,903 a year. This estimate was later revised to $42,296,340. The opinion by Chairman Clark of the Commission says in part:

"An exhibit, based upon an increase of 15 per cent in rates, a corresponding increase in commissions and in taxes on gross transportation revenues or such revenues less express privileges only, and the computed wage increases, shows a remainder of $2,212,339 as available to meet such other increased expenses as incidental increases to draymen and railroad baggagemen and increased payments under state compensation laws to injured employees. The ultimate results can be more nearly approximated by recasting the 1919 items of revenue and operating expenses, tabulated in our preceding report and showing an operating deficit of $21,819,488, on the basis of a total increase of 27.5 per cent.

"So computed, the gross transportation revenues, domestic and miscellaneous, plus the 1919 valuation charges, would be $369,716,288, or an increase of $78,619,170. The offsetting items of expense, exclusive of express privileges, would be $161,055,177, covering the 1919 operating expenses other than commissions, in turn including the retroactive application of the basic wage scale in effect at the close of that year, together with the estimated cost of apportioning the revenues accruing to the railroads; the estimated wage increase, $42,296,340; uncollectible revenue, $45,055; taxes other than on earnings, $905,170, and 127.5 per cent of the 1919 commissions, $15,384,446, and taxes on earnings other than net, $1,415,326. The total of these items is $221,101,513. The difference between this sum and the gross revenue would be $148,614,775. A further deduction of the 1919 express privileges, $143,429,820, for the purpose of the present calculation, would leave $5,184,955. While this result assumes no increase in expenses from other sources, it also takes no account of such gains as may be made by lessening the loss and damage account or of such additional revenues as may accrue from the proposed classification changes now pending in No. 11416, Express Classification, 1920.

"The concrete figures for 1920 might afford a more satisfactory basis for computing the results of the proposed rate increase were it not for the fact that the items of expense are not separated into those that would and those that would not be proportionately affected. While the indicated higher ratio of expenses to revenues in 1920 than in 1919 might suggest some reduction in the net revenue hereinbefore computed on the basis of the 1919 operations, there is no explanation of record for the attendance of an ascending percentage of cost upon materially increased business and revenues.

"Again recasting the 1919 operations, but upon the basis of a total increase of 26 per cent in the rates, in the manner before outlined, the results would be $365,427,970 in gross revenues and $220,903,869 in total operating expenses, exclusive of express privileges. Deducting from the difference between these amounts the 1919 express privileges, the net remainder would be $1,094,281. As before indicated, this would take no account of prospective further revenues from the pending classification changes, some of which have been agreed to by interested shippers and others of which have not been contested. As already suggested, also, there is, or ought to be, a fair opportunity for a material abatement of the loss and damage account and a corresponding augmentation of revenues, and there is a reasonable right of shippers to expect such a result, with gradually improving conditions as the disorganizing period of the war recedes. With the increases in wages there should follow an enhancement of the morale of respondent's working forces that ought in all reason to manifest itself in a more zealous care of the property of patrons of the service in transit and at terminals. No less certainly, with the very substantial increases in express rates, shippers have a right to demand an improved and steadily improving service; and the obligation on respondent's part will not be discharged by mere compensation for loss or damage, but primarily by prompt and otherwise satisfactory deliveries. On our part, while at all times ready to accord to a common carrier that relief to which it may be justly entitled, we shall not view with complacency anything other than a painstaking and unremitting effort to reduce the item of loss and damage to the lowest possible figure."

Freight Car Loadings Show Temporary Reductions

Figures for Week Ended September 11 Total 872,043; But Include Labor Day Holiday

WASHINGTON, D. C.

WHILE THE FREIGHT CAR loadings for the first week in September, as reported to the Car Service Division of the American Railroad Association, showed a falling off as compared with the high figure attained in the last week of August, the report for the week ending September 11 indicates that the reduction was a temporary one. For the week ending September 11 the total revenue freight loaded was 872,043 cars, as compared with 946,970 in 1919 and 974,269 in 1918, but the week ending September 11 this year included the Labor Day holiday. For the weeks in 1919 which included Labor Day the total loadings were 874,856 and 868,828, respectively, which indicates that the traffic this year is still holding its own.

For the month of August the loadings were greater than for August in 1919 or 1918, and August, 1918, was a heavier month than August, 1917. For the week ending August 28 the total loading was 985,000, which set a new record for this year and nearly reached the highest record ever attained. For the week ending September 4 the total was 947,743.

The considerable reduction seemed to afford some confirmation of the predictions made in some quarters that the increase in freight rates would tend to reduce traffic, but a possible explanation is that there was a special effort on the part of shippers to get as much freight as possible started before the increased rates went into effect on August 26, which caused the large increase in loading during the last week of August, and that there may have been a period of hesitancy during the first week they were in effect. There has also been reported a tendency toward slowing up in several lines of business, which is attributed to other factors than rates, but the fact that the loading during Labor Day week was almost the same as for the Labor Day weeks of 1919 and 1918 does not indicate much interruption of the increase in the volume of traffic. Whereas so far this year the volume of traffic has greatly exceeded that of 1919, from now on comparisons will be made with that part of 1919 when the freight business was heavier even than in the war years 1918 and 1917. There were three weeks in 1919 in which over 1,000,000 cars a week were loaded. The summary for the week of September 11 follows:

The freight congestion has been practically cleared up, as switching service has been restored to a normal condition by the return of yardmen to the service, according to the reports of the Car Service Division of the American Railroad Association. For the week ending September 17 the accumulations of freight cars on hand in excess of current movement had been reduced to 47,438. This included 22,000 cars held awaiting export or coastwise movement. In times of heavy traffic an accumulation of 30,000 to 40,000 cars is regarded as normal. On April 16, after two weeks of the strike, there was an accumulation of 288,000 delayed cars.

Deferred Car Requisitions

The deferred car requisitions (car shortage) for the week ending September 8 averaged 104,790 for the United States and 110,750 for the United States and Canada, of which 64,000 were for box cars and 28,000 for coal cars. For the preceding week the total for the United States was 146,070 but an investigation developed that some roads were reporting the accumulated weekly figures instead of the daily average and the marked decrease is accounted for in part by the resulting corrections.

Reports of Local Committees

The weekly reports of the local car service committees show practically normal conditions in almost all parts of the country. From some places light business is reported but, generally speaking, the demand for equipment continues to increase. While the switching forces have been restored to practically normal numbers, there is a widespread shortage of car repair men, which is delaying the campaign to reduce the percentage of bad order cars.

The Chicago committee reports that since the termination of the switchmen's strike the yard forces are practically normal on all lines on account of the old men returning to work, but the car repair forces are only about 70 per cent of normal and freight house labor is 10 per cent below normal.

Most of the committees report a very low railroad fuel supply and in a good many instances railroads have been

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REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS FOR WEEK ENDED SATURDAY, SEPTEMBER 11, 1920

SUMMARY—ALL DISTRICTS; COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO

District	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse L. C. L.	Miscellaneous	Total revenue freight loaded: This year 1920	Total revenue freight loaded: Corresponding year 1919	Total revenue freight loaded: Corresponding year 1918	Received from connections: This year 1920	Received from connections: Corresponding year 1919	Received from connections: Corresponding year 1918
Eastern	1920	7,211	2,656	36,201	3,584	7,330	11,250	40,721	86,818	195,771			247,052		
	1919	9,708	3,014	47,463	3,363	7,751	6,808	21,263	131,993		231,363	229,562		250,374	254,944
Allegheny	1920	2,971	3,272	53,741	6,504	3,862	12,001	35,449	69,352	187,152			138,398		
	1919	3,675	3,862	60,470	4,398	4,497	12,923	38,454	79,324		207,603	225,364		150,114	186,828
Pocahontas	1920	169	205	22,710	781	1,941	215	2,525	6,698	35,244			19,053		
	1919	254	468	23,971	640	2,265	306	122	9,629		37,655	40,642		19,840	23,740
Southern	1920	3,900	2,150	26,639	1,486	17,727	2,781	32,111	35,518	121,412			71,184		
	1919	3,448	2,462	24,213	335	18,816	2,485	21,113	49,516		122,588	123,717		70,427	71,841
Northwestern	1920	13,121	7,411	9,856	1,598	15,310	43,229	24,452	40,460	155,437			57,725		
	1919	14,212	9,136	8,804	1,157	16,082	41,352	21,257	48,758		160,758	169,809		62,455	77,073
Central Western	1920	10,048	9,649	20,080	400	5,550	2,894	28,256	37,933	114,810			69,114		
	1919	12,191	12,317	21,249	344	5,235	3,556	23,815	44,377		123,079	125,454		68,672	66,309
Southwestern	1920	4,163	2,591	5,614	118	7,912	357	16,900	24,562	62,217			49,953		
	1919	5,441	2,964	7,394	153	8,056	360	12,712	27,044		64,124	59,721		50,455	48,491
Total all roads	1920	40,683	27,934	174,841	14,471	59,632	72,727	180,414	301,341	872,043			652,479		
	1919	48,929	34,223	193,564	10,390	62,702	67,790	138,736	390,636		946,970			672,337	
	1918											974,269			729,226
Increase compared	1919				4,081		4,937	41,678							
Decrease compared	1919	8,246	6,289	18,723		3,070			89,295	74,927			19,858		
Increase compared	1918														
Decrease compared	1918									102,226			56,889		

obliged to confiscate commercial coal. A number of the reports show only from 1 to 4 days' supply of fuel on hand.

I. C. C. Operating Statistics for June

The Interstate Commerce Commission has issued a summary of operating statistics for June and the six months ending with June, covering the large steam roads, showing that the railroads in the first six months of this year handled 207,281,000,000 net ton miles of revenue and non-revenue freight, an increase of 17.3 per cent over 1919. The tons per train showed an increase from 700 to 710 and the tons per loaded car from 27.9 to 28.4. The percentage of serviceable cars to the total cars on line was 93.3 as compared with 93.4 in 1919. The average miles per car day had increased from 21.3 to 22.7.

The commission's summary also includes the cost per freight train mile for selected accounts, totalling $1.84 for this year as compared with $1.65 in 1919. The cost of locomotive repairs per freight train mile had increased from 44 cents to 47 cents, enginemen from 22.7 to 26.9 cents, fuel from 50 to 57.4 cents, other locomotive and train supplies from 11.1 to 11.5 cents, trainmen from 26.2 to 30.7 cents, while enginehouse expenses had decreased from 11.3 to 11.1 cents. The cost per passenger train mile for selected accounts had increased from 89.8 to 98.8 cents. The cost of coal per net ton had increased from $3.35 to $3.74.

For the month of June the ton miles showed an increase of 18.4 per cent. The miles per car per day had increased from 23.1 to 25.0, the tons per loaded car from 27.8 to 29.1, and the percentage of serviceable cars from 92 to 93.

New Monthly Bulletin of Car Performance

The Bureau of Railway Economics has begun the publication of a monthly bulletin of freight car performance covering the Class I roads, which gives by roads and by regions the net ton miles, freight car miles, freight cars on line and the efficiency ratios of car miles per day, tons per car and per cent of unserviceable cars. A summary of the most significant factors for the first six months of this year with per cents for previous months and years is given in the following table:

MONTHLY SUMMARY, JANUARY, 1917, TO JUNE, 1920

	Car-miles per day				Tons per car (Revenue and non-revenue)				Percentage of unserviceable cars				Per cent loaded to total car-miles			
Month	1917	1918	1919	1920	1917	1918	1919	1920	1917	1918	1919	1920	1917	1918	1919	1920
January	25.3	18.3	21.4	22.8	26.4	29.6	29.0	28.3	5.6	5.1	6.0	6.6	70.1	70.0	66.2	70.9
February	23.9	22.0	20.3	22.3	26.1	28.4	27.7	28.3	5.5	5.2	5.6	6.5	71.5	70.9	67.5	72.0
March	25.6	24.9	20.4	23.8	26.4	28.1	27.6	28.3	5.4	5.0	5.6	7.0	70.8	71.4	68.1	72.3
April	27.4	25.9	21.6	19.4	25.6	29.4	27.3	28.6	5.8	5.1	6.4	6.5	71.6	68.0	68.1	68.3
May	29.0	26.4	22.8	24.2	26.7	27.7	27.7	28.3	5.6	5.4	7.3	6.6	70.1	66.8	67.4	71.2
June	28.4	26.8	23.0	25.0	27.8	28.3	27.5	29.0	5.6	5.9	8.1	7.0	68.7	66.8	67.9	69.5
July	28.3	26.5	24.1	...	27.1	30.1	27.8	...	6.0	6.9	8.7	...	67.9	64.7	68.0	...
August	27.1	26.0	24.2	...	27.9	30.1	28.0	...	6.0	6.6	9.2	...	68.7	67.6	70.4	...
September	26.6	26.8	26.5	...	27.0	29.7	28.5	...	5.8	6.2	8.5	...	70.0	66.9	69.6	...
October	26.3	26.2	27.3	...	27.7	29.7	28.0	...	5.6	6.0	7.4	...	71.5	67.9	68.4	...
November	26.2	24.6	23.3	...	27.2	29.5	26.2	...	5.2	5.6	6.3	...	71.0	67.1	71.3	...
December	21.3	22.8	22.3	...	29.2	29.8	27.7	...	5.2	5.8	6.2	...	70.9	65.9	71.1	...
Total	26.1	24.9	23.1	...	27.0	29.1	27.8	...	5.6	5.7	7.1	...	70.2	67.7	68.7	...

The bulletin for April says it is evident that April operations were affected by the strike, for the percentage of loaded car miles and the car miles per day were lower than in March. Car loading, however, was increased and the percentage of unserviceable cars was lowered below the March average. The average daily car mileage in May was the greatest since the month of October, 1919, and a further increase was shown in June. The average tons per loaded car for June, 29, were the greatest for any month since January, 1919.

Home Cars on Home Lines Increasing

In a circular addressed to the railroads, the Car Service Division says that the percentage of home cars on home lines, which progressed so favorably from March 1 to May 1 and then remained practically stationary from May 1 to July 15, has taken a new start in the right direction. The percentages of *all cars* are as follows:

March	1	....21.9	per cent	July	15	...26.0	per cent
April	1	...24.1	" "	Aug.	1	...26.7	" "
May	1	....25.9	" "	Aug.	15	...27.3	" "
June	1	...25.7	" "	Sept.	1	....28.0	" "
July	1	...26.0	" "				

"The box cars have in this period made a gain from 11.5 per cent to 17.0 per cent; the coal cars from 22.6 per cent to 33.8 per cent. This improvement is attributed perhaps in a large measure to the efforts to relocate equipment, box cars to the West and coal cars to the East. The box cars show a gain, however, in all districts while the coal cars show losses in the three western districts.

"The opportunity to further improve in this situation, which is so much desired by the executives and has been the subject of resolution on their part, is dependent upon the activity of the individual railroad and will not be brought about by anything except a whole-hearted response on the part of all concerned in the handling of cars.

"It is fully realized that the railroads cannot as a whole exact full compliance of car handling on the basis of ownership during such time as the demands for transportation are so much in excess of the car supply. That much can be done, however, to handle cars in accordance with the ownership principle, at the same time meet traffic requirements, must be conceded. A determined effort applied generally on the part of all roads and continued under reasonable supervision will accomplish the desired results.

"The suggestion contained in Circular CCS-26 is renewed —that all roads shall take a survey of the cars owned by its direct connections which are on line and instruct that such cars be sent loaded or empty to the home line. This will be very helpful in accomplishing results."

Cars Unloaded on Sunday

In a bulletin addressed to the roads the Car Service Division says that splendid results have been accomplished by unloading cars on Saturdays and Sundays.

On railroad reports a total of 26,497 cars unloaded on Saturday and Sunday in four weeks, an increase of 60.6 per cent over normal. At one large railroad center served by 23 railroads, 2121 cars were unloaded on one Sunday. At another railroad center 798 cars were unloaded by railroad forces and 241 by individual consignees on one Sunday. At still another railroad center 721 bad order cars were repaired on one Sunday.

"This shows," the bulletin says, "what has been and can be accomplished and the information is offered to the railroads for such use as they may desire to make of it. The hearty co-operation of shippers in this direction is very gratifying, and in order to obtain the full advantage of this co-operation railroads should see to it that the cars so released are promptly moved and returned to service."

Other Car Service Circulars

Instructions contained in Circular CCS-56, issued July 16, providing for a 75 per cent car supply for fertilizer shipments, have been cancelled by the Car Service Division, which says that further shipments of this material shall be accorded full pro rata share of all available cars.

The Car Service Division has been advised by the Interstate Commerce Commission that the War Department is about to enter into various contracts with mines to supply the department with coal for its posts, camps and stations in the Eastern, Northeastern and Central Departments; also that it will be necessary, when these contracts are made and the Interstate Commerce Commission has received notification thereof, to see that the commission's agents under Service Orders Nos. 10 and 11, are instructed that to the extent coal is so supplied to the War Department such mines will be relieved from the burden of any allotment made by the commission's agents under Service Orders 10 and 11.

The circular says that the details of this arrangement will have to be worked out when and as the Interstate Commerce Commision receives information as to the consummation of contracts between the mines and the War Department. It is important, however, that railroads understand the intention to relieve such coal from assessment by the commission's agents under Service Orders Nos. 10 and 11 and all concerned should be informed of the plan and make arrangements to give prompt effect to such instructions as the commission's agents may issue in the premises. It is to be particularly noted that this arrangement does not contemplate that there will be any super-allotment of cars to any mines over and above the commercial distribution except insofar as the same may be required to protect the various utility services at the War Department posts, camps and stations in accordance with Supplement No. 3 to CCS-54 dated September 27, 1920, interpretative of Interstate Commerce Commission Service Order No. 9 as amended and modified.

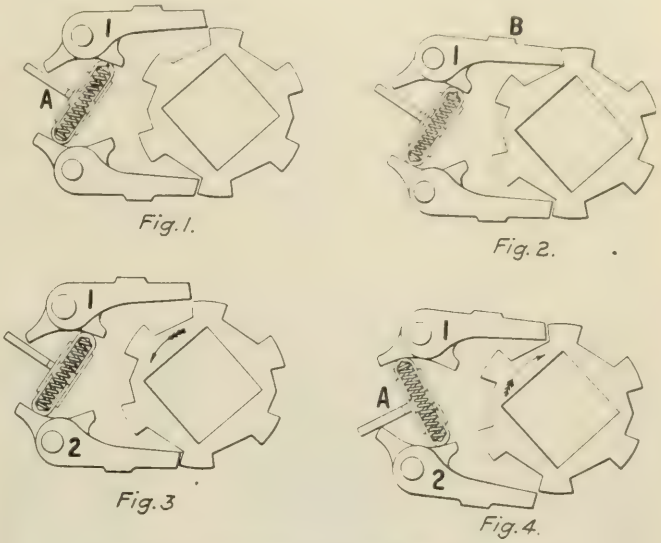
The Interstate Commerce Commission has also advised that the preference in car supply accorded by paragraph 4 of its Service Order No. 9 and the amendments thereto and modifications thereof for the protection of the loading of coal for necessary daily use of utilities privately owned but engaged in public business, shall be understood to apply to like utility services of the War Department at its various posts, camps and stations.

Safety Wrench for Opening Car Hoppers

In releasing the drop doors of freight cars, there is often considerable danger of personal injury. When the latch holding the door is released the load comes on the operating wrench and it may be torn from the grasp of the man using it. To avoid the possibility of accident from this cause, a special type of ratchet wrench is now being made by the Safety Wrench & Appliance Co., Philadelphia, Pa. This device which is known as the "Swaco" safety hopper car wrench allows quick manipulation with assurance of safety.

The mechanism of the wrench is so arranged that the top pawl is automatically thrown to the safety position when the wrench is lowered. Referring to the drawing, the operations in releasing the shaft to open the door are as follows: The spring lever *A* is thrown up as shown in Fig. 1 to force the top pawl *1* out of engagement with the ratchet. The wrench is then placed on the hopper shaft. By placing a finger at *B*, the pawl *1* is pressed down to engage with the ratchet. The operator then pulls up on the wrench handle to take the load off the pawl on the door frame which is lifted out of engagement, leaving the load on the wrench. By quickly lowering the wrench handle pawl *1* is freed from the ratchet, the load rotating the ratchet in the direction shown. Should the door stick, the shaft can be revolved by pushing down on the wrench. To close the door, the spring lever *A* is reversed as shown in Fig. 4 to throw pawl *2* out and pawl *1* into engagement.

The "Swaco" hopper car wrench has a ball bearing head



Ratchet Mechanism of the Swaco Wrench

and the entire wrench is made from electric steel castings of high tensile strength. The socket is designed for holding 2 in. square shafts and bushings or reducing sockets are used to fit smaller sizes. This device is being used by railroads and also by many industrial firms.

A Portable Car-Unloader For Bulk Materials

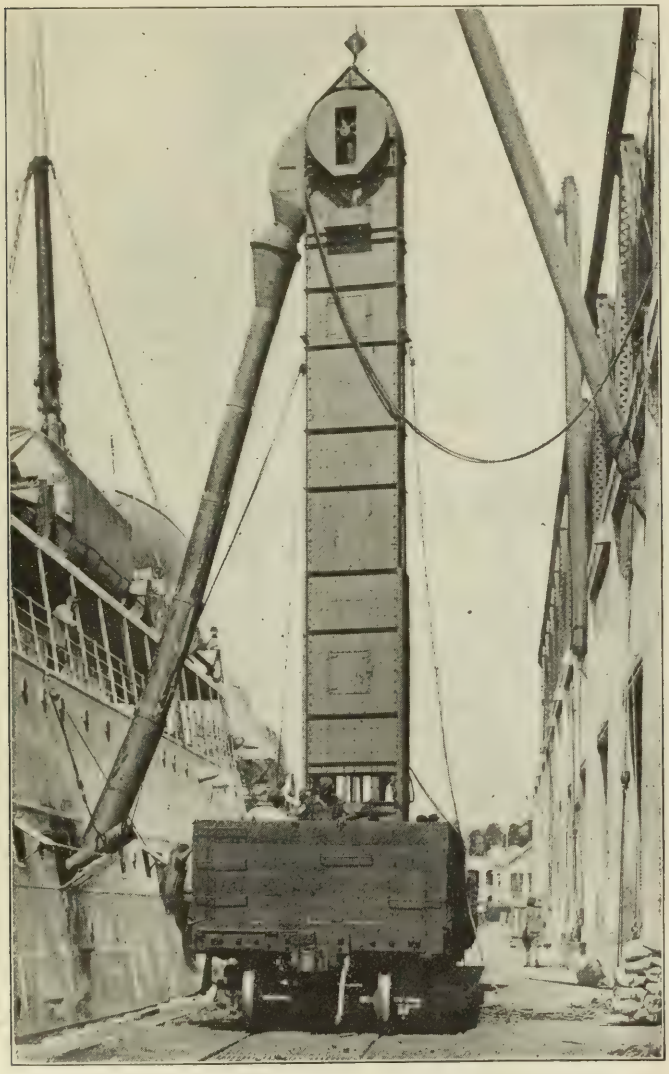
One of the latest machines to appear in the railway field for the loading and unloading of such bulk materials as coal, gravel and sand, is a portable elevator recently put on the market by the DeMayo Engineering Corporation, New York. This elevator has been developed for railway use as a result of the successful employment of similar, though larger machines for the past 15 years in and around the port of New York. All of the machines for either marine or railway use are constructed on the same principle and follow the same general design. The capacities range from 125 tons an hour for the larger sizes down to 50 tons an hour for the smaller, the latter being the size developed for the railroads.

At the present time the rapid loading and unloading of open-top cars is of great importance. The car-unloader, as it is called, was developed from the original DeMayo elevators which have been used chiefly in the past to transfer to vessels bunker coal from barges laid alongside or direct from cars run out on the docks. It was found to be so readily adaptable for the handling of other materials that a smaller machine was constructed to meet the requirements of the railways. As the design is identical in all cases, a detailed description of the standard or 100-ton size will serve to illustrate the manner in which the car-unloader is constructed.

The coal or other material in this class of machine is elevated by an endless steel-plate belt of which every alternate link consists of a rectangular steel bucket 18 in. long, 12 in. wide and 8 in. deep. Both the steel plate links and the buckets are hinged by heavy steel pins extending out about

2 in. at each end. These engage with or in grooves on two sprockets of large diameter located one at each end of a sheet-metal covered steel framework supporting and housing the entire unit. The overall length of the standard elevator is 40 ft. with a cross section measuring 2 ft. 6 in. by 3 ft. 6 in. Double rows of angle iron have been riveted to the sides of the frame to form tracks or guides in which the hinge pins travel after they leave each sprocket. This tends to keep the belt in perfect alinement, prevents any "whip" and renders the use of idlers, etc., unnecessary. The head sprocket is driven at 2½ r. p. m. by a 10-hp. electric motor operating through a double gear reduction, all entirely enclosed. Each bucket as it comes over the upper sprocket discharges into a spout equipped with telescopic sections, giving it a total extended length of about 30 ft. The point of discharge into the spout is about 32 ft. from the digging end.

In operation the unloader is suspended from a swinging



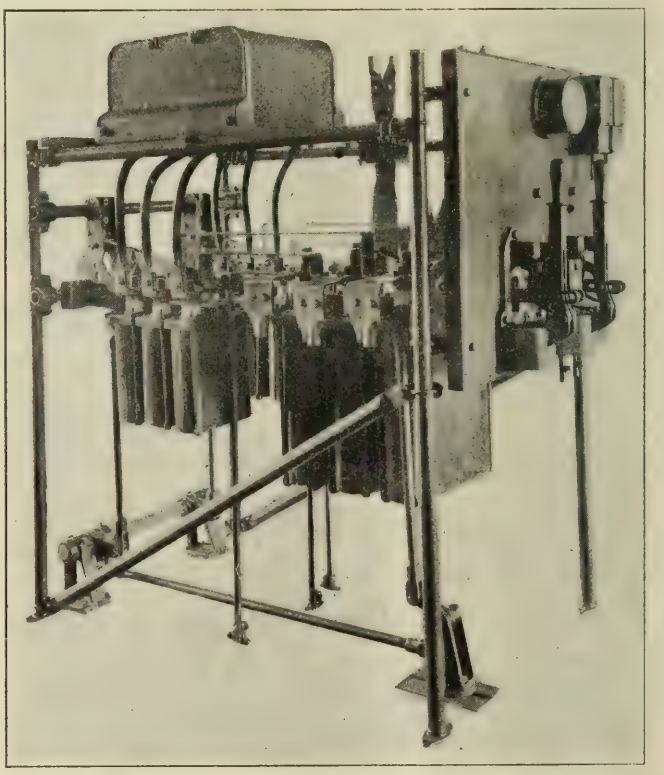
A Standard Machine Unloading at the Rate of 75-100 Tons an Hour

boom by means of some form of tackle and the basis allowed to rest upon the material to be elevated. In this work it is not necessary to maintain the elevator in a vertical position, as it will dig into and elevate the material from practically any position so long as the buckets come in contact with it. An independent power-driven hoist has been installed in the smaller or railroad types so that one attendant can handle the entire operation, raising and lowering the elevator at will through an electric control located at the digging end. The smaller machines weigh about 2 tons and vary in height from 15 ft. to 25 ft. The driving equipment consists of a 5-hp. electric motor and the capacity is, as stated, about 50 tons an hour. This capacity is such that it can unload an ordinary open-top car in from 45 minutes to 1½ hours, depending upon the size of the car and the class of the material. The operation is simple and does not require a trained engineer, while through the use of the long boom or an overhead track and the variable discharge spout coal or other materials may be delivered readily from cars to trucks, to bins or to open storage piles or vice versa.

Induction Motor Control Panels

The General Electric Company, Schenectady, N. Y., has completed the standardization of a line of unit switchboard panels for the control of various forms of induction motors. The panels are designed for the control and safeguarding of motors of either the squirrel-cage or wound rotor types.

Protection of the motor against incorrect sequence of



Three Phase Standard Unit Induction Motor Panel of Heavy Current Capacity for Squirrel Cage Motor

operation in starting is provided by mechanical and electrical interlocks. Protection against radical drop in supply voltage is given by an under-voltage device which causes the breaker to open. Unnecessary interruptions of service are avoided by the use of a time-limit trip, but in the event of sustained overload, the breaker in the circuit of the motor opens as determined by the time setting of the relay furnished as a part of the equipment.

G. T. R. Welfare Superintendent.—The Grand Trunk has appointed Mrs. E. H. Gaudion welfare superintendent of the female clerical staff at the offices in Montreal.

General News Department

The Smoke Prevention Association will hold its fourteenth annual convention at the Hotel Sherman, Chicago, on October 5, 6, 7 and 8.

Fairfax Harrison, president of the Southern Railway, was one of eleven employees and officers of the system to receive "loyalty" medals on September 22. The medals are given to all employees of the road on completion of 25 years' service.

The ninth annual congress of the National Safety Council opened at Milwaukee, Wis., on September 27. The Steam Railroad Section's meetings began on September 29. A report of the meetings of this section will appear in next week's issue of the *Railway Age*.

The Grand Order of Supervisors of Railroads will hold its third annual convention on October 11 and 12 at Columbus, Ohio. All supervisory foremen are requested to send representatives. Among the matters for discussion will be questions of production, efficiency, shop methods and practices, and the question of the classification of subordinate officials.

Imprisonment for two years was the sentence passed on Frederick Vollers, an employee of the Baltimore & Ohio Railroad, at Frederick, Md., on September 24, for stealing merchandise from freight cars; and two other employees received sentences of one year each. The judge said that of men guilty of freight car thefts, only about one in twenty ever suffers punishment.

The Advisory Committee appointed by the mayor of Los Angeles, Cal., to investigate the controversy over the proposed Plaza terminal site and the Arcade plan, brought before the Public Utilities Committee of the city council, on September 13, strong recommendations in favor of the Plaza site for a union terminal. This is in line with the plans outlined by Engineer Sachse, of the State Railroad Commission.

The Western Society of Engineers, Chicago, and the Chicago section of the Signal Division of the American Railroad Association, will hold a joint technical meeting on Thursday evening, October 21, at which time W. P. Borland, chief of the Bureau of Safety of the Interstate Commerce Commission, Washington, D. C., and W. B. Murray, engineer of the Miller Train Control Company, Danville, Ill., will present the subject of "Automatic Train Control."

The Interstate Commerce Commission has isued its summary of traffic statistics for the large steam roads for the month of May, showing a total of revenue tons carried one mile of 32,926,962,000 as compared with 29,284,909,000 in May, 1919. The average miles per revenue ton per railroad was 189.25 as compared with 177.89 and the revenue per ton mile was .946 cents as compared with .972. The number of revenue passengers carried one mile was 3,760,702,000 as compared with 3,649,431,000. The average miles per revenue passenger per railroad was 36.67 as compared with 38.75 and the average revenue per passenger mile was 2.624 cents as compared with 2.539 cents.

Governor J. M. Cox, of Ohio, Democratic candidate for president, was in a derailment on the Atchison, Topeka & Santa Fe at Peoria, Ariz., on September 22, about 4 P. M., the special train in which he was traveling having been thrown off the track, when moving at about 35 miles an hour. One engineman had his leg broken, but all other persons on the train escaped serious injury. **Senator W. G. Harding,** Republican candidate, had a somewhat similar experience on the Pennsylvania, at Pittsburgh, Pa., on the 27th, when a switching train on a side track, started to foul the main line a few seconds before the rear of the special train passed. Both trains were moving at low speed, but two cars were badly scratched. This accident occurred before daylight in the morning. On Wednesday, the 29th, another accident happened to Senator Hardnig's train. It was at Millwood, W. Va., on the Ohio River division of the Baltimore & Ohio. While the train was moving at about 40 miles an hour the Senator's car, the fifth and last one of the train, was derailed by a broken truck and ran 400 ft. on the ties before it was stopped. In this distance it passed over a bridge 80 ft. high, being kept on the bridge floor by the guard rail. There were no serious personal injuries.

At the September meeting of the Traffic Club of New York, September 28, in the Hotel Waldorf-Astoria, New York, A. H. Armstrong, of the General Electric Company, spoke on the subject "Steam vs. Electricity," and W. A. Schumacher, of the United Fruit Company, gave a talk describing the banana industry. Mr. Armstrong's talk was illustrated with lantern slides, was general in character and was punctuated with facts which indicated that he is making preparations to meet any counter claims which may be made by the steam locomotive advocates. Mr. Schumacher described the origin and growth of the banana industry and described in detail the manner in which bananas are brought to market, laying particular stress on the need of having ventilated refrigerator cars for shipping them. His address was concluded by a carefully prepared motion picture which followed the banana from the time it was planted until it reached the consumer.

Canadian Railway Club

Inventions for patents will be the subject of the paper to be presented by W. P. McFeat at the October 12 meeting of the Canadian Railway Club. Mr. McFeat is a patent solicitor of Montreal.

Steam and Electric Locomotives to be Compared

The relative advantage of modern steam and electric locomotives are to be described in four papers to be presented before a joint meeting of the New York Section of the American Institute of Electrical Engineers, the Metropolitan Section of the American Society of Mechanical Engineers and the Railroad Section of the A. S. M. E., to be held October 22, in the Engineering Societies building, 29 West 39th street, New York.

The papers on steam locomotives will be presented by J. R. Muhlfeld, vice-president, Railway & Industrial Engineers, Inc., and W. E. Woodard, vice-president, Lima Locomotive Works.

The papers on electric locomotives will be presented by A. H. Armstrong, chairman electrification committee, General Electric Company, and F. H. Shepard, director of heavy traction, Westinghouse Electric & Manufacturing Company.

The following men have agreed to take part in the discussion: W. L. Bean, mechanical assistant, New York, New Haven & Hartford; A. W. Gibbs, chief mechanical engineer, Pennsylvania system; F. H. Hardin, chief engineer motive power and rolling stock, New York Central; F. W. Kiesel, Jr., mechanical engineer, Pennsylvania system; C. H. Quinn, chief electrical engineer, Norfolk & Western; A. L. Ralston, mechanical superintendent, New York, New Haven & Hartford; and R. Beeuwkes, electrical engineer, Chicago, Milwaukee & St. Paul.

The meeting will be conducted by a joint committee of the three society sections, will be opened by Frank J. Sprague, Sprague Safety and Signal Corporation, and George Gibbs, chief engineer electric traction, of the Long Island, will close the discussion.

St. Louis Railway Club

R. D. Sangster, industrial commissioner of the St. Louis Chamber of Commerce, will read a paper on Industrial Conditions at the next meeting of the St. Louis Railway Club, which will be held on October 8.

The Philadelphia-Camden Bridge

The bridge and tunnel commission, which, on behalf of the states of Pennsylvania and New Jersey, is to begin the construction of a bridge across the Delaware river at Philadelphia, met in that city on September 24 and chose the members of a board of engineers to prepare plans. These engineers are Ralph Modjeski, of Chicago, chairman; George S. Webster, chief of the bureau of surveys, Philadelphia, and Lawrence A. Ball, of East Orange, N. J.

Superintendents' Association

At a meeting of the executive and advisory committee of the American Association of Railroad Superintendents held in St. Louis, Mo., on August 28, steps were taken to revive the activities of this organization, which has been inactive during the period of government control. The secretary-treasurer presented a report showing that the association now has 1,205 members, an increase of 391 over the number on January 1, 1918. It was decided to hold the thirtieth annual convention at Kansas City, Mo., on August 24, 25 and 26, 1921.

"Release Cars With the Greatest Expedition"

In an effort to speed up freight car movement, the Illinois Agricultural Association has informed its membership of 86 county farm bureaus of the delinquency of shippers in delaying cars and urges prompt loading and unloading. This fact was brought to the attention of the secretary of the association by the reply of C. H. Markham, president of the Illinois Central, to an earlier statement of the association noted in an article which appeared in the *Railway Age* of September 17 (page 471). Mr. Markham, in his reply, showed that more long delays to cars were occasioned by shippers holding cars to load or unload than because of all other reasons combined. The secretary of the association, in his letter to the farm bureaus, calls their attention to this delinquency of shippers in delaying freight cars unduly and urges that those of the 97,000 members of the association having cars to load or unload do so promptly upon receipt of cars.

He also states that "Mr. Markham's analysis of the figures indicates that the answer to the question raised by the agricultural association as to whether the apparently slow movement of freight cars was due to the inertia of railroad officials is decidedly in the negative in so far as the Illinois Central is concerned." In closing, the association's letter states that "with the switchmen's vacation ending and with the return of great numbers of experienced men to work, and with the railroad officers exerting themselves to efficient movement of cars, it now seems up to all shippers to exert themselves to release cars with the greatest expedition."

Roadmasters Closing Business

The election of officers at the convention of the Roadmasters' Association at St. Louis, which was reported in last week's issue, page 531, resulted in the election of: President, W. P. Wiltsee, principal assistant engineer, Norfolk & Western, Roanoke, Va.; first vice-president, L. M. Denney, supervisor, Cleveland, Cincinnati, Chicago & St. Louis, Indianapolis, Ind.; second vice-president, J. P. Corcoran, roadmaster, Chicago & Alton, Bloomington, Ill.; secretary, P. J. McAndrews, roadmaster, Chicago & North Western, Sterling, Ill.; treasurer, Coleman King, supervisor, Long Island Railroad, Jamaica, N. Y.; members of the executive committee for four-year term, J. Martin, New York Central, Elkhard, Ind., and J. W. Blalock, Chicago, Rock Island & Pacific, Pratt, Kan.; G. W. Koontz, Delaware & Hudson, Carbondale, Pa., for one year, to fill unexpired term of Mr. Corcoran. Chicago was selected as the place for holding the next convention.

The subjects selected for consideration by the association during the ensuing year, together with the names of chairmen of committees assigned to report on them, are as follows: (1) The Classification and Distribution of Second-hand Rail, W. Shea, general roadmaster, C. M & St. P., Chicago, chairman; (2) The Most Economical Method of Laying and Renewing Track and Switch Ties, with Special Reference to the Conservation of Time and Timber, G. S. Brooks, general roadmaster, Terminal Railroad of St. Louis, St. Louis, chairman; (3) Methods of Stimulating Rivalry Between Track Forces, G. W. Koontz, roadmaster, D. & H., Carbondale, Pa.; (4) The Construction and Maintenance of Railroad Crossings, D. O'Hearn, roadmaster, E. J. & E., Joliet, Ill., chairman, and (5) The Records and Accounts of a Roadmaster's Office, F. J. Meyer, assistant engineer, N. Y., O. & W., Middletown, N. Y., chairman.

The Track Supply Association held its business meeting on Thursday morning and elected the following officers for the ensuing year: President, David T. Hallberg, assistant general sales agent, the P. & M. Company, Chicago; vice-president, Herbert T. Potter, sales manager, the Wyoming Shovel Works, Wyoming, Pa.; secretary-treasurer, W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y.; directors, Alexander Chapman, the Rail Joint Company, Chicago; F. M. Condit, Fairbanks, Morse & Co., Chicago; J. J. Cozzens, Union Switch & Signal Company, Swissvale, Pa., and A. H. Told, Positive Rail Anchor Company, Marion, Ind.

New York Central Motion Picture, "Bulletin 70"

Marcus A. Dow, general safety agent of the New York Central, has brought out a fourth motion picture for use in giving safety lessons to the employees of the road, and it is being exhibited this week at the National Safety Congress in Milwaukee. Unlike "The House That Jack Built" and other films heretofore produced for the New York Central, the present one deals mainly with the startling facts of the railroad accident records of the whole country; and the "human interest" features which are introduced to relieve the horrors of the exhibition are somewhat less prominent.

The title of this film is "Bulletin 70," and the story is based on the annual statistical accident report of the Interstate Commerce Commission for the calendar year 1918, which was contained in the bulletin of that number. This bulletin was issued last January, and was noticed in the *Railway Age* of January 23 and January 30. That record tells of 9,286 persons killed and 174,575 injured on the railroads of the United States in the twelve months, and the details and classifications of casualties fill 30 large pages—not to mention $40,000,000 in money damages. Mr. Dow has been able, of course, only to touch a few of the "high spots" of the record.

The picture opens with a procession of railroad employees marching into the jaws of a devouring dragon. The scene soon changes to a magnified copy of the bulletin, followed by views of pages of statistics, both full sheets, and "close-ups" of specially significant figures. For example, the fact that 164 employees were injured while adjusting car couplers with the foot (Table 105, page 27) is shown up in such large figures that the most indifferent observer must begin to apprehend the significance of the statement.

The author has aimed to make it clear to the reader that a story of actual events, not a mere lecture, is being laid before him, and to impress the magnitude of the losses of life, limb and comfort by concentrating attention on single classes or kinds of carelessness.

Collisions and other hair-raising scenes are shown, as in the former motion pictures; and also a number of animated drawings. In one of these latter, two freight cars are bumped together, withdrawn, and then bumped again; and at each operation a figure, representing a man, steps between the cars and is crushed; and when the cars are pulled apart, the man falls some 20 ft. into a hopper marked "Hospital." This operation is repeated over and over, thus giving an idea of the frequency of that general class of bodily injury. The statement that 156,013 railroad employees had to go to the hospital in a year—say, one every three or four minutes, night and day—is so staggering that the mind cannot fully grasp it; but to *see* a man pitched into this "hopper" every two seconds helps to fix that fact in the memory.

Highway crossing dangers are also included, and attention is called to the fact that every year in this country 17 miles of automobiles are struck by trains. The engineman who is at all careless or indifferent about sounding the whistle to give warning to careless drivers at crossings, is impressed by a vivid picture showing the way in which it is desired to have the whistle sounded.

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings:

AIR BRAKE ASSOCIATION. F. M. Nellis, Room 3014, 163 Broadway, New York City.

AIR BRAKE APPLIANCE ASSOCIATION.—Fred W. Venton, 836 So. Michigan Ave., Chicago.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS. S. W. Derr, Philadelphia & Reading, Philadelphia, Pa.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, Illinois Central, Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, C. & E. I. R. R., 332 South Michigan Ave., Chicago. Next meeting, November 16-18, 1920, St. Louis, Mo.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Next annual meeting, October 14-15, Chicago.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next convention, August 24-26, 1921, Kansas City, Mo.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 8 W. 40th St., New York.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOCIATION.—C. F. J. Dell, 50 E. 42nd St., New York.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCATION.—Otto E. Schlinck, 185 W. 5th St., Peru, Ind.

AMERICAN RAILROAD ASSOCIATION.—J. E. Fairbanks, 75 Church St., New York. Next regular meeting November 17, 1920, Chicago.

Section I, Operating (including former activities of Association of Railway Telegraph Superintendents).—W. J. Fripp (chairman), N. Y. C. R. R., New York, N. Y.

Telegraph and Telephone Division.—J. F. Caskey (chairman), Supt. of Telegraph, Lehigh Valley.

Section II, Engineering.—E. H. Fritch, 431 South Dearborn St., Chicago.

Signal Division.—H. S. Balliet, 75 Church St., New York. Exhibit by Signal Appliance Association.

Section III, Mechanical (including former activities of Master Car Builders' and Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago. Next convention, June 15-22, Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association.

Equipment Painting Division—V. R. Hawthorne, Secretary.

Section IV, Traffic.—Robert C. Wright (chairman), General Traffic manager, P. R. R., Philadelphia, Pa.

Section V, Transportation (including former activities of Association of Transportation and Car Accounting Officials.—E. J. Pearson (chairman), President, N. Y., N. H. & H. R. R., New Haven, Conn.

Section VI, Purchases and Stores (including former activities of Railway Storekeepers' Association).—J. P. Murphy, N. Y. C. R. R., Collinwood, Ohio.

Section VII, Freight Claims (including former activities of the Freight Claim Association).—Lewis Pilcher, 431 South Dearborn St., Chicago. Next meeting, November 17, 1920.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Austin Station, Chicago. Next convention, October 26-28, 1920, Atlanta, Ga. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railroad Association, Section II.) E. H. Fritch, 431 South Dearborn St., Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railroad Association, Section III, Mechanical.)

AMERICAN RAILWAY PERISHABLE FREIGHT ASSOCIATION.—E. F. McPike, 135 E. 11th Place, Chicago. Regular meetings, 2nd Wednesday in March and September.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 1145 East Marquette Road, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Col. H. S. Crocker (acting secretary), Engineering Societies Building, 33 W. 39th St., New York. Annual convention, August 10-12, Multnomah Hotel, Portland, Oregon. Regular meetings, 1st and 3d Wednesday in month, except July and August, 33 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

AMERICAN STEEL TREATERS' SOCIETY.—W. H. Eisenman, 154 East Erie St., Chicago

AMERICAN TRAIN DESPATCHERS' ASSOCIATION.—C. L. Darling, Northern Pacific Ry., Spokane, Wash. Next convention, June 20, 1921, Kansas City, Mo.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Mt. Royal Sta., Baltimore, Md. Next annual meeting, January 25-27, 1921, San Francisco.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—Willis H. Failing, C. R. R. of N. J., Jersey City, N. J.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Exhibit by Railway Electric Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Thomas De Witt Cuyler (chairman), 61 Broadway, New York, N. Y.

ASSOCIATION OF RAILWAY SUPPLY MEN.—C. L. Mellor, 212 W. Illinois St., Chicago. Meeting with International Railway General Foremen's Association

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railroad Association, Section I, Operating.)

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railroad Association, Section V. Transportation.)

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—G. R. McVay, Barrett Company, Chicago. Meeting with convention of American Railway Bridge and Building Association, October 26-28, 1920, Atlanta, Ga.

CANADIAN RAILWAY CLUB. W. A. Booth, 131 Charron St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 624 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS.—Thomas B. Koenecke, Federal Reserve Bank Bldg., St. Louis, Mo. Meetings first Tuesday in month at the American Hotel Annex, St. Louis.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 2d Thursday in November and 2d Friday in January, March, May and September, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—J. C. Keene, General Car Inspector, Wabash R. R., Decatur, Ill.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—W. R. Elliott, Terminal R. R. Ass'n of St. L., St. Louis, Mo.

CINCINNATI RAILWAY CLUB.—H. Boutet, 101 Carew Bldg., Cincinnati, Ohio.

EASTERN RAILROAD ASSOCIATION.—D. G. Stuart, Washington, D. C.

FREIGHT CLAIM ASSOCIATION.—(See American Railroad Association, Section VII, Freight Claims.)

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Sta., Chicago. Regular meetings, Wednesday preceding 3d Friday in month, Room 856, Insurance Exchange Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 702 E. 51st St., Chicago. Next annual meeting, May, 1921, Hotel Sherman, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn. Exhibit by Association of Railway Supply Men.

MAINTENANCE OF WAY MASTER PAINTERS' ASSOCIATION.—E. E. Martin, Union Pacific R. R., Room No. 19, Union Pacific Bldg., Kansas City, Mo. Next convention, October 5-7, 1920, Detroit, Mich.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—(See American Railroad Association, Section III, Equipment Painting Division.)

MASTER CAR BUILDERS' ASSOCIATION.—(See American Railroad Association, Section III, Mechanical.)

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—E. E. Pershall, T. J. Moss Tie Company, 720 Security Bldg., St. Louis, Mo. Next annual convention, January 27-28, 1921, San Francisco.

NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Next convention, November 9-12, 1920. Washington, D. C.

NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, Kelly-Derby Co., Peoples Gas Bldg., Chicago. Meeting with American Railway Engineering Association.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting months of June, July, August and September.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meeting 2d Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Bldg., Washington, D. C.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 30 Church St., New York.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, Americus Club House, Pittsburgh, Pa.

RAILWAY DEVELOPMENT ASSOCIATION.—D. C. Welty, Missouri Pacific R. R., Little Rock, Ark.

RAILWAY ELECTRIC SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—D. L. Eubank, Galena Signal Oil Company, Richmond, Va. Meeting with traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Next annual meeting, October 19-21, Southern Hotel, Baltimore, Md.

RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, C. & O. Ry., Richmond, Va.

RAILWAY SIGNAL ASSOCIATION.—(See American Railroad Association, Section II, Signal Division.)

RAILWAY STOREKEEPERS' ASSOCIATION.—(See American Railroad Association, Section VI. Purchases and Stores.)

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meeting with American Railroad Association, Section III, Mechanical.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Co., 30 Church St., New York.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, Schroeder Headlight & Generator Co., New York City. Meeting with American Railroad Association, Signal Division

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.

SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—C. N. Thulin, Duff Manufacturing Company, 935 Peoples Gas Bldg., Chicago.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. R. R., Cleveland, O. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN ASSOCIATION OF SHORT LINE RAILROADS.—Clarence M. Oddie, Mills Bldg., San Francisco.

WESTERN RAILWAY CLUB.—J. M. Byrne, 916 W. 78th St., Chicago. Regular meetings, 3d Monday in month, except June, July and August.

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF JULY, 1920

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	141	$174,149	$79,233	$274,695	$56,351	$58,115	$5,910	$101,275	$9,872	$234,534	85.37	$40,162	$14,639	$25,522	—$8,715
Ann Arbor	301	430,961	75,689	537,185	55,942	91,821	12,925	195,035	19,558	375,289	69.86	161,896	17,500	144,363	51,787
Arizona Eastern	383	269,173	48,080	343,914	70,617	49,234	2,605	115,085	20,314	261,241	75.96	82,673	17,997	64,716	—13,581
Atchison, Topeka & Santa Fe	8,829	11,672,015	4,837,293	18,060,954	2,638,157	4,012,834	201,028	6,403,163	322,486	13,572,032	75.14	4,488,922	970,427	3,547,996	177,334
Atlanta & W. Point	93	105,331	103,625	237,590	39,193	47,394	7,112	101,447	12,097	211,663	89.08	25,927	8,928	16,999	—28,150
Atlanta, Birmingham & Atlantic	639	369,118	111,432	514,185	133,503	137,191	20,180	262,750	18,996	572,726	111.38	—58,541	16,330	—74,991	—43,420
Atlantic City	177	75,761	586,747	687,292	48,938	44,267	7,004	274,751	1,036	376,078	54.71	311,214	14,520	296,693	67,664
Atlantic Coast Line	4,889	3,820,878	1,421,856	5,717,449	1,366,524	1,657,626	86,897	3,348,800	167,600	6,653,856	116.37	—936,407	300,000	1,237,708	—1,444,279
Atlantic & St. Lawrence	166	156,248	59,241	234,275	66,151	61,006	2,425	134,149	9,971	275,829	117.74	—41,554	17,722	—59,276	82,936
Baltimore & Ohio Chicago Terminal	90	.....	.....	141,426	67,423	57,522	1,186	141,460	10,108	284,607	201.24	—143,181	31,169	—174,356	—162,330
Baltimore & Ohio	5,153	14,675,650	2,878,720	19,072,421	3,720,011	7,344,336	315,798	11,789,454	666,787	24,021,207	125.94	—4,948,785	550,494	—5,510,122	—7,767,447
Baltimore, Chesapeake & Atlantic	87	93,786	76,177	179,202	17,668	25,059	1,268	113,839	4,371	162,203	90.51	16,998	3,700	13,298	135,578
Bangor & Aroostook	658	309,884	88,376	436,292	126,001	140,685	4,449	190,009	23,634	492,998	112.99	—56,706	26,998	—83,704	—19,682
Belt Ry. of Chicago	31	.....	.....	381,857	58,358	52,596	762	229,865	9,861	351,443	92.03	30,414	24,767	5,647	—69,853
Bessemer & Lake Erie	225	1,431,603	52,607	1,513,214	175,473	364,826	13,066	443,163	26,919	1,032,140	68.20	481,073	15,800	465,274	—18,935
Bingham & Garfield	36	167,052	1,592	171,316	36,068	32,277	1,845	36,365	6,519	113,183	66.07	58,133	7,425	50,708	81,172
Birmingham Southern	31	39,484	.....	51,559	5,399	10,727	1,345	29,602	3,754	50,827	98.58	733	1,754	—1,034	—8,949
Boston & Maine	2,304	4,271,406	2,441,251	7,508,589	1,127,799	1,377,117	56,864	3,959,131	251,218	6,823,460	90.88	685,129	236,539	448,581	—332,145
Brooklyn Eastern District Terminal	9	112,751	.....	124,044	7,117	17,090	275	63,823	4,851	93,156	75.09	30,888	6,319	24,569	33,487
Buffalo & Susquehanna R.R. Corp.	296	232,963	6,904	244,006	66,929	96,923	2,299	81,253	12,878	266,283	106.67	—16,276	7,000	—23,278	—19,536
Buffalo, Rochester & Pittsburgh	589	1,606,396	183,302	1,871,728	396,443	654,412	22,446	913,591	45,522	2,032,986	108.61	—161,259	35,000	—196,259	—249,481
Canadian Pacific (Lines in Maine)	233	112,427	37,229	156,354	60,836	40,348	3,455	91,446	3,770	199,854	127.82	—43,500	12,200	—55,700	2,712
Carolina, Clinchfield & Ohio	282	504,849	50,348	566,966	77,484	134,699	16,742	177,543	20,413	426,481	75.22	140,485	28,830	111,655	—92,069
Central New England	301	620,749	29,713	676,505	236,866	211,702	5,356	561,694	22,841	1,031,106	152.41	—354,601	18,225	—372,826	—513,640
Central of Georgia	1,924	1,423,610	654,457	2,289,049	474,171	561,354	58,463	1,175,465	92,761	2,367,521	103.43	—78,472	81,332	—159,852	—468,655
Central R.R. of New Jersey	686	3,459,315	1,228,582	4,997,797	469,641	1,547,748	31,923	2,084,219	90,623	4,265,463	85.35	732,334	354,527	377,806	—549,290
Central Vermont	413	457,721	111,733	624,655	110,346	201,683	7,353	407,713	18,975	747,925	119.73	—123,270	17,400	—140,683	—84,708
Charleston & Western Carolina	342	218,595	60,024	296,971	73,553	58,583	6,841	167,345	11,889	318,211	107.15	—21,241	11,625	—32,986	—41,736
Chesapeake & Ohio	2,520	5,616,024	1,085,415	7,259,357	1,261,839	2,378,699	53,508	3,498,596	176,985	7,404,708	102.00	—145,351	349,810	—495,194	—1,914,278
Chicago & Alton	1,050	1,909,376	625,576	2,795,251	550,396	787,901	55,771	1,429,391	73,932	2,905,216	103.93	—109,965	76,851	—186,947	—462,444
Chicago & Eastern Illinois	1,130	1,460,865	501,021	2,161,309	519,888	927,796	33,727	1,374,922	79,277	2,949,770	136.48	—788,461	100,000	—888,682	—982,664
Chicago, Det. & Canada Grand Trunk Jct.	62	117,835	45,682	194,905	19,337	26,638	2,162	104,476	4,425	157,068	80.58	37,837	4,596	33,239	—46,251
Chicago & Erie	269	1,027,145	101,179	1,207,623	176,609	238,711	16,707	618,446	36,129	1,088,491	90.14	119,133	40,009	78,197	4,614
Chicago & North Western	8,406	9,687,665	3,716,798	14,801,129	2,690,226	2,665,346	131,251	6,105,948	333,322	12,058,127	81.46	2,743,002	725,000	2,017,739	—1,055,882
Chicago, Burlington & Quincy	9,369	9,840,302	3,425,143	14,720,003	3,080,934	3,156,822	161,788	5,948,916	538,011	13,046,019	88.62	1,673,984	738,799	934,835	—1,753,224
Chicago Great Western	1,496	1,295,488	508,722	1,979,581	744,301	736,367	51,312	1,085,546	66,491	2,703,664	136.57	—724,083	81,836	—805,668	—1,135,296
Chicago, Ind. & Louisville	654	952,446	296,407	1,375,040	187,248	377,760	28,193	603,592	32,121	1,245,935	90.61	129,105	44,899	84,183	—9,200
Chicago Junction	12	.....	.....	280,124	47,964	61,723	299	359,019	9,966	478,971	170.98	—198,847	4,401	—203,249	—199,265
Chicago, Milwaukee & St. Paul	10,629	10,409,447	3,059,248	15,083,931	2,949,639	2,989,297	135,927	6,318,020	443,996	12,934,027	85.74	2,149,904	677,263	1,472,453	2,155,067
Chicago, Peoria & St. Louis	247	196,883	29,774	241,846	34,730	63,346	6,593	123,310	11,149	239,129	98.87	2,717	7,100	—4,383	78,659
Chicago, Rock Island & Gulf	461	414,873	115,434	578,357	79,845	93,609	10,852	231,566	14,512	431,818	74.66	146,539	12,833	133,686	69,766
Chicago, Rock Island & Pacific	7,662	7,790,733	3,173,286	11,897,838	3,432,588	3,910,021	162,790	6,192,899	353,164	14,086,758	118.39	—2,188,921	460,352	—2,649,873	—4,357,948
Chicago, St. Paul, Minn. & Omaha	1,749	1,600,683	760,544	2,559,875	618,962	483,108	27,175	1,110,655	79,481	2,334,235	91.18	225,640	128,547	96,156	—238,688
Chicago, Terre Haute & S. E.	374	416,133	27,695	456,867	99,814	214,910	6,662	265,883	15,863	605,702	132.57	—148,835	19,500	—168,335	150,332
Cincinnati, Indianapolis & Western	321	302,412	68,209	392,716	77,505	116,977	2,993	175,846	19,724	399,965	101.84	—7,249	13,538	—20,788	14,427
Cincinnati Northern	245	259,719	25,406	291,307	52,532	65,245	4,044	123,138	6,745	251,703	86.40	39,604	10,720	28,883	—25,896
Clev., Cinc., Chicago & St. Louis	2,408	5,077,579	1,908,156	7,697,773	1,318,126	1,978,129	98,358	3,457,826	170,444	7,092,860	92.14	604,912	237,478	367,191	—1,000,614
Colorado & Wyoming	43	25,242	1,009	88,959	21,750	17,395	777	63,365	4,179	107,460	120.79	—18,501	5,000	—23,501	—29,329
Copper Range	142	47,988	12,211	65,995	25,464	16,425	2,074	31,818	2,348	78,129	183.86	—12,133	6,859	—18,992	—23,926
Colorado & Southern	1,099	814,488	329,461	1,235,843	306,659	309,429	15,636	439,300	47,260	1,133,253	91.69	102,590	59,791	42,624	—142,384
Delaware & Hudson	858	3,511,326	368,717	4,055,981	426,077	1,113,123	38,893	1,976,905	156,482	3,744,443	92.31	311,539	81,500	230,032	—255,051
Delaware, Lackawanna & Western	957	4,860,399	1,371,081	7,038,977	953,491	1,537,932	96,125	3,302,260	157,749	6,161,115	87.52	877,861	389,583	488,272	—903,279
Denver & Rio Grande	2,585	2,234,205	900,855	3,422,871	652,562	709,608	53,535	1,168,484	79,545	3,756,982	80.55	665,888	135,000	530,873	—93,356
Denver & Salt Lake	255	191,639	69,731	273,456	106,892	71,669	883	143,982	10,574	333,999	122.13	—60,544	9,000	—69,544	—15,149
Detroit & Mackinac	376	118,617	43,051	180,849	36,964	53,492	2,935	76,135	7,763	176,980	97.86	3,870	10,958	—7,088	—53,029
Detroit, Grand Haven & Milwaukee	195	403,500	39,239	496,615	68,643	74,362	7,289	279,812	15,012	446,033	89.81	50,583	3,088	47,457	—26,889
Detroit, Toledo & Ironton	454	383,781	17,698	427,334	174,395	99,275	8,964	230,689	16,962	530,285	124.09	—102,952	9,039	—112,035	—94,258
Duluth & Iron Range	298	1,606,794	26,446	1,763,078	150,106	125,404	1,863	320,906	20,519	619,776	35.15	1,143,302	90,729	1,052,536	263,492
Duluth, Missabe & Nor	406	2,904,428	56,720	3,307,748	239,472	147,615	3,101	514,820	22,491	929,445	28.10	2,378,302	167,943	2,210,359	—209,371
Duluth, South Shore & Atlantic	614	358,954	140,281	545,589	106,115	82,152	4,449	231,030	10,840	442,908	81.18	102,681	25,000	77,538	13,842
Duluth, Winnipeg & Pacific	178	148,526	26,181	185,093	48,929	41,455	3,806	95,998	9,011	199,199	107.62	—14,106	9,297	—23,461	—13,578
East St. Louis Connecting	3	.....	.....	114,590	15,390	23,471	287	92,644	3,655	135,445	118.20	—20,855	2,864	—23,719	39,692
El Paso & S. W.	1,027	907,939	235,357	1,210,508	186,317	214,580	22,605	322,611	46,552	803,220	66.35	407,288	100,414	306,791	252,992
Elgin, Joliet & Eastern	834	1,653,867	46	1,858,497	234,681	404,766	6,958	805,781	38,262	1,488,663	80.10	369,833	54,505	315,329	—261,027
Erie	1,989	7,460,647	1,475,717	9,751,932	1,840,413	3,385,728	141,094	5,569,312	335,473	11,358,699	116.47	—1,606,767	247,583	—1,854,835	—2,241,475
Florida East Coast	764	463,215	221,311	830,988	145,830	207,436	6,784	393,410	26,046	797,164	95.92	33,824	79,160	—47,565	—124,418
Fondo, Johnstown & Gloversville	88	43,181	86,425	134,998	13,748	13,385	824	43,284	20,000	91,241	67.58	43,757	5,075	38,682	4,097
Ft. Smith & Western	253	90,857	37,649	138,123	29,201	32,769	4,450	58,593	8,179	134,433	97.33	3,690	5,000	—1,310	—16,415
Ft. Worth & D. City	454	639,753	408,494	1,101,355	169,232	256,764	9,305	414,194	39,817	898,967	81.62	202,389	23,100	179,257	—176,578

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY, 1920 (CONTINUED)

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Galveston, Harr. & S. A.	1,384	$1,390,421	$512,106	$2,075,638	$759,584	$485,000	$42,886	$733,326	$72,346	$2,115,992	101.94	—$40,354	$67,856	—$109,648	—$554,805
Georgia	328	344,947	160,448	547,155	107,045	129,960	14,281	297,658	22,376	571,569	104.46	—24,413	5,950	—30,363	—110,997
Georgia & Florida	405	94,796	33,518	136,197	75,368	35,281	6,579	109,034	10,468	236,731	173.81	—100,534	6,383	—106,922	—80,070
Grand Trunk Western	350	1,120,631	279,527	1,498,542	327,804	332,976	25,305	770,938	50,239	1,515,060	101.10	—16,518	51,084	—67,629	—271,271
Great Northern	8,175	7,549,806	2,066,252	10,780,786	2,731,108	1,865,516	100,092	4,027,873	239,728	9,113,681	84.53	1,667,106	801,144	865,108	—2,107,268
Green Bay & Western	252	71,908	18,746	98,890	19,288	23,156	2,034	40,758	3,120	88,356	89.34	10,534	6,824	3,710	9,804
Gulf & Ship Island	307	163,478	64,216	245,824	84,024	65,086	6,496	97,823	13,814	258,634	52.11	—12,810	39,381	—52,202	77,025
Gulf, Colorado & Santa Fe	1,907	1,240,941	597,800	1,962,931	603,282	444,561	26,547	904,974	54,131	2,032,918	103.56	—69,986	87,016	—157,184	—313,727
Gulf, Mobile & Northern	470	190,240	165,573	274,783	182,107	97,240	12,853	141,749	18,353	452,302	164.60	—177,518	14,175	191,699	—211,043
Hocking Valley	350	1,282,183	126,734	1,523,062	220,601	790,985	3,554	668,039	49,399	1,737,576	114.08	—214,514	75,976	—290,490	—782,583
Houston & Texas Central	915	585,585	283,548	952,033	266,038	183,333	17,001	381,091	26,946	874,231	91.82	77,802	42,559	34,766	—89,449
Houston East & West Texas	190	137,969	65,890	222,617	137,606	31,667	4,020	94,297	7,009	274,610	123.35	—51,993	8,489	—60,580	—106,746
Illinois Central	4,799	8,243,019	2,396,940	11,646,139	2,512,948	3,009,263	92,005	4,988,215	261,450	10,956,967	94.08	689,172	674,383	14,294	785,437
Illinois Terminal	24	100,789	.....	107,855	3,720	9,658	625	24,537	5,577	44,118	40.90	63,737	1,117	62,620	19,017
Indiana Harbor Belt	120	.....	.....	754,671	70,462	615,960	2,565	623,678	26,797	1,339,461	177.48	—584,790	10,686	—595,477	—596,815
International & Great Northern	1,159	1,152,727	310,888	1,575,976	247,602	423,798	27,486	776,796	62,204	1,543,510	97.93	32,467	25,000	7,202	9,612
Kanawha & Michigan	176	384,834	62,641	465,968	130,487	162,697	2,812	189,279	15,112	500,388	107.38	—34,420	26,056	—60,476	—76,450
Kansas City, Mexico & Orient	272	118,739	22,355	148,616	41,697	55,570	3,981	96,721	9,026	206,994	139.27	—58,378	7,700	—66,078	—50,074
Kansas City, Mexico & Orient of Texas	465	122,841	24,632	154,847	80,028	58,186	4,227	87,194	6,047	235,682	152.20	—80,835	6,925	—87,760	—38,731
Kansas City Terminal	27	.....	.....	137,842	17,661	29,655	.....	60,816	3,455	114,459	83.04	23,383	27,350	—3,967	—52,215
Lake Erie & Western	741	988,198	72,937	1,115,312	156,143	450,996	19,117	490,967	29,324	1,146,003	102.75	—30,691	36,293	—67,057	—68,128
Lake Superior & Ishpeming	34	255,329	278	288,716	23,552	17,274	215	52,082	3,136	96,259	33.34	192,457	6,183	186,274	41,415
Lake Terminal	12	.....	160	121,058	23,484	26,858	.....	75,217	44	125,602	103.75	—4,544	5,761	—10,304	14,221
Lehigh & Hudson River	96	261,784	4,130	274,090	29,980	44,031	1,701	146,895	8,742	231,349	84.40	42,740	8,600	34,139	—33,967
Lehigh & New England	229	424,245	1,510	444,770	64,967	76,434	2,497	155,152	12,734	311,708	70.08	133,062	15,453	117,609	80,933
Lehigh Valley	1,435	5,322,759	775,350	6,607,630	1,252,712	2,062,837	87,754	3,698,075	179,578	7,322,627	110.82	—714,997	206,000	—921,012	—1,707,506
Long Island	398	624,801	2,110,537	3,001,281	333,364	436,854	22,111	1,186,318	56,132	2,054,941	68.46	946,340	101,136	845,155	48,798
Los Angeles & Salt Lake	1,168	1,292,690	531,431	1,985,934	144,606	405,374	44,642	779,112	50,175	1,491,457	75.10	494,478	97,924	396,571	217,198
Louisiana & Arkansas	302	260,874	52,479	325,659	84,424	46,558	4,645	110,297	9,390	256,604	78.79	69,055	18,561	50,495	75,333
Louisiana Ry. & Navigation Co.	343	255,563	46,859	321,863	92,639	52,276	8,037	155,898	11,056	319,906	99.39	1,957	14,009	—12,082	—33,473
Louisiana Western	207	290,823	130,928	442,376	100,911	76,667	6,370	118,146	15,699	320,277	72.39	122,100	20,320	101,419	—29,142
Louisville & Nashville	5,040	7,444,045	2,399,629	10,494,484	2,310,528	2,993,387	172,320	5,226,970	268,596	11,016,870	104.97	—522,386	302,611	—825,032	—2,186,247
Louisville, Henderson & St. L.	199	176,491	70,937	261,111	66,070	31,327	5,486	87,327	8,192	198,402	75.98	62,710	7,215	55,550	4,910
Maine Central	1,216	1,045,271	568,755	1,754,957	416,770	510,139	18,483	1,432,094	84,905	2,472,134	140.86	—717,177	95,742	—812,923	—742,120
Maryland, Delaware & Virginia	82	74,638	62,627	143,045	14,991	16,601	1,105	94,463	2,291	129,451	90.49	13,593	2,000	11,539	66,011
Michigan Central	1,862	4,638,544	2,433,159	7,873,447	1,340,551	2,521,777	85,190	3,542,231	144,980	7,768,777	98.67	104,670	246,500	—142,685	—1,954,215
Midland Valley	388	265,227	105,248	385,963	175,534	113,677	4,029	187,416	26,704	507,361	131.45	—121,397	7,183	—128,587	—171,623
Mineral Range	101	50,572	302	53,087	16,186	18,222	299	29,128	1,211	65,046	122.52	—11,959	4,100	—16,081	9,861
Minneapolis & St. Louis	1,646	1,030,992	237,002	1,328,867	388,741	365,630	19,692	801,416	40,301	1,615,994	121.61	—287,127	66,768	353,946	468,944
Minneapolis, St. Paul & Sault Ste. Marie	4,243	2,950,659	990,477	4,304,954	878,020	610,769	43,456	1,644,213	88,280	3,304,690	76.76	1,000,264	279,084	721,364	.....
Minnesota & International	194	58,776	35,267	100,443	28,031	18,732	573	46,608	3,748	97,690	47.47	2,753	6,054	—3,303	—3,506
Mississippi Central	164	57,711	28,905	90,848	58,761	14,605	2,481	38,069	9,451	123,448	135.88	—32,600	5,000	—37,600	—37,417
Missouri & North Arkansas	364	113,376	60,193	200,196	62,143	36,461	2,505	66,666	7,940	175,715	87.77	24,482	5,893	18,589	63,124
Missouri, Kansas & Texas	1,715	2,498,981	771,973	3,560,488	777,793	979,972	40,379	1,356,962	108,091	3,281,233	92.15	279,255	122,799	156,496	—376,999
Missouri, Kansas & Texas of Texas	1,739	1,150,046	742,434	2,119,584	771,123	418,971	35,930	1,293,784	100,618	2,640,452	124.57	—520,867	59,583	—580,675	—516,553
Kansas, Oklahoma & Gulf	329	173,060	27,860	211,065	49,047	46,992	3,336	96,133	8,712	204,371	96.82	6,694	8,000	—1,326	74,808
Missouri Pacific	7,299	6,487,154	2,105,947	9,262,786	1,840,890	2,172,760	159,240	3,820,736	260,177	8,306,727	89.67	956,058	279,294	675,804	—263,429
Mobile & Ohio	1,165	1,132,970	212,409	1,437,165	451,550	496,320	38,209	765,369	53,032	1,805,679	125.64	368,513	59,905	428,428	494,636
Monongahela	106	291,730	30,178	329,386	96,015	41,868	72,272	107,210	1,350	256,966	78.01	72,421	6,293	66,128	—74,486
Monongahela Connecting	7	.....	.....	254,661	34,144	34,926	562	119,605	6,608	195,845	76.90	58,817	13,371	45,446	53,876
Montour	56	143,477	1,185	150,693	45,140	53,158	1,137	40,699	7,403	149,896	99.47	707	2,613	—1,817	1,649
Morgan's La. & Texas R.R. & S.S. Co.	400	483,743	198,431	739,313	255,030	158,333	10,091	298,239	28,345	752,651	101.80	—13,338	42,938	—56,486	—178,557
Nashville, Chattanooga & St. Louis	1,247	1,416,519	503,651	2,059,015	626,081	734,713	73,614	1,285,933	78,234	2,803,670	136.17	—744,655	42,500	—787,212	—960,372
Nevada Northern	165	150,930	11,318	168,954	30,834	23,013	883	35,701	5,107	95,657	56.61	73,308	8,379	64,947	39,754
New Jersey & New York	47	12,894	101,436	119,890	16,125	16,394	756	60,957	2,180	96,411	80.42	23,479	1,927	21,552	5,865
New Orleans Great Northern	284	146,384	67,057	222,945	55,510	43,775	5,572	88,544	13,803	207,085	92.89	15,860	12,188	3,696	—50,501
New York Central	6,069	19,197,547	9,501,438	32,579,679	5,303,689	11,523,866	346,422	14,978,283	863,513	33,570,941	103.04	—991,262	997,345	—1,990,036	—9,044,560
New York, Chicago & St. Louis	574	3,293,741	151,999	3,530,281	280,066	359,831	47,383	924,735	66,339	1,692,090	67.13	828,190	135,000	693,089	351,114
New York, New Haven & Hartford	1,981	4,740,713	4,924,886	11,011,890	2,506,400	3,276,732	94,464	7,679,434	485,142	14,263,861	129.53	—3,251,970	491,035	—3,743,731	5,460,185
New York, Ontario & Western	569	649,35	706,817	1,538,190	170,255	267,783	11,649	525,154	26,709	1,001,551	65.11	536,639	61,000	475,539	484,282
New York, Philadelphia & Norfolk	121	618,831	135,200	810,422	66,897	202,506	6,801	416,340	13,781	727,084	89.71	83,337	25,101	58,236	—93,389
New York, Susquehanna & Western	135	288,992	73,224	398,781	78,903	82,656	2,475	316,911	8,524	489,469	122.74	—90,688	18,674	—109,513	—102,190
Newburgh & South Shore	7	.....	.....	137,446	25,085	32,677	.....	84,689	4,009	147,039	106.99	—9,613	11,846	—21,459	10,585
Norfolk & Western	2,199	5,950,811	930,111	7,231,137	1,070,576	2,727,587	61,264	2,430,916	179,471	7,483,034	103.48	—251,897	425,000	—677,127	1,626,935
Norfolk Southern	944	365,563	215,162	620,032	174,915	145,296	14,364	318,179	31,506	684,535	110.40	—64,503	26,876	—91,357	—35,519
Northern Pacific	6,655	5,714,165	2,129,513	8,676,446	1,537,926	1,636,773	88,265	3,207,771	231,367	6,808,957	78.47	1,867,489	1,055,531	810,235	—997,995
Northwestern Pacific	536	373,451	349,584	814,138	106,847	77,250	7,276	290,573	14,424	499,019	61.30	315,119	30,571	284,507	53,436
Oregon Short Line	2,358	2,426,395	745,081	3,479,016	799,133	694,785	39,495	1,206,726	145,487	2,983,725	85.76	495,290	458,386	36,904	—1,043,850
Oregon-Washington R.R. & Nav. Co.	2,223	1,770,201	717,359	2,741,668	710,939	514,597	54,830	1,189,220	147,118	2,723,731	99.34	17,938	224,795	—206,863	—791,530

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY, 1920 (CONTINUED)

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Panhandle & Santa Fe	848	$539,934	$220,176	$800,860	$178,819	$221,398	$3,211	$293,785	$16,594	$713,807	89.13	$87,053	$19,041	$68,012	—$32,958
Kansas City Southern	779	1,217,163	269,955	1,586,722	281,003	390,823	36,008	705,777	84,951	1,498,138	94.46	88,585	73,300	15,154	266,386
Pennsylvania	7,259	34,168,953	12,823,790	51,209,821	7,692,509	14,377,396	422,260	23,579,326	1,195,575	48,152,575	94.02	3,057,246	1,582,226	1,469,616	—3,915,227
Peoria & Pekin Union	19	19,161	3,550	122,857	20,069	32,771	159	87,079	5,410	145,488	118.42	22,631	9,500	—32,131	14,744
Pere Marquette	2,236	2,631,381	843,630	3,803,826	542,014	747,537	42,717	1,412,772	104,742	2,852,932	75.00	950,954	61,708	889,206	—179,493
Philadelphia, Bethlehem & New England	10	.....	.....	118,121	13,974	13,834	475	75,867	1,316	105,466	89.28	12,666	1,335	11,321	12,385
Perkiomen Railroad	41	80,757	15,471	99,714	9,032	4,931	13	41,517	268	55,780	55.93	43,933	3,449	40,484	—17,956
Philadelphia & Reading	1,126	5,465,723	1,028,404	6,907,627	888,527	1,846,409	55,859	3,477,463	164,365	6,454,322	93.43	453,305	192,496	260,545	—1,321,684
Pittsburgh & Lake Erie	224	1,904,424	310,678	2,398,131	766,807	1,230,160	20,696	1,086,200	69,163	3,175,565	132.41	—777,434	65,571	—843,005	1,613,378
Pittsburgh & Shawmut	103	135,590	4,891	142,314	33,044	29,126	1,356	52,260	13,340	129,125	90.73	13,189	125	13,064	36,302
Pittsburgh & West Virginia	63	193,522	10,793	225,813	83,241	39,451	1,174	73,807	9,036	220,180	9,750	5,633	14,086	—8,453	54,296
Pittsburgh, Shawmut & Northern	209	114,218	5,991	122,811	33,702	56,025	1,123	61,874	5,369	158,094	128.72	—35,283	1,869	—37,151	—31,349
Port Reading	21	88,882	.....	108,666	20,511	5,442	18	52,174	779	78,923	72.62	29,742	12,238	17,504	35,078
Quincy, Omaha & Kansas City	255	60,170	25,762	97,328	69,930	21,019	732	58,812	2,190	152,618	156.80	—55,290	3,822	—59,113	—34,355
Richmond, Fredericksburg & Potomac	117	475,697	293,020	912,958	90,214	136,363	5,573	346,577	28,237	622,695	68.21	290,263	32,150	258,109	—282,414
Rutland	415	243,443	158,733	489,274	98,046	158,083	6,152	243,368	15,298	523,389	106.97	—34,115	18,935	—53,051	—106,123
St. Joseph & Grand Island	258	187,171	36,602	241,492	151,457	50,093	3,307	147,836	13,777	367,790	152.29	—126,298	13,089	—139,387	—159,636
St. Louis Merchants' Bridge Terminal	9	.....	.....	356,299	52,109	50,699	954	280,579	8,303	392,644	110.20	—36,345	18,949	—55,294	—65,963
St. Louis-San Francisco	4,757	4,671,076	2,267,371	7,404,411	1,931,490	2,048,866	86,804	4,051,055	298,257	8,402,412	113.47	—998,000	226,333	—1,224,587	—2,903,644
St. Louis Southwestern	968	1,515,068	213,765	1,797,332	255,643	279,457	50,629	507,580	56,166	1,155,393	64.28	641,938	87,028	554,910	380,671
St. Louis Southwestern of Texas	807	513,700	153,666	721,939	319,166	201,688	21,138	412,674	42,027	996,157	137.98	—274,217	23,000	—297,219	—186,770
St. Louis Transfer Ry.	6	.....	.....	101,224	8,740	12,892	195	58,534	2,339	82,698	81.70	—18,526	273	18,253	—27,682
San Antonio & Aransas Pass	737	341,230	133,749	508,513	89,748	99,168	7,883	238,313	18,470	453,465	89.17	55,048	13,750	41,298	13,842
San Antonio, Uvalde & Gulf	317	74,923	45,156	129,081	34,770	22,469	2,711	148,104	8,090	216,145	167.44	—87,064	2,355	—89,444	—96,023
Seaboard Air Line	3,563	2,318,473	919,570	3,620,263	987,305	1,207,150	141,807	2,132,379	162,702	4,661,255	128.75	—1,040,992	135,000	—1,176,312	—1,771,056
Southern	6,971	8,125,554	3,374,801	12,584,800	1,720,488	2,603,432	185,349	6,047,330	365,262	11,043,406	87.75	1,541,394	426,731	1,112,233	—1,076,294
Alabama Great Southern	313	767,853	235,785	1,066,485	101,622	163,612	20,645	382,671	32,046	710,378	66.61	356,106	35,455	320,649	176,450
Cinc., New Orleans, Texas & Pacific	338	1,391,717	378,613	1,875,615	185,569	391,112	26,429	635,300	48,812	1,294,721	69.02	580,894	61,123	519,591	607,249
Northern Alabama	110	106,037	17,044	125,646	44,798	9,531	1,542	65,895	3,368	125,134	99.59	512	4,732	—4,219	15,394
Georgia Southern & Florida	402	226,236	117,211	386,863	86,067	112,066	7,620	245,150	14,175	469,934	121.47	—83,071	19,336	—102,407	—142,651
New Orleans & Northeastern	267	492,855	116,142	664,728	101,366	104,933	11,100	278,612	22,779	524,216	78.86	140,512	43,619	96,881	—9,651
Southern in Mississippi	278	64,450	48,597	125,645	85,057	28,403	3,018	87,989	6,735	211,201	168.09	—85,556	9,800	—95,356	—92,949
Southern Pacific	7,105	10,810,234	5,072,674	17,781,187	2,304,175	3,092,175	192,787	6,689,576	445,056	13,124,613	73.81	4,656,574	829,073	3,826,339	579,351
Southern Pacific Steamship Line	...	192,037	45,504	253,567	21,865	229,089	14,319	445,000	29,336	739,609	291.68	—486,042	18,800	—504,842	31,971
South Buffalo	11	63,568	.....	129,974	7,535	14,393	426	101,652	5,287	129,293	99.47	680	4,000	—3,320	—8,933
Spokane International	165	104,619	21,452	130,615	30,478	7,245	2,128	34,703	4,916	79,418	60.80	51,197	5,261	45,936	6,449
Spokane, Portland & Seattle	549	473,983	273,605	813,495	281,903	112,461	7,871	245,334	23,973	685,972	84.32	127,523	117,548	8,178	—250,156
Staten Island Rapid Transit	23	82,602	142,270	250,192	55,446	27,893	1,175	117,159	12,387	214,061	85.55	36,131	15,000	21,007	—15,617
Tennessee Central	292	154,161	62,484	229,856	51,313	48,966	4,550	119,574	10,467	234,797	102.15	—4,941	5,709	—10,654	19,813
Terminal R.R. Association of St. Louis	36	.....	.....	383,508	82,759	52,341	998	177,331	7,843	325,433	84.85	58,075	40,980	17,095	—64,391
Texarkana & Ft. Smith	93	115,811	24,122	155,584	26,042	19,551	4,965	71,980	9,343	131,791	84.70	23,793	80.70	15,690	34,455
Texas & New Orleans	469	585,154	186,694	876,129	222,004	226,666	11,325	294,206	22,166	798,212	91.73	71,916	22,332	49,518	—107,741
Texas & Pacific	1,946	2,083,240	992,124	3,323,116	606,842	665,236	32,879	1,342,275	102,338	2,788,320	83.91	534,796	89,150	445,261	—202,243
Toledo & Ohio Central	503	965,773	77,407	1,117,140	251,083	416,545	8,251	544,944	24,604	1,248,982	111.81	—131,841	45,179	—177,025	—226,915
Toledo, Peoria & Western	247	95,798	51,298	159,890	33,329	37,297	2,555	103,584	9,073	185,837	116.22	—25,947	8,500	—34,447	—13,743
Toledo, St. Louis & Western	454	920,793	40,703	1,003,643	233,104	221,462	18,010	396,072	18,777	887,426	88.42	116,217	31,000	85,217	28,439
Trinity & Brazos Valley	368	101,425	27,442	135,238	35,363	44,039	11,925	63,009	11,088	155,098	114.68	—19,860	7,210	—27,070	35,872
Ulster & Delaware	128	68,333	52,709	147,027	21,096	21,723	3,057	118,206	5,257	169,913	155.65	—22,886	5,000	—27,886	—18,027
Union R.R. (of Penna.)	45	.....	.....	854,332	91,610	298,589	283	486,023	8,272	884,777	103.56	—30,445	11,105	—41,549	—101,402
Union Pacific	3,614	7,047,045	2,127,447	10,161,766	2,502,430	2,347,968	127,350	3,356,960	359,162	9,041,937	88.97	1,119,830	888,430	231,385	—2,611,826
Utah Ry.	98	153,722	908	155,183	27,655	28,500	179	35,648	3,147	95,128	61.30	60,055	6,173	53,882	15,431
Vicksburg, Shreveport & Pacific	171	205,683	108,910	340,187	88,126	69,742	6,744	117,780	11,443	297,492	87.44	42,695	14,036	28,651	—33,922
Virginian	523	1,344,272	81,811	1,579,173	208,791	282,775	16,543	599,902	37,335	1,136,095	71.94	443,078	64,196	378,881	108,142
Wabash	2,472	3,530,509	1,043,836	5,006,889	991,775	1,369,812	122,598	2,728,935	187,062	5,438,161	108.61	—431,271	130,880	—562,246	—1,028,305
West Jersey & Seashore	361	319,800	1,279,800	1,690,919	241,127	263,156	13,027	663,677	24,193	1,214,838	11.84	476,081	51,648	424,419	104,634
Western Maryland	797	1,350,662	137,628	1,604,633	393,743	510,136	52,694	743,672	49,537	1,768,186	110.19	—163,553	50,000	—213,553	—394,625
Western Pacific	1,011	1,069,939	286,011	1,434,443	208,299	176,363	26,863	478,013	33,115	954,263	66.53	480,180	62,669	417,478	157,178
Western Ry. of Alabama	133	111,071	83,347	213,019	41,299	54,315	6,782	97,449	10,327	214,227	100.56	—1,208	7,175	—8,383	—46,134
Wheeling & Lake Erie	511	1,406,271	81,309	1,631,324	223,136	341,537	14,650	694,550	36,291	1,314,179	8,056	317,145	69,418	247,727	—110,424
Wichita Falls & Northwestern	328	143,844	48,812	212,552	68,954	21,614	613	108,916	8,920	209,016	98.33	3,566	10,742	—7,223	4,704
Wichita Valley	256	73,524	41,544	122,781	40,088	17,998	.....	49,861	1,293	109,240	88.97	13,542	5,707	7,832	—26,044
Yazoo & Mississippi Valley	1,382	1,923,657	482,504	2,534,078	597,271	589,429	26,371	964,632	59,695	2,246,511	88.65	287,566	82,146	204,732	—268,564
SEVEN MONTHS OF CALENDAR YEAR 1920															
Alabama & Vicksburg	141	$1,189,387	$476,439	$1,844,398	$295,888	$352,189	$37,352	$670,890	$69,438	$1,446,970	78.45	$397,428	$96,340	$301,009	$237,574
Ann Arbor	301	2,222,560	383,610	2,818,343	380,300	604,562	48,612	1,359,741	101,867	2,495,280	88.53	323,063	120,900	202,098	4,646
Arizona Eastern	379	1,781,665	368,312	2,348,207	468,965	345,400	22,724	733,612	127,182	1,718,212	73.17	629,995	184,712	445,152	46,634
Atchison, Topeka & Santa Fe	8,721	75,659,329	29,674,459	117,553,023	17,154,674	27,351,166	1,273,945	40,665,325	2,086,163	88,494,987	75.28	29,058,035	5,997,651	23,054,309	6,589,902
Atlanta & West Point	93	865,396	622,841	1,720,288	227,072	304,858	44,531	665,855	68,299	1,339,039	77.83	381,249	56,583	324,665	—12,741

REVENUES AND EXPENSES OF RAILWAYS

SEVEN MONTHS OF CALENDAR YEAR 1920

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Atlanta, Birmingham & Atlantic	639	$2,429,012	$550,827	$3,299,360	$751,503	$934,682	$128,740	$1,721,509	$127,707	$3,664,653	111.07	—$365,293	$114,691	—$481,029	$360,344
Atlantic City	177	737,647	1,660,124	2,536,393	349,786	300,034	16,876	1,366,552	16,783	2,044,720	80.61	491,613	98,703	392,949	—140,563
Atlantic Coast Line	4,891	27,720,974	10,890,311	42,636,535	6,422,917	9,001,568	500,455	20,040,635	937,338	37,196,220	87.22	5,446,315	1,900,000	3,537,446	—1,191,554
Atlantic & St. Lawrence	166	1,236,817	250,688	1,654,489	450,471	422,196	19,225	1,072,212	83,841	2,102,520	127.07	—448,032	110,905	—558,992	44,187
Baltimore & Ohio Chicago Terminal	90	.....	35	1,155,615	331,731	400,453	8,236	963,716	74,637	1,812,304	156.82	—656,689	208,929	—865,625	—175,618
Baltimore & Ohio	5,153	92,261,527	16,221,583	118,859,144	17,920,162	37,557,701	1,484,764	58,425,605	3,340,192	119,622,662	100.64	—763,518	3,863,998	—4,657,877	—3,436,531
Baltimore, Chesapeake & Atlantic	87	507,253	237,112	806,133	77,293	343,018	7,846	534,439	26,451	989,047	122.69	—182,914	25,900	—208,814	42,004
Bangor & Aroostook	658	2,813,834	571,302	3,649,292	848,011	866,891	27,925	1,438,674	126,933	3,361,662	92.11	287,636	183,614	104,015	41,308
Belt Railway of Chicago	31	.....	.....	2,242,997	277,901	419,518	4,287	1,403,221	56,063	2,160,990	96.34	82,007	156,540	—74,532	—7,902
Bessemer & Lake Erie	225	6,050,145	267,957	6,531,285	843,451	2,271,503	93,035	2,319,697	199,158	5,772,456	88.38	758,829	106,800	652,003	—884,494
Bingham & Garfield	36	1,052,866	11,605	1,080,372	226,328	252,239	12,155	244,693	31,111	773,409	71.59	306,963	51,975	254,981	424,188
Birmingham Southern	31	247,387	.....	343,269	31,582	55,071	6,875	210,206	24,704	328,439	95.67	14,830	12,280	2,521	—72,189
Boston & Maine	2,291	27,854,248	1,283,838	45,911,303	7,086,845	10,075,007	314,929	26,582,238	1,523,755	45,813,055	99.78	98,248	1,638,361	—1,587,793	—2,545,113
Brooklyn Eastern District Terminal	9	538,110	.....	595,667	121,640	214,369	1,235	399,841	29,812	766,898	128.74	—171,231	43,592	—214,823	35,856
Buffalo & Susquehanna R. R. Corp.	296	1,506,769	48,153	1,587,879	351,182	689,176	15,892	585,246	70,994	1,712,482	107.84	—174,604	38,900	—163,505	25,044
Buffalo, Rochester & Pittsburgh	589	9,309,044	992,663	10,645,269	1,843,914	3,914,510	110,955	5,165,372	280,903	11,330,460	106.44	—685,190	225,000	—910,843	—49,993
Canadian Pacific (Lines in Maine)	233	1,269,040	375,032	1,727,731	378,254	438,224	21,068	1,120,804	24,730	1,983,079	114.77	—255,347	85,400	—340,748	—62,959
Carolina, Clinchfield & Ohio	282	3,478,744	259,698	3,846,752	507,399	950,493	85,741	1,501,976	115,562	2,859,669	74.33	987,082	149,333	837,478	198,507
Central New England	301	3,173,162	170,040	3,537,065	1,160,117	1,009,247	22,895	2,394,475	115,625	4,707,993	133.10	7,170,928	127,613	—1,298,599	—1,401,748
Central of Georgia	1,924	8,975,329	3,751,035	14,528,772	2,635,810	3,243,171	332,704	6,692,666	526,824	13,464,580	92.67	1,064,191	552,489	511,338	—395,101
Central Railway of New Jersey	686	18,589,114	5,166,123	25,874,136	3,062,319	7,881,609	189,039	13,563,154	647,854	25,521,883	98.63	352,254	1,859,043	—1,506,920	—3,230,265
Central Vermont	413	2,593,403	636,078	3,644,828	607,245	1,087,624	62,988	2,585,581	132,699	4,491,375	133.22	—846,547	121,800	—968,414	—368,475
Charleston & Western Carolina	342	1,514,873	367,368	1,996,587	421,422	430,541	34,954	1,072,257	35,195	1,994,371	99.88	2,216	81,375	—79,279	—181,716
Chesapeake & Ohio	2,518	36,453,238	6,025,377	46,145,621	6,611,199	13,122,675	378,732	19,360,040	991,852	40,681,519	88.16	5,464,101	1,648,670	3,814,326	—3,369,099
Chicago & Alton	1,050	10,671,849	3,619,687	15,969,720	2,432,072	4,354,763	233,724	7,448,768	433,691	14,987,613	93.84	982,107	465,945	514,995	—338,244
Chicago & Eastern Illinois	1,131	10,869,659	2,902,746	15,804,185	2,129,564	5,363,654	158,702	7,172,486	451,656	15,363,865	97.21	440,320	670,000	—232,249	—562,152
Chicago, Det. & Canada Gr. Trk. Jct.	62	657,748	128,803	940,688	121,644	187,608	10,122	531,823	25,380	876,774	93.21	63,913	31,127	32,765	—378,904
Chicago & Erie	269	5,422,708	490,119	6,566,525	759,533	1,202,471	98,827	3,481,839	210,465	5,776,155	87.96	790,370	280,454	509,510	—38,310
Chicago & North Western	8,296	56,336,242	20,520,441	86,940,835	14,250,371	19,658,809	687,704	41,694,766	2,151,195	79,249,395	91.15	7,691,440	4,750,621	2,935,487	—4,380,539
Chicago, Burlington & Quincy	9,371	67,595,356	19,471,839	98,638,678	17,753,568	21,834,969	890,024	42,917,764	2,650,467	86,466,340	87.65	12,178,337	4,736,626	7,424,382	—5,168,417
Chicago, Great Western	1,496	8,395,232	3,098,616	12,950,982	3,163,512	3,568,975	227,531	6,319,771	375,657	13,776,025	106.37	—825,043	470,101	—1,293,719	—1,970,116
Chicago, Indianapolis & Louisville	654	5,606,412	1,792,857	8,359,996	1,024,815	2,586,304	174,125	3,705,576	211,832	7,808,336	93.41	551,660	336,917	214,405	—596,495
Chicago Junction	12	.....	.....	1,780,582	365,318	426,957	1,794	1,953,492	66,663	2,814,223	158.05	—1,033,642	22,129	—1,055,771	—557,125
Chicago, Milwaukee & St. Paul	10,629	62,183,143	17,154,721	91,084,991	15,336,155	22,171,116	781,437	43,268,549	2,698,373	84,848,999	93.15	6,236,090	4,592,050	1,611,434	1,647,768
Chicago, Peoria & St. Louis	249	1,127,198	184,131	1,411,153	253,892	470,676	26,816	707,732	67,509	1,526,555	108.18	—115,403	47,700	—163,118	361,239
Chicago, Rock Island & Gulf	461	2,694,291	695,874	3,717,820	555,012	564,174	57,274	1,484,236	91,755	2,760,775	74.26	957,045	112,201	844,658	677,327
Chicago, Rock Island & Pacific	7,626	48,508,717	18,403,865	74,618,833	14,389,856	19,529,584	839,110	34,229,129	1,759,749	71,082,577	96.03	2,936,255	3,069,803	—138,952	—4,681,318
Chicago, St. Paul, Minn. & Omaha	1,749	11,099,997	4,603,294	17,314,170	2,405,236	3,204,980	172,508	7,935,842	511,578	14,326,601	82.74	2,987,570	910,838	2,072,720	596,975
Chicago, Terre Haute & S. E.	374	2,673,942	168,261	2,927,430	454,043	1,062,564	32,589	1,307,362	80,283	2,948,508	100.72	—21,079	133,500	—154,579	—134,733
Cincinnati, Indianapolis & Western	321	1,815,059	382,450	2,428,752	391,652	871,996	55,225	1,112,666	121,066	2,559,827	105.39	—131,075	91,795	—222,875	93,278
Cincinnati Northern	249	1,622,377	137,142	1,858,820	372,561	439,244	23,631	722,857	40,054	1,598,325	85.98	260,495	71,810	188,677	—128,163
Cleveland, Cinc., Chicago & St. Louis	2,408	32,027,089	10,561,263	47,850,283	6,328,901	11,184,851	664,279	20,488,559	1,080,986	40,020,693	83.63	7,829,590	1,532,803	6,292,625	—405,975
Colorado & Wyoming	43	140,134	6,466	540,826	96,792	127,756	2,040	283,562	28,800	538,950	99.65	1,816	35,000	—33,124	—135,083
Copper Range	142	375,922	84,334	491,401	152,270	118,632	13,339	257,095	19,937	561,273	114.21	—69,872	44,522	—114,393	—73,664
Colorado & Southwestern	1,099	9,134,152	1,539,204	7,990,826	1,438,039	2,018,125	76,989	2,846,626	295,841	6,738,951	86.83	1,251,876	400,937	848,985	122,091
Delaware & Hudson	858	19,037,808	1,828,433	22,170,928	2,603,954	6,845,354	192,904	11,542,810	980,851	22,335,948	100.74	—165,020	562,642	—728,107	—1,789,914
Delaware, Lackawanna & Western	956	27,558,721	7,151,648	40,201,807	4,951,354	9,575,092	532,061	20,177,600	975,164	36,826,385	91.61	3,375,422	2,522,917	851,330	—6,163,916
Denver & Rio Grande	2,585	14,554,374	4,005,584	20,271,759	2,996,539	4,883,921	249,122	7,213,785	535,492	16,283,789	80.33	3,987,970	897,000	3,075,586	925,275
Denver & Salt Lake	255	1,117,109	235,597	1,431,165	485,999	542,572	5,899	842,470	56,659	1,933,600	135.11	—502,434	69,332	—571,837	49,599
Detroit & Mackinac	376	713,507	244,065	1,062,283	196,072	303,982	18,324	535,539	50,543	1,103,705	103.89	—41,423	94,726	—136,149	—22,856
Detroit, Grand Haven & Milwaukee	195	1,795,941	293,500	2,420,636	409,606	567,631	38,030	1,634,209	88,076	2,738,599	113.13	—317,963	23,024	341,550	—625,066
Detroit, Toledo & Ironton	454	2,388,977	100,924	2,669,220	651,593	597,388	40,684	1,374,395	147,683	2,811,742	105.33	—140,507	62,153	—203,498	228,666
Duluth & Iron Range	298	4,760,011	161,320	5,337,678	766,517	795,685	6,337	1,385,771	121,958	3,080,493	57.71	2,257,186	278,688	1,977,949	81,555
Duluth, Missabe & N.	406	8,106,604	349,534	9,274,923	1,334,412	1,072,341	19,263	2,066,448	147,644	4,652,630	50.16	4,622,292	483,482	4,138,776	—2,940,262
Duluth, Winnipeg & Pac	178	1,148,735	189,116	1,370,307	233,419	273,224	24,204	652,881	60,250	1,243,983	90.78	126,323	73,536	52,727	11,626
Duluth, South Shore & A	614	1,935,049	701,719	2,999,401	617,860	553,236	35,622	1,490,914	75,595	2,815,071	93.85	184,330	166,000	18,085	7,951
East St. Louis Connecting	3	.....	.....	722,197	94,809	204,108	1,947	563,434	26,086	890,384	123.28	—168,187	18,064	—186,251	—102,209
El Paso & Southwestern Co	1,037	6,022,421	1,547,111	8,134,069	1,396,643	1,500,249	106,718	2,209,072	275,366	5,550,361	68.24	2,583,708	622,904	1,960,182	54,621
Elgin, Joliet & E.	853	8,125,228	73	9,221,341	1,007,627	2,241,037	36,143	3,677,362	187,132	7,146,619	77.50	2,074,722	245,698	1,828,615	—972,371
Erie	1,989	41,901,090	7,574,331	55,447,728	8,229,633	19,493,203	650,293	30,093,717	1,671,757	60,616,824	109.32	—5,169,096	1,729,401	—6,920,607	—4,946,016
Florida East Coast	764	4,443,638	2,486,449	8,080,694	938,501	1,246,460	60,870	2,922,905	174,335	5,436,576	67.27	2,644,118	316,499	2,325,050	1,650,499
Fonda, Johnstown & Gloversville	88	270,664	495,974	804,050	91,268	77,080	3,499	284,598	64,597	521,042	64.81	283,008	35,175	247,833	53,225
Ft. Smith & Western	253	712,035	212,144	996,220	245,933	248,573	29,900	426,720	53,497	1,013,114	103.51	—16,894	35,000	—52,454	—90,914
Ft. Worth & D. City	454	4,167,399	2,250,925	6,814,017	1,115,191	1,564,533	45,426	2,997,605	225,129	5,977,154	87.72	836,863	159,300	676,945	—957,254
Galveston, Harr. & S. A.	1,383	9,255,530	3,174,645	13,563,137	4,361,322	3,407,980	224,116	5,157,738	439,256	13,741,888	101.31	—178,751	581,197	—771,883	—2,739,026
Georgia	328	2,451,965	967,011	3,712,176	497,881	813,611	87,634	2,050,571	136,750	3,587,951	96.65	124,226	41,650	82,555	—533,663
Georgia & Florida	405	544,772	172,239	798,025	436,250	174,804	35,556	579,283	58,988	1,284,882	161.07	—486,857	43,881	—530,986	—315,146
Grand Trunk Western	350	6,219,679	1,494,782	8,458,920	1,113,206	2,447,233	129,906	4,302,549	300,715	8,343,486	98.63	115,433	335,695	—220,183	—1,723,130
Great Northern	8,175	44,570,527	11,051,914	65,021,221	14,571,591	12,960,352	594,753	26,983,674	1,422,336	57,444,728	88.34	7,576,493	5,396,846	2,167,685	—3,630,388

REVENUES AND EXPENSES OF RAILWAYS

SEVEN MONTHS OF CALENDAR YEAR 1920 (CONTINUED)

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Maintenance of: Way and structures.	Equipment.	Operating expenses: Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Green Bay & Western	252	$503,330	$128,212	$684,121	$152,091	$165,814	$8,557	$308,727	$19,639	$654,789	95.71	$29,332	$47,992	—$18,661	—$24,249
Gulf & Ship Island	307	1,140,626	334,859	1,625,318	457,710	382,324	37,149	664,706	84,489	1,629,505	100.26	—4,188	133,242	—137,613	—65,648
Gulf, Colorado & Santa Fe	1,916	9,300,401	3,488,336	14,043,839	3,739,640	3,000,013	166,055	6,136,829	370,318	13,388,103	95.33	655,735	606,914	47,472	—543,699
Gulf, Mobile & Northern	469	1,526,160	387,017	2,081,435	731,740	512,104	70,903	928,369	98,701	2,341,818	112.51	—266,383	93,876	—354,796	—352,214
Hocking Valley	350	6,748,437	720,405	7,972,581	1,027,097	3,127,249	64,875	3,204,761	231,543	7,655,437	96.02	317,144	484,204	—167,060	—625,405
Houston & Texas Central	887	4,025,487	1,625,509	6,247,078	1,677,535	1,283,485	94,516	2,582,169	176,437	5,813,258	93.05	433,820	306,818	123,414	—351,989
Houston East & West Texas	190	1,157,774	371,393	1,652,667	772,327	238,228	19,917	744,266	40,876	1,815,625	109.86	—162,958	66,843	—231,539	—431,632
Illinois Central	4,799	55,235,308	14,737,304	77,426,153	13,966,915	20,764,674	677,774	32,899,133	1,740,696	70,663,902	91.27	6,762,251	4,156,273	2,590,213	—169,273
Illinois Terminal	24	531,676	.....	563,699	27,061	62,495	5,008	135,640	34,446	264,651	46.94	299,048	7,982	291,956	—11,673
Indiana Harbor Belt	120	.....	.....	4,420,238	824,673	1,370,858	17,180	3,391,112	143,269	5,747,092	130.01	—1,326,855	74,928	—1,401,959	—1,124,716
International & Great Northern	1,159	7,900,180	1,896,789	9,837,676	2,119,139	2,516,675	136,643	5,236,380	342,569	10,385,261	105.56	—547,585	220,003	—77,172	—90,585
Kanawha & Michigan	176	2,245,567	357,941	2,734,454	546,441	1,113,980	19,261	1,128,564	94,668	2,902,915	106.16	—168,461	176,056	—344,521	—336,426
Kansas City, Mexico & Orient	272	700,567	125,805	890,944	305,856	306,732	23,354	494,199	64,515	1,194,657	134.08	—303,712	53,915	—357,676	29,709
Kansas City, Mexico & Orient of Texas	465	741,936	152,135	975,965	447,467	325,734	23,113	550,908	62,806	1,410,027	144.47	—434,062	45,269	—479,660	—32,329
Kansas City Terminal	27	.....	.....	853,276	138,334	211,865	.....	458,450	18,118	843,505	98.85	9,771	198,371	—188,605	—180,952
Kansas City Southern	779	7,763,521	1,665,547	10,290,015	1,613,326	2,298,469	209,829	4,031,261	423,783	8,578,461	83.36	1,711,554	470,317	1,239,717	655,032
Lake Erie & Western	741	5,262,360	446,664	6,098,296	910,878	2,201,755	109,785	2,742,184	182,116	6,144,466	100.76	—46,170	276,543	—323,240	53,926
Lake Superior & Ishpeming	34	718,630	1,690	811,796	133,599	124,495	1,527	176,378	18,897	454,896	56.03	356,900	33,706	323,194	240,453
Lake Terminal	12	.....	1,470	731,543	117,756	194,324	.....	499,472	403	811,955	110.99	—80,412	40,972	—121,384	—57,268
Lehigh & Hudson River	96	1,341,761	25,372	1,461,110	190,484	304,839	11,716	754,460	51,971	1,313,467	89.89	147,642	60,551	87,962	—119,942
Lehigh & New England	229	2,402,113	14,462	2,520,941	331,196	540,354	36,292	926,095	89,311	1,921,006	76.20	599,935	96,385	503,551	207,765
Lehigh Valley	1,435	30,233,176	4,051,917	37,577,071	6,319,132	11,687,456	447,203	22,679,342	899,353	42,210,186	112.32	—4,633,116	1,382,000	—6,016,264	—7,520,649
Long Island	398	3,542,163	8,654,657	13,667,891	1,994,330	2,835,137	105,197	7,629,670	383,263	13,049,281	95.47	618,610	718,502	—102,095	—2,221,994
Los Angeles & Salt Lake	1,168	6,945,637	3,190,571	11,209,025	1,419,357	2,123,571	181,346	4,038,550	261,716	8,377,870	74.74	2,831,154	563,860	2,266,482	637,801
Louisiana & Arkansas	302	1,884,275	350,159	2,346,247	465,941	321,232	31,433	774,339	55,639	1,648,483	70.26	697,764	120,535	577,114	699,144
Louisiana Ry. & Navigation Co.	343	1,853,440	296,877	2,287,678	590,606	399,813	40,656	1,036,506	78,658	2,146,239	93.81	141,439	98,000	43,318	149,644
Louisiana Western	207	1,996,473	754,134	2,959,067	659,668	531,344	44,996	142,426	95,595	2,092,050	70.70	866,957	158,420	707,557	—89,968
Louisville & Nashville	5,040	48,940,679	14,151,297	68,817,535	12,473,043	18,892,334	1,172,341	31,712,862	1,668,439	66,271,219	96.29	2,546,316	2,061,494	481,705	—4,605,822
Louisville, Henderson & St. Louis	199	1,154,773	410,087	1,714,821	415,841	218,725	33,906	597,444	58,894	1,324,810	77.25	390,011	22,928	367,082	71,731
Maine Central	1,216	7,186,658	2,743,893	10,909,889	2,269,759	2,767,209	87,217	6,620,290	340,882	12,102,214	113.00	—1,192,325	644,191	—1,836,680	—926,562
Maryland, Delaware & Virginia	82	405,054	202,629	643,860	69,261	226,713	4,787	494,690	16,917	812,368	126.17	—168,507	14,000	—182,562	90,587
Michigan Central	1,862	28,555,934	12,277,226	46,257,451	6,599,646	12,444,497	504,045	21,181,648	935,865	42,453,154	91.77	3,804,297	1,732,500	2,067,163	—6,360,208
Midland Valley	388	1,730,521	692,620	2,552,708	667,365	518,112	23,894	1,023,815	117,631	2,350,817	92.09	201,890	50,284	151,239	—229,297
Mineral Range	101	355,461	2,103	371,876	103,534	131,205	2,068	206,814	7,739	451,360	121.37	- 79,484	26,200	—105,706	—29,545
Minneapolis & St. Louis	1,646	6,803,347	1,542,454	9,009,815	1,661,285	2,411,088	120,272	4,723,550	254,407	9,172,929	101.81	—163,114	411,447	—575,632	311,266
Minneapolis, St. Paul & Sault Ste. Marie	4,243	17,113,445	4,829,428	24,499,441	4,545,681	4,661,593	261,198	11,081,490	641,794	21,363,669	87.20	3,135,772	1,949,042	1,184,537	—1,242,347
Minnesota & International	194	478,132	211,522	742,632	180,025	131,634	3,587	355,682	25,652	696,578	93.79	46,053	37,399	8,651	—44,061
Mississippi Central	164	356,077	149,816	550,480	238,278	234,981	14,374	289,071	58,058	834,762	151.64	—284,283	29,615	—314,059	—225,137
Missouri & North Arkansas	364	682,044	310,686	1,104,542	405,014	240,043	19,703	495,965	56,436	1,217,160	110.20	—112,619	41,946	—154,598	294,856
Missouri, Kansas & Texas	1,715	14,764,589	4,710,160	21,542,434	4,189,498	6,154,325	256,969	7,906,620	710,507	19,336,549	89.75	2,205,885	771,733	1,431,297	—140,884
Missouri, Kansas & Texas R.R. of Texas	1,755	8,828,734	5,077,187	15,503,133	4,149,771	3,263,571	205,094	8,979,340	619,328	17,383,526	112.12	—1,880,393	416,977	—2,300,170	—2,534,535
Kansas, Oklahoma & Gulf	327	1,110,867	161,732	1,344,029	318,841	361,752	16,572	695,904	63,533	1,457,931	108.47	—113,902	77,566	—191,652	345,800
Missouri Pacific	7,299	44,588,751	11,805,700	62,838,291	12,303,902	14,035,301	932,948	25,782,676	1,702,815	55,089,845	87.66	7,748,446	1,831,242	5,900,992	3,474,053
Mobile & Ohio	1,101	8,066,678	1,298,335	10,193,952	2,108,135	3,340,907	216,674	4,988,094	337,063	10,997,406	107.88	—803,455	421,512	—1,225,287	—387,052
Monongahela	108	1,739,557	176,622	1,968,024	753,737	405,871	5,223	750,699	53,196	1,968,728	100.03	—704	41,465	—42,169	—537,371
Monongahela Connecting	7	.....	.....	1,767,829	200,301	252,214	3,922	801,975	44,951	1,303,362	73.72	464,447	120,726	343,741	473,922
Montour	56	665,874	8,997	701,965	192,296	330,157	7,941	249,433	50,861	846,637	120.61	—144,672	16,946	—161,617	—4,677
Morgan's La. & Texas R.R. & S.S. Co.	401	4,120,725	1,242,368	5,828,450	1,444,147	1,074,286	75,254	1,921,351	175,239	4,708,977	80.78	1,119,472	322,017	795,230	348,666
Nashville, Chattanooga & St. Louis	1,247	9,612,747	2,989,462	13,854,230	2,411,764	3,847,099	379,976	6,215,056	380,023	13,287,500	95.90	566,731	304,500	260,821	236,598
Nevada Northern	166	996,308	70,140	1,108,514	194,799	183,133	6,129	283,432	33,468	701,821	63.31	406,692	60,065	346,627	133,890
New Jersey & New York	47	91,014	569,205	112,746	79,498	120,969	8,911	433,998	16,137	659,512	92.53	53,234	15,364	37,858	38,942
New Orleans Great Northern	284	1,048,671	339,821	1,454,663	316,883	303,772	28,832	592,698	69,439	1,314,640	90.37	140,022	82,885	57,099	49,324
New York Central	6,069	110,253,944	51,102,550	191,946,709	30,035,185	53,908,704	1,886,672	95,531,173	5,216,441	189,849,790	98.91	2,096,919	7,479,182	—5,404,622	—28,124,580
New York, Chicago & St. Louis	574	13,512,967	676,531	14,760,917	1,637,684	2,583,616	276,596	6,061,948	460,495	11,059,147	74.92	3,701,770	465,000	3,234,696	381,493
New York, New Haven & Hartford	1,981	28,845,048	27,590,810	66,416,829	10,841,796	16,279,144	392,243	36,754,019	2,358,112	67,903,004	102.24	—1,486,177	2,481,035	—3,977,007	—7,329,094
New York, Ontario & Western	569	3,850,005	1,644,963	6,634,128	1,129,086	1,630,316	70,080	3,259,382	181,908	6,270,771	94.52	363,356	217,483	145,871	—283,700
New York, Philadelphia & Norfolk	121	3,266,768	664,643	4,320,275	435,125	1,247,677	65,397	2,634,201	92,974	4,586,563	106.16	—266,288	161,407	—427,842	—952,130
New York, Susquehanna & Western	135	1,691,561	433,333	2,415,794	341,054	545,619	18,402	1,838,292	63,660	2,807,021	116.19	—391,227	146,631	—541,011	—450,951
Newburgh & South Shore	7	.....	.....	912,272	110,269	228,478	.....	587,112	20,630	956,490	104.84	—44,218	58,666	—102,884	—165,934
Norfolk & Western	2,201	36,046,017	5,196,560	43,928,135	7,024,552	16,193,289	379,422	19,725,254	1,073,267	44,569,065	101.45	—640,930	2,695,000	—3,338,668	—8,851,626
Norfolk Southern	916	3,041,991	1,093,484	4,484,634	979,697	862,171	81,981	2,152,413	192,673	4,270,048	95.21	214,586	125,540	88,323	260,953
Northern Pacific	6,651	40,937,594	11,657,201	58,950,421	12,632,645	11,373,289	39,253	1,758,756	105,947	3,236,233	77.51	939,160	184,119	754,536	331,347
Northwestern Pacific	537	2,091,642	1,557,204	4,175,393	783,765	531,237	535,418	22,916,781	1,486,989	49,851,079	84.56	9,099,341	5,218,531	3,872,006	—3,389,154
Oregon Short Line	2,351	17,576,966	4,220,964	24,237,864	3,531,944	4,055,635	211,057	7,750,759	858,786	16,931,655	69.85	7,306,209	2,016,083	5,289,395	1,114,607
Oregon-Washington R.R. & Nav. Co.	2,222	12,452,725	4,182,476	18,535,491	3,195,751	3,326,682	265,544	7,767,197	862,128	15,662,394	84.49	2,873,097	1,277,098	1,595,628	—201,074
Panhandle & Santa Fe	783	3,414,705	1,027,994	4,793,686	1,102,602	1,591,663	27,654	2,022,787	114,871	4,857,904	101.34	—64,217	141,156	—205,308	359,748
Galv. Wharf Co.	13	.....	.....	816,960	225,885	23,025	2,751	255,929	16,861	649,673	79.52	167,287	119,200	43,704	79,269
Pennsylvania	7,259	185,995,680	70,945,281	285,459,916	49,177,155	93,158,877	2,624,409	148,427,830	7,498,096	306,198,998	107.26	—20 739,082	10,422,055	—31,197,945	—43,996,407
Peoria & Pekin Union	19	182,198	27,556	860,260	116,628	231,724	1,492	561,294	32,302	943,442	109.66	—83,182	6,650	—149,682	205,419

REVENUES AND EXPENSES OF RAILWAYS

SEVEN MONTHS OF CALENDAR YEAR 1920 (CONTINUED)

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Pere Marquette	2,230	$14,946,451	$3,780,415	$21,202,353	$2,939,336	$4,914,662	$279,855	$9,907,059	$700,859	$18,807,302	88.70	$2,395,052	$443,962	$1,949,738	—$1,741,932
Philadelphia, Bethlehem & N. E.	10	.....	.....	733,400	111,557	114,987	3,128	522,588	10,612	762,872	104.02	—29,472	7,515	—36,987	—56,322
Perkiomen Railroad	41	541,384	71,450	654,387	56,146	30,229	97	278,423	2,029	367,070	56.09	287,317	17,243	270,074	—8,573
Philadelphia & Reading	1,126	39,038,643	6,076,742	48,189,539	5,181,580	13,291,211	356,788	23,693,532	1,103,507	43,768,202	90.82	4,421,337	1,160,946	3,257,767	362,803
Pittsburgh & Lake Erie	224	12,284,962	1,717,134	15,254,075	3,441,772	7,090,138	126,248	6,543,028	413,475	17,627,720	115.56	—2,373,644	821,853	—3,195,958	—4,807,817
Pittsburgh & Shawmut	103	862,869	35,846	906,671	182,109	222,515	9,728	344,935	44,111	803,398	88.61	103,272	828	102,444	270,688
Pittsburgh & West Virginia	63	944,864	65,527	1,134,725	348,970	360,442	10,933	457,034	63,709	1,313,138	115.72	—178,414	99,964	—279,966	215,634
Pittsburgh, Shawmut & Nor.	209	733,323	44,443	798,644	194,455	379,814	11,996	403,841	55,877	1,046,008	130.97	—247,365	13,199	—261,080	—48,303
Port Reading	21	722,579	.....	950,179	118,337	71,319	134	567,300	11,784	768,874	80.91	181,305	57,017	124,289	—341,941
Quincy, Omaha & Kansas City	255	459,151	171,895	728,813	311,608	151,311	3,128	431,263	14,661	911,605	125.08	—182,793	26,407	—209,246	—118,714
Richmond, Fredericksburg & Potomac	117	3,053,484	2,117,215	6,453,246	573,614	1,026,190	47,660	2,576,090	177,050	4,471,362	69.29	1,981,885	208,420	1,773,287	—1,428,594
Rutland	415	1,678,580	813,967	3,084,525	648,642	917,112	36,294	1,633,918	100,044	3,348,528	108.55	—264,004	130,158	—394,176	—372,546
St. Joseph & Grand Island	258	1,357,013	256,849	1,762,639	628,095	303,795	15,689	967,449	90,270	2,018,970	114.54	—265,332	82,453	—338,822	—337,879
St. Louis Merchants' Bridge Terminal	9	.....	2,892	2,134,982	331,208	411,457	5,791	1,595,909	54,404	2,396,769	112.26	—263,787	74,830	—338,740	130,152
St. Louis-San Francisco	4,757	33,304,544	13,513,005	49,927,686	8,312,428	11,508,232	445,078	21,209,792	1,545,924	42,935,494	85.99	6,992,191	1,606,513	5,379,649	—1,608,524
St. Louis Southwestern	960	9,664,804	1,232,969	11,501,499	1,574,162	2,040,042	276,501	3,103,576	326,857	7,356,138	63.95	4,145,361	407,517	3,737,703	2,538,791
St. Louis S. W. of Texas	807	3,683,497	856,577	5,012,833	1,627,969	1,642,008	107,075	2,802,048	226,067	6,402,759	127.78	—1,389,927	169,468	—1,559,762	—641,962
St. Louis Transfer	6	.....	.....	749,506	59,521	115,386	1,335	378,418	16,671	571,332	76.23	178,174	1,583	176,592	71,646
San Antonio & Aransas Pass	736	1,688,119	672,249	2,643,413	764,800	683,409	47,442	1,511,061	129,843	3,135,017	118.59	—491,604	102,500	—594,393	29,415
San Antonio, Uvalde & Gulf	317	525,110	280,688	855,775	253,745	151,198	15,709	524,490	40,740	985,882	115.20	—130,106	15,555	—145,781	—80,533
Seaboard Air Line	3,563	18,810,562	5,831,126	28,297,327	5,497,478	7,351,608	663,296	14,698,754	972,732	29,493,682	104.22	—1,196,355	1,035,000	—2,236,457	—3,958,484
Southern	6,974	56,082,454	19,816,068	85,334,481	11,531,708	16,392,225	1,137,983	38,597,205	2,270,941	70,786,082	82.95	14,548,399	2,820,870	11,716,272	6,761,274
Alabama Great Southern	313	4,430,133	1,315,260	6,246,181	654,691	1,355,219	125,619	2,316,305	159,578	4,659,608	74.59	1,586,572	221,797	1,363,770	657,527
Cinc., New Orleans, Texas & Pacific	338	8,086,694	2,240,286	11,224,057	1,290,427	2,857,799	181,682	4,144,040	265,528	8,817,808	78.56	2,406,249	376,109	2,028,922	1,014,298
Northern Alabama	110	726,180	99,665	871,508	210,462	52,681	10,988	420,855	17,738	712,724	81.78	158,784	30,436	128,297	157,001
Georgia Southern & Florida	402	1,822,449	878,680	3,014,957	460,416	712,567	51,280	1,528,983	84,476	2,856,218	94.73	158,739	131,336	25,751	—46,884
New Orleans & Northeastern	207	3,090,505	724,189	4,291,953	648,336	892,659	73,508	1,762,589	124,293	3,533,180	82.32	758,773	284,999	473,353	348,665
Southern in Mississippi	278	591,519	333,790	1,034,021	393,895	128,163	20,718	622,591	41,555	1,260,923	121.94	—226,902	68,600	—295,519	—200,074
Southern Pacific	7,095	65,139,184	30,257,932	107,594,417	16,270,621	21,469,251	1,008,816	40,805,688	2,552,215	84,560,925	78.59	23,033,493	6,378,011	16,640,893	3,967,193
Southern Pacific S.S. Lines	...	2,709,778	164,407	2,995,553	129,612	2,361,018	80,609	3,205,774	179,255	5,956,269	198.83	—2,960,715	78,793	—3,039,509	—2,491,435
South Buffalo	11	354,963	.....	787,611	49,282	100,068	3,696	516,673	14,977	684,697	86.93	102,915	28,000	74,915	—14,991
Spokane International	159	719,167	125,902	671,070	142,093	72,231	16,407	269,827	35,518	539,105	80.33	331,965	35,630	296,023	160,447
Spokane, Portland & Seattle	549	3,212,837	1,220,547	4,843,471	1,021,999	632,169	48,427	1,620,011	160,137	3,541,588	73.12	1,301,884	624,361	675,383	—23,746
Staten Island Rapid Transit	23	534,224	632,470	1,288,801	242,301	240,644	8,712	139,027	69,543	1,300,227	100.88	— 11,426	105,000	—116,721	—200,185
Tennessee Central	292	1,161,012	338,352	1,631,628	307,260	355,898	32,465	792,030	71,939	1,559,455	95.57	72,173	38,681	32,849	312,416
Terminal R.R. Association of St. Louis	36	.....	8,483	2,496,659	465,301	439,339	6,920	1,110,610	57,610	2,107,460	84.41	389,199	264,430	124,739	159,742
Texarkana & Ft. Smith	93	856,764	155,238	1,118,259	150,174	116,961	15,318	363,471	38,536	686,221	61.37	432,039	80,010	351,973	289,054
Texas & New Orleans	469	3,584,433	1,142,459	5,332,094	1,391,237	1,534,657	59,152	1,855,973	138,304	5,225,357	97.99	106,738	176,464	—75,530	—355,949
Texas & Pacific	1,946	13,745,246	6,775,882	22,470,689	4,127,961	4,810,614	252,975	9,591,783	634,360	19,705,306	87.70	3,765,382	796,550	1,963,547	—5,256
Toledo & Ohio Central	484	5,430,959	461,531	6,249,753	1,003,421	2,030,759	66,225	3,145,534	153,801	6,422,295	102.76	—172,542	347,293	—519,865	—448,916
Toledo, Peoria & Western	247	629,173	347,820	1,081,392	179,796	248,099	15,606	582,138	46,559	1,072,138	99.14	9,255	59,500	—50,245	91,968
Toledo, St. Louis & Western	454	5,505,263	232,331	6,071,659	1,204,717	1,237,109	75,859	2,463,753	103,615	5,084,675	83.74	986,984	217,000	769,690	414,290
Trinity & Brazos Valley	368	788,700	146,392	1,000,035	427,779	324,872	14,054	472,426	62,729	1,301,533	130.15	—301,498	55,609	—357,215	40,863
Ulster & Delaware	128	367,821	158,788	718,424	120,349	145,119	17,156	508,360	45,223	839,948	116.91	—121,524	35,000	—156,522	14,290
Union R.R. (of Penn.)	45	.....	.....	5,295,289	596,346	1,499,682	1,940	3,341,085	56,733	5,495,784	103.78	— 200,495	60,478	—260,973	—452,444
Union Pacific	3,614	46,023,355	12,062,153	66,491,357	11,390,856	13,393,588	549,066	20,657,874	2,084,044	49,887,859	75.02	16,603,499	3,404,330	13,196,468	—3,580,913
Utah Ry.	98	1,026,001	2,503	6,034,594	124,354	207,940	1,262	241,870	18,937	594,364	98.49	440,230	46,573	393,657	196,835
Vicksburg, Shreveport & Pacific	171	1,557,699	671,281	2,444,074	373,869	435,174	44,701	906,730	75,994	1,862,330	76.19	581,744	92,631	488,952	—251,442
Virginian	523	7,459,287	451,134	8,804,616	1,077,404	1,802,619	50,325	3,475,569	196,768	6,595,071	74.90	2,209,546	406,482	1,803,055	960,479
Wabash	2,472	21,069,022	5,923,238	30,170,998	5,686,843	8,724,972	608,769	16,415,177	1,067,706	32,117,521	108.44	—2,546,522	898,870	—3,447,595	—5,228,485
West Jersey & Seashore	361	1,852,300	4,502,397	6,878,710	1,675,422	1,536,759	70,672	3,822,952	170,146	7,329,027	106.55	—450,316	360,708	—811,246	582,001
Western Maryland	766	8,532,121	640,760	9,886,897	2,058,620	3,567,824	256,565	4,189,538	343,703	10,522,149	106.42	—635,252	336,400	—971,652	—670,619
Western Pacific	1,019	6,261,324	1,387,015	8,116,075	1,337,727	1,265,366	175,308	2,735,912	236,296	5,919,338	72.93	2,196,736	416,906	1,779,515	1,158,844
Western of Alabama	133	880,647	520,591	157,667	228,706	344,320	43,687	602,074	57,386	1,301,539	82.54	275,129	46,025	229,097	—65,068
Wheeling & Lake Erie	511	7,456,314	449,933	8,721,031	1,295,713	2,096,801	82,203	3,780,057	208,953	7,487,624	85.85	1,233,407	458,118	775,990	150,101
Wichita Falls & N. W.	328	1,046,511	329,428	1,485,884	424,715	222,533	7,769	795,220	80,561	1,530,684	103.01	- 44,799	76,067	—121,180	—2,441
Wichita Valley	256	602,342	266,063	932,073	235,378	111,142	281	411,281	11,051	769,050	82.51	163,023	38,708	124,282	78,625
Yazoo & Mississippi Valley	1,381	12,368,852	3,333,029	16,731,295	3,633,958	4,009,489	165,487	6,443,412	405,811	14,695,026	87.82	2,036,269	560,213	1,471,642	—704,355

SIX MONTHS OF CALENDAR YEAR 1920

Western Maryland	761	7,181,459	503,132	8,282,264	1,664,878	3,057,688	203,871	3,445,866	294,167	8,753,963	105.70	471,699	286,400	—758,099	—375,995
Western Pacific	1,022	5,191,386	1,101,004	6,681,631	1,129,428	1,089,003	148,446	2,257,899	203,180	4,965,075	74.31	1,716,556	354,238	1,362,038	1,001,606
Western Ry. of Alabama	133	769,577	437,244	1,363,649	187,407	290,005	36,905	504,625	47,058	1,087,313	79.74	276,336	38,850	237,479	—18,983
Wheeling & Lake Erie	511	6,050,044	368,624	7,089,707	1,072,577	1,755,264	67,553	3,085,507	172,663	6,173,445	87.07	916,262	388,700	526,263	260,526
Wichita Falls and North Western	328	902,667	280,617	1,273,302	355,762	200,920	7,156	686,304	71,941	1,321,667	103.80	—48,365	65,325	—113,957	—7,145
Wichita Valley	256	551,717	227,660	836,113	192,861	114,549	846	378,744	13,856	701,052	83.85	135,062	33,001	101,950	90,170
Yazoo & Mississippi Valley	**1,381**	**10,445,195**	**2,848,526**	**14,197,217**	**3,036,688**	**3,420,060**	**139,115**	**5,478,781**	**346,116**	**12,448,515**	**87.68**	**1,748,702**	**477,467**	**1,266,910**	**—435,792**

Traffic News

The Chicago, Rock Island & Pacific has reopened its Spokane (Wash.) traffic office in the Symons Building.

A. U. Tadlock, who was recently traffic manager of the El Paso, Tex., Chamber of Commerce, has become traffic manager of the Jonesboro, Ark., Chamber of Commerce and the Northeast Arkansas Traffic Association.

The loss and damage committee of the Atchison, Topeka & Santa Fe System will hold its semi-annual meeting at Houston, Tex., beginning on October 4. Matters of special interest to traffic, freight claim and operating officers will be discussed.

W. G. MacEdward, formerly on the Erie, and afterwards for 15 years general freight and passenger agent of the Detroit & Mackinac, has been appointed secretary of the Bay City (Mich.) Board of Commerce, succeeding J. C. McCabe.

The New Jersey Industrial Traffic League was organized at Newark on September 23. The president is E. E. Ebert, and vice-president, Robert Wallace, both of Jersey City. The secretary is C. J. Fagg, traffic commissioner of the Newark Board of Trade. The next meeting will be held on October 7.

Railroad officers, apple-growers and shippers of the Northwest will meet in conference at Yakima, Wash., on September 27, for a conference and discussion of the increased freight rates. It is the contention of the apple shippers that the heavy increase in freight rates is discriminatory and will work an injustice on the fruit industry.

The Southern Pacific announces the restoration of former schedules of its Morgan Line of steamers with sailings from New York to Galveston every Tuesday, Thursday and Saturday, and from New York to New Orleans on Wednesday and Saturday, with corresponding regular departures in the opposite direction. The Southern Pacific line comprises 16 steamers.

The West Coast lumbermen have been invited by railroad officers to attend a further conference on the subject of freight rate relief at Chicago on October 6. While the freight rate relief was refused at the recent conference held at Portland, Ore., the railroad men announced that at the meeting of traffic officers on October 6, a review of the lumber rates would be made and the tariffs covering the rates would be arranged for reissuing. It was further stated that the lumbermen would be given an opportunity to be heard at that time.

Plans for the organization of a divisional office of the Southern Hardwood Traffic Association were made at a meeting held at St. Louis, Mo., on September 22. J. H. Townsend, secretary-manager of the association, Memphis, Tenn., explained the work of the organization in detail at the meeting, and related how the association had been of great service to the lumber industry in correcting traffic situations which have adversely affected the lumber business. It is stated that the association will establish an office at St. Louis.

The Minnesota Central Cooperative Live Stock Shippers' Association instigated action on September 17 to have the railroads furnish transportation both ways to men in charge of a single carload of live stock. The law in Minnesota provides that carriers shall furnish free transportation both ways to men in charge of carload shipments of live stock going to market. When the government took over the roads this practice was changed so that only those with more than one car would get passes both ways, while those with a single car were allowed transportation to market only.

Objections to the plan proposed by the Chicago packers for the disposition of their stock yard interests to a holding company to be formed by F. H. Prince & Co. of Boston were filed by the Department of Justice in the Supreme Court of the District of Columbia on September 28. The department in its petition said that the proposed holding company to take over controlling interests in substantially all of the stock yards in the United States, together with terminal railways, which are in turn owned or controlled by the stock yards, would constitute in itself a combination in violation of the Sherman and other anti-trust laws.

Forty-five men and women charged with illegal use of commutation tickets were served with injunctions by the New York Supreme Court at White Plains, N. Y., on September 24, on complaint of the New York Central. The defendants named in the injunctions live in Poughkeepsie, Newburgh, Tarrytown, Ossining, White Plains, Brewster and Peekskill. The restraining orders forbid the renting of tickets on pain of contempt proceedings. The attorney for the railroad told the court that in Poughkeepsie alone the ticket profiteers have rented out family 50-trip and regular 60-trip tickets extensively, making large profits.

Shippers of peaches in western New York complain loudly of a shortage of refrigerator cars and declare that large losses are impending. Dr. E. H. Porter, the state commissioner of foods and markets, attributes the shortage "to the injudicious manner in which the new transportation act is being administered by the Interstate Commerce Commission." The commissioner charged that the effort of the commission to supply the whole country with cars really meant "robbing the strong eastern roads for the benefit of the smaller roads of the west and south." He declared that "many fine New York state peaches will be wasted at the very door of the eastern city markets, while other peaches are moved half way across the continent to supply the demand."

At New York City automobile long-distance freight carriers are now so numerous and so well settled in their various enterprises, that the New York Tribune has advertisements of twenty of them, grouped in a "Ship by Truck" department. These twenty concerns carry freight to Albany, N. Y. (142 miles); Allentown, Pa. (90); Boston, Mass. (232); Bound Brook, N. J. (33); Bridgeport, Conn. (56); Camden, N. J. (90); Chester, Pa. (100); Danbury, Conn. (50); Newark, N. J. (9); Nyack, N. Y. (25); Patchogue, N. Y. (56); Philadelphia, Pa. (90); Pittsfield, Mass. (150); Reading, Pa. (126); Rockaway, N. Y. (20); Scranton, Pa. (134); Troy, N. Y. (148); Washington, D. C. (225); Waterbury, Conn. (88); White Plains, N. Y. (23). Some of these advertisements name one or more intermediate towns. All of those mentioned promise daily service except those to Pittsfield, Scranton, Troy, Washington and Wilmington. The Pittsfield line is run twice a week.

The West Coast Lumbermen's Association is taking its freight rate grievances to the public in the form of a series of display advertisements in the daily newspapers. The first advertisement of the series, occupying a full page, appeared in the leading newspapers of the Douglas fir region on September 20. It was addressed to the employees of the lumber industry and to the public, and stated that Douglas fir had always been farther away from the important markets than Southern pine. The former, because of paying higher wages than are paid in the South, and because of its distance from the principal markets, was at a distinctive disadvantage. Now that the problem of transportation and the cost thereof has become greatly emphasized, Douglas fir is still farther from the Eastern market. The struggle to overcome distance is set forth in figures of initial cost, plus freight charges, in detail form. The article, in closing, states that, "if we may be allowed to make a forecast, we will state that at the present freight rate lumber will not move in the same quantities that it has in the past."

New Assigned-Car Rule

The Interstate Commerce Commission on September 28 issued Service Order No. 18 rescinding its order of April 15 amending the car distribution rules to provide that private cars and cars placed for railroad fuel should be designated as assigned cars in accordance with the decisions of the commission in several cases.

The commission finds that the rule is being applied by particular carriers in a manner contrary to the principles approved in the Hocking Valley and the Traer cases, thereby causing confusion and undue prejudice. It is, therefore, ordered that, effective October 1, 1920, private cars and cars placed for railroad fuel loading, in accordance with the decisions of the Interstate Commerce

Commission in *RR. Com. of Ohio, et al.*, v. *H. V. Ry.*, 12 I. C. C., 398, and *Traer* v. *Chicago & Alton, et al.*, 13 I. C. C., 451, shall be designated as assigned cars. All other cars are to be designated as unassigned cars. Railroads may not assign cars for their own fuel and fail to count such cars against the mine's distributive share unless the entire output of such mine is taken by such a carrier for a period of not less than six consecutive months.

The order also provides that any contract or arrangement for the purchase of coal made by a carrier on or before November 1, 1920, which terminates at the expiration of the coal year ending March 31, 1921, shall be regarded as a compliance with the rule hereinbefore prescribed. Rules and practices, with respect to car service, are superseded only in so far as they conflict with the provisions of this order.

The order states that because of a shortage of cars and a congestion of traffic, and because of the inability of the carriers to secure an adequate supply of coal without resorting to the confiscation of commercial coal, an emergency exists which requires immediate action.

Coal Production

The production of soft coal during the week ended September 18 was the largest, with one exception, for any week this year since January. Because of the strike in the anthracite region, however, the total production of hard and soft coal combined was much below the average for August. The output of bituminous is estimated at 11,614,000 net tons, according to the weekly bulletin of the Geological Survey. One factor in the increased output was the release of cars from the anthracite region of Pennsylvania for use in the adjacent bituminous fields. Production during the first 222 working days of the year has been 380,832,000 net tons, which is 14,000,000 tons less than that for 1917 and 43¼ million tons less than that for 1918, but over 51 million tons ahead of 1919. Although the figures of production of anthracite for the week ended September 18 show no general resumption of activity in the anthracite region, there was a marked improvement during the week of September 18 to 25. The estimated production of anthracite for the calendar year to September 18 is 59,859,000 net tons as compared with 59,041,000 in the corresponding period of 1919.

Dumpings at Lake Erie ports during the week of September 18 recovered partially from the Labor Day depression, but were still short of the maximum attained in the last week of August. The total quantity dumped is reported as 1,007,833 tons. The cumulative lake movement from the opening of the season now stands at 13,977,000 tons as against 20,417,000 in 1918 and 17,863,000 in 1919. The volume of the tidewater movement declined slightly during the week at New York, Philadelphia and Charleston. At the Chesapeake Bay ports the rate increased.

Every effort is being put forth by the bituminous coal operators of the country, according to a statement issued by the National Coal Association, to attain a weekly output of over 12,000,000 tons of soft coal from now until December 1, so as to forestall the possibility of a shortage anywhere in the country during the winter. During October of last year, preceding the miners' strike, production averaged 12,081,750 tons a week. In the week of October 25, of that year, 13,092,000 tons were produced. The highest production for any week during the present stringency was 11,813,000, during the week of August 14. The average for the last two months has been approximately 10,100,000 tons a week.

"To insure the winter supply of coal for the Northwest," the statement says, "the railroads have promised to expedite the movement of cars, so as to provide 4,000 a week, for shipments to Lake ports. The New England situation has been cleared up so that danger of a coal famine this winter no longer exists and the immediate wants of New England consumers can be supplied. The outstanding difficulty in New England is lack of railroad fuel for storage for the winter's use. This is now being straightened out. * * * The situation will be appreciably improved if the Interstate Commerce Commission's order, restricting the use of open top cars to the movement of coal, is rigidly enforced. At this time thousands of cars, which ought to be carrying coal, are being used to haul other commodities."

Commission and Court News

Interstate Commerce Commission

The hearing on the export bill of lading set for October 4 before Commissioner Woolley of the Interstate Commerce Commission has been cancelled and reassigned for November 15 at Washington.

The commission has suspended until February 2, of a Kanawha & Michigan tariff that proposes the cancellation of through rates on bituminous coal to points in Florida, Georgia, North Carolina, South Carolina, Virginia and West Virginia, leaving combination rates applicable, which results in an increase of approximately 70 cents a ton.

The commission has announced an investigation of the situation created by the refusal of the Arkansas Corporation Commission to permit carriers in that state to increase rates on roadbuilding material and other things similar to those permitted by the Interstate Commerce Commission for interstate traffic. A hearing will be held before Examiner Brown on October 4 at Little Rock, Ark.

The commission has received a brief by J. H. Painter and V. L. Brooks as attorneys for protestants against the application of the Eastern Texas Railroad Company for authority to abandon its line. The brief asserts that the road was not constructed principally as a logging road, but under a charter to conduct the business of a common carrier for 25 years from November, 1908, and that the fact, if fact it be, that its business will not provide a profit for the remaining years of that term furnishes no ground for permitting it to repudiate the obligations of its contract, especially in the absence of a showing that its revenues for the entire 25 years will be insufficient. It is stated that the present rundown condition of the railroad is due solely to improvident and uneconomical business managemet.

The commission has made public a tentative report of its Attorney-Examiner M. A. Pattison recommending that the rule of the telegraph companies, limiting their liability for negligence in the transmission or delivery or non-delivery of unrepeated interstate messages to the amount paid for transmission and of repeated messages to $50 or 50 times the rate charged, be found to be unreasonable. As a reasonable rule to be prescribed for the future, the examiner recommends that the maximum liability in case of a message for the transmission of which the unrepeated rate was charged should be not less than $500 and for a repeated message transmitted at the repeated rate $5,000. Provision, however, should be made, he says, for the transmission of valued messages under a liability limit, to the value stated by the sender, at the repeated rate plus one-tenth of one per cent of the stated value in excess of $5,000.

Court News

Safety Appliance Act—Trainman's Attempt to Stop Runaway Cars

Because of a defective coupler, a train broke in two on a grade in a yard, allowing the detached portion to run down the grade. A member of the switching crew, who was then standing on the ground in a safe position, climbed on one of the detached cars which had started down grade, and set the brake in an unsuccessful attempt to prevent a collision. He was injured in the collision which followed and sued the railroad and the Director General of Railroads. The Circuit Court of Appeals, Sixth Circuit, holds that it was not error to charge that failure to comply with the Safety Appliance Act was a proximate cause of the injury and that the switchman's act, which was in the line of his duty and apparently not imminently dangerous, could not be held the proximate cause. The railroad, being under federal control, was not liable for the negligent injury.—Erie v. Caldwell, 264 Fed. 947.

Equipment and Supplies

Locomotives

THE RHODESIAN RAILWAY has ordered 12, 4-8-2 type locomotives from the American Locomotive Company.

THE WELLER CONSTRUCTION COMPANY, Washington, D. C., has ordered one four-wheel general utility locomotive from the Bell Locomotive Works.

THE ILLINOIS CENTRAL, reported in the *Railway Age* of September 3 as inquiring for 25 switching locomotives, has ordered this equipment from the Baldwin Locomotive Works.

THE PARIS-ORLEANS, reported in the *Railway Age* of August 27 as inquiring for 50 locomotives, has ordered 50, 4-6-2 type locomotives from the American Locomotive Company.

THE UNITED FRUIT COMPANY, New York, has ordered 5, 2-8-0 type locomotives from the Baldwin Locomotive Works and one eight-wheel plantation locomotive from the Bell Locomotive Works.

THE TOLEDO TERMINAL has ordered 2 Consolidation type locomotives from the American Locomotive Company. These locomotives will have 22 in. by 28 in. cylinders and a total weight in working order of 201,000 lb.

THE GREAT NORTHERN has included in its budget for 1921, 500 refrigerator cars and contemplates the purchase of 1,000 freight cars and 50 locomotives. This road is also continuing to convert its oil-burning engines to coal burners.

THE CANADIAN PACIFIC, reported in the *Railway Age* of July 2 as inquiring for 15 locomotives, has ordered 15 Mikado type locomotives from the American Locomotive Company. These locomotives will have 25½ in. by 32 in. cylinders and a total weight in working order of 320,000 lb.

THE ST. LOUIS SOUTHWESTERN, reported in the *Railway Age* of September 24 as inquiring for 10 Consolidation type locomotives, has given an order to the Baldwin Locomotive Works for 10 locomotives. This is in addition to the order for 10 locomotives previously placed by this company with the same builders.

Freight Cars

THE STANDARD SERVICE CORPORATION, New York, is inquiring for 80 cane cars of 30 tons' capacity.

THE GULF COAST LINES, reported in the *Railway Age* of July 16 as inquiring for 500 box, 300 gondola, 150 flat cars and 50 tank cars, has withdrawn its inquiry for these cars.

THE MISSOURI, KANSAS & TEXAS, reported in the *Railway Age* of August 6 as inquiring for 2,000 automobile cars and 1,500 gondola cars, has withdrawn its inquiry for these cars.

THE UNITED STATES SMELTING, REFINING & MINING COMPANY, Boston, Mass., is inquiring for 23 steel underframe box cars of 50 tons capacity; 2 composite gondolas of 50 tons capacity, and 2 automobile cars of 40 tons capacity.

Miscellaneous

THE SOUTHERN PACIFIC, TEXAS & LOUISIANA LINES has authorized the expenditure of $700,000 for the purchase and installation of shop tools. The purchase of one locomotive crane, a ditcher and other track equipment has also been authorized.

RAILROAD BUYING comprised approximately 25 per cent of the business secured by west coast lumbermen and the west coast mills for the week ending September 18. In the general trade for rail delivery, there were 758 carloads represented in new orders, and 253 carloads of special cuttings for the transportation system.

Supply Trade News

The Easton Car & Construction Company, Easton, Pa., has opened a branch office in the Railway Exchange building, Chicago.

C. G. Cope has been appointed district sales manager for Philadelphia (Pa.) territory of the **Minwax Company, Inc.,** New York, with offices at 507 Schubert Building, Philadelphia.

Carl J. Schmidlapp and **Allan A. Ryan** have been elected members of the board of the **Chicago Pneumatic Tool Company,** New York. Mr. Schmidlapp takes the place of A. F. Cassidy and Mr. Ryan fills a vacancy that had existed in the board for some time.

John B. Canfield, who was associated with the Harley Company, Springfield, Mass., as special representative and counsel, left the service of that company on August 1, to become New York representative, with offices in the Grand Central Terminal, of **Brown & Co.,** Pittsburgh, Pa., manufacturers of fine iron and steel.

F. F. Fitzpatrick, president of the **Railway Steel-Spring Company,** New York, has received the decoration of Officer of the Crown of Italy. This order was founded in 1868 by King Victor Emmanuel II and is given as a reward for signal merit to military officers and others who have performed distinguished service service in Italy.

The Norton Company, Worcester, Mass., has opened a branch office for its grinding machine decision in room 304 Penway building, 241 North Pennsylvania avenue, Indianapolis, Ind., under the direction of **Walter F. Rogers,** district representative. The establishment of this branch office will in no way affect the distribution of Norton grinding wheels. These will be handled as in the past by the **Vonnegut Hardware Company.**

Charles H. McCormick has been appointed western representative of the railroad department of the **Standard Paint Company,** New York, with headquarters in the Plymouth Building, Chicago. Mr. McCormick began railway work with the Michigan Central in the mechanical department at Bay City, Mich., and later was transferred to Jackson, Mich., and Detroit, at the latter place serving as chief clerk to the superintendent of motive power for six years. He later went to the Standard Heat & Ventilation Company, at New York and Chicago, for four years and was with the Hegeman-Castle Corporation, at New York and Chicago, for four years previous to entering the service of the Standard Paint Company.

The East St. Louis Locomotive & Car Company, capitalized at about $5,000,000, will establish a railroad car and locomotive building and repair plant at East St. Louis, Ill. The plant, it is stated, is ultimately to employ 3,000 men. **R. W. Crawford,** formerly head of a car building plant at Streator, Ill., is president of the company. Options have been obtained on three sites, according to J. N. Fining, secretary of the East St. Louis Chamber of Commerce, and it is planned to begin work at once on several buildings. The plant, with buildings and tracks, is expected to cover 150 acres and to have an output of 75 to 120 freight cars per day. The company expects to be in a position to begin repair work on cars this winter.

The **Whiting Foundry Equipment Company,** Harvey, Ill., and the **American Foundry Equipment Company,** New York, have been consolidated in a new organization to be known as the **Whiting Corporation.** The new company will be capitalized at $5,000,000. **J. H. Whiting,** president of the Whiting Foundry Equipment Company, becomes chairman of the board, and **V. E. Minich,** president of the American Foundry Equipment Company (Sand Mixing Machine Company) and of the Foundry Equipment Manufacturers' Association, will

be president. As the lines of manufacture of the component companies do not overlap, it is the intention to maintain all present manufacturing facilities. The Whiting plant at Harvey will retain the manufacture of cranes, cupolas, hoists, tumbling mills, core ovens and all other items of the established Whiting line, together with sand blast equipment and dust arresters. Sand cutting machines, charging trucks, core machines and steel flasks will comprise the bulk of work at the new American plant at 2935 West Forty-seventh street, Chicago, under the direction of **E. A. Rich, Jr.** Molding machines, jolts, flask specialties and pattern mounting materials will continue to be manufactured at the York, Pa., plant of the American company in charge of **R. S. Buch.** The plans include maintaining and enlarging the present offices of the American Fundry Equipment Company, 366 Madison avenue, New York, as the eastern sales and export office of the combined lines.

Freight Car Production—Eight Months' Figures

Figures of production reported by 23 leading car building companies associated with the Railway Car Manufacturers' Association show that the car building industry in August was working at a slightly higher percentage of capacity than in July. The number of new freight cars delivered in August totaled 3,056 for domestic service and 1,184 for export, as compared with 2,583 and 380, respectively, in July. The deliveries of passenger cars totaled 21 for domestic service and 13 for export. Car repairs totaled 2,818, as against 2,491 in July. At the end of August there were 49,442 freight cars for domestic service on order and undelivered, 861 passenger cars and 27,031 heavy repairs.

For the purpose of comparison there are shown herewith the figures for the several months of the year and the cumulative figures for the eight months. Extended comment is not necessary in view of the fact that the tendencies, as evidenced by the July figures, were covered in detail in the editorial entitled "Car Building in First Seven Months of 1920," on page 511 of last week's issue. The names of the 23 builders co-operating in the figures of the association were also given on the same page.

The figures are as follows:

Table I—Cars Delivered

	Freight cars		Passenger cars	
	Dom.	For.	Dom.	For.
January	4,482	1,904	1	9
February	3,774	1,039	4	..
March	2,796	1,994	11	28
April	2,127	1,912	15	..
May	2,630	1,387	..	..
June	2,608	708	..	21
July	2,583	380	18	27
August	3,056	1,184	21	13
	24,056	10,508	70	98

Table II—Cars on Order and Undelivered

(Figures for end of month)

	Freight cars			Passenger cars		
	Dom.	For.	Total	Dom.	For.	Total
December, 1919	24,816	10,720	35,536	407	110	517
January, 1920	27,282	9,381	36,663	311	103	414
February, 1920	29,706	8,389	38,095	282	103	385
March, 1920	33,061	7,854	41,455	522	80	602
April, 1920	42,869	7,180	50,049	586	88	674
May, 1920	47,761	6,338	54,099	732	110	842
June, 1920	48,171	7,792	55,963	796	97	893
July, 1920	50,275	8,212	58,487	811	88	899
August, 1920	49,442	7,574	57,016	861	75	936

Table III—Freight Car Repairs

	Delivered during month	Delivered Jan. 1 to end of month	On order and undelivered at end of month
May	2,296	10,442	20,130
June	2,541	12,983	24,092
July	2,491	15,474	23,541
August	2,818	19,269	27,031

Obituary

Edwin Thacher, formerly chief assistant engineer of the Louisville Iron & Bridge Company, Louisville, Ky., and, from 1901 to 1912, a partner in the Concrete Steel Engineering Company, New York, died at his home in New York on September 21, at the age of 80. He was graduated from Rensselaer Polytechnic Institute in 1863, and for several years did railroad engineering work. He was the inventor of numerous improvements in civil engineering.

Railway Construction

Atchison, Topeka & Santa Fe.—This company has let contracts to Jerome A. Moss, general contractor, Chicago, for extensions and alterations to its passenger station at Ponca City, Okla., and the building of locker room and lavatory facilities at its roundhouse at Chanute, Kan. The work at the first point is estimated to cost approximately $30,000 and will comprise waiting room, plumbing and heating facilities, while the second contract will total approximately $12,000.

Chicago, Burlington & Quincy.—This company has awarded a contract to T. S. Leake & Co., Chicago, for the construction of a brick and stucco passenger and freight station, 24 ft. by 100 ft., at Albany, Mo.

Chicago, Rock Island & Pacific.—This company has awarded a contract for the construction of a freight house, 40 ft. by 260 ft., at Enid, Okla., to T. S. Leake & Co., Chicago. The office section of this building will be of brick construction, with a tile roof, and the freight sheds will be frame, with a covering of corrugated iron.

This company is building a three-story office building at the corner of Sixty-third and La Salle streets, Chicago. This building, which will be 60 ft. by 84 ft., is to be of reinforced concrete construction, and will be completed about December 15.

Chicago Union Station Company.—This company has let a contract to the Underground Construction Company, Chicago, for building the substructure on the south side of the new viaduct at Roosevelt Road, Chicago. The Underground Construction Company has also been awarded a contract for the installation of conduit lines between Harrison and Polk streets with the W. J. Newman Company, Chicago, and will construct the sub-sidewalk to be laid in connection with the widening of Canal street, between Harrison and Van Buren streets.

Chicago & North Western.—This company has awarded a contract to G. A. Johnson & Son, Chicago, for the construction of a one-story brick passenger station at Glen Rock, Wyo.

Detroit, Toledo & Ironton.—This company is contemplating the construction of a tie treating plant in the vicinity of the 400,000-acre tract of timber land recently purchased by the Ford interests in the upper peninsula of Michigan. This road has also applied to the Interstate Commerce Commission for a certificate of necessity and convenience for a 15-mile extension, leaving its main line near Flat Rock, Mich., or Trenton, and extending to the Ford furnace plant on the River Rouge.

Great Northern.—This company has awarded contracts to the Bay City Foundry & Machine Company, Bay City, Mich., for the construction of 9 locomotive coaling stations. The new stations will be located at Burlington, Seattle, Everett, Columbia River, Wilson Creek, Harrington and Marcus, Washington, at Grand Forks, N. D., and Minneapolis, Minn.

Idaho Central.—This company has applied to the Interstate Commerce Commission for a certificate of convenience and necessity in connection with the proposed construction of a line from Rogerson, Idaho, to Wells, Nev. The company holds that the building of the proposed line will open up extensive agricultural and mining territory now without railroad transportation. Officers further maintain that a new road will shorten the distance between points in Idaho, eastern Washington and Oregon, on the one hand, and Nevada and California on the other, by approximately 400 miles.

Palatine, Lake Zurich & Wauconda.—This company has applied to the Interstate Commerce Commission for authority to cease operating and abandon its line from Palatine to Wauconda, Ill., because it has been unsuccessful in efforts to obtain funds to provide needed facilities.

Southern Pacific, Texas and Louisiana Lines.—Bridge work amounting to approximately $700,000 has been authorized, also ballasting at various points, estimated to cost $3,800,000; new rails to be laid will involve an expenditure of $2,800,000.

Railway Financial News

ANN ARBOR.—The Interstate Commerce Commission has authorized this company to issue 12 notes for $5,190 each, maturing serially and bearing interest at 6 per cent, for the purpose of acquiring two eight-wheel switching locomotives from the American Locomotive Works at the price of $38,925 each, $15,570 to be covered by a cash payment.

On September 25 the Interstate Commerce Commission approved a loan of $250,000 to the Ann Arbor to aid this company in making additions and betterments to roadway and structures at a cost estimated at $500,000. The carrier itself is to finance $250,000 of the cost. The proposed additions and betterments include improvements of and additions to facilities at Toledo, Ohio, at a cost estimated at $400,000, which will enable the Pennsylvania to operate through the terminals of the Ann Arbor at that point to a connection with the Pere Marquette at Alexis, Ohio, making a through Detroit line.

ARKANSAS & LOUISIANA MISSOURI.—This company has applied to the Interstate Commerce Commission for a certificate authorizing it to operate the line from Monroe, La., to and through Bastrop, La., to Huttig, Ark., and, when rehabilitated, the line from Bastrop to Crossett, Ark.; also, for authority to issue $1,000,000 of capital stock for the payment of the purchase price and the necessary cost of rehabilitating the property acquired from the Arkansas & Louisiana Midland at a foreclosure sale.

BOSTON & MAINE.—Minority stockholders on September 23 waived their appeal in the Supreme Court at Springfield, Mass., against the action of the Public Utilities Commission in approving the issuance of $17,606,000 of six per cent bonds under the plan of reorganization, thus ending the threatened litigation.

BUFFALO, ROCHESTER & PITTSBURGH.—See Delaware, Lackawanna & Western.

CHICAGO & EASTERN ILLINOIS.—Judge Carpenter, in the Federal District Court at Chicago, has authorized the receiver to borrow $800,000 from the railroad revolving fund for 15 years at 6 per cent.

CHICAGO & NORTH WESTERN.—This company has applied to the Illinois Public Utilities Commission for authority to establish an Equipment Trust Agreement of 1920, providing for the issuance of equipment trust certificates to an amount aggregating $10,000,000. The company has also applied to the Commission for authority to issue and sell bonds under its "General Gold Bond Mortgage of 1987," and its "First and Refunding Gold Mortgage Bond," which provide for the refunding or retiring of underlying bonds in amounts of $440,000 and $416,000, respectively. The Commission has continued these applications without definite date.

DELAWARE, LACKAWANNA & WESTERN.—In an interview in Rochester on September 23, President William T. Noonan, of the Buffalo, Rochester & Pittsburgh, said that a working alliance between his road and the Delaware, Lackawanna & Western is being considered. "All this," he stated, "is in line with a closer working relationship which may give that line trackage facilities into Rochester, to the great benefit of that city. In turn, through the Buffalo, Rochester & Pittsburgh, the city would have another line by way of the Delaware, Lackawanna & Western to New York City, and all the territory tapped by that line would be directly accessible to traffic originating here and elsewhere on lines of the Buffalo, Rochester & Pittsburgh. Such a working relationship is, I believe, in line with the present-day conception of railroading. Operation of railroads under a close relationship during the war pointed the tendency. All this indicates the point the two lines are at in their plans for closer operation."

INDIANA HARBOR BELT.—This company has applied to the Interstate Commerce Commission for authority to issue demand notes to an amount not exceeding $2,200,000, to provide funds to pay current expenses, pending a settlement to be made with the United States government on the six months' guarantee. The company estimates that its guarantee will amount to $3,000,000.

KANSAS CITY, MEXICO & ORIENT.—This company has applied to the Interstate Commerce Commission for authority to issue $2,500,000 of 6 per cent receivers' certificates maturing December 1, 1921, to be used as collateral for a loan from the government.

MAINE CENTRAL.—The Interstate Commerce Commission on September 25, approved the making of a loan to this company of $653,000, to aid it in the purchase of 10 locomotives, 6 caboose cars and work equipment, at a total cost of $534,780, and in making additions and betterments at a total cost of $783,132. The applicant itself is required to finance $665,706 to meet the loan of the government.

This company has applied to the Interstate Commerce Commission for authority to issue $4,000,000 of 20-year first and refunding mortgage gold bonds at 6 per cent, dated December 1, 1915, to be pledged as collateral for loans.

PEARL RIVER VALLEY.—This company has applied to the Interstate Commerce Commission for authority to issue its unsecured notes for $150,000 to pay for additional construction.

PENNSYLVANIA.—Howard Heinz, of Pittsburgh, president of the H. J. Heinz Company, manufacturer of food products, and United States food administrator for Pennsylvania during the war, has been elected to the board of directors, succeeding Percival Roberts, who resigned last April.

PERE MARQUETTE.—This company has filed a claim with the Railroad Administration for $13,904,416 to adjust its accounts with the government for the period of federal control. This includes an item of $4,965,157 for under-maintenance and depreciation of equipment and $2,816,170 for maintenance of way and structures. There is also an item of $2,652,000 attributed to the inefficiency of labor.

ST. LOUIS & HANNIBAL.—This company has withdrawn its application, made to the Missouri Public Service Commission more than a year ago, for permission to cease operations and scrap its line. George A. Mahan, of Hannibal, counsel for the company, stated that the property had been sold to John Ringling, of circus fame, who proposes to improve the property and operate it. The line extends 103 miles, between Hannibal, Mo., and Perry.

TEXAS & PACIFIC.—This company has applied to the Interstate Commerce Commission for approval of an issue of $477,000 of notes for the purchase of 200 Rodger ballast cars.

VIRGINIAN.—The Interstate Commerce Commission on September 25 certified its approval of a loan of $2,000,000 to this company, to aid it in extending its facilities to adequately handle its rapidly increasing traffic. The carrier itself has financed large expenditures for equipment and other additions and betterments. The commission says that the Virginian is an important coal carrier and the transportation demands upon it are apparently limited only by the extent of its facilities and resources to meet them.

WESTERN MARYLAND.—The Interstate Commerce Commission on September 25 approved the making of a loan of $1,372,000 to the company, to aid it in purchasing 20 Mikado freight locomotives at a cost of $1,500,000, and in making additions and betterments to roadway and structures, at a cost of $822,800. The carrier itself is required to finance $750,000, one-half of the purchase price of the locomotives, and has itself already financed the purchase of two modern car floats at a cost of $500,000.

A BIG IMPROVEMENT in transportation conditions took place during the month of September, according to the Federal Reserve Bank of Philadelphia. It states that the improvement is by no means universal, but certainly the better movement of cars has been of great benefit to industries such as iron and steel, which had been greatly hampered heretofore.

Railway Officers

Executive

Floyd H. Milliard has been appointed assistant to the president of the St. Louis Southwestern on special assignments.

Eppa Hunton, Jr., general counsel of the Richmond, Fredericksburg & Potomac, has been elected president, with headquarters at Richmond, Va., succeeding **W. H. White,** deceased. Mr. Hunton was born on April 14, 1855, at Brentsville, Prince William County, Va. He studied in the grammar schools of Warrenton, Va., and attended the Bellevue High School in Bedford County, Va. Graduating in 1875, he entered the University of Virginia, from which he graduated in 1877. In the fall of the same year he began to practise law with his father at Warrenton, under the firm name of Hunton & Son. In 1901 he became a member of the law firm of Munford, Hunton, Williams & Anderson, at Richmond, Va., and still retains that connection. Besides representing the Richmond, Fredericksburg & Potomac, he is also counsel for the Washington-Southern.



E. Hunton, Jr.

Financial, Legal and Accounting

W. W. Smithey has been appointed auditor of the Houston & Brazos Valley with headquarters at Freeport, Tex., effective September 7, succeeding John R. Johnson, resigned.

Alfred Evens has been appointed general attorney of the Chicago, Indianapolis & Louisville with headquarters at Chicago, effective September 15.

M. E. Keehan, auditor of disbursements of the Chicago Great Western with headquarters at Chicago, has been appointed comptroller with the same headquarters, effective September 20; **W. H. Sievers** has been appointed to succeed Mr. Keehan, effective same date.

Operating

G. C. Vestal has been appointed chief despatcher of the Mobile & Ohio, with headquarters at Meridian, Miss.

G. H. Bateman has been appointed assistant trainmaster of the Illinois Central, with headquarters at Chicago, effective September 1.

D. S. Hartman, M. R. McCreath and J. C. Hamilton have been appointed trainmasters of the Illinois Central, with headquarters at Fordham, Ill., effective September 1.

J. B. Doles has been appointed chief despatcher on the Oregon Short line, with headquarters at Nampa, Idaho, effective September 20, succeeding **C. Fowler,** who has resigned.

H. G. McCarthy, assistant trainmaster on the Shasta division of the Southern Pacific, at Ashland, Ore., has been promoted to trainmaster of the Shasta division with the same headquarters, effective September 16 and the position of assistant trainmaster has been abolished.

C. S. Maharg, superintendent of the Cranbrook division of the Canadian Pacific, with headquarters at Cranbrook, B. C., has been transferred to the Vancouver division, with headquarters at Vancouver, B. C., succeeding **J. L. Jamieson,** who has been transferred to the Edmonton division, with headquarters at Edmonton, Alta., effective September 1. **W. S. Hall,** trainmaster on the Canadian Pacific, with headquarters at Red Deer, Alta., succeeds Mr. Maharg.

F. W. Smith, superintendent of telegraph and chief despatcher of the Bessemer & Lake Erie, has been promoted to assistant division superintendent, effective August 9. **R. V. Bagnall** succeeds Mr. Smith as chief despatcher and the title of superintendent of telegraph has been dropped, Mr. Smith still handling his former duties. **W. A. Skellie,** assistant trainmaster, with headquarters at Albion, Pa., has been promoted to trainmaster, with the same headquarters. **G. R. Steiger** succeeds Mr. Skellie.

Traffic

V. Schaffenburg has been appointed assistant general freight agent of the Texas & Pacific, with headquarters at New Orleans, La.

Charles J. Collins, general agent of the Chicago & North Western with headquarters at Cleveland, Ohio, has resigned, effective October 1.

W. E. Goodloe has been appointed division freight and passenger agent of the Pan Handle & Santa Fe, with headquarters at Amarillo, Tex.

W. S. Duryee has been appointed commercial agent of the Seaboard Air Line with headquarters at New York effective September 16, succeeding O. G. Boesser, resigned.

H. G. Sullivan has been appointed commercial agent of the Central of Georgia with headquarters at Athens, Ga., effective October 1, succeeding B. R. Bloodworth, resigned.

J. L. Cahoon, freight traffic representative of the Mobile & Ohio, has been appointed commercial agent with headquarters at Sheffield, Ala., succeeding J. G. Kitchell, promoted.

P. C. Patterson has been appointed general eastern agent of the Chicago, Indianapolis & Louisville with headquarters at New York, effective September 1, succeeding Cyril R. Boak, promoted.

J. Harmon Wilson has been appointed assistant general freight agent of the Norfolk & Western with headquarters at Columbus, Ohio, effective September 16, succeeding S. S. Bridgers, resigned.

T. B. Montgomery, general agent of the Northern Pacific with headquarters at New York, has been promoted to assistant freight traffic manager with headquarters at St. Paul, Minn., effective September 16.

Cyril R. Boak, general eastern agent of the Chicago, Indianapolis & Louisville, with headquarters at New York, has been appointed division freight agent, with headquarters at Chicago, effective September 1, succeeding **N. R. Markle,** resigned.

R. Chisholm, inspector of agencies of the Canadian National and Grand Trunk Pacific, with headquarters at Winnipeg, Man., has been given jurisdiction, effective September 1, over all Canadian National lines west of Armstrong, Ont., west of and including Port Arthur, Ont., to and including Edmonton, Alta. This territory will also include the Stony Plains, St. Albert, Athabaska and Onoway subdivisions, and all Grand Trunk Pacific lines east of and including Edmonton, Alta.

J. H. Wilson, foreign freight agent of the Norfolk & Western, with headquarters at New York and Norfolk, Va., has been appointed assistant general freight agent, with headquarters at Columbus, Ohio, succeeding S. S. Bridgers, who has resigned. **J. W. King** succeeds Mr. Wilson.

H. A. Benjamin, whose promotion to assistant general freight and passenger agent of the Waterloo, Cedar Falls & Northern, with headquarters at Waterloo, Iowa, was announced in the *Railway Age* of September 17 (page 507), was born on November 8, 1885, at Todago, Ind. He entered railroad service with the Toledo, St. Louis & Western on August 6, 1905, and served as agent and telegraph operator at various stations on that road. In December, 1909, when the Toledo, St. Louis & Western was consolidated temporarily with the Chicago & Alton, he was transferred to Chicago, where he served in the accounting department until March 1, 1911. Upon the latter date he was appointed agent and telegraph operator on the Southern division of the Chicago & Great Western. In June, 1915, he resigned to accept an appointment as commercial agent of the Waterloo, Cedar Falls & Northern, with headquarters at Waterloo, Iowa, the position he held at the time of his recent promotion.

Mechanical

E. H. McCann has been appointed master mechanic of the eastern division of the Chicago Great Western, with headquarters at Stockton, Ill., effective September 1.

Engineering, Maintenance of Way and Signaling

E. E. Mayo, roadmaster of the Southern Pacific at Hillsboro, Ore., has been promoted to division engineer of the Portland division, with headquarters at Portland, Ore., effective September 15. Mr. Mayo succeeds **H. M. Lull,** promoted.

J. B. Mabile, assistant engineer maintenance of way of the Chicago, Rock Island & Pacific, with headquarters at El Reno, Okla., has been appointed supervisor of work equipment, with headquarters at Chicago, effective September 16, succeeding A. L. Greenabaum, who has resigned.

C. D. Rex, signal supervisor of the Southern, Lines West, with headquarters at Oakdale, Tenn., has been appointed signal and electrical supervisor with headquarters at Cincinnati, Ohio, succeeding T. N. Charles, promoted; **B. Furman,** assistant signal supervisor with headquarters at Oakdale, Tenn., has been promoted to succeed Mr. Rex.

H. B. Holmes, who has been appointed chief engineer of the Pittsburgh & West Virginia and the West Side Belt, with headquarters at Pittsburgh, Pa., as noted in the *Railway Age* of September 10 (page 468), was born on July 13, 1875, at Ferris, Ill. He graduated from the State University of Iowa at Iowa City, Iowa. His first railroad work was done for the Chicago, Burlington & Quincy during the vacation periods of his college course, first as rodman and then as chainman and timekeeper. In 1900 he became rodman for the Kansas City, Mexico & Orient and remained with that company for eight years, advancing meanwhile to levelman, transitman, office engineer, engineer and assistant to the superintendent of construction. In 1913 he was appointed resident engineer at Kansas City, Mo., and in February, 1917, his title was changed to chief engineer, although his duties remained practically the same, that being the title given his position before the Kansas City, Mexico & Orient was put into receiver's hands. He resigned in September, 1917, to accept a position with the firm of Coverdale & Colpitts, of New York. He became principal assistant engineer in charge of the New York office of that firm in March, 1920, and retained that position until his recent appointment.

Special

J. M. Bannerman, chief special agent of the Canadian National, has been given jurisdiction over the lines of the Grand Trunk Pacific, in addition to his former duties, effective August 24. He will retain his headquarters at Winnipeg, Man.

Julius H. Parmelee, chief statistician of the Bureau of Railway Economics, with office at Washington, D. C., has been appointed director of the bureau. R. J. Leimer, heretofore assistant statistician, has been appointed statistician and J. E. Monroe has been appointed assistant sttistician.

Railroad Administration

George M. Huss, who resigned some months ago as chairman of the committee on claims of the Railroad Administration, has been appointed assistant to the director of liquidation claims, with office at Washington, D. C., effective on October 1.

Obituary

Jacob H. Schiff, head of the banking firm of Kuhn, Loeb & Co. of New York, since 1885, died on September 25 at his home in New York at the age of 73.

Richard L. O'Donnel, vice-president of the central region of the Pennsylvania with headquarters at Pittsburgh, Pa., died on September 28 at New York after an illness of several weeks. Mr. O'Donnel was born on November 5, 1860, at Philadelphia, Pa. He graduated from the Polytechnic College of Pennsylvania in 1882 and in 1883 entered the service of the Pennsylvania as rodman. From then until 1896, when he was appointed assistant engineer in the principal assistant engineer's office at Altoona, Pa., his promotions were frequent. In 1887 he was appointed assistant supervisor at Hollidaysburg, Pa., and in 1888 was transferred to Lancaster, Pa. For a short time afterward he served as assistant superintendent at New Florence, Pa., and in 1889 was appointed supervisor of the Altoona yard, retaining that position until 1891 when he was appointed assistant engineer of the Tyrone division. He was transferred to the Pittsburgh division in December, 1894, and in February, 1897, was appointed assistant superintendent of that division, being promoted to superintendent in 1902. He became general superintendent of the Buffalo & Allegheny Valley division in 1903 and in 1911 was transferred to the Western Pennsylvania division. He was promoted to assistant general manager of the lines east of Pittsburgh in 1917 and again promoted to general manager in 1918, serving in that capacity under Federal control. Mr. O'Donnel was elected vice-president in March, 1920. While acting for the American Railroad Association, in addition to his other duties, he was placed in charge of the movements of troops to the Mexican Border in 1916 and in the early part of 1917 was assigned to Governor's Island where he had entire charge of the embarkment of all troops and supplies. In this connection he worked in conjunction with the War Department.



R. L. O'Donnel

Strike Ending.—The strike as a mode of solving labor problems is deprecated by all the judicious. In the course of time it must wholly be abolished. To strike is to wage war, and there is need for perpetual peace in the industrial world. Without it there can be no continued prosperity, nor comfort, nor content. It rejoices our soul, therefore, to find a labor organization which has renounced the stone-age method of enforcing its demands. All honor is due to the Order of Railroad Station Agents of Pittsburgh, which has eliminated its by-laws authorizing strikes and voted to submit grievances hereafter to the Railroad Labor Board and abide by its decision. This is a small straw and the breeze whose direction it indicates is not very strong, but we hope it will wax to a big wind.—*Leslie's.*

EDITORIAL
Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Specifying Material Purchases

Many mechanical men, who would not be willing to confine their domestic purchases to a single firm, particularly if they thought that the prices charged were out of line, do not hesitate in submitting requisitions for railway supplies to specify materials that can only be obtained from a single manufacturer. Many specialties are essential and must be specified. The purchase of a machine tool designed for a particular service or a certain brand of tool steel to which the shop has become accustomed presents an unusual problem, but there is no reason why the purchase of by far the greater bulk of railway supplies cannot be subject to a specification. It should be the policy of the mechanical and engineering departments to establish satisfactory standards and to incorporate these standards into specifications covering as large a number of items as possible. This at once enables the purchasing agent to buy to the best advantage and affords the mechanical or engineering department an opportunity to protect the railroad against inferior materials. It is the best business policy and the only basis on which these departments can genuinely cooperate with the service of supply. There is still some doubt as to whether certain materials can be adequately defined by specifications. The Railroad Administration purchased large quantities of paint by specification and it will be interesting to determine the results obtained on the standard equipment. In any event, a sincere effort should be made to extend the application of specifications to an increasing variety of railway supplies.

Is First Cost the Only Consideration?

It is unfortunate that any railroad official responsible for the purchase of machinery or materials should disregard any consideration as to the ultimate expense and order material upon the basis of its first cost. This should never be the sole consideration when it is only a small proportion of subsequent operating and maintenance costs. Does it pay to save five hundred dollars on the first cost of any item if it will cost one thousand dollars more to keep it in operation annually? The principle applies with particular force to the purchase of high speed steel. Most satisfactory results can always be obtained with the continued use of a certain brand of high speed steel. The shop becomes acquainted with the characteristics of this particular brand, it knows how to treat this steel in order to get the best results. The purchase of another brand, even if as good, will cause confusion and the mistreatment of a certain portion of the new steel. The purchase of a cheaper steel would unquestionably handicap the work of many men whose daily wages amount to many times the value of the special steel. It is recognized that wherever possible purchasing agents must be allowed such latitude in the purchase of materials as will enable them to buy to the best advantage. They cannot be required to confine their orders to a single manufacturer and be expected to protect their company against excessive charges. But the purchase of high speed steel presents an unusual case; often the most expensive article is by far the most economical in the long run. Purchasing agents must recognize this fact and respect the judgment of tool makers and shop foremen or they will inevitably increase shop costs and may do much harm. There is an old adage to the effect that if you expect a workman to do good work, you must see that he has good tools.

Record Locomotive Exports

There is apparently nothing wrong with our export trade in locomotives. According to the official figures shown in the Monthly Summary of Foreign Commerce of the United States, the exports of steam locomotives for this year are going to break all records. The exports in July, 1920, numbered 134 valued at $4,742,306 as compared with 17 valued at $322,775 in July, 1919. In the first seven months of 1920 the locomotives exported numbered 1,025 valued at $32,549,343, as compared with 446 valued at $15,426,439 in the same period of 1919, or 690 valued at $15,426,439 in the first seven months of 1918. Our best previous record was reached in the fiscal year ended June 30, 1918, in which period we exported 1,457 locomotives valued at $35,889,632. If the exports continue during the remainder of 1920 in the same proportion as for the first seven months, we should not come far from doubling the 1918 record.

Will the Railroads Get Their Share?

The recent opening of American universities for the fall semester has disclosed some interesting facts on attendance. One eastern school reports an enrollment of 30,000 students. Western school registrations are double those of pre-war days. Abnormal conditions such as the unusual prosperity of the times can be but partly responsible for this enormous growth of our colleges, and even with the advent of hard times, it is clear that the college trained man will be available in much larger numbers than in the past. This places in a new light the employment of the university graduate by the railroads. There were formerly many, and no doubt there still are a few, who question the value of higher education, but it is unthinkable that these many thousands of young men are spending four of the best years of their lives and many thousands of dollars in a vain undertaking. Higher education is becoming increasingly popular because it is paying dividends to most of the men who have made the investment and also to the firms that employ them. Whether the railroads are to participate in the benefits of this system to the fullest extent will depend on what they are willing to offer. This may embody many things, but the foremost of these is recognition—not in the sense of preferment, but through a system of organization that provides such training of these specially educated men as will insure the assignment of the man to the grade and character of position to which he is best suited, and recognition of demonstrated merit. To a certain extent the worth of the technical man has been recognized in the purely technical departments, but this has been more because of his admitted ability to do certain technical work than because it was felt that he had the stuff in him of which the ablest officers are made. If

the university man is to be employed for a usefulness beyond his purely technical value, it must be admitted that he must undergo a period of practical training, but a man who has sacrificed his earning capacity and perhaps gone into debt for his education should not be expected to submerge himself in a group of eighth grade or high school graduates to wait until some act of providence affords the opportunity to demonstrate his worth. The form of society in which we live is becoming more and more complex, and it is not safe to rely solely on the survival of the fittest to provide leadership.

Standardization Resurrected Again

After the extended discussion of the merits of the standardization of railway equipment in the early days of federal control, and its abandonment after trial with cars and locomotives, one is surprised to note the plea for the standardization of maintenance equipment and practices, published in another column. There is much of merit in Mr. Morse's contention that there are certain wastes incident to the lack of standardization and it will be admitted that there are many details such as the drilling of rails which could be standardized to advantage. However, the recommendation that the Interstate Commerce Commission recognize the American Railroad Association as the authority through which uniformity of practice shall be established, and that this association be given mandatory power to enforce its standards is so drastic in its effect as to warrant serious reflection. To give this association or any association power to specify the standards of construction and of maintenance for a road is dangerous. It is not necessary to repeat the arguments against standardization which were set forth in these columns a couple of years ago. Suffice it to say that standardization may easily be carried so far as to arrest development and the exercise of initiative at a time when individual initiative is needed by the railways more than ever before. It is admitted that a diversity of standards tends to increase manufacturing costs but the remedy—standardization—when put into general application leads to even greater disadvantages and is worse than the disease. There are undoubtedly parts of the railroad plant standization of which would be desirable but the question of standardization of each part should be treated upon its individual merits.

The Eighth Fuel Commandment: Inspection

It is imperative that fuel purchases be thoroughly inspected to insure conformity with the highest practical standards. A reduction in the percentage of impurities, or ash, may be taken as the objective of everyday inspection although the percentage of fine coal, or slack, is an important consideration. Suppose you contract for one hundred thousand tons of coal which, having an average ash content of 12 per cent, would meet your requirements over a certain period. If the average percentage of impurities were subsequently permitted to increase one per cent it would then be necessary to buy over 2,000 tons more coal for the same period involving at least 40 additional empty and loaded car movements. Would it not be better to strive for a lower percentage of impurities by vigorous inspection than to permit deterioration in quality through lax inspection at the mines? Experienced inspectors can be of the greatest assistance to operators towards improving the product of their mines. Their efforts should be constructive and not purely critical. This work is exceedingly trying in the face of a coal shortage and the rejection of poor coal will not always solve the problem. A car recently rejected by the representative of an important eastern carrier moved forward as a commercial shipment and on account of a fuel shortage was later confiscated by the same railroad at a price which far exceeded the original figure. Purchasing agents are not inclined to co-operate heartily with the rigid inspection of fuel because it increases the difficulty of obtaining an adequate supply. But rigorous fuel inspection is so fundamental to fuel efficiency that it must obviously be classed as one of the ten fuel commandments.

Contest on Car Loading

That railway men are keenly alive to the necessity of rendering the maximum transportation service is indicated by the fact that 42 contributions were received in the contest on "Means of Increasing the Average Miles Per Car Per Day" which closed on September 30. These papers came from men in all ranks of railway service, including general managers, division and terminal superintendents, agents, yard clerks, etc. The papers are now in the hands of the judges and will be published in early issues of the *Railway Age*. Second in importance only to the problem of expediting the movement of cars as a means of increasing the transportation facilities of the country is that of increasing the average load per car. The Association of Railway Executives has set before the roads a goal of an average of 30 tons per car. The problem of securing greater mileage from cars is largely although not entirely one for railway men to solve. Increasing the loading of cars depends in greater measure upon the co-operation of shippers and means must be devised to enlist their full support. Because of the importance of this subject to the transportation industry, we announce a contest on Means of Increasing the Average Loading of Cars, to which we invite contributions by railway officers and shippers, thus affording an open form for the frank discussion of means of solving this problem of such great concern to both. Contributions to this contest should preferably not exceed 1,200 words in length, and should be confined to the presentation of practical means within the power of the railways and the shippers to put into effect. To stimulate interest in this subject we will award prizes of $50 and $35, respectively, for the two best papers received and will pay our regular space rates for others accepted and published. All articles should be sent to the editor of the *Railway Age*, 608 south Dearborn street, Chicago, and must be mailed before November 10 to be considered by the judges.

Impartial Treatment of Shippers

In speaking of the relationship of the railroads to the public, it has been long recognized that it is the shippers who wield the most potent influence over the destinies of the carriers. Thus the drastic railway legislation of the last two decades had its inception when special concessions to favored patrons served to crystallize antagonism among the smaller shippers who suffered from these objectionable practices By the same token there is no question but that the Esch-Cummins law became a reality only because the great mass of shippers were thoroughly convinced that improved service could come only through a return to private control under terms which would enable the roads to improve and extend their facilities. It is patent, therefore, that the future of the railroads depends very largely on the esteem in which they are held by their patrons and one of the first principles to this end is fair dealing. We are not in a position to say whether these were the considerations which prompted the Railway Corporate Engineers' Association to recommend uniform practice in the construction and maintenance of in-

dustry tracks, but this is surely a step in the direction of that impartial treatment of the shippers which is so necessary to obtain and retain good-will. This proposal implies no departure from existing practices; rather it means the continued observance by the individual roads of General Order No. 15 and Supplement No 1. thereto, promulgated by the United States Railroad Administration, prescribing the division of the expense involved in the construction and maintenance of the industry tracks. This would seem to embody one of those practices initiated by the Railroad Administration which it would be well for the roads to perpetuate. There are cases where strict compliance with an established rule is better than the exercise of the most ingenious initiative and it should be clear that this is one of them.

The Significance of Recent Car Loading Statistics

THE STATISTICS regarding the number of carloads of freight moved by the railways within recent weeks raise some interesting questions.

One of these is as to the effects produced by the advances in freight rates. Not a few persons contended that such large advances in rates as went into effect in the last week in August impose a burden on commerce that would reduce the freight moved. In the week ended August 28 the number of car loads shipped was 986,064. This was the highest record that had been reached in the present year, and a good many comments were made implying that the shippers had been hurrying the forwarding of freight to forestall the advance in rates. There was a decline in the number of loads moved during the next two weeks, which seemed to give support to this view. But in the last week for which statistics are available, that week ending September 18, the number of carloads moved was 983,913, which was the largest it had been in any week of the present year, excepting that ended August 28. This certainly does not indicate that the advance in rates has had any tendency to reduce the amount of freight shipped.

Another interesting question is as to whether the movement of freight thus far indicates any recession in general business activity. It is well known that there has been a decline of activity in some industries, and there is much talk to the effect that a slump in production and commerce generally has been occurring. The statistics regarding carloadings, however, show that in the last four weeks for which we have records the freight movement continued to be practically as heavy as it ever was at that time of the year. The year 1918 was one of tremendous industrial activity owing to the war; and in the late summer and early fall of the year 1919 there was a great revival of business activity and the freight traffic of the railways became as large as it ever had been at that time of the year.

How does the amount of freight which recently has been moved compare with the amounts moved during the corresponding weeks of 1918 and 1919? In the four weeks ending with September 18, 1920, the total number of cars of freight loaded was 3,788,763. This was only 9,244 cars less than in the corresponding weeks of 1919. The number of cars moved in these weeks of 1920 was only 13,455 less than in 1918. The differences between the amounts of freight moved in 1918, 1919 and 1920 were relatively infinitesimal. The figures indicate that the productive and commercial activity of the country on the whole was as great as in either of the preceeding two years, although there undoubtedly was less business and reduced prosperity in particular industries and particular territories.

Another most interesting question which these statistics raise is in respect to the maximum capacity of the railways with their present facilities. In the years 1918 and 1919 under government control and in the year 1920 under private control the managements have put forth the utmost efforts to move the greatest possible business with the available facilities. In each of these years the maximum movement of freight attained in a week has been almost the same, namely, about one million carloads. Some individual railroads made better showings in some of these years, and some in others, depending on local conditions, on the distribution of the total supply of cars, etc., but the maximum result which the railways as a whole have been able to attain has been in each of these years about the same. There has been considerable difference of opinion among students of railway matters as to whether it is practicable, even under the most favorable conditions and the most skilful operation, for the railways, with their existing facilities, to move a substantially greater freight traffic than they have in the past, and certainly the results gained up to the present time indicate that one million carloads a week is practically the maximum they can handle. Whether this is the case should be pretty definitely determined within the next few weeks. Should the traffic offered continue heavy and weather conditions favorable, and the railways still fail to move substantially more than one million carloads a week, the fact that this is practically the maximum number of loads they can move with existing facilities and that further increases in the amount of transportation rendered will have to wait upon increases in facilities, will be pretty conclusively demonstrated.

In this connection, it is pertinent to call attention to the significance of the fact that no little satisfaction is felt by railway officers and business men when the amount of freight moved in any given part of the year exceeds the amount handled in the corresponding parts of previous years. Until within the last few years it was not regarded as an unusual achievement for the railways to handle more freight in any one year than they have handled in previous years. On the contrary, their development formerly went on in proportion to the increase in the productive capacity of the country and everybody expected that in any year when general business was active the amount of freight handled would largely exceed that of any previous year.

Equipment Orders in the First Nine Months of 1920

THE CLASS I RAILROADS of the United States ordered in the first nine months of 1920, 1,403 locomotives, 40,254 freight cars and 814 passenger cars. Canadian roads ordered 154 locomotives, 10,773 freight cars and 174 passenger cars. The total orders for freight cars placed in the United States amounted to 57,172; in addition to the 40,254 placed by Class I roads, there were also 256 cars ordered by other roads and 16,662 by private car lines and industrials.

Interesting figures may be developed from a detailed analysis of the orders for equipment reported in the Equipment and Supplies column of issues of the *Railway Age* from January 1 to the last issue in September. The figures themselves as given below show that the railroads are not ordering cars anywhere near in proportion to their needs in anything like the manner they should. Locomotives are being contracted for on a proportionately better basis, but if the rate of buying for the rest of the year continues on the same basis as for the first nine months, it is evident that the totals of locomotive orders for the year will not be relatively large.

Figures concerning the *production* of freight and passenger

cars up to the end of July were the subject of an editorial on page 511 of the *Railway Age* of September 24, in which the attempt was made to ascertain the reasons for the low production of cars in the first seven months of this year. The last sentence in the editorial was "No data could show more conclusively than those given above (referring to the figures of production) that at present almost no progress is being made in increasing facilities." The interest created by this rather severe pronouncement has been so great as to lead us to make a detailed analysis of the *orders* for equipment reported so far this year. This has been done with a view to seeing if the figures for orders would lead to a conclusion relative to the progress that has been made in rehabilitating the railway equipment of the country different from that derived from the figures of *production*. It is apparent that that they do not. While it is true that the orders for equipment have exceeded the production of equipment, it is also evident that the orders placed have run on a scale very much below that which is going to prove necessary if the railways are to have sufficient cars and locomotives for the next two or three years.

Before introducing the figures themselves, it is wise to utter a word of caution as to their use. They are not strictly comparable with the figures given in the editorial in the issue of September 24 mentioned above. The figures given herewith cover all *orders* reported in the issues of the *Railway Age* from January to September. Those given in the former editorial showed the *production* of the 23 car builders reporting to the Railway Car Manufacturers' Association. They did not include cars built in railway shops. The figures given herewith are, however, comparable with certain figures relative to orders which were given in an editorial in the issue of September 10, with the exception that the figures below are shown more nearly complete and have been corrected in instances in the light of later information.

Table I shows the orders for locomotives reported in the issues of the *Railway Age* from January 1 to the last issue of September. In this period there were reported in the *Railway Age* orders for 1,403 locomotives for Class I railroads, 49 for other roads and 56 for industrials—a total of domestic orders of 1,508. There were also reported 669 locomotives ordered for export. Canadian roads contracted for 154 locomotives. The bulk of the domestic orders was placed in February, March, April and May. Business fell off to ridiculously low figures in the summer months, but September showed a considerable compensating advance. The total of 1,508 locomotives for the nine months is not exceptionally low. It shows that some roads have ordered locomotives in good quantity. There is no indication that the roads in general have placed the quantity of orders that they are going to find it necessary to place before they have recovered the ground lost during the war.

Table I—Locomotives Ordered in 1920

	United States					Canada	
			Domestic				
Issue	Class I roads	Other roads	Car lines or industrials	Total Dom.	U. S. export	Dom.	Export
January	19	9	4	32	206	..	7
February	283	6	4	293	86	85	..
March	201	14	13	228	89	32	..
April	414	17	2	433	108	28	..
May	188	2	7	197	8	3	..
June	64	1	..	65	40	4	..
Total, first half year	1,169	49	30	1,248	537	152	7
July	86	..	9	95	77	2	..
August	11	..	3	14	24	..	..
September	137	..	14	151	31	..	..
Total, nine months	1,403	49	56	1,508	669	154	7

Table II gives the analysis of freight car orders. In the nine months period the Class I railroads were reported as having placed orders for 40,254 freight cars. There were 256 ordered by other roads and 16,662 by car lines and industrials—a total of 57,172 cars ordered for domestic service in the United States. There were 10,773 cars ordered by Canadian roads. Export orders reported totaled 4,527, including 80 placed in Canada. It is generally accepted that 100,000 cars are needed yearly to take care of retirements alone. The orders will have to average 20,000 a month for the rest of the year to make that total for the Class I roads. The 16,662 cars ordered by car lines and industrials also merit attention. The tank car orders alone in 1919 totaled 15,295.

Table II—Freight Cars Ordered in 1920

	United States					Canada	
			Domestic				
Issue	Class I roads	Other roads	Car lines or industrials	Total Dom.	U. S. export	Dom.	Export
January	1,300	6	914	2,220	1,000	....	80
February	5,992	...	400	6,392	516	....	..
March	3,069	100	500	3,669	625	6,567	..
April	18,018	...	1,304	19,322	350	4,206	..
May	5,010	100	2,292	7,402	207	....	..
June	1,000	...	2,757	3,757	375	....	..
Total, first half year	34,389	206	8,167	42,762	3,073	10,773	80
July	2,850	...	2,618	5,468	66	....	..
August	1,000	50	5,106	6,156	900	....	..
September	2,015	...	771	2,786	408	....	..
Total, nine months	40,254	256	16,662	57,172	4,447	10,773	80

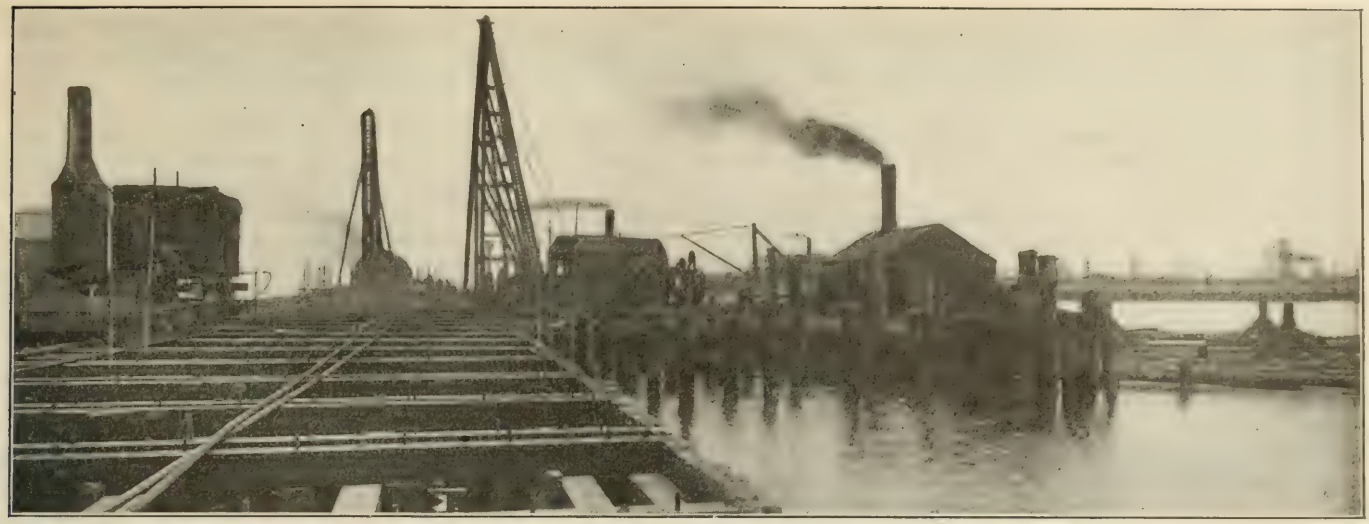
Table III shows that the passenger car orders placed by Class I roads totaled 814, for Canadian roads 174, and for export 80. This total of 814 for the nine months' period represents a great advance over the total of orders placed by United States railroads in 1919, of 292, or of the United States and Canada in 1918, of 131. It is, however, far below the average of preceding years when the roads of the United States and Canada were accustomed to order 2,000 or more cars yearly, as for example, 2,544 in 1916.

Table III—Passenger Cars Ordered in 1920

	United States			Canada	
		Domestic			
Issue	Class I roads	Total Dom.	U. S. Export	Dom.	Export
January	107	107	...	...	...
February	35	35	...	...	...
March	148	148	...	102	...
April	328	328	50	...	...
May	57	57	...	72	...
June	...	...	...	...	...
Total first half year	675	675	50	174	...
July	60	60	10	...	...
August	...	...	...	...	...
September	79	79	...	...	...
Total nine months	814	814	60	174	...

The statement was made in our issue of September 10, in speaking of the orders for cars and locomotives in August, that: "In view of the new conditions under which the railways are operating, there is every reason to expect that the remaining months of the year will show a considerable improvement over the three summer months." This prophecy, as it might properly be called, was borne out by the September totals. Nevertheless, everything considered, it is apparent that the nine months' figures for *orders* do not permit a different conclusion from that derived from those of *production*. The railroads have not made much progress in increasing facilities.

Despite the discouraging nature of the facts above submitted, it is not difficult to feel optimistic over the situation. Conditions are brightening from day to day and we find no reason for changing the opinion so often expressed in these columns that there is considerable business in sight. In the meantime, the problem is up to the operating man and he is showing that he realizes the fact by the progress that is being made in advancing towards the standards of operating efficiency set by the Association of Railway Executives.

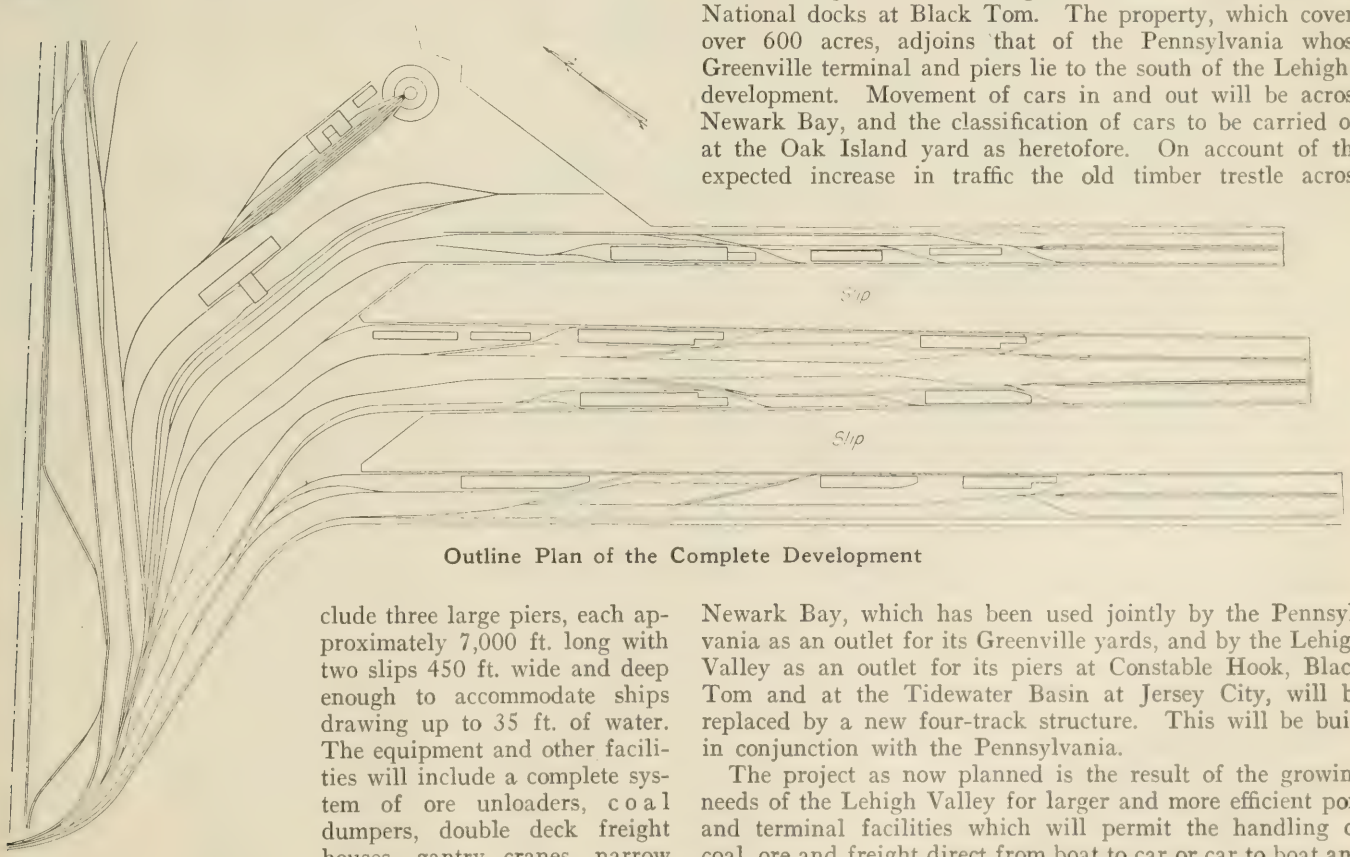


Work on First Unit Is Being Pushed Rapidly

Lehigh Valley Plans Comprehensive Terminal

Work Begun on First Unit of Deep Water Project Having Total Dock Length of Nearly Six Miles

THE LEHIGH VALLEY has recently commenced work on a tidewater terminal development in the Greenville section of Jersey City that, for size and completeness of harbor facilities, will be one of the foremost in the country. The Claremont project, as it is known, will include three large piers, each approximately 7,000 ft. long with two slips 450 ft. wide and deep enough to accommodate ships drawing up to 35 ft. of water. The equipment and other facilities will include a complete system of ore unloaders, coal dumpers, double deck freight houses, gantry cranes, narrow gage electric locomotives and other miscellaneous modern material handling facilities. The improvements to accompany the pier construction provide for receiving, loading and storage tracks, an engine terminal, shops, etc., and a large capacity grain elevator.



Outline Plan of the Complete Development

The new Claremont terminal is located on the tidewater flats off Jersey City and lies approximately midway between the old ore piers of the Lehigh at Constable Hook and the National docks at Black Tom. The property, which covers over 600 acres, adjoins that of the Pennsylvania whose Greenville terminal and piers lie to the south of the Lehigh's development. Movement of cars in and out will be across Newark Bay, and the classification of cars to be carried on at the Oak Island yard as heretofore. On account of the expected increase in traffic the old timber trestle across Newark Bay, which has been used jointly by the Pennsylvania as an outlet for its Greenville yards, and by the Lehigh Valley as an outlet for its piers at Constable Hook, Black Tom and at the Tidewater Basin at Jersey City, will be replaced by a new four-track structure. This will be built in conjunction with the Pennsylvania.

The project as now planned is the result of the growing needs of the Lehigh Valley for larger and more efficient port and terminal facilities which will permit the handling of coal, ore and freight direct from boat to car or car to boat and the berthing of more vessels of increased size and draught than is now possible. The present port facilities of the Lehigh Valley concerned in this work include the coal piers

at Perth Amboy, N. J., with discharge space for vessels drawing up to 20 ft. of water, the ore piers at Constable Hook handling two ships of 35 ft. draught, the piers at Black Tom which are used chiefly for lighterage work of export and import bulk freight delivered in open top cars and the docks at the Tidewater Basin at Jersey City. The capacity of the latter terminal is now limited to 4 vessels with a maximum draught of 23 ft. and any further development at this point is restricted by the hard rock which forms the bed of the river at this point. The growth of import and export traffic and the increasing size of vessels in the last eight or ten years have rendered it much more difficult to handle such freight in the most economical manner and was the underlying cause for the present project which in a manner centralizes the export and import traffic and permits of the use of the old piers for their most efficient purpose.

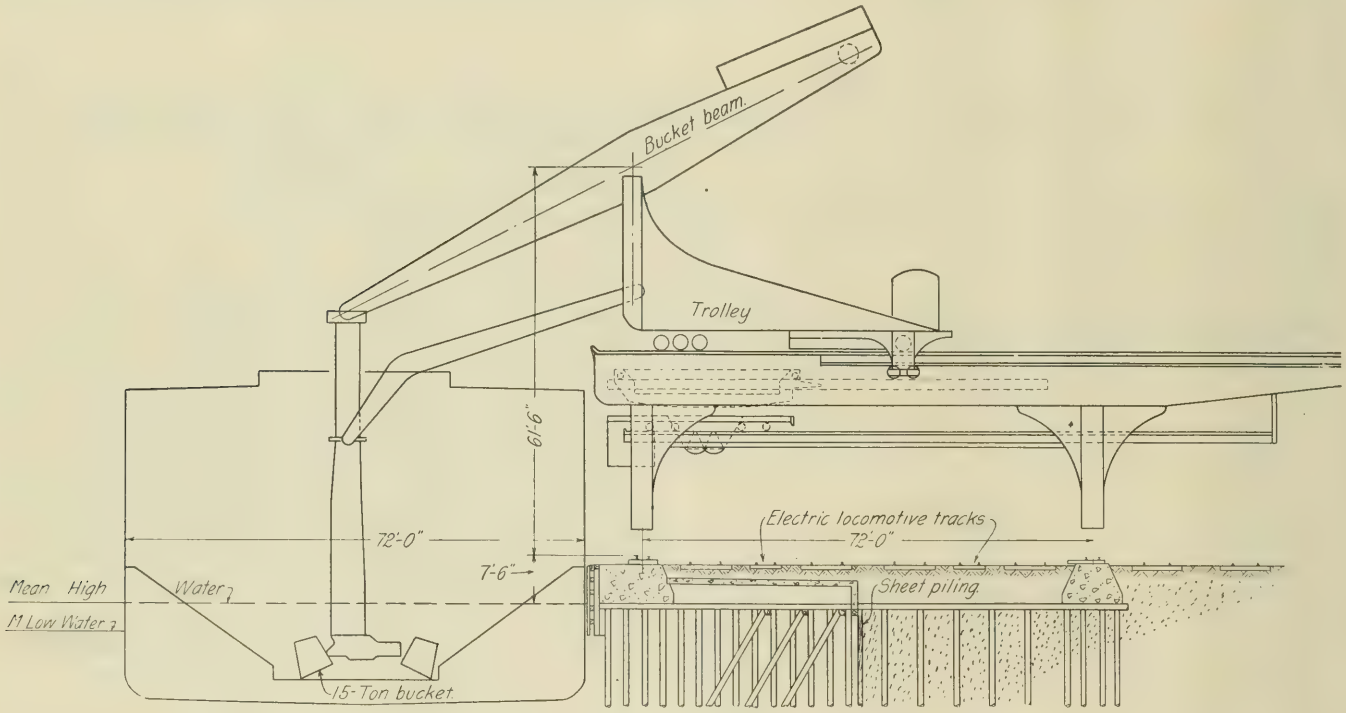
The design of the terminal calls for the construction of three piers, two of which are approximately 400 ft. wide, including backfill and the double width center pier 700 ft. wide. The four docks thus formed will have lengths varying from 6,650 ft. for the north pier up to a maximum of 7,800 ft. for the south pier. These piers will be built inshore from the present established bulkhead government line for a distance of about 3,000 ft. as a combination pier and backfill. The remainder of the piers will extend approximately 4,000 ft. out from that line and will be supported entirely on timber piles carrying a concrete deck and fill, all designed for Cooper's E-60 loading.

The backfill will be retained by a line of 8-in. by 12-in. sheet piling carried across the bulkhead line and back to the inshore end at a distance of 40 ft. from the dock line. The necessary fills alongside the north and south docks, the inshore end of the central dock and the area for the storage yards, engine terminals, etc., will be built up from the material dredged from the two slips. In order to furnish ample room for the movement of ships in and out of their berths these slips will be made 450 ft. wide at the inshore end, gradually widening to 550 ft. at the outer end and terminating in a wide channel dredged to deep water. The estimated yardage which will be removed by hydraulic dredging is about 12,000,000 cu. yd. for the entire project.

The construction of the terminal will be carried on in sections of which the work on the first unit is now under way. This consists approximately of the first half of the proposed Pier No. 1 and gives a dock length of about 3,000 ft., the pier extending to a point slightly outside the government bulkhead line. A 700-ft. timber trestle will be continued on out from this point to form a support for a drill track upon which loaded ore cars will be handled. The outer 1,060 ft. of the combined pier and fill construction will be equipped with two 15-ton electric ore unloaders of the bucket and boom type and two 5-ton unloaders of the rope system and grab bucket type. These will span four loading tracks and will have an unloading capacity of a car a minute.

Two vessels 600 ft. in length can be accommodated at this section of the pier, while the remainder of the dock space is divided into three parts. These include a 720-ft. open dock with four tracks and an open storage space served by a 30-ton traveling gantry with revolving crane which spans all four tracks and a warehouse dock serving a double deck warehouse 800 ft. long and 100 ft. wide. Two boats may be handled at the warehouse and one at the open dock, giving a total berthing capacity of five 500-ft. to 600-ft. vessels at one time.

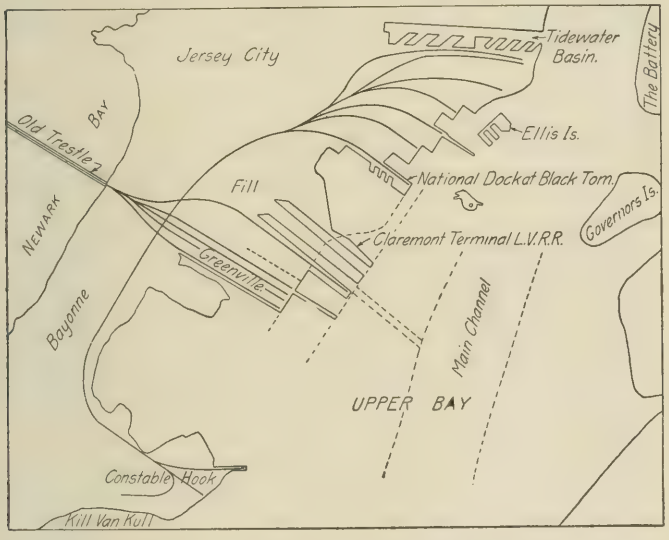
The 3,000 ft. unit will be constructed in the manner prescribed for the completed pier with a line of sheet piling running lengthwise of the pier 40 ft. from the dock to the end and then across to a stone dyke connecting with the built-up land of the Pennsylvania terminal. The area between the sheet piling, the bulkhead and the adjoining property is now being built up with the material obtained from the dredging of the channel. This will be dredged 300 ft. wide for the length of the dock, tapering to 250 ft. wide at the end and continued out at this width for a distance of nearly 5,000 ft. to deep water. About 3,600,000 cu. yd. of material will have to be removed, of which about 1,000,000 cu. yd. had been removed up to August 1, 1920.



Section Through One of the Proposed Piers and an Ore Unloader

With the main yard of the Lehigh lying on the opposite side of Newark Bay it was necessary to provide considerable yard space on and adjacent to the pier. This consists chiefly of an empty storage yard for the ore dock and a storage yard for the open storage and warehouse docks with capacities of 422 cars and 210 cars, respectively. In addition to this trackage there are three tracks for loaded cars, holding 25 cars each, an advance empty yard with a capacity of 70 cars, three repair tracks, six tracks serving the open storage space and the warehouse and the four tracks served by the ore unloaders.

To facilitate the operation of the ore unloaders two narrow-gage tracks will be laid between each pair of tracks through the advance yard and under the unloaders upon which electric locomotives are operated. Empty cars are shunted into the advance yard, where they are picked up by the narrow-gage electrics and spotted under the unloaders by means of poling arms. These electrics also deliver the loaded cars to a steam locomotive operating on the drill track carried by the trestle extension which places them in cuts of 10 cars on the loaded tracks. When a sufficient number have been so placed they are consolidated into a train of about 50 cars for westward movement.



Relation of the Proposed Claremont Terminal to Other Terminals on New York Bay

The warehouse facilities for import and export freight will consist of a two-story steel and concrete structure 800 ft. long and 100 ft. wide, having one track extending along the edge of the dock and two tracks along the rear or shore side of the building. A 30-ton traveling gantry with a revolving crane will be installed over the single track and will load or unload freight direct from ship to cars or from ship to either floor of the warehouse.

The open storage arrangement consists of four tracks along the dock and two tracks on the shore side separated by a continuation of Linden Avenue. This road will be extended parallel to the warehouse in order that incoming and outgoing drayage may be handled. The four tracks along the dock line will be served by a 30-ton traveling gantry spanning all four tracks and delivering freight direct to cars or the open storage space.

The Claremont terminal project was designed by and is being constructed under the direction of the engineering department of the Lehigh Valley, G. T. Hand, chief engineer, and J. J. McCleece, architect, with W. R. Johnston, terminal engineer, in direct charge of the field work. The dredging and the placing of piling, etc., is being done by company forces. The ore handling equipment will be furnished by the Wellman-Seaver-Morgan Company, Cleveland, Ohio, and the Mead-Morrison Manufacturing Company, East Boston, Mass.

Cost of Railroad Fuel

WASHINGTON, D. C.

THE INCREASE in the cost of coal purchased by railways, public utilities and industries in July, 1920, as compared with the cost in July, 1919, is shown in a compilation made by the Interstate Commerce Commission from reports received from 159 railroads, 123 public utilities and 184 industrial companies. In July, 1920, these railroads purchased 9,627,491 net tons of bituminous contract coal at an average price at the mines of $3.24 per net ton, as compared with 8,880,021 net tons in July, 1919, at an average cost of $2.47. They also purchased 1,518,444 tons of spot coal at an average price of $6.01, as compared with 476,758 tons last July at an average of $2.40. Public utilities paid an average of $3.58 for contract coal, as compared with 52.42 last year, and $8.36 for spot coal as compared with $2.51, while industries paid $4.40 for contract coal and $8.44 for spot coal, as compared with $2.13 and $2.04 last year. For anthracite coal the railroads paid an average of $4.23 for contract coal and $4.50 for spot coal, as compared with $3.45 and $3.04 last year. In the New England district the average was $7.14 for contract coal and $10.54 for spot coal as compared with $5.46 and $5.33 last year. The utilities paid $4.61 and $6.28 as compared with $3.19 and $5.15 last year, and the industries $2.48 and $4.85 as compared with $2.76 and $3.25.

The table also shows the number of net tons on hand on July 31, 1920, as compared with the amount a year before. The railroads had only 3,364,043 tons of bituminous this year and 8,782,275 last year. That part of the table referring to bituminous coal purchased by railroads is as follows:

Geographical district	Number of companies reporting	Quantity purchased (net tons)				Cost at mine per net ton				Number of net tons on hand	
		Contract		Spot		Contract		Spot			
		July, 1920	July, 1919	July, 1920	July, 1919	July, 1920	July, 1919	July, 1920	July, 1919	July 31, 1920	July 31, 1919
New England	7	458,824	443,387	366,399	33,182	$1,717,165.00	$1,926,232.00	$3,624,199.00	$60,323.00	299,996	1,104,103
Average price at mine per net ton	..	.....	.....	.....	.....	3.74	2.31	9.89	1.82	.....	.....
Other Eastern	49	4,099,458	3,678,806	403,808	224,213	13,249,226.00	8,332,044.00	1,994,717.00	520,430.00	1,029,953	2,524,098
Average price at mine per net ton	..	.....	.....	.....	.....	3.23	2.26	4.94	2.32	.....	.....
Southern	30	1,504,435	1,353,955	319,741	92,813	4,819,341.00	3,219,521.00	1,708,132.00	233,925.00	510,047	1,193,300
Average price at mine per net ton	..	.....	.....	.....	.....	3.20	2.38	5.34	2.52	.....	.....
Western	73	3,564,774	3,403,873	428,496	126,560	11,477,632.00	9,369,204.00	1,795,475.00	319,516.00	1,824,038	3,960,774
Average price at mine per net ton	..	.....	.....	.....	.....	3.22	2.75	4.19	2.52	.....	.....
Total—all districts	159	9,627,491	8,880,021	1,518,444	476,768	31,263,364.00	24,947,001.00	9,122,523.00	1,134,194.00	3,664,034	8,782,275
Average price at mine per net ton	..	.....	.....	.....	.....	3.24	2.47	6.01	2.40	.....	.....

Apply the Recommended Practices*

By C. A. Morse
Chief Engineer, Chicago, Rock Island & Pacific, Chicago

THE AMERICAN RAILWAY ENGINEERING ASSOCIATION has spent 21 years in the study of the maintenance methods and practices, and its committees have been composed of men who have been actually engaged in maintenance of way. The practices, methods and appliances in use on the different railroads have been tabulated, and from the studies made they have reported recommended practice. These recommendations have been reviewed and amended from time to time, until at this time there is no question about their being the very best authority as to what will give the most economical and safe construction and maintenance of the railroads of the American continent.

With the passage of the Esch-Cummins Transportation Act, the Interstate Commerce Commission is instructed to make such rates as will, in addition to paying operating and maintenance expenses and a proper depreciation, return a certain rate of interest on the investment in the railroads as a whole, or in certain groups.

It is evident that in order to be fair to all railroads and to the patrons of the roads, a classification should be made of the different roads and sections of the same road, based upon density of traffic, weight of locomotives and frequency and speed of passenger trains, and there should be a specification covering construction and maintenance of each class of road to be followed by all the railroads in that group, so that the money expended by the different roads shall be fairly uniform, in order that the receipts from the established rates shall not be expended too lavishly in one case or too niggardly in others. No records or recommendations are based on such general study and careful consideration as those of the American Railway Engineering Association, and it is fair to presume that its recommended practice will be adopted.

There is a strong probability that a stop will be put to the present practice whereby over 50 different sections of rail are rolled between the weights of 70 and 140 lb. per yd., when 7 sections will answer all the purposes, and are all that are recommended by this association. A set of rail rolls costs about $5,000, and a rolling mill has to carry an investment of $250,000 for rolls to roll 50 sections, when an investment of but $35,000 would suffice to roll 7 sections. The railroads, and through them the public, have to pay the interest on this additional $215,000 invested by each mill in surplus rail rolls. The same thing applies to rail joints and tie plates. The public is not going to continue to pay increased railroad rates to meet the whims of individual railroads.

One of the practices that has the least reason for existence and which costs an immense amount of money per year is that of the variation in punching and drilling of rail. There is absolutely no reason why all rail of the same section should not be drilled the same. With this standardized, all joints for that section of rail would be drilled the same.

Frogs and switches should be the same for the same class of railroads, thus doing away with the innumerable patterns that frog and switch manufacturers have to carry today, and permitting the manufacture of frogs and switches for stock instead of having to make them to order, as is the present practice.

There should be uniformity in width of roadbed, width of cuts at sub-grade, depth of ballast, amount of shoulder for ballast of different kinds; also in the use of treated track, bridge and switch ties, and the use of tie plates. Many roads in the past who have recognized the economy of treated ties and the use of tie plates, have not used them on account of the immediate expense.

The new conditions are going to call for the practice that is the most economical in the long run, as the public will have to pay the bills in rates and is entitled to have these rates as low as the best practice and the practice that is most economical in the long run will produce.

It is to be hoped that the reorganized American Railroad Association will be used by the Interstate Commerce Commission as the medium through which uniformity of practice can be secured, and that the American Railroad Association will be given mandatory powers to enable it to secure these results.

Section II—Engineering, of the American Railroad Association, consists of the American Railway Engineering Association; the former Signal Association and former Committee on Electrical Working, and is the Section that would be called upon for recommendations as regards maintenance of way and structures. In view of its 21 years of study of maintenance problems, the American Railway Engineering Association is particularly well qualified to function promptly and efficiently in this capacity.

*Abstracted from Bulletin No. 227 of the American Railway Engineering Association.

Priority Ordered for Navy Coal Under War Power

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION on October 1 issued Service Order No. 19, giving preference and priority in the transportation of coal commandeered by the Navy and produced in certain mines in Pennsylvania and Maryland, on the ground that the President, by the Secretary of the Navy, had certified to the commission that such preference and priority "is essential to the national defense and security."

This reminder that the country is still technically at war is the first order that has been issued by the commission under the war power of the interstate commerce act, as provided in paragraph 15 of section 1. Its previous orders have been issued under the provisions of that paragraph authorizing it to issue priority orders whenever it "is of the opinion that shortage of equipment, congestion or traffic or other emergency requiring immediate action exists." Another clause in the same paragraph says that "In time of war or threatened war, the President may certify to the commission that it is essential to the national defense and security that certain traffic shall have preference and priority in transportation, and the commission shall, under the power herein conferred, direct that such preference or priority be afforded." It is understood that the Navy Department originally asked that the order be issued under the general emergency provisions of the section.

The order applies to about 50,000 tons of coal per month to be shipped to the various navy yards and other points on the Atlantic seaboard from mines on the Baltimore & Ohio, Pennsylvania, Cumberland & Pennsylvania, East Broad Top Railroad & Coal Company, and the Cambria & Indiana, which, together with other carriers named in the order, form the routes over which the coal may be transported. These roads are ordered, as they participate in the transportation, to afford preference and priority in the supply of cars and transportation, in accordance with a schedule which is made part of the order.

MORE SUPPLIES FROM AMERICA.—The Melbourne Electric Supply Company, Australia, has placed an order for a supply of grooved tramway rails in America, as English rolling mills, it is said, could not quote for the rails. The price shows an advance of 400 per cent on pre-war rates.

Results of Twelve Years of Electric Operation

Grand Trunk Equipment Still in Good Condition—A Description of the Kind of Maintenance Required

By R. L. Hermann

SINGLE-PHASE electric locomotives were placed in service on the Grand Trunk in May, 1908, for the purpose of hauling freight and passenger trains through the St. Clair tunnel, under the St. Clair river, connecting Port Huron, Mich., and Sarnia, Ontario. The tunnel is a single track tube, 6,032 ft. in length, with approaches totaling 5,603 ft. The track enters the tunnel from the Michigan portal with a descent of two per cent for 1,914 ft., then graduates to 1.5 per cent for 1,718 ft. and then takes a two per cent grade for 2,400 ft. to the portal on the Canadian side. The locomotives haul trains of 1,000 tons up these two per cent grades at a speed of 10 miles per hour. The service rendered by both the power plant and the electric locomotive equipment has been such that during the entire 12 years of operation, delays of even a few minutes have been almost unknown. Some delays, due to insulator failure causing short-circuits, occurred at first, but this trouble has practically been eliminated by changing the design of some of these devices. The only trouble since these changes were introduced has been due to rare mechanical and accidental injury.

There are six locomotive units, each weighing about 65 tons and mounted on a frame which is non-articulated from end to end. None of them have shown any signs of weakening. Each locomotive, consisting of two units, has a rating of 1,500 h.p. and a maximum safe speed of 30 miles per hour. Each motor is directly connected through a single gear and pinion to a pair of 62 in. driving wheels. Considering that no quills or springs are used to absorb the shocks, the performance of the gears and pinions has been exceptionally good. A number of the original gears are still in service and in good condition after having made 432,000 miles. Some of the pinions have made more than 150,000 miles and are still in good condition.

Driving Wheels

At first, considerable trouble and expense was experienced with the wheels due to abnormal flange wear, which was caused to a large extent by the rigid wheel-base and the great number of curves and switches encountered. The mileage never exceeded 25,000 before it was necessary to remove the wheels for turning. In July, 1910, W. D. Hall, superintendent of the tunnel, conceived the idea of an atomizer to spray oil on the wheel flanges by means of compressed air. This is accomplished by pressing a button in either of the controllers, one of which is at each end of the cab. The oil is applied as the locomotive approaches a curve and then only for a very short duration of time. The results have been so remarkable that the tires of No. 9 pair of wheels of locomotive No. 2,658 have made a mileage slightly exceeding 300,000 miles since they were in a lathe.

It is found that the mixture of oil and air not only lubricates the flanges, but cleanses them from grit and sand. The lubricators are placed outside on the locomotive frame; the oil is thinned to suit the temperature conditions, so that it is sprayed nearly as well in winter as in summer. This device alone has naturally brought about a very considerable saving in both labor and tires. The electric locomotives on this property have been available for service more than 90 per cent of the time.

Pantagraphs, Autotransformers and Switch Groups

Each unit is equipped with one pneumatically-operated pantagraph which is controlled from the engineer's cab. With a reasonable amount of attention these have given very little trouble. Breakages usually occur as a result of the shoe catching in some part of the overhead construction, but such trouble is rare.

The pantagraphs collect the current from a catenary overhead construction, supplemented with a steel contactor wire on the grades, at 3,300 volts, 25 cycles. The same voltage is used direct from the power plant, which is located near the portal of the tunnel on the Port Huron side.

After the current is collected, it passes to the autotransformer, which is located on one side of the cab. During severe electrical storms two of these transformers were affected, but repairs were made without removing them from the locomotive. The cabs are roomy and all of the apparatus in them is readily accessible. The switch groups are located on the side of the cab opposite the transformer. The contacts in the switch groups require occasional scraping and the shunts are renewed from time to time, but all in all the smallness of the amount of burning is remarkable. The valve parts require little attention. An air compressor oil is used which does not cause gumming of the small parts.

The controllers are of the locomotive type, with short angular movement and the number of accelerating resistance steps provided give a very smooth acceleration without slipping the wheels. The controllers require little attention and have given practically no trouble.

Main Motor and Locomotive Auxiliaries

The field windings of the main motors have given no trouble at all but some armatures have been repaired from time to time. The commutators have made more than 400,000 miles each and up to the present time not one has been renewed. Arrangements are now under way to start renewals, so that no trouble will be met in a year or two, due to the necessity of renewing a number of commutators at one time. Practically all the motors have made the same mileage and the wearing parts have held up very uniformly. Some of the commutators have exceeded 100,000 miles since last being turned and slotted. The brush mileage varies between 40,000 and 60,000 miles. No shunts or caps are used with the brushes, but the finger tips are practically the full width of the brush.

The air compressors have given satisfactory results. They are equipped with electrically controlled governor synchronizers, which cause both compressors to start and stop at the same time for double heading operation of the locomotives. The air compressor and blower motors have given splendid service. The latter have not required repairs to either the stator or rotor windings. Only three armatures of the former have been repaired, and one of these had the canvas heads renewed only. The commutators are cleaned from time to time, but it is not necessary to dress them in a lathe.

Power Plant

The two main units in the power plant are Westinghouse three-phase, 25-cycle, 3,300-volt turbo-generators. Operating

in conjunction with these are two barometric condensers, two engine-driven exciters, one motor-driven exciter and two air pumps. In the turbine room basement are two engine-driven circulating pumps of the centrifugal type, one house pump, two engine-driven stoker fans, the transformer room, a storeroom and a mercury arc rectifier. The boiler room contains four water tube boilers equipped with underfeed stokers, an independently fired superheater, overhead coal bunkers and two feed water pumps.

The insulation of the generator fields gave evidence of breaking down after about six years' operation, at which time they were rebuilt with more modern insulation. They have given splendid service since that time. The stator coils have not given any trouble whatever, although frequently subjected to severe strains.

The motor driven exciter unit has given excellent service. It has been in continuous operation, night and day, for 12 years with exception of a few minutes each week for inspection and dusting. The commutator of the direct-current generator has never been turned or dressed since being slotted about 11 years ago. During an electrical storm, one or two coils in the motor broke down, but were repaired in short order and the set put back in service.

The turbines have given very satisfactory service during the 12 years. No bearing trouble has been experienced. In fact, the oil stone marks on the spindles are just about as fresh as when they were made 12 years ago. Some of the steel blading has been removed and as the small or high pressure blading was not laced it has been found advisable to replace the small unlaced steel blading with laced bronze blading. The turbines take the irregular loading without noticeable vibration.

The condensers and circulating pumps have required the ordinary running repairs only. For a short period at the start, the condensers caused a little trouble due to the spray nozzles becoming clogged with small fish during certain seasons, as the water was taken directly from the St. Clair river. This was overcome by removing the grids from the nozzles, thus permitting the fish to go right through with the water.

The engines of the engine-driven circulating pumps have received only the ordinary repairs and the pumps show practically no sign of wear. In fact the paint with which the impellers were originally painted is even now quite fresh.

The boiler feed pumps are of the reciprocating type. They have received frequent repacking and renewals of parts. Water for sealing the turbine glands and various parts is supplied by a house pump of the reciprocating type. In order to avoid trouble, due to loss of vacuum on account of failure of the water supply, the discharge pipe of the pump is connected with the city supply line, but interposed by a check valve. Hence, by maintaining a slightly higher pressure at the house pump than that of the city line, no water from the city system can pass. Should it be necessary to stop the house pump, or should it fail, the check valve will open and thus an uninterrupted supply of water is maintained. This little detail in itself is a good precaution which guards against an accident that might tie up the system and it is characteristic of the whole installation.

The boilers and stokers have given very satisfactory results, especially in view of the fact that they have had to care for very erratic load conditions. A few tubes have been renewed during the 12 years and the furnaces have been repaired from time to time. It is probable that it would not have been necessary to have renewed even these few tubes if slack coal could have been used at all times. On account of the very sudden demands for power it is necessary to use high air pressure, so that when crushed mine run is used a blow torch effect may be set up to such an extent as to result in the blistering of tubes.

Although working under widely fluctuating conditions of load, not one retort was burned out and not one renewed in a period of 11 years. At the end of this period all the retorts were renewed, because they were worn out by the action of the rams and corrosion, where they were set in the brickwork at the front end. The boilers and stokers have been in 24-hour service since November, 1907, only being out of service during their regular cleaning and inspection periods.

Trolley Line Construction

The trolley and messenger wires are supported on steel bridges, which are spaced at 250 ft. intervals. The trolley wire is suspended from the messenger wire by catenary hangers spaced every 13 ft. This type of construction has given very satisfactory results. The greatest wear was found at points of rigid support. At these points an iron trolley wire was installed beneath the copper, and this has given satisfaction, especially where it is not exposed to steam locomotive gases.

Train delays due to line material failures have been so few as to make them almost negligible. Especially has this been true during the last six or seven years of operation. During the first few years a few short circuits and consequent delays were experienced, due to insulator failures, which usually resulted from steam locomotive gases causing flashovers. Some failures were experienced due to the cracking of insulators, resulting from unequal expansion and contraction. These have been overcome by installing two insulators in series where locomotive gases have to be contended with. At first there was some insulator trouble in the tunnel due to unequal expansion and contraction, but this difficulty has been overcome by installing insulating devices of newer design.

Another source of trouble due to short-circuits was brought about by birds alighting on the lightning arrester tips. As it would be a difficult matter to educate the birds, perches were provided above the arrester tips for the birds' convenience, and in this manner the trouble was easily overcome.

Detroit Edison Service

Arrangements have been completed with the Detroit Edison Company to supply power for the tunnel operation. A Westinghouse synchronous motor-generator set with a capacity of 2,860 kilowatts has been installed in the substation, which stands just north of the power house. The motor operates at 4,600 volts, 60 cycles, three-phase, and the generator furnishes single-phase, 25-cycle current at 3,300 volts to the tunnel trolley. The trainload reaches a four-to-six-minute peak of about 2,400 kilowatts. Both the motor and generator sides of the machine have separate exciters at the respective ends of the shaft. Both exciters are equipped with automatic regulators. The motor exciter regulator takes care of the power-factor and the other regulator controls the generator voltage.

Results

The average cost of maintenance of the electric locomotive equipment, material and labor up to December, 1914, was 4.514 cents per locomotive-mile, and from December, 1914, to December, 1919, 7.051 cents per locomotive-mile.

The fact that the electric locomotive equipment, the power plant equipment, and the line material are in splendid operating condition today, not only speaks well for both the design of the various parts and the quality of material used in their construction, but also for the maintenance and supervision given them during these twelve very successful years of operation.

The Economic Value of Railway Safety Work*

Indirect Results Gained Exceed Direct Results—Marked Improvement in Railway Accident Record Within Last Decade

By Samuel O. Dunn
Editor of the *Railway Age*

RAILROAD TRANSPORTATION always has been recognized as a hazardous industry—hazardous to those working for the railways, to those using their service and to those having occasion to go upon or cross their properties. If I remember my history correctly, on the first occasion when a steam locomotive drawing a train was run in England, a prominent statesman who had been active in securing the construction of the railway was killed.

In consequence of the clearly recognized hazardousness of the industry, efforts constantly have been made since the first railway was built to reduce the hazards and increase the safety of operation. Until within the last decade these efforts had met with greater success in some other countries, notably in France, Great Britain and Germany, than in the United States. The accident record of our railways long was bad by comparison with that of the railways of almost any other leading country, and the worst of it was that it did not improve much. Accidents increased as the mileage and the amount of business handled increased. Those who studied the problem realized that this was principally due to two causes. One was that most of our railways were hastily and poorly built into new and undeveloped territories, and the character of their construction made the prevention of accidents very difficult. The second and most important reason was that our railway officers and employees had the characteristic American tendency toward recklessness, the tendency to "take a chance" regardless of consequences. This tendency of employees, who in this respect were merely typical Americans, was so strong that even after the physical properties of many railways had been greatly improved and safety appliances of numerous kinds had been installed it was found extremely difficult to get employees to protect themselves and the patrons of the railways by properly using the facilities at their disposal.

About ten years ago the railway accident situation grew so bad that it became the subject of much agitation and of great concern and consideration by railway executives and operating officers throughout the country. One of the results was the starting of what was called the "safety first" movement. The real father of this movement on the railways, as I believe is generally recognized, was R. C. Richards, general claim agent of the Chicago & North Western, who is now president of the National Safety Council. It was on his initiative that the management of the North Western began the formation of local safety committees all over its lines, composed of both officers and employees. The example set was rapidly followed by railways in all parts of the country. Not only were hundreds of safety committees organized, but many railways created safety departments in charge of able men whose duty it was to study all the conditions which tended to cause accidents and to devise remedies for them. A very extensive propaganda was carried on among employees to educate them regarding their own interest and the interests and rights of the railways and of the public concerning this matter.

Increase of Safety on Railways

The results of all the work which has been done within the last ten years in installing safety devices and in educating officers and employees upon this subject are strikingly reflected in the statistics regarding railroad accidents. The latest statistics available regarding railway operations and railway accidents for an entire year are those for 1918. In the eight years from 1910 to 1918 the amount of freight handled increased 70 per cent and the number of passengers about 30 per cent. It is a remarkable fact that during these years there not only was no increase but a marked reduction in the number of railway employees and of passengers and other persons carried under contract who were killed. The number of employees, both on and off duty, killed in 1910 as a result of train operation was 3,383, while in 1918 it was only 2,781. The number of passengers and other persons carried under contract killed in 1910 was 421, while in 1918 it was only 342. This makes a total of 3,804 employees and passengers and other persons carried under contract who were killed as the result of the operation of trains in 1910, and a total of 3,123 in 1918. The number of employees killed in railway industrial accidents in 1910 was 421, while in 1918 it was 418. There was even a marked reduction in the number of trespassers killed. The figure for the number of this class of persons killed in 1910 is not available, but we know it was about 5,000. In 1918 it was only 3,255.

It is surely a high tribute to the efficiency of those who have carried on safety work for the railways that this record can be exhibited. Lest some of my friends who believe in government control should claim that the good results obtained in 1918 were due to government operation, I will say in passing that in 1917, under private operation, the number of both passengers and employees killed was less than in 1918.

While, however, gratifying progress has been made on the railways, I need hardly tell you that the number of persons annually killed and injured upon them is still much too large. The total number of all classes killed in 1918, including trespassers and those killed at highway crossings, was almost 10,000, while the total number of all classes injured was almost 175,000. When we discuss the need for safety measures we usually discuss them on the assumption that they are needed almost entirely to prevent the loss of life or the pain and suffering occasioned to their victims. Undoubtedly that is the most important point of view from which the subject should be considered. I am going to venture today, however, to call your attention to the fact that safety work has economic phases which are of very great importance.

Economic Effects of Accidents

Almost every accident has some economic consequences. By that I mean that it either results in some destruction of property, or temporarily, partially or completely destroys the value of one or more persons as producers. The amount of property destroyed each year in railway accidents, including both the property of the railways and of their patrons, is very large. The destruction of a large amount of property is the destruction of the results of the work of a large number of men, and it causes directly and indirectly a diminution of the amount of necessities, comforts and luxuries available for the use and consumption of the public. It is obvious that if all the property and all the commodi-

*An address delivered before the Railroad Section, National Safety Council, at Milwaukee, Wis., on September 30, 1920.

ties produced by men's work were immediately destroyed we should all be speedily reduced to starvation and misery, no matter how hard we worked. The destruction by accidents or otherwise of a smaller amount of the things produced by the labor of our brains and hands has similar effects which are great in proportion to the amount of the destruction.

Likewise, every accident which results in a man being killed or maimed reduces the total production that otherwise would be obtained. When a man who has just reached his prime as a worker suddenly is cut off society loses a large part of the work that has been done to rear and develop him. It gets only a partial economic return for his economic cost. When a man is compelled to refrain from work because of an accident society loses the product which would have been obtained from his exertions if he had been able to stay at work. As I have said, the number of men injured in railway accidents in the year 1918 was 175,000. If those men lost an average of four days each the total loss of working time aggregated 700,000 days, which was equivalent to the complete loss of the work of 27,000 men for one month.

To measure the results of railway accidents in economic terms of lost production, and lost opportunity for consumption on the part of the public, may seem a coldblooded way to treat the subject; and as I already have indicated, I recognize the fact that the main purpose for which safety work should be carried on is to prevent the cutting off of the lives and the pain and suffering of the victims. But to measure the results of accidents by economic standards is by no means so coldblooded as it may seem. When a man in the prime of life, with a family dependent upon him, is cut off or loses a limb the economic consequence to his family is the destruction or reduction of his income. The amount of deprivation, pain and suffering occasioned to the families of the victims of accidents is surely comparable with the effects upon the victims themselves.

Indirect Economic Effects

It is not, however, the immediate families of the victims who experience all the economic effects. The welfare of society as a whole demands not only a fair division between all classes of what is produced but the largest aggregate production of necessities, comforts and luxuries that is compatible with reasonable conditions of work for those who do the work of society. Now, every accident by which a man loses his life, or even is temporarily disabled, reduces the amount of production that can be secured for the general good.

Railway safety work has the direct effect of reducing the amount of property destroyed and the number of persons killed and injured, and if its economic value were to be measured merely by these direct and obvious effects it would be worth far more than it costs. From an economic point of view, however, its indirect effects may be and probably are more valuable than its direct effects. In the first place, every derailment, collision or other train accident which occurs not only affects the trains directly involved, and the persons upon them, but also affects the operation of a large part or even all of the railroad upon which it occurs. It throws passenger trains off their schedules, delays freight trains and has other consequences which reduce the amount of traffic that can be handled and adds greatly to operating expenses. The number of collisions upon our railways in 1918 was 8,715, the number of derailments 13,568, the number of boiler explosions 239, the number of other locomotive accidents 275, and the number of miscellaneous train accidents 1,898. This made a total of 24,695 train accidents of all kinds. The damage of railway property reported as a result of these accidents was $20,954,350, but the reduction of earnings and the increase in operating expenses indirectly due to them caused an aggregate loss exceeding by many times the value of the property destroyed. Whatever tends to reduce accidents necessarily tends to reduce these very large indirect effects which are due to them.

Careful Worker Is Efficient Worker

The economic effects of railway safety work are even greater and more comprehensive than what has been said already would indicate. The principal cause of railway accidents is and always has been the failure of officers and employees to exercise reasonable care in the performance of their duties. Safety work, when properly and effectively carried on, so constantly and forcibly brings home to officers and employees the necessity for being careful in every thing they do that it changes and improves their entire attitude and habits with reference to their work. It results, when they have a thing to do, in their thinking not merely of getting it done in some way, but of doing it in the right way. Now, this improvement in their mental attitude and habits is one of the main things needed not merely to reduce accidents but also to increase their general efficiency. Usually whatever tends to make a man more careful in his work also tends to make him a more efficient worker—that is, a worker who in the long run will do more and better work than he would do if he were not careful. The effects produced by the constant inculcation of the principles of safety upon the general efficiency of the operation of the railroads cannot possibly be measured either in increased passenger miles and ton miles handled per employee, or in terms of reduced cost of handling a given number of tons one mile or passengers one mile, but that increased care by employees in doing their work does tend to increase the general efficiency of operation is beyond question.

Safety Work and Sober Problem

There is one other indirect effect of safety work, and especially of the work of safety committees, to which I think attention should be called. The greatest industrial and social problem of our time is that of establishing better and more satisfactory relations between the owners and managements of large business concerns, on the one hand, and their employees, on the other. I believe that the principal reason why employers and employees in so many of our great industries are divided into warring camps is that many business concerns have become so large that their owners and chief officers and their employees seldom come in contact with each other except when they are brought together by controversies regarding conditions of employment and wages. The owners and chief officers of the concerns and the employees have been pushed so far apart that neither class has an adequate understanding of the problems, the functions, the motives or the desires of the other. The suspicions and antagonisms arising from this situation have a direct tendency to reduce efficiency in all industries, including the railroads, and they will never be allayed until employers and employees of large industries come to a better understanding with each other. They will never come to a better understanding with each other until new points of contact are established between them to take the place of the points of contact which have been destroyed by the substitution of vast industrial concerns for comparatively small concerns in which employers and employees worked closer together. I know of no means which actually has been tried on the railroads which is better adapted to re-establish points of contact between employers and employees, and bring about a better understanding between them, than safety committees. When officers and employees work together on safety committees they soon learn that the problems with which they are dealing are problems of mutual concern the solution of which will be equally advantageous to the railways and to the men. The employees who serve upon these

committees are almost certain to get a better knowledge of the problems of railway operation and develop a more friendly attitude toward the managements and to communicate this knowledge and friendly attitude to many of their fellow employees. This again is bound to have a tendency to promote efficiency in the operation of the railroads.

On the whole, therefore, I firmly believe that the safety work being done on the railways is not merely, from a humanitarian point of view, but also from an economic and social point of view, one of the most important kinds of work being done on them. From a purely economic standpoint no railway management can afford to hesitate to spend all the money that is necessary to have safety work adequately and ably done. It is, on the other hand, a kind of work which from a purely business point of view no railway management can afford to neglect. While great progress has been made in this kind of work within the last decade, it is only necessary to mention the fact that 10,000 people were killed and 175,000 injured on our railways in 1918 to emphasize that there is great need for safety work on the railways to be carried on more comprehensively, energetically and ably than it ever yet has been.

Classification of Subordinate Officials

WASHINGTON, D. C.

MODIFICATIONS of the regulations issued by the Interstate Commerce Commission on March 23, defining the term "subordinate official," as used in the transportation act, for the purpose of determining which of the minor officials of the railroads are within the jurisdiction of the Railroad Labor Board, were requested and opposed by various organizations at a hearing before Commissioners Clark, Daniels and McChord at Washington on October 1. Some organizations desire independent recognition of their members as subordinate officials so they may represent them before the Railroad Labor Board, while the standard labor organizations desire to retain jurisdiction of as many men as possible and the railroads desire that those who are in a fiduciary relationship to the company or have authority to employ, discipline, or dismiss employees be considered as officials. The Grand Order of Supervisors of Railroads maintains an organization which is not in the same class with the labor organizations, but takes the position that its members are officials. The commission's regulations issued on March 23 define subordinate officials not by classes but in accordance with their relations with the company and therefore include as officials some who are claimed by organizations as subordinate officials.

The Roadmasters' and Supervisors' Association asked that its members be classed as subordinate officials.

J. G. Luhrsen, president of the Train Despatchers' Association, asked that the definition of train despatchers classed as subordinate officials be broadened to leave out the restriction to those not vested with authority to employ, discipline and dismiss employees. He argued that train despatchers had been recognized as subordinate officials by the Railroad Administration and that the commission should merely confirm that status. He said some railroads were refusing to recognize the right of his organization to represent the despatchers and also were trying to prevent the labor board from exercising jurisdiction.

The National Order of Railroad Claim Agents objected to the limitation to claim agents not vested with authority to bind the company to pay claims.

The Traveling Auditors' Association asked that its members be included as subordinate officials on the ground that they bear no fiduciary relations to the company, but are governed by written instructions.

The Order of Railroad Station Agents asked that supervisory agents be classed as subordinate officials. E. J. Manion, president of the Order of Railroad Telegraphers, asked that no change be made in the status of station agents, saying that his organization had always legislated for them as employees except for a few at the larger stations.

Charles G. Poirier, vice-president of the Grand Order of Supervisors of Railroads, asked that no modification be made in the regulations, saying that under them most of the supervising officials now believe they are properly classed as officials and that they should not be allowed to affiliate with the organizations of the men they supervise. Mr. Poirier also said that if the commission should modify its regulations to classify subordinate officials by title without regard to their authority or relation to the company, it would throw the supervisory foremen into the ranks of the American Federation of Labor and defeat the purpose of the law.

B. M. Jewell, president of the Railroad Employees' Department of the American Federation of Labor, said that the classification of subordinate officials should include those below the rank of general foremen, in order that they might be represented by his organization before the Labor Board.

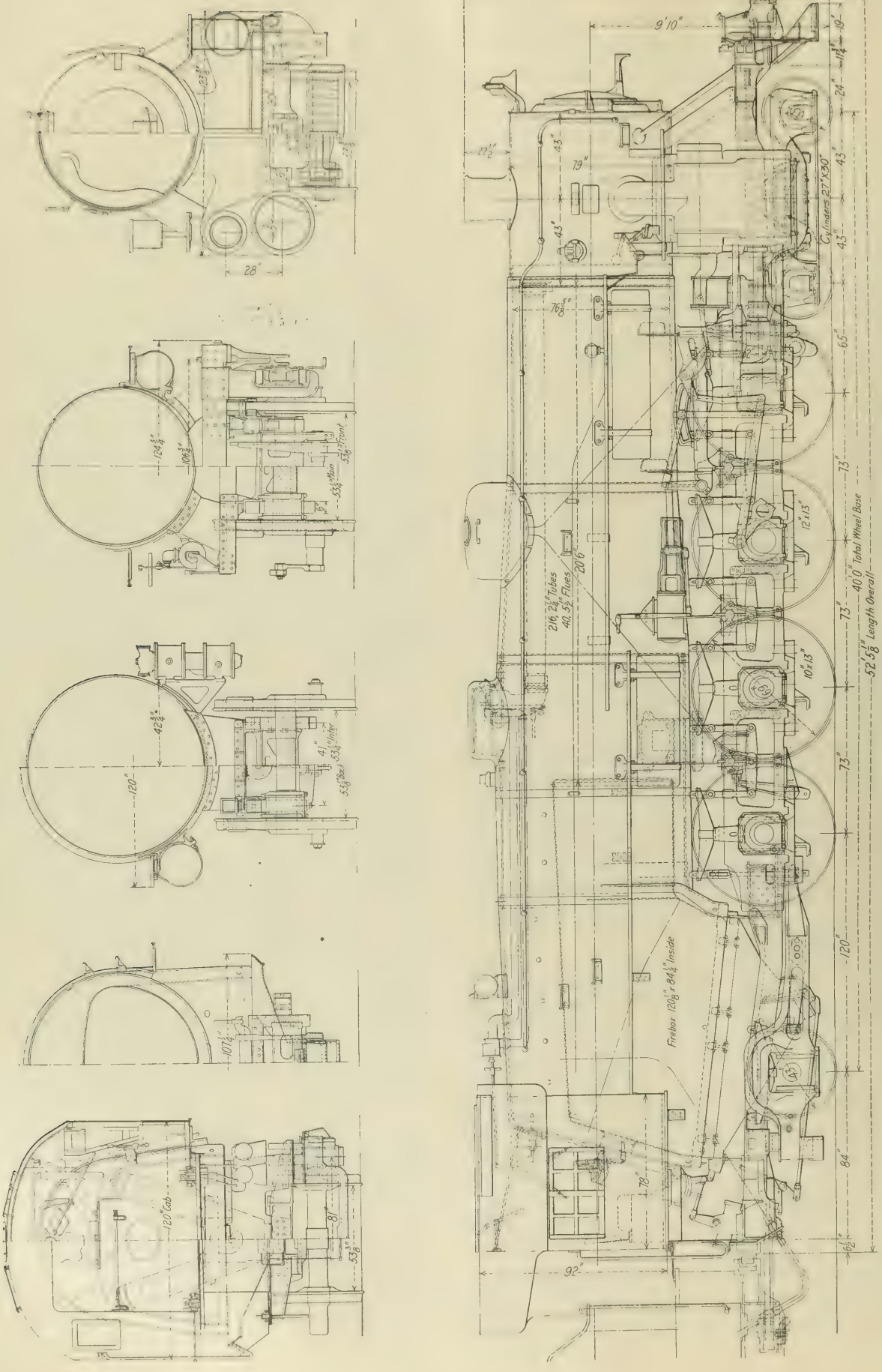
D. W. Helt, president of the Brotherhood of Railroad Signalmen, expressed satisfaction with the commission's regulation including as subordinate officials supervisors of signals with rank below the grade of assistant supervisor of signals and asked that no change be made.

Alfred P. Thom, counsel for the Association of Railway Executives, said that under the law the commission was directed to define subordinate officials, and he disputed the claim that it should be bound by any classification that may be claimed to have been made by the Railroad Administration. He argued that subordinate officials should not include those entrusted with the duties of management and that the management could not properly perform its function if some of its officials owed allegiance to organizations formed for other purposes.

E. T. Whiter, representing W. W. Atterbury, chairman of the labor committee of the Association of Railway Executives, said that the director general had never definitely classified subordinate officials, but had loosely applied the term to certain classes to emphasize their character as officials whose compensation should be decided by the operating officials, as distinguished from employees who were allowed to present their claims for wage increases before the Board of Wages and Working Conditions. He took the position that officials having authority to employ, discipline or dismiss employees should not be represented by organizations and that train despatchers above trick despatchers, for example, are officials who act for the management. If the management is to be permitted to conduct operations in an efficient manner, he said, it must be free to deal with officials with no divided allegiance who will not leave the company to get along as best it can in order to support a labor organization. "We feel very keenly," he said, "as to what may happen if the management should be deprived of its right to exercise power over its supervisory officials and divested of everything but the responsibility."

J. G. Walber, who was labor assistant to the director of operation for the Railroad Administration, said that the commission would not be able to find that the Railroad Administration at any time made a distinct classification of the lower ranking officials, but that the expressions "subordinate officials," "supervisory officials," and "minor officials," were used indiscriminately to distinguish them from employees.

Chairman Clark announced that the commission is now making a reclassification of railroad employees for statistical purposes which should not be confused with any definition of subordinate officials it should make as required by the law.



Elevation and Sections of N. Y. N. H. and H. Mountain Type Locomotive

New Mountain Type Locomotives for Fast Freight

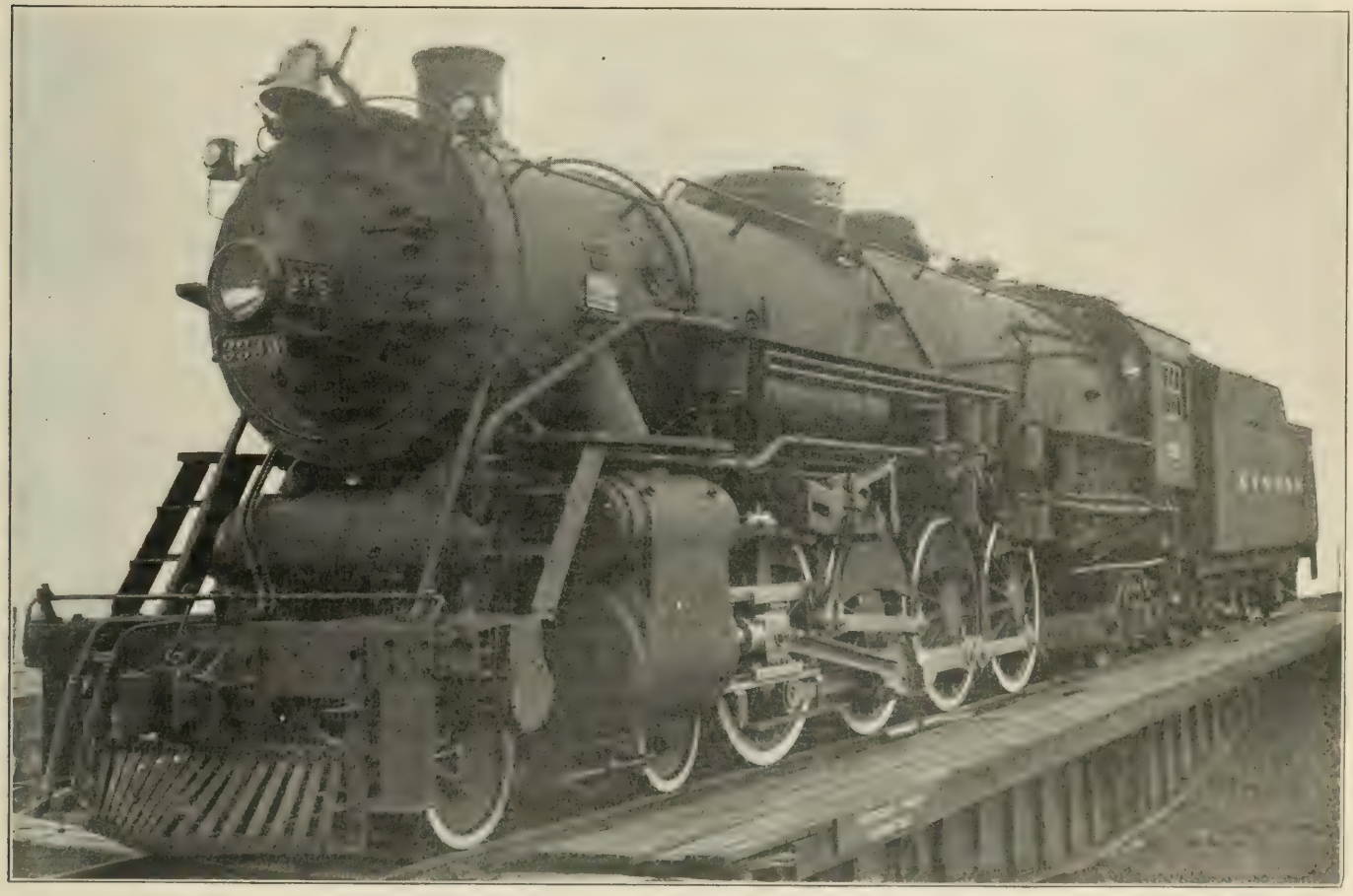
Modified Design of the Standard Locomotive Adopted by New Haven for Main Line Freight Service

IT WILL BE RECALLED that the Mountain type locomotive first came into prominence in passenger service on the Chicago, Rock Island & Pacific seven years ago, where it enabled the operating department successfully to consolidate two sections of a train that had exceeded the capacity of Pacific type locomotive. Similar locomotives were subsequently purchased for the same character of service on the Chesapeake & Ohio, the Seaboard Air Line and other railroads. More recently the type has found favor in freight service where a large volume of freight must be handled rapidly over congested lines.

The New York, New Haven & Hartford has purchased 30 Mountain type locomotives following closely in design the U. S. R. A. standard light Mountain type locomotives delivered to that railroad during federal control. The selection of this type for freight service is particularly significant in view of the fact that the railroad has also had experience with Mikado and Santa Fe type locomotives of recent design.

The construction of a large, well-designed classification yard at Cedar Hill, near New Haven, Conn., which was described in the July 30, 1920, issue of the *Railway Age* has placed the New Haven in a better position to utilize heavy power in freight service. It has always been a difficult matter on the New Haven to assemble heavy tonnage trains regularly for through movement on account of the character of the territory served and it may be possible that the potential tonnage rating of the Santa Fe type locomotives would be in excess of the practical limitations on this section on the line. On the other hand, the Mountain type should be able to handle tonnage to advantage in excess of that handled by the Mikado type locomotives and should be able to demonstrate sustained speed with full tonnage trains in excess of either the Santa Fe or Mikado type locomotives.

The new Mountain type locomotive will operate mainly in through service between New Haven and Providence, a distance of approximately 110 miles. As this portion of the railroad is a two track line over which moves a large portion of the fast passenger service between New York and Boston, the necessity for a locomotive that can handle these freight trains at sustained speed is apparent.



Mountain Type Locomotive for Fast Freight Service

Performance Characteristics

The light Mountain type was the last of the standard designs to be prepared by the Railroad Administration but the first of these locomotives completed by the American Locomotive Company was consigned to the New Haven. The performance of these first Mountain type locomotives has been generally satisfactory and the new locomotives do not differ from them in any marked degree except for the addition of several important specialties designed to in-

crease the efficiency and capacity of the new locomotives.

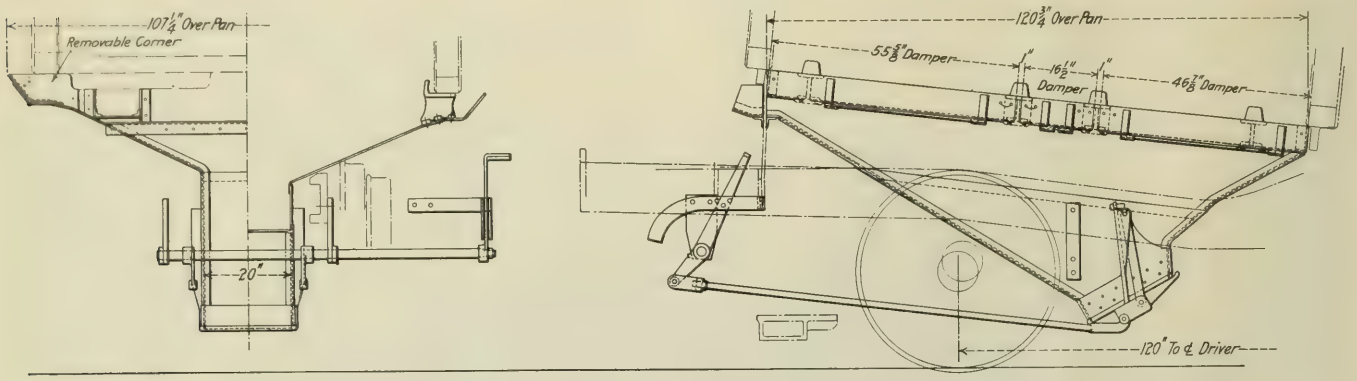
The locomotives will exert a maximum tractive effort of 53,900 lb. The line over which these locomotives will operate is along the shore of Long Island Sound and is practically level except for a few short breaks with a maximum of 0.6 per cent for a short distance. As the tonnage handled by these locomotives will be approximately 3,000 tons, they should be able to handle a large volume of through freight in conjunction with the heavy passenger traffic.

Based on the performance of the earlier Mountain type locomotives it is anticipated that the new locomotives will be able to operate on an average monthly fuel consumption of not to exceed 135 lb. of coal per 1,000 ton-miles. The locomotives will, of course, make a very much better fuel performance between terminals and although these locomotives have been in service only a short time, they have already shown remarkable economy in the use of fuel. A close record is being kept of their performance and three of the locomotives recently effected an average record of 62 lb. of coal per 1,000 ton-miles between terminals with an average train load of 2,968 tons. One of these locomotives was equipped with a feedwater heater which is part of the regular equipment applied to five of these locomotives.

Application of Feedwater Heater

The feedwater heater and feedwater pump is an important addition to these locomotives. The apparatus has been applied to five engines and the arrangement of the running board and air pumps on the left hand side of the remaining 25 locomotives is such as to facilitate the application of this device at a later date. The Locomotive Feedwater Heater Company's standard apparatus is used. This includes a type E-1 heater and a 6½ in. pump having a capacity of approximately 7,500 gal. an hour.

The railroad has adapted an open-minded attitude toward the application of feedwater heaters. The fuel problem is acute on the New Haven and it is realized that every possible effort must be made to obtain the maximum service from every pound of coal. Feedwater heaters of the exhaust steam type appear to offer possibilities for a very large fuel saving particularly on the long level pulls where the locomotives will be continuously exhausting steam.



Single Dump Ash Pan Designed to Facilitate Booster Application

Changes in the Standard Design

The general dimensions of the new locomotives are practically identical with the U. S. R. A. standard light Mountain type locomotives described in the May 16, 1919, issue of the *Railway Age*. The boiler and firebox are the same with the exception of a small increase in the number of staybolts applied and an increase in superheater heating surface from 966 sq. ft. to 1,009 sq. ft. The engine truck presents the first noticeable departure; this is of the constant resistance type with Commonwealth cast steel truck frame. Wheel dimensions are the same but the distribution of weight is changed as shown in the following table:

	Light Mountain type locomotive	
	New N. Y., N. H. & H.	U. S. R. A. standard
Total weight, lb.	328,500	327,000
Weight on drivers, lb.	229,000	224,500
Weight on engine truck, lb.	47,000	49,500
Weight on trailing truck, lb.	52,500	53,000

The important specialties applied to these locomotives include the following: Duplex stoker, Franklin firedoor, Franklin grate shaker, Radial buffer and Unit drawbar, Alco flexible staybolts (1773 applied), Chambers throttle valve (modified design), Lewis power reverse, and Southern valve gear.

The cylinders are cast with by-pass valve chambers to permit the future application of the railroad company's standard by-pass valves.

Future Application of Booster

The application of a booster to the trailing truck of these locomotives should materially increase the maximum tractive effort available for starting trains and might eliminate the services of a pusher used in assisting the trains over Branford Hill, a short distance out of the Cedar Hill yard. The railroad has probably had this in mind in providing for the future application of the booster to the extent of equipping all of the locomotives with trailing truck axles so designed that booster gears can be applied without necessitating new axles. The trailing truck is of the Woodward-Commonwealth type and the trailing truck brake is also arranged for the possible future application of the booster.

The most interesting detail in this connection is the use of a single hopper ashpan. The base of the pan slopes forward to a single drop door in advance of the trailer truck axle. The purpose of this design was to facilitate the application of the booster, although it appears that a further change would have to be effected in the design in order to provide sufficient clearance for the booster mechanism.

Principal Dimensions

The principal dimensions and data for these locomotives are as follows:

General Data

Gage	4 ft. 8½ in.
Service	freight
Fuel	bituminous coal
Tractive effort	53,900 lb.
Weight in working order	328,500 lb.
Weight on drivers	229,000 lb.
Weight on leading truck	47,000 lb.
Weight on trailing truck	52,500 lb.
Weight of engine and tender in working order	511,000 lb.
Wheel base, driving	18 ft. 3 in.
Wheel base, total	40 ft. 0 in.
Wheel base, engine and tender	75 ft. 7½ in.

RATIOS

Weight on drivers ÷ tractive effort	4.25
Total Weight ÷ tractive effort	6.1
Tractive effort × diam. drivers ÷ equivalent heating surface*	660
Equivalent heating surface* ÷ grate area	80.1
Firebox heating surface ÷ equivalent heating surface* per cent	6.2
Weight on drivers ÷ equivalent heating surface*	40.7
Total weight ÷ equivalent heating surface*	58.3
Volume both cylinders	19.9 cu. ft.
Equivalent heating surface* ÷ vol. cylinders	283.2
Grate area ÷ vol. cylinders	3.5

CYLINDERS

Kind	simple
Diameter and stroke	27 in. by 30 in.

VALVES

Kind	piston
Diameter	14 in.
Greatest travel	7 in.
Steam	1¼ in.
Exhaust clearance	1⅞ in.
Lead	¼ in.

WHEELS

Driving diameter over tires	69 in.
Driving journals, main, diameter and length	12 in. by 13 in.
Driving journals, others, diameter and length	10 in. by 13 in.
Engine truck wheels, diameter	33 in.
Engine truck, journals	6½ in. by 12 in.
Trailing truck wheels, diameter	43 in.
Trailing truck, journals	9 in. by 14 in.

BOILER

Style	conical, connected
Working pressure	200 lb. per sq. in.
Outside diameter of first ring	78 in.
Tubes, number and outside diameter	216—2¼ in.
Firebox, length and width	120⅛ in. by 84¼ in.
Firebox plates, thickness	tube and throat, ½ in.; others ⅜ in.
Firebox, water space	Front, 6 in.; others 5 in.
Flues, number and outside diameter	40—5½ in.
Tubes and flues, length	20 ft. 6 in.
Heating surface, tubes	2,597 sq. ft.
Heating surface, flues	1,176 sq. ft.
Heating surface, firebox, including arch tubes	348 sq. ft.
Heating surface, total	4,121 sq. ft.
Superheater heating surface	1,009 sq. ft.
Equivalent heating surface*	5,635 sq. ft.
Grate area	70.3

TENDER

Tank	water leg
Frame	cast steel
Weight	182,500 lb.
Wheels, diameter	33 in.
Journals, diameter and length	6 in. by 11 in.
Water capacity	10,000 gal.
Coal capacity	16 tons

*Equivalent heating surface = total evaporative heating surface + 1.5 times the superheating surface.

Intrastate Rate Proceedings

WASHINGTON, D. C.

JOHN E. BENTON, general solicitor of the National Association of Railway and Utilities Commissioners, has issued a supplemental bulletin on the status of intrastate rate advance cases showing that all commissions from which he has received advice have either allowed the proposed advances to take effect without order, or have granted the allowances asked for temporarily or finally, or have disallowed the same wholly or in part, as has been set out in this and former bulletins, except Arizona, Louisiana, and Tennessee.

Alabama. The secretary advises "that the commission has authorized temporary increases in Alabama rates the same as the Interstate Commerce Commission in Ex Parte 74, with the exception of limestone and ore, and has had a final hearing on the petition of carriers to make these permanent. Decision has not been rendered.

Georgia. On September 22 the commission denied the petition of carriers to strike out the exceptions in the commission's order, effective September 1, on brick, cotton and cotton linters.

Indiana. No increases authorized in passenger, baggage, milk, cream, and Pullman rates, or rates on brick. Class rates and coal increased 33 1/3 per cent. Commodities generally increased 10 per cent. Live stock, iron and steel increased 16 per cent. Carriers authorized to file rates effective on one day's notice not earlier than October 1. Maximum scale fixed on straw and short haul coal rates.

Mississippi. On September 16, 1920, the commission made an order permitting carriers to file, effective October 1, "and until such time or times as this commission on complaint or complaints, or on its own motion, or both, may order otherwise," tariffs making the same percentage increases in freight and passenger rates as were authorized interstate in Ex Parte 74.

Nevada. On September 17 the commission denied all increases asked for. The following are the concluding paragraphs of the commission's report:

"The powers of this commission are clearly defined and restricted by the delegation of authority granted by the legislature of Nevada. It is our duty, as we conceive it, to ascertain and fix just, reasonable, non-discriminatory, and compensatory rates to both the public and the carriers, and we have no power to make or authorize rates which consider only the rights and welfare of one of these parties without regard to the other. This commission, therefore, has not the power to make an order, such as the carriers demand, authorizing sweeping changes in every rate throughout the state without regard to their reasonableness; and in this proceeding the carriers have refused to enter upon an investigation as to the reasonableness of the present war-emergency rates of 1918 and the further increased rates here under consideration. Without at this time passing upon the reasonableness of the freight rates which were increased 25 per cent by the Railroad Administration in 1918 and which are said to have closed down a certain proportion of our operating mines, but with the understanding that the carriers may continue to apply said rates pending complaint to and adjustment by this commission, we are of the opinion that the applications of the carriers for authority to horizontally apply percentage increases to the present freight and milk rates, and to passenger, Pullman, and excess baggage fares, should be denied."

Oklahoma. On September 4 the commission granted authority to carriers to file on one day's notice, effective not prior to September 10, tariffs increasing freight and passenger rates by the percentages authorized interstate in Ex Parte 74, with the exception noted in paragraph IV below. The following paragraphs are from the order:

"IV. That the increases hereinbefore authorized for passenger and excess baggage shall apply only to steam carriers and then only where the maximum rate created by such increases will not exceed 3.6 cents per mile, except in the case of minimum charges or disposition of fractions. * * *

"VII. That the increases herein authorized shall be effective for a period of six months from and after September 10, 1920, at which time said rates shall be restored to the basis of rates in effect on February 29, 1920, unless the commission shall extend the period of effectiveness or change the rates herein prescribed. * * *

"X. That the applicants herein be and they are each hereby required to maintain their records so as to be able to advise the commission fully as to the revenues produced by the increases herein authorized, and that they be and they are hereby ordered severally to file with this commission on or before January 15, 1921, a full and complete statement of the revenues secured and expenses incurred in the conduct of intrastate freight and passenger traffic for the period from September 1 to November 30, 1920, both dates inclusive.

"XI. That the applicants herein be and they are hereby ordered severally to file with this commission on or before December 15, 1920, detailed statements of the value of the property devoted to intrastate freight and passenger services within the state of Oklahoma.

"XII. That the applicants herein be and they are hereby ordered severally to file with the commission on or before November 1, 1920, a detailed statement showing every officer or employee of the company on August 1, 1920, whose salary is in excess of $7,500 per year, or if employed during the month of August, 1920, and paid by the month, or any other period of time whose compensation for the period in question is on the basis of or in excess of $7,500 per year. Such statement shall show the name of the party employed, the residence, the nature of the occupation and the compensation."

J. M. Hannaford—Charles Donnelly

JULE M. HANNAFORD, president of the Northern Pacific, has announced his resignation effective on his seventieth birthday—November 19, 1920. After 54 years of railroad service, 48 years of which have been in the continuous employ of the road of which he became president in 1913, he has made way for a younger man whose age, in Mr. Hannaford's own words, better fits him for "the arduous duties and the personal responsibilities of the position of president"—Charles Donnelly, now executive vice-president. Mr. Hannaford will remain with the road as a director and vice-chairman of the board of directors.

Better comments cannot be made upon the reasons for Mr. Hannaford's action and upon his life work than those included in his letter of resignation addressed to Howard Elliott, chairman of the board of directors. He said:

"November 10, 1920, I shall have reached my seventieth birthday. For more than 54 years I have been in continuous railroad service; over 48 years in the service of the Northern Pacific, commencing with the organization of the operating department when we took the first section from the construction company, and remaining continuously until the property represents over 6,650 miles of the best transportation system in America.

"I believe I have done my share in making the success of the property, the prosperity of the country along the line, and the gratifying pride the people tributary to the Northern Pacific take in 'their road.' And this life spent in such service has been, most of the time, a very happy, satisfactory one. The local management has been uniformly harmonious; all working together for the best interest of the property, and the authority resting in the directors has been wisely used and freely given to make the success attained.



J. M. Hannaford

"All this has changed; legislation has been enacted, commissions have been elected, committees have been appointed, and authority that I have always recognized and believed should be confined to certain definite channels, in order that the property could be successfully handled, seems to have become too widely distributed.

"The Northern Pacific and all other railroads are about to enter a new era, and, if successful, it must be under a management not so fully wedded to old ideas and traditions. You have such men on the Northern Pacific, but they must commence the new way before they are too fixed in the old, and to do my part in this I would like to be relieved from the arduous burden of the presidency as near the nineteenth of November next as may be perfectly convenient to you."

Later, Mr. Hannaford, in commenting on his retirement, said:

"I am retiring from the active management of the Northern Pacific for no other reason than my desire to be relieved from the arduous duties and the personal responsibilities of the position of president. They are those of a younger man.

"At the request of the Board, I shall continue as a director of the company and with the title of vice-chairman, with office in St. Paul, shall act in an advisory capacity, still holding my interest in the success of the property.

"Charles Donnelly will succeed me as president. He has been connected with the larger activities of the company for many years and is well known by the officers and the public, and I hope will receive the same loyal support from both that I have received."

Mr. Hannaford's rise to the presidency of the Northern Pacific from chief clerk in the general freight office of that road at St. Paul, Minn., in 1872, was entirely through the traffic department. From 1899 until he became president he was in complete charge of that department successively as third vice-president and second vice-president.

His railway service began in 1866 when he entered the employ of the Central Vermont at St. Albans, Vt., with which road he remained until he entered the employ of the Northern Pacific in 1872. In his first position with the latter road, he is said to have compiled and written with a pen the first regular distance tariff of freight rates ever published on the Northern Pacific.

Mr. Hannaford was one of the most democratic and approachable of Western railway executives. His long connection with the traffic department made him popular among the shippers with whom he had been associated so long. He has been unusually popular with his subordinates and employees. At the time of his promotion to the presidency, it was said of him "that he never forgets an old friend and has in many ways been especially appreciative of long and faithful service on the part of his subordinates."

Mr. Hannaford was born on November 19, 1850, at Claremont, N. H., and entered railway service in June, 1866, as a clerk in the general freight office of the Central Vermont at St. Albans, Vt. On May 17, 1872, he became chief clerk in the general freight office of the Northern Pacific at St. Paul, serving in that capacity until May 1, 1879, when he was promoted to assistant general freight and passenger agent, with the same headquarters. From May 1, 1881, to August 1, 1883, he served as general freight agent of the Eastern division of the Northern Pacific, and from August 1, 1883, to March 1, 1884, as assistant superintendent of freight traffic. Subsequently he served for two years as general freight agent of the main line and branches, for four years as traffic manager, and from 1890 to 1899 as general traffic manager. From 1890 to 1893 he was also general traffic manager of the Wisconsin Central lines during the period when that road was leased to the Northern Pacific. On February 1, 1899, he was elected third vice-president, and on April 1, 1902, second vice-president. From June 1, 1895, to June 28, 1906, he was also vice-president and general superintendent of the Northern Pacific Express Company, and since June

28, 1906, he has been president of that company. In August, 1913, Mr. Hannaford was elected president of the Northern Pacific after more than 40 years of continuous and loyal service. When the government assumed control of the railroads, he was appointed federal manager, and when the railroads were returned to private control, he again assumed the presidency of that line.

Mr. Donnelly's rise within recent years has been very rapid. He has advanced from assistant general counsel to president within three years. There are several reasons for this. As counsel for the road, handling all kinds of litigation and matters of policy, he has shown a remarkable knowledge of the problems of all its different departments. Furthermore, as Mr. Hannaford remarked in his letter of resignation, the conditions under which the railways must be managed have changed greatly within recent years. Their relations with regulating bodies, their employees and the public require a different handling from the principal problems presented to the generation of executives to which Mr. Hannaford belongs. Mr. Donnelly is thoroughly acquainted with these new conditions, and has shown that he has the vision, the diplomacy and the personality required to deal successfully with them. He is, in fact, a man not only of progressive and constructive ideas and capable of a great deal of hard work, but also one of very attractive personality. It has been known for almost a year to the officers of the Northern Pacific that he was slated to become president, and his election will give great satisfaction to the organization of which he has so long been a part and in which he has risen from the bottom.



Charles Donnelly

Mr. Donnelly was born at Grand Rapids, Wis., on November 9, 1869, and graduated from the Georgetown University School of Law at Washington in 1896. He began railroad work on September 8, 1903, with the Northern Pacific, as assistant division counsel on the Montana division with headquarters at Helena, Mont. In January, 1908, he was promoted to assistant general counsel with headquarters at St. Paul, Minn. In May, 1918, he was again promoted to general solicitor of the Northern Pacific. Shortly thereafter he was appointed assistant to Judge Payne, head of the law department of the United States Railroad Administration. Because of Judge Payne's illness during the time that Mr. Donnelly was in Washington, the latter largely conducted the affairs of that department. Later he returned to St. Paul, because of the illness of Thomas Cooper, then vice-president and land commissioner. Mr. Donnelly, on October 1, 1919, was elected executive vice-president and assumed charge of corporation affairs in St. Paul, in addition to Mr. Cooper's duties during the remainder of the period of federal control. He continued in the same capacity for the Northern Pacific after the termination of federal control. Mr. Donnelly will assume the presidency of the Northern Pacific upon Mr. Hannaford's retirement on November 19.

Increased Priority for Coal Proposed

WASHINGTON, D. C.

PLANS FOR OBTAINING an increased movement of bituminous coal to the lake ports for transshipment in order to supply the northwestern section dependent upon lake coal with its fuel before the close of the season of navigation, and at the same time to meet the need of consumers, particularly domestic consumers, in Ohio, Indiana and Michigan, that are dependent for coal on the same sources as that from which the lake shipments are made, were discussed at a meeting of representatives of the railroads, the coal operators and public utilities and other coal consumers at Washington on Monday and Tuesday. As a result of the discussion recommendations were made to the Interstate Commerce Commission for several amendments to its service orders pertaining to coal transportation and although no announcement was made of their nature it was expected that the commission would take some action before the end of the week.

The railroads were represented by Daniel Willard, chairman of the Advisory Committee of the Association of Railway Executives, and officials of the Car Service Division of the American Railroad Association, and the coal operators were represented by officers of the National Coal Association. It is understood that a spirit of hearty co-operation prevailed and that it was the unanimous conclusion that in order to obtain an increased coal movement it would be necessary to increase the number of open-top cars devoted to coal transportation, which means further curtailment of the number of open-top cars allowed to shippers of other commodities. The commission has already issued several priority orders for coal but it has also issued a large number of permits for the use of open-top cars for construction materials and other shipments to meet pressing demands, and the facts discussed at the meeting are said to indicate that a greater degree of priority for coal is essential if the demands for coal are to be fully met.

The railroads have about reached the limit of the amount of coal they can transport in the number of cars that have been available for coal and while the lake shipments have proceeded at a fairly satisfactory rate since the issuance of Service Order No. 10, which calls for 4,000 carloads a week for the lakes, it is believed that it will be necessary to continue its operation up to the close of the season of navigation if the demand is to be supplied. Up to September 25 the cumulative lake shipments have been 14,866,000 tons as compared with 18,448,000 in 1919 and 21,665,000 in 1918. At the same time the large amount of coal moved to the lakes has had the effect of reducing the supply of coal available to domestic consumers in Ohio, Indiana and Michigan that are served by the same mines. There have been numerous complaints relative to this matter.

New York Central Program for Overcoming Equipment Shortage

The New York Central system, which includes 6 per cent of the main line mileage of the United States, owns 277,734 freight cars, or approximately 12 per cent of the entire freight equipment of the country. The work of rehabilitating this equipment and adding to it sufficient new rolling stock to overcome the car shortage was one of the most serious problems which the road faced at the termination



With All Tracks Filled by Decrepit Cars Awaiting Shops for Rebuilding, Long Lines Like the Above Are Set Off the Rails in Adjoining Yards. Scene at American Car & Foundry Plant, Detroit, Mich.

of federal control. Immediately upon the return of the roads, the New York Central lines placed orders for 11,244 freight cars of all classes at a total cost of approximately $53,000,000. On account of the difficulty in securing material, the delivery of new cars has been delayed and this made it imperative that an extensive rebuilding campaign be instituted at once.

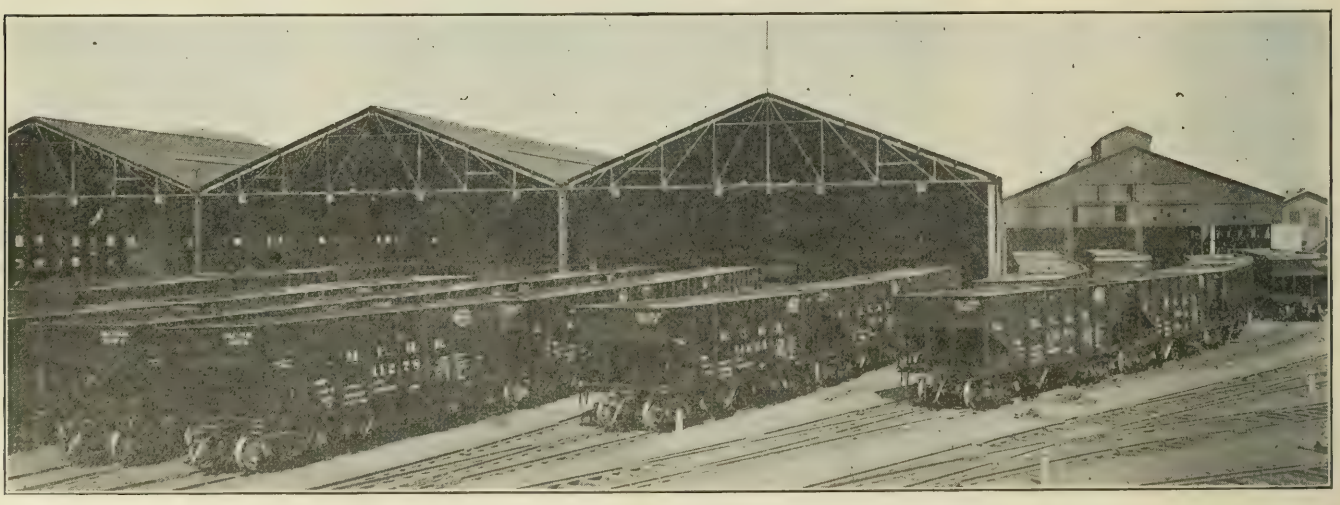
This work was undertaken with vigor and arrangements were made for carrying on extensive rebuilding operations not only in the company's shops but also in the plants of a number of car builders. During the eight months ending September 1, heavy and medium repairs to 100,418 cars were completed, many being completely rebuilt and all put in first-class condition. The contract work was distributed among 15 repair shops. This was an undertaking of even greater magnitude than the building of new cars, as the stripping and rebuilding of existing equipment requires approximately three times as long as building a new car. However, the shortage of material was not such a serious handicap in this work.

The new equipment ordered is now being delivered at a rapid rate. The Pressed Steel Car Company is turning out 20 cars a day at McKees Rocks, Pa. The Merchants Despatch Transportation Company at East Rochester, which is rebuilding 700 refrigerator cars, has reached an output of 15 a day. At Detroit the American Car & Foundry Company is rebuilding 3,000 hopper and gondola cars at the rate of 20 a day.

In carrying on these extensive rebuilding operations, a progressive traction system similar to that used in the construction of new cars has been developed. The cars are brought in for repairs at one end of the shop, the work required is marked by the inspectors and then the cars are moved through the shop bays past the crews, each of which performs a given operation. The rivet heads are burned off with acetylene torches and the whole superstructure torn apart and discarded. As the car passes down the track, the successive rebuilding operations are performed and the car emerges at the other end of the shop ready for painting, after which it is placed into service.

The carriers cannot overlook a single "bet" which promises to increase their potentialities of service, and thereby their potentialities of revenue.—*Baltimore Sun.*

Public Sentiment.—There is a favorable public attitude toward the railroads, for the first time in many years. The roads are making decided headway thus far in meeting public expectations. They must, however, continue their progress and thereby support the disposition to regard public ownership as definitely out of the realm of feasibility.—*N. Y. Journal of Commerce.*



Group of New York Central Lines' New Hopper Cars Ready for Shipment at McKees Rocks, (Pa.) Plant of Pressed Steel Car Company. Twenty of These Cars Are Being Delivered to the New York Central Lines Each Day from This Plant

A Directory of Farmers' Organizations along the lines of the Delaware, Lackawanna & Western has been prepared by Allan S. Merchant, agriculturist of the railroad. The list shows the names and addresses of the presidents and secretaries of the organizations together with the product in which each specializes. It is purposed in this way to get producers and consumers in direct communication with each other, thus eradicating the commission buyer.

Figures Show Continuance of Heavy Freight Traffic

Car Loading Increases and Shortage Reduced—Principle of Equalization in Interchange of Freight Cars Adopted

WASHINGTON, D. C.

REPORTS JUST COMPILED by the Car Service Division of the American Railroad Association show that the volume of freight traffic is holding its own in spite of the increase in freight rates which went into effect on August 26. For the week ending September 4 there was a slight reduction in the number of cars loaded with commercial freight to 947,743, as compared with the highest record made for this year, 985,064, in the week of August 28. The week of September 11 included the Labor Day holiday and the total loading fell to 872,043 cars, but in the week ending September 18, for which the reports have just been received, the total was 983,913, as compared with 994,991 for the corresponding week of 1919 and 970,458 in 1918. Up to July 1 the car loading figures still reflected the effects of the strike, but from July 3 to September 18 the total car loading has been 11,008,219, as compared with 10,697,733 in 1919 and 11,340,621 in 1918. The report follows:

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS; COMPARISON OF TOTALS, THIS YEAR, LAST YEAR, TWO YEARS AGO, FOR WEEK ENDED SATURDAY, SEPTEMBER 18, 1920

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year, 1920	Corresponding year, 1919	Corresponding year, 1918	Received from connections: This year, 1920	Corresponding year, 1919	Corresponding year, 1918
Eastern	1920	9,139	2,668	41,613	3,640	8,273	12,314	44,891	102,515	225,053	.....	.....	256,859	.....	.....
	1919	9,383	2,894	52,795	3,461	8,171	7,059	26,277	131,071	.....	241,111	230,614	.....	254,394	254,251
Allegheny	1920	2,971	3,541	61,814	6,653	3,774	17,079	39,480	79,882	215,194	.....	.....	142,823	.....	.....
	1919	3,598	3,510	61,446	4,287	3,809	12,769	42,644	79,799	.....	211,862	217,057	.....	154,187	184,762
Pocahontas	1920	192	267	24,646	770	2,200	205	2,916	7,110	38,306	.....	.....	18,556	.....	.....
	1919	259	426	22,366	650	2,234	258	124	10,196	.....	36,513	40,816	.....	20,278	25,914
Southern	1920	3,127	2,238	26,924	1,501	19,162	3,416	37,016	37,919	131,303	.....	.....	72,972	.....	.....
	1919	3,247	2,680	25,818	327	19,248	3,217	20,721	51,819	.....	127,077	125,274	.....	71,696	72,481
Northwestern	1920	15,364	8,794	11,805	1,591	15,657	49,090	27,943	38,449	169,693	.....	.....	58,177	.....	.....
	1919	15,313	10,126	10,928	1,301	16,775	46,283	21,229	51,215	.....	173,170	169,808	.....	66,628	88,793
Central Western	1920	11,924	12,735	22,459	447	7,011	2,969	31,032	47,920	136,497	.....	.....	71,364	.....	.....
	1919	12,487	14,077	22,211	343	6,693	3,872	23,527	57,479	.....	140,689	128,283	.....	76,092	67,991
Southwestern	1920	4,956	2,693	6,331	122	8,229	346	17,380	27,810	67,867	.....	.....	51,648	.....	.....
	1919	5,183	2,941	7,956	149	6,691	270	12,845	28,534	.....	64,569	58,606	.....	49,482	47,526
Total, all roads	1920	47,673	32,936	195,592	14,724	64,306	85,419	200,658	342,605	983,913	.....	.....	672,399	.....	.....
	1919	49,470	36,654	203,520	10,518	63,621	73,728	147,367	410,113	.....	994,991	.....	.....	692,757	.....
	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	970,458	.....	.....	741,718
Increase compared	1919	.....	.....	.....	4,206	685	11,691	53,291	.....	.....	.....	.....	.....	.....	.....
Decrease compared	1919	1,797	3,718	7,928	.....	.....	.....	.....	67,508	11,078	.....	.....	20,358	.....	.....
Increase compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	13,455	.....	.....	.....	.....	.....
Decrease compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	69,319	.....	.....

The average daily car shortage (deferred car requisitions) show a further reduction during the week of September 17 to 96,114 for the United States, as compared with 104,790 the previous week and 146,070 for the week ending September 1. Of the total 55,653 were box cars and 23,647 were coal cars.

The freight car accumulations during the week of September 24 amounted to 47,689, which represents practically a normal condition for a year of heavy traffic.

Continued progress in "unscrambling" the freight cars, which had become badly scattered during the war period, is shown by the report for September 15, when 28.7 per cent of the cars were on "home" lines, as compared with 21.9 per cent on March 1. On January 1, 1918, 44 per cent of the cars were on home lines. Of the box cars 17.6 per cent were on home lines; of the refrigerator cars, 46.3 per cent; of the gondola cars, 35.3 per cent; of the stock cars, 36.1 per cent, and of the flat cars, 34.9 per cent.

On September 15 the railroads in the Eastern district had on their lines 100.6 per cent of the number of freight cars owned; the Allegheny district had 100.2 per cent; the Pocahontas district 71 per cent; the Southern district 87.3 per cent; the North Western district 99.1 per cent; the Central Western district 92.3 per cent and the Southwestern district 96.7 per cent.

Car Equalization Plan

Thus far this year the policy of car distribution has been in general to build up the supply of cars in each district to approximately 100 per cent of its ownership, as far as that could consistently be done, and the report for September 15 shows that very good progress has beeen made in that direction as a result of the relocation orders that have been issued, although individual relocation orders will still be necessary in some cases to build up the car supply on individual roads.

In order to maintain the car supply by districts and by individual roads the Advisory Committee of the Association of Railway Executives at a recent meeting adopted a resolution providing for the establishment of a plan of equalization between railroads, so that each road, in general, will receive from its connections as many cars as it delivers to them, in accordance with arrangements to be worked out between the roads locally.

The Car Service Division on October 4 issued circular C.S.D.-85 announcing that in accordance with a circular of October 1 issued by the Advisory Committee, the principle of equalization in interchange of freight equipment is effective as between all railroads. The record of interchange dating from September 1, 1920, will serve as a basis in arriving at balances due. The circular prescribes regulations for the plan of equalization as follows:

Regulations for Plan of Equalization

1. In making equalization effective railroads are required to analyze their interchange currently and make such arrangements as may be necessary locally to effect an interchange movement with their connections.

2. Equalization will apply separately as to types of cars. For this purpose the different types will be understood as follows:

A. Box cars—including ventilated box, furniture and automobile cars.

B. All open top cars, except flats.
C. Flat cars.
D. Stock cars.
E. Refrigerator cars.

Tank cars will not be considered in equalization.

Note: Ventilated box and automobile cars will not be applied in equalization of box cars where such movements are contrary to any special instructions of the Car Service Division.

Refrigerator cars will be generally subject to special instructions of the Car Service Division.

3. At all terminals where deliveries are made to connections in switching service the roads involved will work out between themselves and maintain a plan of equalization. Where local committees on car service are established their services will be available in case of necessity. Responsibility for maintaining arrangements agreed upon, however, rests with the individual roads.

4. Equalization shall be maintained currently and be handled on weekly balances.

5. Car service rules will be observed in effecting equalization. When forced movement of empties is necessary to effect equalization, or excess over equalization if required by specific orders, the selection of car ownerships shall be in the following order of preference:

1. Cars of destination line.
2. Cars of direct connections of destination line.
3. Cars which it is known can properly be used by the destination line for loading according to Car Service Rules.
4. Cars of delivering line.

6. The Car Service Division will from time to time give such special directions as may in its judgment be necessary to relocate cars for traffic or other requirements.

7. In case of disagreement as to equalization between railroads appeal may be made to the Car Service Division, whose settlement of the matter will be final. It is expected, however, that such means will be adopted only as a last resort, pending which time current deliveries in equalization shall be maintained.

8. It is of the utmost importance under the equalization plan that interchange reports to the Car Service Division on Form CS 22 shall be accurately compiled and promptly forwarded.

Status of Outstanding Orders of Car Service Division

All orders requiring movement of a definite number of cars daily, or as a total, will remain in effect until the order is completed and cars reach destination road, unless the orders are changed or cancelled on specific instructions in each case.

Outstanding orders requiring straight equalization will be cancelled or modified only by special notice to that effect in the individual case. Orders requiring deliveries in excess of equalization will continue in effect until changed or cancelled.

Summary of General Conditions

The Car Service Division has issued the following summary of general conditions as of September 29:

Box Cars—The requirements continue heavy at all points, especially in the West. Grain loading is below last year, and the demand for cars for immediate loading continues to be in excess of the supply. Cars are being moved west in volume, and additional orders are being placed to the fullest possible extent. The volume of perishable traffic which will be offered for transportation during coming season is expected to be unusually heavy. The loading of ventilated box cars with dead freight must be confined to points in direct line to home roads.

Automobile Cars.—This equipment must be moved, loaded or empty, to the central automobile manufacturing district for protection of automobile loading, demands for which are again on the increase.

Stock Cars—Demand so heavy for protection of stock loading and for building up supply on Western lines for movement of range cattle and sheep, that utmost efforts must be made to move cars to owning lines, or in accordance with specific orders issued for necessary relocation.

Refrigerator Cars—Demand for refrigerators continues heavy throughout eastern, middle west and western territory. Fall fruit movement now at peak. Dairy and packing house products continue to be offered in heavy volume, and generally in excess of the ability to supply cars currently. It is of utmost importance that both loaded and empty refrigerators be given preferential handling, and likewise important that the loading of refrigerator cars be confined to freight requiring refrigeration. Consignees should be impressed with the importance of promptly releasing refrigerator cars.

Open Top Cars—The upward trend which the production of bituminous coal has taken during the past few weeks reflects the improved car supply which has been made available by extraordinary efforts on the part of all railroads in speeding up the movement of coal cars. However, the exigencies of the coal situation necessitated the issuance of Service Orders 15 and 16 effective September 19 containing practically the same provisions as original orders 7 and 9 curtailing the distribution of open top cars to commodities other than coal. The conditions in the steel loading districts are reported as somewhat improved. In fact, a progressive decrease has been made in the amount of steel stored since July 1, and the present effort of the railroads is to reduce this storage to normal. Permits are still being issued to cover the supplying of coal carrying cars for commodities other than coal, where such movements cannot be protected under Service Order 15. Only material urgently needed for the public welfare is being considered in the issuance of these permits.

Flat Cars—Requirements for this type of equipment continues to exceed the supply. Cars are now being moved in greater volume to the lumber and stone regions where demands are exceedingly large.

This type of equipment should be promptly released and moved expeditiously in the territory in which it is badly needed.

Car Service Circulars

The Car Service Division has issued a supplement to its circular CCS-54 saying that the Interstate Commerce Commission advises that the preference in car supply accorded by its Service Order No. 16 for the protection of the loading of coal for necessary daily use of utilities privately owned but engaged in public business, shall be understood to apply to like utility services of the War Department at its various posts, camps and stations.

Circular CSD-82, issued by the Car Service Division, says that numerous instances have come to the attention of the Interstate Commerce Commission and to the Car Service Division of small lots of freight being billed at carload rates apparently for the purpose of forcing movement of an empty car to a particular consignee, thereby promoting certain advantages in car supply during periods of car shortage.

"This in its simplest terms is a form of conspiracy," the circular says, "and a device to obtain an unjust preference, and one to which the railroads should not be a party. Therefore railroad agents and others concerned should be instructed to decline to sign bills of lading, or to place a car, for small lots of freight offered for shipment at carload rates where the intent to control movement of the car is evident. Furthermore, should a car be received by a consignee under such circumstances, its further use for outbound loading of such consignee is prohibited, and the consignee should receive his car supply in the usual manner."

Annual Meeting of the National Safety Council

Steam Railroad Section—Meetings Deal Largely with Co-operation and Means of Assisting Educational Work

THE NINTH ANNUAL CONGRESS of the National Safety Council opened at the Auditorium, Milwaukee, Wis., on September 27, continuing in session until October 1. The sessions of the Steam Railroad Section of the Congress began on September 29, three sessions and one roundtable discussion being held on that and the subsequent days of the Congress.

R. C. Richards, chairman of the Central Safety Committee of the Chicago & North Western, and president of the Council, opened the Congress at 10 o'clock Monday morning, the entire first general session being devoted to the consideration of council business. The first session of the Steam Railroad section was opened by Robert Scott, superintendent of insurance and safety of the Atlantic Coast Line and chairman of the section. After the consideration of various officers' and committees' reports, W. M. Jeffers, general manager of the Union Pacific, addressed the safety men extemporaneously, emphasizing the value of and need for safety supervision and urging fair treatment for railroad employees, in return for which he said the men would reciprocate.

Safety and Time Service

Webb C. Ball, general time inspector of the Bureau of Railroad Time Service, presented a paper at this session on "Safety and Time Service." The purpose of Mr. Ball's paper was to give an account of the ways and means by which the standard system of time service has been developed. He said in part: "The 'railroad standard watch' of today is justly recognized as one of the most important 'safety appliances' required in train operation. It is called upon to perform a service of safety every hour and minute, both day and night and it is as constant and necessary as regular pulsations of one's heart and lungs. Railroad people who carry standard watches and submit the same for periodic inspection as a rule appreciate their responsibility and accordingly live up to the rules of the service. On most lines four men on every train are subject to prescribed watch inspection rules—the engineer, the fireman, the conductor, and the rear flagman, and as a further safety measure, some lines require towermen, train despatchers, station masters, and section foremen to carry standard watches."

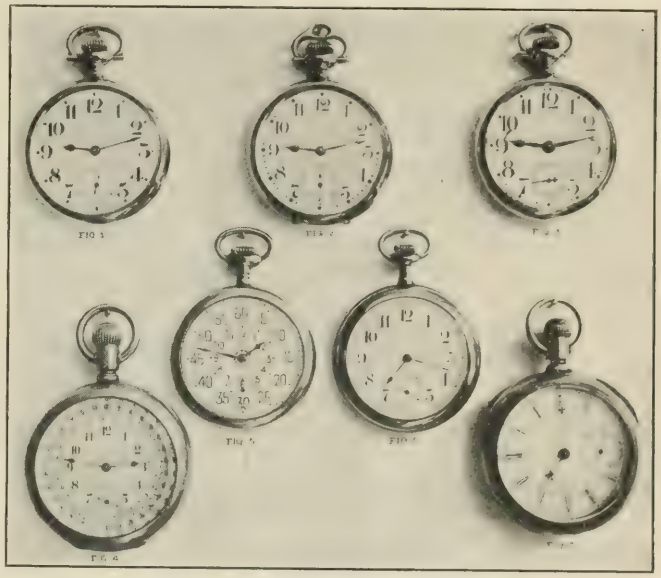
The duties of the watch inspectors, of whom there are several thousand throughout the United States, and the development of the present system of watch inspection were then described by Mr. Ball in detail.

Continuing he said: "The difference between the minimum standard railroad watch today and the best grade 30 years ago in itself reveals the improvement that has been made in the mechanical construction of watches during the last few years, an improvement which can be accepted as the watchmakers' contribution to the safety first movement. For their co-operation in making possible standardization of grades, special credit must be given the watch manufacturers. In January, 1918, the number of railroad watches scheduled was reduced from 85 to 22. It is therefore reasonable to expect that the few grades retained will receive special attention and further improvement in their finish and adjustments.

"Another very important factor of safety is the dial, that part of the watch which quickly and surely reveals the correct time to the engineer, the conductor and other trainmen. As this information is often required at night when lights are dim and obscure, it is needless to emphasize the importance of dials that give the hour and minute without any confusion of fantastic figures or freakish designs.

"The figures should be 12 plain upright Arabic figures to indicate the hour points and the 12 five minute division points in the dial circle should be distinct squares, diamond or round dots, with the four intervening minute dashes not quite so heavily marked but distinct for easy reading. Dials that serve their purpose of safety, are illustrated on the accompanying chart prepared to compare the standard safety dials shown in Figures 1, 2 and 3 with the freak confusing unsafe dials shown in Figures 4, 5 and 6.

"Another feature about the standard dial is the position of the stem or winding crown. This should be opposite the 12, not as with a hunting case watch, opposite the 3. The use of such closed-face models that have been converted into open face watches without changing the position of the stem, has proved disastrous to life and property as a result of false



A Comparison Between "Safe" and "Unsafe" Railroad Watch Dials. Figures 1, 2 and 3 Show Standard Dials. Figures 4, 5 and 6 Show Freak Dials. Figure 7 Shows the Old-Style "Side Wheeler" Watch.

reading of the time indicated. A serious error of 15 minutes can easily result from a confused reading of a side-wheeler watch dial such as is shown in Figure 7.

"The Official Bureau of Railroad Time Service was chartered in the United States and Canada in 1918. This bureau has its principal office in Cleveland, Ohio, with branches in Chicago, Ill., San Francisco, Cal., and Winnipeg, Man., and has a present organization of about 60 people schooled in this work. The purpose for which this bureau is formed is not for profit or any merchandising whatsoever, but to reduce the element of danger in the operation of railroads, caused by inaccurate timepieces, and to increase the factor of safety to the public by general supervision; * * * to keep records of performance under uniform rules and regulations; to appoint and educate local watch inspectors; to see that railroad watches and clocks are properly inspected; to make and maintain a standard system of watch and clock rating and regulation for railroad employees and railroad companies and in general to exercise careful supervision of railroad time service.

"This bureau is governed by a board of five trustees who serve from three to five years."

Co-operation With Railroad Labor Organizations

The second session was opened with an address on "Co-operation With Railroad Labor Organizations" by Isaiah Hale, safety superintendent of the Atchison, Topeka & Santa Fe.

Mr. Hale's address recounted his experiences in endeavoring to interest officers of the railway brotherhoods in safety work and in this connection he urged the safety men to co-operate with the editors of the official publications of the larger railroad brotherhoods by supplying copy for Safety departments in these publications. In this manner safety work can be made more effective, being directed, as it will be, largely through the employees' organizations, he said. Mr. Hale closed his address with an appeal for the spreading of optimism and good cheer as an important factor in safety work.

J. A. McNally, safety agent of the Wabash, in presenting a paper on "Shop Accidents" at this session, outlined many preventive measures and "Don'ts" for mechanical department employees, urging among other things a daily inspection of all tools in tool rooms and a weekly inspection of all tools in private lockers.

Samuel O. Dunn, editor of the *Railway Age*, also addressed the second session of the Steam Railroad Section on "The Economic Value of Railway Safety Work." Mr. Dunn's address is reproduced in full elsewhere in this issue. C. H. Baltzell, superintendent of the St. Louis-San Francisco at Fort Smith, Ark., addressed this session on the general subject of Transportation Accidents.

The roundtable discussion was held on Thursday afternoon, Harry A. Adams, of the Bureau of Safety of the Interstate Commerce Commission, presiding. The discussions were led by J. C. Clark, assistant to the general manager, in charge of safety, on the Oregon Short Line; Harry J. Bell, formerly regional supervisor of safety of the Northwestern Region, and Marcus A. Dow, general safety agent of the New York Central. The questions of the use of statistics in safety work, their comparability as between roads, the adoption of new standards for reporting accidents, competition in safety work, the advisability of permitting prizes and awards to be made for safety work, and the duties of safety committee members were thoroughly discussed.

Maintenance of Way and Motor Car Accidents

The last session of the Steam Railroad Section was held on October 1, Arthur Ridgway, assistant chief engineer and safety officer of the Denver & Rio Grande, presenting the first paper. Mr. Ridgway said in part:

"Because of the general character of that class of men which furnishes most of our track labor and because of the particular kind of work demanded of such men, a high probability of accident among maintenance of way forces is apparently a perfectly natural assumption. Relatively high probability of accident among these workmen is, however, not a fact, for reliable figures show conclusively that the per cent injured among maintenance of way forces is considerably lower than among railway employees as a whole. For example, a record of two years shows an average of 26 per cent less injuries per 100 men employed in this department than the average of all the railroad forces combined. Again, the same two-year period shows that in the maintenance of way forces there were 62 per cent less injuries per 100 men employed, or less than half as many as among all the other so-called unskilled railroad laborers. While this statement is not indicative of the relative immunity from injury of maintenance of way forces as compared with other industrial pursuits, it does show that insofar as railway employees as a whole are involved, the maintenance of way man, contrary to expectations, is decidedly less likely to be injured than the average railroad worker.

Motor Car Accidents

"To be of any practical value, an analysis of the subject under discussion would seem to demand a segregation of motor car accidents from other kinds in the maintenance of way department. Comparing the two general classes we find that motor car accidents comprise about 14 per cent of the total, and all others, therefore, about 86 per cent. The motor car accidents may be conveniently grouped into four typical classes and their respective frequency compared thus:

"Motor-car accidents are classified as follows: Collisions with trains, 37 per cent; men falling off cars, 32 per cent; derailments, 26 per cent; collisions with other cars, 5 per cent. Collisions with trains are due to speed and carelessness; men falling off because of speed, carelessness, and limitation in design of cars; derailments are due to speed, carelessness, and limitation in design of cars; collisions with other motor cars may be charged wholly to speed.

"There are thus shown to be three principal contributing factors of which one, speed, is common to all four groups. Perhaps excessive speed in the use of cars can be very largely, if not entirely, attributed to that human instinct common to all mankind which may be described as an almost uncontrollable passion to utilize to the utmost all power and authority vested in the individual.

"As to the limitations in the design of cars, much may be said. Lightness is the first requisite, for to be of any use at all workmen's cars must be so limited in weight as to be easily handled on and off the track by the number of men they are designed to carry. On the other hand, this very limitation in weight militates against immunity from derailment, since many derailments may be ascribed to light weight as a contributing cause. Again, limitation in weight is inseparable from restricted dimensions, which necessarily curtail seating and tool-carrying capacity, both in magnitude and distribution throughout the space available therefor. In fulfilling the fundamental essentials, the designer is also handicapped in properly disposing of the matter of hand holds and grabirons, while provisions for the various forms of tools, separate and apart from their weight, is indeed a serious study. Moreover, the adoption of either the direct or indirect method of drive carries with it a sacrifice of some of the advantage of the other.

"The carelessness factor in most motor car accidents is manifested in disorderly seating of men, hasty and thoughtless loading of tools, inattention to car and contents while under way, and wanton disregard of the danger of imperfect flag protection.

"Turning now to a consideration of other maintenance of way accidents, we find the most frequently recurring accidents listed in their order of frequency to be as follows:

Struck by flying objects.
Use of tools not defective.
Eye injuries.
Struck by falling objects.
Use of tools in hands of others.

"Among the flying objects which carry destruction in their path may be mentioned spikes not firmly started before a full swing blow of the maul is delivered, nuts cut off track bolts with a chisel or knocked off with a maul, and articles thrown or falling off passing trains.

"The unskilled use of non-defective tools such as picks, claw bars, shovels, adzes and track jacks contributes a very large share of resultant injuries.

"Eye injuries originate largely from mushroomed chisel heads, improperly tempered cutting edges, dust and metal scale.

"Many of the injuries resulting from falling objects are incurred during the loading, unloading or otherwise handling materials of one sort or another.

"The erratic swinging of picks and mauls and the careless manipulation of shovels are responsible for a very

considerable number of injuries inflicted by tools in the hands of others.

"Of all the injuries suffered by maintenance of way employees, more than one-third—35.6 per cent to be exact—are to be found in injured hands and feet, in the proportion of about two in the hands to each one in the feet. A most prolific source of injury to the fingers is in the use of the claw bar when pulling inside spikes. Perhaps the claw is worn and the foreman hasn't taken the trouble or had time to send the bar in for reforming; or perhaps the workman does not use care in getting a good bite on the spike; or perchance the spike head is snapped off, but whatever the reason, a wild hard pull often sends the handle end of the car crashing down on the opposite rail with only a human finger to absorb the impact. Another deep rooted origin of injury to the hands is to be observed in the many slivers, jagged edges and rough surfaces with which maintenance of way materials abound. Again, maintenance of way materials are of necessity weighty and large in size. Stored in piles or nested in transportation they present no opportunity for a hand hold. The slightest opening between units serves as an invitation to a workman to thrust in his hand and the outcome is often a crushed finger.

"Occasionally a man cuts his foot with an adze or strikes it a glancing blow with a maul, but by far the majority of foot injuries occur through the dropping of some heavy object on the toes. Very often this is the result of some spontaneous action of one or more of his co-workers without advance warning. In the handling of railroad materials, the units of which require the combined effort of two or more men, lack of unity of action or movement is almost sure to result in some sort of accident.

"The only absolute cure for excessive speed in the use of motor cars is to render high speed impossible in the design of cars, and notwithstanding the disadvantage of limiting the speed of all cars to a predetermined rate, safety interests apparently demand such limitation.

"Thorough co-operation with manufacturers of cars in the details of design will accomplish much towards a universally satisfactory type of car, and will surely open a way for a judicious choice of the lesser of any two evils of design.

"There is but one wholly effective remedy for curing the most pernicious practice of moving motor cars without flag protection, and that is to require such movements to be conducted under the standard train order system. We are forced to the conclusion, however, that because of the delicate questions involved, this plan is impossible of adoption and that there remains the only alternative of enforcing a rigid requirement of adequate flag protection. To accomplish the desired results, this requirement must be exacted under the most stringent discipline and even trivial violations thereof subjected to extremely careful scrutiny. Perhaps there is no more effective means to the end sought than in justifying these severe disciplinary measures by emphasizing without stint the constantly impending danger involved in unprotected car movement. The unsystematic loading of men and tools, primarily due to simple thoughtlessness, can generally be eliminated by patient and specific admonition.

"The most potent instrument in combating the persistent menace of other maintenance of way accidents is available in the form of a prudently administered campaign of education; in fact it is about the only recourse. There is in this suggestion no intended implication that these men of brawn are necessarily of inferior mentality. It means simply that thus far no educational opportunities have been available. Briefly stated, they have never been told."

Safety Work of the Interstate Commerce Commission

The work of the Bureaus of Safety and Locomotive Inspection of the Interstate Commerce Commission was described in detail at this session by W. P. Borland, chief of the Bureau of Safety.

Mr. Borland said that approximately 1,000,000 freight cars and 25,000 to 30,000 passenger cars, and 25,000 or more locomotives were inspected annually by the two bureaus. He presented a table which showed that in these inspections, the percentage of defective passenger cars in service to the total number inspected was 2.85 in 1915; and that there was a steady decline annually until 1919, when the per cent of defective passenger cars was 0.39, less than one-half of one per cent. The decline in the number of defective locomotives, he said, was from 4.06 per cent in 1915 to 1.84 per cent in 1919. The per cent of defective freight cars in 1915 was 4.77 and in 1919, 3.70. Reports received to date for 1920, according to the statistics presented by Mr. Borland, indicate a slight increase in the amount of defective rolling stock of all classes.

Mr. Borland also discussed the enforcement of the safety appliance and the hours of service laws and told of the work of his men in the investigation of all accidents and in the examination of plans for new types of block signals, automatic train stops and other safety devices.

C. M. Talbert, director of the Department of Streets and Sewers, City of St. Louis, Mo., also presented a paper on "Public Safety" at this session.

Election of Officers

The following men were elected officers of the Steam Railroad Section at its last session: T. H. Carrow, supervisor of safety of the Pennsylvania, Philadelphia, chairman; Peter Groome, safety agent of the Union Pacific System, vice-chairman and A. V. Rohweder, supervisor of safety of the Duluth, Missabe & Northern, Duluth, Minn., secretary.

Cast Iron for Locomotive Cylinder Parts

FREQUENT RENEWAL of cylinder parts of locomotives results in greatly increased cost of maintenance to the railroads, and consequently the quality of the cast iron entering into their construction is a matter of paramount importance, particularly from the standpoint of wear. These parts include piston-valve bushings, piston-valve packing rings, piston-valve bull rings, cylinder bushings, piston packing rings, and piston-head or bull rings. It was found that ordinary high-silicon cast iron gave unsatisfactory wear, particularly in modern superheater locomotives, and the tendency has been toward a harder and stronger iron.

At the request of the U. S. Railroad Administration the Bureau of Standards has investigated the mechanical, chemical and microscopical properties of a number of packing rings furnished with service-mileage records, as well as arbitration-test bars, chill-test specimens, and miscellaneous samples from different manufacturers. All of this material was cast iron such as is used for the various cylinder parts. At the same time a review was made of the previous work and specifications on this subject, to ascertain as far as possible the practices of the different foundries and to suggest such revision of existing specifications as would be warranted by the results of the present and of earlier investigations.

The results of the tests are to be published in Technologic Paper No. 172 of the Bureau of Standards, by C. H. Strand, associate physicist.

Conclusions are drawn and recommendations made as follows:

1. On the basis of tests made by inspectors of the U. S. Railroad Administration and this bureau, which were substantially in agreement, it is concluded that air furnace or so-called "gun iron" is more uniform in character and on the

average of somewhat better mechanical properties than cupola iron. The latter, however, often equals or even excels in mechanical properties the specimens of air-furnace iron tested in this investigation. The sulphur content of the air-furnace irons examined seldom exceeded 0.06 per cent, while the cupola irons varied in sulphur content from 0.10 to 0.17 per cent.

2. The findings of the American Railway Master Mechanics' Association with respect to correlation of laboratory and service tests are confirmed in the present investigation. It was impossible, except in a very general way, to find any correlation between the quality of the iron as developed by laboratory tests and the mileage obtained in service. This is explained by the fact that many other factors besides the quality of the iron enter into consideration in the service results, namely, design, lubrication, method of handling the locomotive, topography of the country, character of water used in locomotive, etc. The ring from foundry B, which gave the exceptionally good service of 93,000 miles, showed no unusual properties in laboratory tests. It is for the reasons cited above that the conclusions and recommendations of this paper are based essentially upon the results of laboratory tests.

3. The present specifications of the American Railway Master Mechanics' Association are somewhat lax in the requirements for mechanical properties. It is recommended that the transverse strength requirements of the 1¼-inch arbitration bar be increased from 3,200 to 3,500 lb. for castings one-half of an inch or less in thickness, and from 3,500 to 3,800 lb. for castings over one-half of an inch in thickness. It is further recommended that the minimum deflection requirements for both cases be increased from 0.09 to 0.11 inch. The division line of the casting thickness is changed from five-eighths of an inch of the American Railway Master Mechanics' Association, to one-half of an inch in order to conform to the recognized standards of the American Society for Testing Materials.

4. It is preferable to leave the chemical composition and the melting process used to the manufacturer, depending for the most part on the mechanical tests, and of these primarily upon the transverse test. The existing specifications allow a maximum of 0.70 per cent phosphorus and 0.12 per cent sulphur; there are no developments in this investigation which would warrant a revision of the maximum permissible amounts of these elements.

Acknowledgment is given to Capt. S. N. Petrenko and T. W. Greene for the mechanical tests and also to S. Epstein for the metallographic work. The co-operation of the chemistry division of the Bureau of Standards in making the chemical analyses is likewise acknowledged.

The paper also includes a proposed specification for cast iron cylinder parts.

The Cost of a Railway Strike in France

By Lee G. Lauck.

The Minister of Finance attributed to the recent railway strike in France the blame for having dampened the enthusiasm of the subscribers to the last loan, and of having in a great measure, hindered its success. That was not the only misfortune caused by the strike, and the following information will suffice to prove it.

The transportation crisis was considerably aggravated by the strike of last February, which has greatly contributed to the present economic unrest in France. This strike lasted officially for four days, from February 27 until March 2, except on the Paris-Lyons-Mediterranean, where it continued for a week. The appended table shows the number of cars which were loaded on the different systems during the week which preceded the strike; then for the week while the strike was on; and finally for the weeks which have followed the termination of the strike.

Table I

Roads	Week of Feb. 20 to Feb. 26, 1920 (Before the strike)	Week of Feb. 27 to March 4, 1920 (Week of strike)	Week of March 5 to March 11, 1920 (After the strike)	Week of March 12 to March 18, 1920 (After the strike)	Week of March 19 to March 25, 1920 (After the strike)
Total for the Eastern, Midi, Northern, Etat and Orleans	178,813	124,612	141,753	163,052	171,933
Paris-Lyons-Mediterranean ...	50,490	5,881	30,294	48,510	51,429

Thus the strike, even though it failed to have the general character that its promoters wished for, caused a decrease of 83.35 per cent in the number of cars loaded on the P-L-M system, and of 31 per cent on the five other systems taken together. Elsewhere the disorganization of traffic resulting from the strike, has continued to make itself felt, long after the return to work. It was only at the end of the third week after the strike that the roads were able to load a number of cars somewhere equal to the average loaded before the strike. But there remain all the arrears, representing the difference between the cars loaded to the time when the loadings have again become normal, and the sum total of the normal loads. This deficit is around 111,000 cars for the first group of systems, and around 75,000 for the P-L-M alone. The latter estimates that to overcome this deficit, it would be necessary to load 500 cars more than normal, which is a difficult thing to do, over a period of 150 days. Consequently on this system the strike will have made its effect felt for nearly five months. The same situation arises when a comparison is made of the number of loaded cars received during the weeks indicated below.

Table II

Roads	Week of Feb. 20 to Feb. 26, 1920 (Before the strike)	Week of Feb. 27 to March 4, 1920 (Week of strike)	Week of March 5 to March 11, 1920 (After the strike)	Week of March 12 to March 18, 1920 (After the strike)	Week of March 19 to March 25, 1920 (After the strike)
Total for the Eastern, Midi, Northern, Etat, and Orleans	93,135	46,317	83,624	95,585	98,544
Paris-Lyons-Mediterranean ...	16,731	20,069	11,647	14,210	18,216

The decrease is 87.63 per cent on the P-L-M, and 53.53 per cent on the other five systems taken together. As for the cars received loaded, less than two weeks after the strike the various roads were able to re-establish their traffic with the same intensity that it had before the strike. The difference which elapsed for the return of normal service for the loaded cars and for the cars that were to be loaded is explained by reason of the strike having held up a certain number of loaded cars which had only to be sent on their way when it had terminated.

Furthermore, the roads are finding themselves under the necessity of rendering still more severe certain restrictive measures, either suspending all traffic in merchandise in certain directions, or limiting the acceptance of goods under the category of merchandise which benefits by priority privileges. The transportation of fertilizer especially, has suffered a considerable setback during this period, which is one of the chief reasons why the French farmers protested with so much energy against the strike.

The strike contributed greatly to prolong the delay in the repair of locomotives and cars, and this delay is the chief cause of the transportation crisis.

The preceding figures show better than all other argument the disastrous reaction of such a strike on the economic life of the country. The ruinous consequences which have entailed, prove obviously the necessity of preventing the return of it, by a formal law, sustained by effective penalties.



A Place Where the Low Voltage Switch Machine Facilitates Traffic

Centralizing the Operation of Outlying Switches*

Remote Control of Switches Means Increased Track Capacity, Safety and Economy in Train Service

By J. E. Saunders,
Assistant Chief Engineer, Union Switch and Signal Company, Swissvale, Pa.

THE DEVELOPMENT of the low voltage switch machine during the last few years has made it possible to avoid much of the delay which has heretofore retarded train movements at outlying switches. It is interesting to note that the signal engineer has functioned as an operating officer in the solution of this as well as many other transportation problems and his work in this case will make it more evident that signal engineering goes beyond the visual indications of the development of the art in fixed signals alone. The operator or other attendant at a station is now enabled to control the position of outlying switches in such a way as to allow trains to enter or leave passing sidings without stopping or even slowing down beyond speeds which are safe for taking the turnouts.

The power operation of switches was formerly confined to locations where crossing protection or traffic density, combined with the proximity of a number of switches to be handled, warranted a centralized control such as can be secured by the installation of an interlocking plant. The cost of transmission and losses served as limitations of the distance from the point of control from which switches could be operated satisfactorily. Improvements in batteries during recent years, together with developments in signal apparatus, have made it possible to operate switches electrically at any distance from the point of control by installing a primary or a storage battery at the switch and controlling the supply of electrical energy to the switch-operating mechanism by means of a high resistance line relay requiring but very little current for its operation. Such control is not inconsistent with up-to-date high voltage electric interlocking practice.

Saving and Safety to Be Secured

The operation of outlying switches electrically costs less than one-quarter cent per switch movement. Authorities differ as to the cost of stopping a train, but it can safely be assumed to be at least $1.50 for a 50-car freight train and at least 50 cents for an 8-car passenger train. On this basis it can be seen that even though a busy outlying switch may be thrown 100 times a day, its operating cost of 25 cents is inconsiderable in comparison with the cost of train stops and delays, which are avoided by the electrical control and operation of the switch in question.

The introduction of an eight-hour work day has also caused a considerable increase in the cost of getting trains over the road. Shorter freight divisions or lower tonnage engine ratings can be avoided only by the substitution of machines for man-power. The automatic block constitutes a saving over the manual block on account of lower cost of operation. The low voltage mechanism at outlying switches is but another means of reducing the cost of train operation.

Power-operated switches are safer than are those which are manually operated. A track-circuit control prohibits the switch points being moved while engine or cars are on or adjacent to the switch. Signals may be made to control train movements over the switch and at the same time provide additional safety in insuring that a train taking the siding has passed the fouling point before another train can proceed on the main track.

The remote control of outlying switches and signals is not an experiment. Low voltage mechanisms operating switches have been in service on some of the largest railways in America for several years; the signals used are the same as have been in service for over 20 years. The degree of protection provided may be varied to suit local operating requirements. The layout may consist of the simplest form, with a single switch movement, a single track circuit, and three signals, or a complete system embracing approach, route, and detector locking handled from interlocked levers, the movement of which is governed by electric locks.

In general, first consideration should be given to the

*Abstract of paper by J. E. Saunders before the Kansas City Sectional Committee, Signal Division A. R. A.

application of low voltage switch mechanisms to the manually operated switches which are most frequently used. Next should come switches which are so located that difficulty is experienced in starting or accelerating trains. A number of factors may enter into the question as to which of the switches on a particular railroad or on a certain division of a railroad should be power operated. It may be that, due to variance from the theoretically best locations of passing sidings, one certain stretch of track forms the choke in getting trains over the railroad. An aggravated situation of this sort can be relieved materially by facilitating the entry to and egress from such a section by applying the low voltage switch and lock movements to its terminating switches. It should be borne in mind that the switch to be operated may be located immediately adjacent to or at any distance from the point where the control is to be exercised and that arrangement may be made for an operator, station attendant, or even trainmen themselves, to determine the position of the electrically operated switches.

Where to Apply Low Voltage Control

A train taking siding to be met or to be passed by another train under the old system had to make several stops. All of these except one can be eliminated by installing low voltage switch movements. An advantage which is in addition to the avoidance of train stops is that of introducing subdivided blocks without any additional cost whatsoever. In manual block territory, a train may occupy the main track between the block station and the signals at an outlying switch while an opposing or following train may be allowed to proceed from the next block office without the use of a special clearance form, as complete signal protection is provided. Such an arrangement is particularly valuable when two trains are to meet a third at a given station.

Yard entrance switches at freight division terminals are the source of many delays, especially on single track railways. Many companies have found automatic signal protection at such locations advisable on account of traffic congestion. One or more low voltage mechanisms will put the control of these switches in the hands of the yardmaster or his representative and reduce delays to a minimum. A junction switch or the end of double track, even though located at some distance from the station or block office, may cease to be a cause for train delays if provided with an electric mechanism and protected by signals. Switches which are of sufficient importance to be operated by men located on the ground continuously can be handled just as well and at a considerable saving in expense by utilizing power movements.

All of the advantages of complete interlocking control at a station and in addition subdivided blocks with automatic signal protection can be obtained by supplementing existing mechanical or power interlocking of switches and signals located near the tower or office by the use of electric switch movements and signals at outlying switches. Electro-mechanical interlocking of lap sidings lends itself especially to such an addition. All switch functioning and train movements within station limit switches are then entirely within the control of the operator or other station attendant.

How Remote Control Is Accomplished

There are many ways in which to control switches receiving energy for operation from local batteries. The protection to be given trains varies with their class and speed as well as with local conditions, all of which have bearing on the refinements warranted in a low voltage switch installation. The most simple arrangement would be to provide a pole changing circuit controller such as a knife switch, two wires between the point of control and the track switch, a relay, switch and lock mechanism, and battery. Although having the advantage of simplicity, such a layout cannot be recommended in the majority of cases. Switches operated by an agency under the control of someone not a part of the crew of the moving train should be protected by signals. Except where the switch is always in plain view of the operator, electric detector locking is a prerequisite of a safe installation. Ordinarily, approach locking is desirable. It will be appreciated that there is a wide range of possible application from which to select the one most suitable or desirable for a given combination of traffic switches and points of control.

Provision should be made for the manual operation of remotely located power switches in case of emergency. The problem is somewhat different from that of switch movements at a 110-volt interlocking plant, because in case of the latter, even though a maintainer or helper be not available, it is possible to secure assistance from the leverman. On the other hand, since there is no limitation of the distance from a station that a low voltage mechanism can be controlled, it may not be feasible for the trainman to secure assistance in case of battery failure or other interference with the normal functioning of the switch movement. The situation has been very easily taken care of by providing a hand crank which is ordinarily kept locked in a box, the railroad company's standard switch lock being used. Removal of the crank from this box is made to open the battery circuit so that as long as the crank is in use, there is no chance of the motor receiving current. The hand crank can be applied at an opening in the switch mechanism case, ordinarily kept closed and locked by means of another switch lock, and which can be opened without exposure of any of the interior parts of the mechanism. The latter should at all times be secured against tampering by means of signal department padlocks, as it would not be advisable for trainmen to have access to the movements.

Signals and Interlocked Circuit Controllers

There is no reason why the electric signals which are standard on the road concerned cannot be used in connection with outlying switch protection. These signals can be made to function entirely in accordance with established power interlocking practice. The number of blades to be used and the limitation of their control can be determined by the individual road.

Where levers in an existing interlocking machine are not available for the control of outlying switch movements the small table machine, known as an interlocked circuit controller, can be applied. This controller is made up of any number of units each of which consists of a roller, carrying contact bands, moved by a small crank and handle, and yet restrained in movement by a dog which engages a quadrant attached to the controller. The controllers can be supplied either with or without indicators and with or without electric locks. Such a device has a distinct advantage over a knife switch for the control of outlying switch movements because an operator will hesitate and think before throwing over one of the levers, which might not be the case were a knife switch used. In other words, the interlocked circuit controller is a distinct piece of apparatus and is associated in the operator's mind only with the idea of the switch and signal control.

Summary of Advantages

The advantages of the power operation of remotely located switches are:

1. Increase in safety to traffic due to better control of train and switching movements at outlying locations.

2. Decrease in operating expense due to the elimination of train stops at remotely located switches with a resultant saving in fuel, wear and tear of brake and other equipment, and time of trainmen. The number of train orders may be reduced and trains kept under the direction of the despatcher without stopping for orders. A greater average mileage per hour may be secured because trains can advance farther before taking siding to be met or passed.

General News Department

The Cumberland Division of the Baltimore & Ohio reports for Sunday, September 26, a total freight movement of 8,041 cars, in 128 trains, the largest divisional movement for one day on record.

The Railway Business Association will move its office on November 1 from New York to Philadelphia, Pa. The new office of the association will be in the Liberty building at Broad and Chestnut streets.

At a fire which swept the wharves of the Galveston Wharf Company, Galveston, Tex., on September 30, the Atchison, Topeka & Santa Fe lost 17 freight cars while two freight cars were badly damaged.

The Veteran Employees' Association of the Chicago, Milwaukee & St. Paul, composed of employees who have served the road for not less than 25 years, held its third annual convention at Milwaukee, Wis., on September 24.

A course on Traffic Management is being offered this term by the Graduate School of Business Administration, Harvard University, Cambridge, Mass. This course is designed primarily for shipping interests and is open to the public free of charge.

Atlanta (Ga.) has established a city planning commission, one of the members of which is Charles A. Wickersham, president of the Atlanta & West Point. This commission is to submit plans for street improvements, relief of traffic congestion and development of housing projects.

The "Old Guard" of the Southern Railway, noticed in this column last week, is to have a further accession of 514 members, that number of employees having recently come into the class who have completed a quarter century of service. The total membership now is 4,405.

The Atchison, Topeka & Santa Fe has leased the Buffalo Northwestern and began operation of this property as a part of its Plains division on September 30. The Buffalo Northwestern is 52 miles long, extending from Waynoka, Okla., where it connects with the Sante Fe, westward to Buffalo, Harper County.

Forty empty cars in an eastbound Chicago, Milwaukee & St. Paul freight train broke away on a mountain grade near Piedmont, Mont., on the night of September 29 and smashed into a gravel train standing at the Piedmont station, killing six men, including one of the engineers and a brakeman. Four persons were seriously injured.

The automatic train stop of the Regan Safety Devices Company, in use on the Chicago, Rock Island & Pacific, and described in the *Railway Age* of April 30, 1920, page 1293, is being tried on the Great Eastern Railway of England, and press despatches report elaborate trials before a large company of railroad men and others, on September 30.

Two masked bandits stopped Illinois Central train No. 2, northbound, at a block signal at Tucker, Ill., 50 miles south of Chicago, on the night of September 24, entered the mail coach, bound five clerks, looted the registered mail sacks, and at Kensington made their escape. The robbery is the third of its kind on the Illinois Central in the last five months.

An agreement to promote Canada's trade with the East Indies has been made under which the Merchant Marine, which is operated by the Canadian National Railways and the British India Steam Navigation Company, will each place an equal number of cargo steamers in operation between the East Indies and Canadian ports. This service will be in full operation by November 1.

An advance in pay, averaging 25 per cent and retroactive to May 1, has been granted by the Canadian National and the Grand Trunk Pacific to clerks, station agents and other station employees to the number of 7,000. This action is announced at Ottawa, following the conclusion of negotiations between the railroads and committee of the Canadian Brotherhood of Railroad Employees.

New York Central engine No. 999, which established the world's record in May, 1893, when it drew the Empire State Express at the rate of 112.5 miles an hour, covering a mile in 32 seconds, has now been placed on a side track at Depew, N. Y., where it will be dismantled and scrapped. Charles Hogan, now manager of the department of shop labor of the New York Central, handled the throttle on the record-breaking run.

The steel industry looks to the railways to keep it in a healthy, normal condition for some time to come, in the opinion of Charles M. Schwab, as stated in a recent interview. He pointed out that normally the railways use about one-third of all the steel produced. For the past five years railway purchases have fallen far below this average, and Mr. Schwab believes that a steady production of steel for several years will be necessary to make up this deficiency, even if orders from other sources fall off.

The New York Sectional Committee of the Signal Division of the American Railroad Association will hold a meeting at Hotel McAlpin, 34th street, New York City, on Thursday evening, October 21. The subject will be Signal Wire and the discussion will be opened by J. W. Hackett, formerly supervisor of signals on the New York Central. He will supplement his remarks with motion pictures. All persons interested in signaling are invited to be present, and members are requested to give their experience with signal wire.

The Employees Magazine of the Atchison, Topeka & Santa Fe for October calls the attention of employees to the securities of that road for investment. The article outlines the financial condition of the road, gives lists of the various classes of stocks and bonds, showing the market prices at which they may be bought at the present time, and also the present rate of return; and follows with a statement of what each security has paid in the past. An inquiry blank appears at the end of the article for the use of those who wish further information or desire to purchase any of these securities.

The seventeenth annual convention of the Maintenance of Way Master Painters' Association was held at the Fort Shelby Hotel, Detroit, Mich., on October 5, 6 and 7. The program was about evenly divided among papers and reports on methods of handling tools and equipment; the proper facilities for housing, transporting and safeguarding the men; and paints or coatings designed to accomplish certain results. About 35 members and friends of the association were in attendance. A report of such portions of the transactions of this meeting which are of interest to readers of the *Railway Age* will appear in next week's issue.

The Long Island Railroad carried 28,073,826 passengers in the 103 days of the holiday season from Decoration Day to Labor Day, an average each day of 270,936. C. D. Baker, assistant general superintendent, in a general notice to employees, congratulates them "on the very efficient service rendered in handling the unprecedented passenger travel of the past summer. The

volume of traffic has been far in excess of anything we have heretofore been called upon to undertake. The spirit of the men has been most gratifying and the management joins with me in expressing our appreciation and pride in the establishment of a record without parallel in the history of railroading in this country."

A statistical analyst is wanted by the Interstate Commerce Commission, and the United States Civil Service Commission announces examinations for the position until November 9. Salary, $3,600 to $4,200 a year. Applicants must have had at least five years' experience in railroad statistics, of which at least two years must have been responsible experience in compilation and analysis of statistics and car service movements covering the railroad systems of the country as a whole or in large groups. Experience in directing the work of a considerable force of clerks during this period is also essential. Also, applicants must submit a thesis upon "How can statistical data be made a means of increasing the efficiency of car service?" Applicants must be 30 years and not over 54 years old.

Miss Dorothy E. Holloway, daughter of William H. Holloway, chief clerk in the office of the division freight agent of the Pennsylvania Railroad at Williamsport, Pa., has been awarded a Pennsylvania Railroad scholarship in the University of Pennsylvania, a scholarship established to commemorate the work done during the World War by the "Division for War Relief" of Pennsylvania Railroad women, department No. 3; and also as a memorial to the men of the freight traffic department of that railroad who gave their lives in the war. Miss Holloway was the winner in a competition open to sons and daughters of present or deceased employees of the freight traffic department of the Pennsylvania, and to the sons and daughters of the members of the aforementioned women's war relief organization.

New England Railroad Club

The October meeting of the New England Railroad Club has been postponed from October 12 to October 19. Gerrit Fort, vice-president of the Boston & Maine, will address the meeting on the subject of the recent increase in passenger and freight rates and its relation to the public.

New York Railroad Club

The New York Railroad Club will hold its next meeting at 8 p. m. on October 15, at 29 West 39th street. W. S. Wollner, general safety and welfare agent of the Northwestern-Pacific and secretary of the Pacific Railway Club at San Francisco, will speak on "The Human Element in Railroading." Many railway officers have watched with interest the increase of personnel and welfare work in other large industries, and it is expected that a lively discussion will follow the proposal that such work be undertaken on a large scale by the railways.

"The Pullman Company Does Not Benefit"

In answer to criticism directed at the Pullman Company by the traveling public because of the collection of the surcharge of 50 per cent on Pullman and parlor car fares, that company has inserted advertisements in the Chicago daily newspapers, headed "The Pullman Company Does Not Benefit."

The text of the advertisement reads as follows:

"The purpose of this announcement is to correct a general misunderstanding that The Pullman Company benefits by the surcharge of 50 per cent recently imposed on Pullman passengers.

"The Pullman Company receives no part of this surcharge.

"The surcharge was imposed solely to increase the passenger revenue for the railroads.

"It simply requires an additional service of The Pullman Company for which it receives no compensation whatsoever."

The Question of Subordinate Officers Reopened

The Interstate Commerce Commission has announced a reopening of its investigation, undertaken in accordance with the terms of the transportation Act, as to the classification of "subordinate officials" and has announced a hearing at Washington on October 1 before Commissioners Clark, McChord and Daniels, for the purpose of determining what modification, if any, shall be made in the list of subordinate officers within the meaning of Section 300 to 313 of the Transportation Act; also upon the question whether the regulations governing the making and offering of nominations for appointment as members of the Labor group of the United States Railroad Labor Board shall, as a result of any modification that may be made in the list of subordinate officers be modified or supplemented.

Liquidation Staff of the U. S. R. A.

As indicating the extent of the work required to settle up the affairs of the Railroad Administration, which for 26 months had charge of the operation of the railroads, its staff of officers and employees on August 20 included 1,195 persons and its monthly payroll was $250,576. Only a small reduction in force has been made during the period since the railroads were relinquished, although the staff is now only about half as large as it was immediately prior to the return of the roads. On March 1, according to a statement issued by Director-General Hines, the force was reduced to 1,223 officers and employees, 1,420 having left the service of the central and regional administrations by March 1. In June, 1919, the total force was 2,725 and the monthly payroll was $575,428. On February 20, 1920, it was 2,612 and the monthly payroll was $570,078.

Milwaukee-Muskegon Railway & Navigation Company Project

The Milwaukee (Wis.) Association of Commerce, through its board of directors, recently adopted a report submitted by its transportation committee endorsing the project of "bridging Lake Michigan" by way of Muskegon, Mich., thereby giving Milwaukee another connection with the eastern trunk lines. Briefly, this project provides for the construction of adequate terminals for a car-ferry, and storage and warehouse purposes, and the purchasing and operating of break-bulk steamers and car-ferries between Milwaukee and Muskegon, where connections can be made with the Michigan division of the Pennsylvania, the Grand Trunk, the Pere Marquette, the Grand Rapids, Grand Haven & Muskegon Electric and the Michigan Railways. The cost of the entire project, including terminals, steamers and car-ferries, is estimated by the committee at $4,880,000. The annual cost of operation is estimated at $2,135,260, and the annual revenues which should accrue at $2,821,500.

Canadian Pacific Memorials

Bronze memorial tablets are to be placed by the Canadian Pacific in a number of its principal offices and stations to perpetuate the memory of the 11,062 employees of the road who fought in the great war. These tablets will be placed in more than 20 prominent buildings; and for the company's stations at Montreal and Winnipeg imposing bronze statuary groups have been designed as tributes to the heroism and self-sacrifice of these men. The tablet was designed by Archibald Pearce, of the engineering department of the road, and the statue is by Coeur de Lion MacCarthy, of Montreal. Of the Canadian Pacific men who joined the forces, 1,096, or nearly 10 per cent of the whole number, were killed. The inscription on the tablets reads:

This tablet commemorates those in the service of the Canadian Pacific Railway Company who at the call of King and country left all that was dear to them, endured hardship, faced danger and finally passed out of sight of men by the path of duty and self-sacrifice, giving up their own lives that others might live in freedom.
Let those who come after see to it
That their names be not forgotten.

Packers' Control of Stockyards

The Federal Trade Commission on September 16 transmitted to the Attorney-General a report objecting to the plan presented to the Department of Justice by the packers for divesting themselves of their holdings in public stockyard market companies by the sale of properties to F. H. Prince & Co., of Boston, and the formation of a new company to acquire the authorized stockyards. Objection was based on the ground that the long-time stockyard relations of F. H. Prince & Co. with the packers have been such that the plan as outlined will not result, in the opinion of the commission, in a divorcement of the stockyards from packing interests and that the plan as outlined will result, in the opinion of the commission, in an infraction of anti-monopoly laws greater and more serious than the existing infraction. The commission

says this plan would amalgamate into one holding company 15 of the principal stockyards, in which the different packers now hold varying interests; whereas they now have majority control of but 11 of the 15.

Invest Your Money Carefully

In connection with the distribution of back pay to employees of the Chicago, Rock Island & Pacific in accordance with the decision of the United States Labor Board, Carl Nyquist, secretary and treasurer of this road, cautions all employees against the unsound investment of this money. He calls attention to the fact that the back pay, under the decision, for all railroad employees will exceed $50,000,000 and that that of the Rock Island alone, averaged for all the employees of the road, represents a payment of between $70 and $80 to each individual. "It is evident, therefore," says Mr. Nyquist, "that swindlers, fake oil stock operators, etc., will advance in attack on this very appreciable sum of money." He calls the attention of the employees to reputable stock and bond houses, to banks and other agencies offer, ing securities which pay a generous rate of interest. He states that railroad stocks and bonds offer to them an investment with a splendid return, which, from the standpoint of security, is second only to the securities of the United States Government.

An Appeal to Shippers

J. B. Cummings, superintendent of the Chicago, Burlington & Quincy at Ottumwa, Iowa, recently addressed a circular letter to shippers outlining the steps which railroads and railroad employees are taking to provide satisfactory transportation with the existing inadequate facilities and requesting, as a result of these facts, the further co-operation of shippers. Mr. Cummings' letter said, in part: "The shippers in your territory can increase the car supply materially by releasing cars more promptly and making them available for another load. With this end in view, instructions have been issued which provide that the railroad agent at your station will be given advance notice of the arrival of cars, the agent will notify the consignee of the probable time that the train will arrive with the car, and if the consignee will then make immediate arrangements by starting to unload the car the day it arrives, and complete the unloading just as quickly as possible, it will enable us in many cases to pick the car up and move it to some station or into the terminal and it can be reloaded within 24 hours."

Accident Investigations—April, May, June

The fourth quarterly issue of the Summary of Accident Investigations, prepared by the Bureau of Safety, of the Interstate Commerce Commission, is for the months of April, May and June, 1920. Seventeen accidents are described in the pamphlet, and they occurred at the places and on the dates shown in the following list:

Road	Place	Date (1920)
Missouri Pacific	Leeds, Mo.	April 4
Atlantic Coast Line	Jesup, Ga.	April 7
Baltimore & Ohio	Nova, Ohio	April 8
Southern Railway	Ellenwood, Ga.	April 15
Louisville & Nashville	Bay Minette, Ala.	April 16
Chicago & N. W.	Lamberton, Minn.	April 29
Oregon-Washington R. & N.	Huron, Ore.	May 3
Southern Pacific	Bertha, Ore.	May 9
Southern Railway	Tallapoosa, Ga.	May 9
Maryland & Pennsylvania	Woodbrook, Md.	May 22
St. Louis-San Francisco	White Oak, Okla.	May 31
Lehigh Valley	Van Etten, N. Y.	May 31
New York Central	Schenectady, N. Y.	June 9
Delaware & Hudson Co.	Gansevoort, N. Y.	June 14
Baltimore & Ohio	South Chicago, Ill.	June 14
Boston & Albany	Worcester, Mass.	June 15
Wabash Railway	Tilton, Ill.	June 28

Leeds, Ellingwood and Van Etten were derailments; all of the others were collisions.

Seeking Owners of a Million Tons of Coal

Owners of 1,000,000 tons of coal, confiscated and consumed by the railroads during the bituminous miners' strike last winter, which has not been paid for, are being sought by Marion J. Wise, manager of the Department of Materials and Supplies of the Railroad Administration. In the confusion of distribution and rerouting during the strike, the records showing the origin of the shipments were lost, and bills for it have not been rendered. In the last two months Mr. Wise has made payment for about 266,000 tons of coal confiscated in this manner by the railroads, but new claims approximating about the same amount have been filed.

In a large number of instances the coal-laden cars have gone over many railroads. Some of this coal was confiscated by one railroad, and then turned over to another railroad, and not infrequently, to a third. All of the approved claims are in process of settlement. In many instances, differences have arisen as to the price. The Railroad Administration has taken the position that the fixed prices of the Fuel Administration will be paid, except in instances where it was sold on a bona-fide contract. A large part of the tonnage that is not yet paid for is involved in controversies of this kind.

Glenn E. Plumb Answers Senator Harding

"Labor," the paper published by the Plumb Plan League, contained recently a statement by Glenn E. Plumb, replying to a speech by Senator Harding, Republican candidate for President, before railroad men at Marion, Ohio, on September 13. The speech contained some rather mixed-up statements as to the provisions of the transportation act. Senator Harding, in asserting that the act did not provide for permanent government guarantee of dividends on railway capital, went further and stated that the act placed a limit on these dividends and did provide for a maintenance of rates for a period of six months after March 1. He also said that the guarantee of a 5½ per cent earning was limited to the period of transition of six months. Mr. Plumb objects to these statements and then proceeds to make some broad statements of his own regarding the transportation act, which he still insists constitutes a 6 per cent guarantee to the railroads. He also refers to a payment of $630,000,000 from the Treasury "to make good the guarantee in the first six months of private operation," although the amount guaranteed has not yet been ascertained and very little of it has been paid. This amount, he says, is "almost as much as it cost for the entire 26 months of federal control."

Southern Pacific Safety Report

The Southern Pacific continues to record a reduction in casualties to employees. A comparison of casualties reportable to the Interstate Commerce Commission for the first six months of 1918, 1919 and 1920 shows:

	Killed	Injured
1918	29	1,436
1919	29	1,239
1920	20	1,129

Per 1,000,000 Locomotive Miles

	Killed	Injured
1918	1.09	53.91
1919	1.23	52.58
1920	0.77	43.69

Per 1,000,000 Man-Hours

	Killed	Injured
1918	.49	24.03
1919	.48	20.64
1920	.33	18.83

In the face of a large increase in the number of automobiles in use in the territory traversed by its lines the following reduction was shown in grade crossing casualties:

	Killed	Injured
1918	23	85
1919	17	80
1920	13	61

Proposed Joint Exhibit for Minor Railway Mechanical Associations

A joint meeting of members of executive committees of seven of the smaller mechanical associations was held at the Hotel Sherman, Chicago, on October 4, for the purpose of considering the question of holding the conventions of the several associations at one place during one continuous period. This plan was proposed at a joint meeting of the International Railway General Foremen's Association and the Association of Railway Supply Men, held during the recent convention of the former organization, as outlined in the *Railway Age* of September 17, page 496.

At the meeting on October 4, the plan was presented with the view of reaching some conclusion, but no definite action was

taken, since a number of the representatives present had not been given full authority by their respective associations. However, a resolution was passed to the effect that another meeting would be called at the Hotel Sherman, Chicago, on December 6. Each association invited to attend will be asked to send one representative with full power to act at this joint executive meeting, at which meeting the entire matter will be considered and, if possible, a plan will be worked out for the holding of the several conventions as proposed.

St. Louis Railway Exposition

The first annual Railway Exposition of St. Louis (Mo.) will be held at the Railway Young Men's Christian Association, St. Louis, October 25 to 30, inclusive. The idea of this meeting was sponsored by the Board of Directors of the Railroad Y. M. C. A., who obtained the co-operation of the St. Louis Railway Club. A committee composed of about 200 railroad officers, brotherhood leaders, office employees and railroad supply men was chosen from these two organizations to formulate and carry out plans. So far approximately 45 railway supply companies have signified a desire to display their appliances.

The exposition was conceived with a view of bringing together the manufacturers and users of various railway appliances and daily demonstrations of the appliances exhibited will be held. The daily program for the exposition includes two noon meetings daily, one for employees at the Railroad Y. M. C. A. and one for officers and office employees at the Hotel Statler. In the afternoons 40-minute periods of technical lectures, demonstrations and educational motion pictures will be held in the Y. M. C. A. Auditorium. The evening meetings will be devoted to exhibitions, addresses and social activities.

Special Trains to Suit All Tastes

A Sweet Potato Special is the latest novelty in the traveling educational line, a train carrying a company of state specialists on a two-weeks' trip through the eastern part of South Carolina to inform the people how best to harvest, handle and market sweet potatoes. The car is in charge of a horticulturalist and a specialist in marking. Twenty towns are to be visited.

Alabama, Indiana and Texas are keeping up with the times by means of traveling lectures on, respectively, power farming, improved home devices and a "health program" to promote the extinction of mosquitoes. The Alabama power farming enterprise is carried out with the co-operation of the International Harvester Company, and the train started out on the Atlanta, Birmingham & Atlantic on September 7. Motion pictures are used and the Alabama State Harbor Commission does some advertising on the same train.

The Indiana campaign is to stimulate interest in farm home conveniences and the train is fitted out with "numerous devices for making rural homes as convenient and attractive as those in the cities." It is operated by Purdue University and began its trips on the Erie Railroad September 27. The Texas health enterprise is in charge of the sanitary engineer of the State Board of Health, and at numerous towns on the St. Louis-South Western the exhibition car was visited by hundreds of people.

The agricultural instruction train of the Canadian Pacific—a seven-car train—includes a nursery car, in which competent nurses entertain and care for small children while the mothers are listening to lectures in the motion-picture car. There are three of these lecture cars in the train, one for farmers, one for farmers' wives and one for boys and girls.

H. M. Curry Addresses St. Paul Signal Engineers

H. M. Curry, general mechanical superintendent of the Northern Pacific, in a talk before the St. Paul (Minn.) Sectional Committee meeting of the Signal division of the American Railroad Association at St. Paul, on September 18, emphasized the importance to the railroads and to the country of every employee doing each day's work a little better. Furthermore, he said that every employee is entitled to a square deal. In this connection attention was called to an article in the *Railway Age* of August 20 (page 330) entitled "Frisco President Enlists Employees in Personal Appeal." Mr. Curry said that men should assume responsibility, take quick action and eliminate unnecessary letter writing; that the success railroads have in keeping trains moving depends to a great extent upon the resource, "pep" and energy an employee puts into his work.

Men complain today about lack of opportunities and this, Mr. Curry continued, should be discouraged, because there was never a better time than the present for men with ambition and enthusiasm to reach the top—in railroading as well as in any other line. The trouble today is that too many people have a "grouch" because they have to work for a living; they seem to think that life is unbearable because of that fact. When men begin to assume such an attitude the result can readily be seen. We should feel that we are living in the best country in the world and under the most favorable conditions; each should grasp his opportunities and not cater to anarchistic tendencies.

Miles Per Car Per Day on the Pere Marquette

Frank H. Alfred, president and general manager of the Pere Marquette, in his campaign to obtain a maximum standard of 24 miles per car per day on his line, recently addressed a circular to employees stating, without exaggeration or color, the actual conditions prevailing on the Pere Marquette and asking in the light of these facts for increased activity and better co-operation. Mr. Alfred said, in part:

"In a letter to you on August 1, I called attention to all the Pere Marquette employees to the very poor showing made in the movement of cars for the month of June, which averaged only 16.2 miles per car per day—a very costly operation. I then appealed to you in the public interest as well as on the substantial grounds of individual welfare for a better record for the month of August.

"The figures for August have just been compiled. There has been some improvement made in the movement of cars, that is, the average car mileage per day has been raised from 16.2 for June to 17.94 for August, which is about 10.74 per centum better operation.

"We are on the way towards the mark set—24 car miles per day—but we are still *'far away from the terminal.'*

"We handled on an average 22,967 cars with a daily car mileage of 411,947. Had we attained the 24-mile per-car per-day standard set, we would have provided the same transportation service with 17,164 cars and thereby effected an economy of $5,222.70 a day at the 90 cent per car per diem rate, or $161,903.70 for the entire month of August—'a saving worth while.'

"We have set a low maximum standard of 24 miles per car per day. The Association of Railway Executives agree on 30 miles per car per day as the standard.

"The Boston & Maine, with approximately the same mileage as the Pere Marquette, with approximately the same average haul, and bearing the same relationship as a transporation unit for the Northeastern New England states as does the Pere Marquette for the state of Michigan, attained a performance of 20.18 miles per car per day for the week ending August 13. This is 11.24 per centum better than the Pere Marquette record. What is being done on the Boston & Maine can be done on the Pere Marquette.

"We individually and collectively as employees of Michigan's intimate home railroad owe this to the people of Michigan. Upon our joint efforts, more than any other single factor, depend the prosperity and welfare of the state of Michigan, for ours is the chief transportation artery that comes to the farms and towns of Michigan's multiplied counties. Individually and collectively, we are contributing to or militating against the success and prosperity of Michigan directly as we provide the state with goor or indifferent transportation service."

Car-Service Men Wanted—Salary $5,000

Circular No. 559, just issued by the United States Civil Service Commission, announces examinations for the position of "service agent," for the Interstate Commerce Commission, at salaries from $3,600 to $5,000; applications to be received until December 28. The entrance salary within the range stated will depend upon the qualifications of the appointee as shown in the examination and the duty to which assigned. On account of the needs of the service, papers will be rated promptly as received. The duties of appointees will lie in the Bureau of Service, and will require experience in railroad service, particularly with respect to the supply and distribution of cars and the movement of traffic. Appointees will each be assigned to a particular geographical territory, and will serve as chairmen of terminal committees at important points, and will have executive charge of the functioning of all such committees. They will be responsible for a full and complete knowledge of service conditions within their territories at all times. They will be expected to keep the commission advised as to service conditions and make recommendations as to the exercise of the mandatory powers of the commission, and, when directed by the commission, to give di-

rections to carriers as to car service. Applicants must have had at least seven years' experience in railroad service, two years of which must have been responsible experience in connection with car service. Experience of a generally similar character as an inspector for a state railroad or public service commission or with the Interstate Commerce Commission, or in a responsible capacity with a traffic organization or a board of trade or other shippers' organization, may be taken as equivalent of railroad experience.

Applicants must submit with their applications a thesis of not less than 500 nor more than 2,000 words in length on the subject "How can terminal or gateway committees facilitate the movement of traffic in times of congestion or car shortage?" Also, a draft of report to the commission, upon the assumption that as a service agent the competitor has received instructions to proceed to some important railway gateway with which he is familiar and investigate the causes and extent of a severe congestion of traffic at such gateway, and to make recommendations for the clearing up of the situation. Applicants must have reached their thirtieth but not their fifty-fourth birthday.

Railway Earnings for July and Seven Months

A deficit of $10,427,000 for the month of July is shown in the Interstate Commerce Commission's compilation of revenues and expenses of 187 Class I roads and 15 switching and terminal companies for the month of July and the first seven months of 1920. In July, 1919, the roads had a net operating income of $77,000,000. For the seven months' period there was a deficit of $1,138,000, as compared with a net operating income in 1919 of $233,000,000. The deficit in July, however, is largely accounted for by the inclusion in the expenses of that month of $39,141,889 of retroactive increased wages. Deficits are shown for the roads of the Eastern, Pocahontas and Southern districts for July, while the Western roads had a net operating income of $10,725,000 after taking into account over $9,000,000 of back pay. The commission's summary is as follows:

Item	July 1920	July 1919	Seven Months 1920	Seven Months 1919
1. Average No. of miles oper...	235,694.26	234,472.54	235,128.58	234,217.99
REVENUES:	Dollars	Dollars	Dollars	Dollars
2. Freight	355,026,239	306,514,025	2,210,071,936	1,918,940,589
3. Passenger	123,383,927	113,725,352	690,468,572	657,438,747
4. Mail	7,916,079	4,166,808	109,046,034	29,969,900
5. Express	14,397,870	7,618,528	89,518,617	61,022,064
6. All other transportation ..	13,460,646	11,788,060	80,672,296	68,535,712
7. Incidental ..	13,456,680	11,113,439	81,840,126	72,005,178
8. Joint facility—Cr.	624,478	566,181	4,136,776	3,835,354
9. Joint facility—Dr.	132,933	212,251	1,210,782	1,205,782
10. Railway operating rev...	528,132,986	455,280,142	3,264,543,575	2,810,541,762
EXPENSES:				
11. Maint. of way and struct..	99,929,869	66,857,388	550,832,789	437,846,444
12. Maint. of equipment ..	138,198,670	96,521,194	848,036,082	669,535,379
13. Traffic	6,564,851	4,304,736	37,908,722	26,749,658
14 Transportation	246,644,618	177,180,023	1,523,978,548	1,219,800.475
15. Misc. operat.	5,716,667	4,205,214	34,077,924	26,870,845
16. General	15,186,093	10,353,220	89,936,521	71,774,600
17. Transport. for invest.—Cr..	467,468	529,963	2,116,319	3,555,158
18. Railway operating exp..	511,773,300	358,891,812	3,082,654,267	2,449,022,243
19. Net rev. from Ry. oper...	16,359,686	96,388,330	181,889,308	361,519,519
20. Railway tax accruals	22,951,912	16,008,728	155,101,774	108,147,378
21. Uncollect. railway rev....	61,194	54,121	586,804	419,782
22. Railway operating income. (D)	6,653,420	80,325,481	26,200,730	252,952,359
23. Equip. rents (Dr. bal.)..	2,180,110	1,997,392	16,233,345	11,496,083
24. Joint facility rent (Dr. bal.)	1,594,459	1,098,597	11,106,203	8,357,451
25. Net of items 22, 23 & 24 (D)	10,427,989	77,229,492	(D)1,138,818	233,098,825
26. Ratio of operating expenses to operat. revs. per cent....	96.90	78.83	94.43	87.14

Cr. Credit.
(D) Debit.

Federal lap-over items settled during the month are included in the above compilation for those roads that have indicated that estimates were not included for substantially all unaudited corporate items. To compare the earning power of roads in 1920, it should be noted that corporate war taxes and organization expenses are not included in the 1919 returns; that the revenues of all roads for seven months of 1920 include approximately $50,000,000 back mail pay and that, in some cases, increased wage accruals, resulting from decision No. 2, by the United States Railroad Labor Board, retroactive to May 1, were not charged to operating expenses, while in other cases estimates of May, June and July accruals were charged to July expenses. The amounts of estimated increased wage accruals charged into July expenses, so far as reported, are: Eastern district, $21,895,292; Pocahontas district, $2,351,968; Southern district, $5,814,845; Western district, $9,079,784; United States, $39,141,889. The amount of the war taxes included in July, 1920, is $3,596,796 and for period March to July, 1920, $16,507,744.

Modifications in Prices in Interchange Rules

The Mechanical Section of the American Railroad Association has issued circulars S III-166 and S III-168 announcing changes in the labor rates for repairing foreign cars and in the maximum amount of labor chargeable to cars under Rule 120. Circular S III-166 reads as follows:

Since Supplement No. 3 to the 1919 Rules of Interchange was prepared and approved, the labor rates paid by the railroads to employees engaged in car repairs have been increased. Therefore, effective September 1, 1920, the rates to be charged for labor repairing foreign cars shown in Supplement No. 3, 1919 Rules of Interchange, effective same date, are modified as follows:

Freight Car Code.—Rule 101, Item No. 172, labor rate for ordinary car repairs; changed from $1.00 to $1.20 per hour. Rule 107, Item No. 443, labor rate for repairing and testing steel tanks of tank cars, changed from $1.25 to $1.45 per hour.

Passenger Car Code.—Rule 21, Item No. 19, labor rate on lubrication; changed from 70 cents to 90 cents per hour. Rule 21, Item No. 20, labor rate for repairing passenger equipment cars; changed from $1.10 to $1.30 per hour.

These labor charges, in addition to including the actual labor cost of performing the work, include the following items of indirect expense:

Wages of foremen, work inspectors, clerks, laborers, etc., working on freight repairs.

Proportion of the expense of operating power plant and of wages of shop or gang foremen, shop clerks, etc., whose time is not charged direct to freight repairs.

Shop switching, including repairs, depreciation, interest, taxes, fuel, lubrication, water, other supplies, fuel station and enginehouse expenses, wages of enginemen and firemen, switch crews and switch tenders.

Proportion of salaries and expenses of G. S. M. P. and M. clerks, S. M. P. and M. and clerks, master mechanics and clerks and general foremen.

Circular III-168 increases the limits for labor in Rule 120, as shown in Supplement No. 1 to the 1919 Rules of Interchange, issued March 1, 1920, to conform with the increase in the labor rate for car repairs, as shown in Supplement No. 3 to the 1919 Rules and Circular No. 166, effective September 1, 1920:

Rule 120. Repair limits for labor:

REFRIGERATOR CARS

Wooden, with trucks of less than 60,000 lb. capacity	$108.00
Wooden, with trucks of 60,000 lb. capacity and over	180.00
Wooden, with trucks of 60,000 lb. capacity and over, equipped with metal draft arms extending beyond body bolster, continuous metal draft arms, transom draft gear, metal center sills, or steel underframe	270.00

HOUSE AND STOCK CARS

Wooden, with trucks of less than 60,000 lb. capacity	45.00
Wooden, with trucks of 60,000 lb. capacity and over	108.00
Wooden, with trucks of 60,000 lb. capacity and over, if equipped with metal draft arms extending beyond body bolster, continuous metal draft arms, transom draft gear, metal center sills, or steel underframe	225.00
All steel, or steel superstructure frame with steel underframe	315.00

GONDOLA AND HOPPER CARS

Wooden, with trucks of less than 60,000 lb. capacity	45.00
Wooden, with trucks of 60,000 lb. capacity and over	108.00
Wooden, with trucks of 60,000 lb. capacity and over, if equipped with metal draft arms extending beyond body bolster, continuous metal draft arms, transom draft gear, metal center sills or steel underframe	180.00
All steel, or steel superstructure frame with steel underframe	270.00

FLAT CARS

Wooden, with trucks of less than 60,000 lb. capacity	45.00
Wooden, with trucks of 60,000 lb. capacity and over	72.00
Wooden, with trucks of 60,000 lb. capacity or over, if equipped with metal draft arms extending beyond body bolster, continuous metal draft arms, transom draft gear, metal center sills, or steel underframe	108.00

In view of the fact that the Rules of Interchange as revised at the Annual Meeting of the Section held at Atlantic City, June 9 to 16, 1920, will be issued in such a short time, no additional supplements will be issued to the 1919 Code.

Traffic News

The Minneapolis Traffic Club will hold its eighth annual dinner at the Radisson Hotel, Minneapolis, Minn., on the night of October 21.

The railroads have declined the request of local political organizations of the District of Columbia that reduced fares be made for the benefit of persons who desire to return to their homes in the states to vote.

The Pacific Railway Club devoted its meeting on October 7 to a discussion of means of co-operation between shippers and railroads. K. M. Nicoles, chairman of the Railroad Association's commission on car service, and Hal M. Remington, chairman of the Interstate Commerce Commission's terminal committee, were scheduled to be among the speakers.

Coal Production

The total output of soft coal during the week of September 25 is estimated at 11,817,000 net tons, according to the weekly bulletin of the Geological Survey. This figure represents the largest production in any week since last January. The rate per working day was 1,969,000 tons. Production during the first 228 working days of this year has been 392,747,000 net tons, about 13½ million tons less than that for 1917 and a little over 44 million tons less than that for 1918, but 51½ million tons ahead of that for 1919. A general resumption of work in the anthracite region brought the total production there for the week up to 1,650,000 tons, or within 168,000 tons of the output during the last week before the strike. The bulletin refers to a general improvement in car supply. The lake movement fell off sharply during the week ended September 25. The cumulative lake movement from the opening of the season now stands at 14,866,000 tons, as against 21,665,000 in 1918 and 18,448,000 in 1919. The movement to tidewater again declined slightly during the week and the decrease was reported in the tonnage of soft coal passing the Hudson gateways for New England by rail.

Western Passenger Schedules Restored

Several western roads have restored pre-war passenger schedules and have accelerated some trains.

The Southern Pacific put into service the "Sunset Express" on October 1, between San Francisco and El Paso, Tex., and reduced the running time between the two cities by approximately five hours. New trains are established between Los Angeles and Santa Barbara and between Los Angeles and Phoenix. The "Lark" and the "Seashore Express" are restored to their old schedules.

The Western Pacific has resumed through service between San Francisco and Chicago, the "Scenic Limited" being run for the first time since its discontinuance under the federal administration. From Salt Lake east it runs over the Denver & Rio Grande and the Chicago, Burlington & Quincy.

The Chicago & North Western plans to restore the "Chicago-Los Angeles Limited"; and the Atchison, Topeka & Santa Fe will restore the old schedule on its "California Limited," cutting its running time four hours. The Chicago, Rock Island & Pacific will also reduce the running time of the "Golden State Limited" between Chicago and Los Angeles.

Apprenticeship in France.—As a means of providing for the present shortage of skilled labor in France, a law has been promulgated providing for the creation of technical classes for youths under the age of eighteen employed in works and factories. Employers themselves have the right to establish classes for their hands, but where this is not done the classes must be instituted by the chambers of commerce or by professional groups with funds provided partly by the state. There is a general feeling that the state should not be permitted to monopolize the instruction, and employers are, therefore, urged to provide the instruction themselves as part of the technical training of their hands.

Commission and Court News

Interstate Commerce Commission

The Commission has suspended to February 2 proposed rules requiring prepayment of freight on cotton to points in Canada as published in a supplement to Agent P. A. Leland's I. C. C. No. 1334.

The commission has suspended to February 2 proposed increased rates on coal from Kentucky, Tennessee and Virginia to northern and northwestern points as published in a Louisville & Nashville tariff.

The commission has suspended to January 29 the operation of certain tariffs providing for the cancellation of joint fares from points on the Southern Pacific and San Diego & Arizona in California in connection with the Atchison, Topeka & Santa Fe, and the establishment of short line fares between California points and Chicago, via New Orleans.

The Interstate Commerce Commission has ordered investigation proceedings on account of the refusal of Ohio and Nebraska to allow for intrastate traffic the full percentages of increase in rates allowed for interstate traffic. Hearings will be held before Attorney-Examiner Disque at Columbus, Ohio, on October 20 and at Lincoln, Nebraska, on October 25.

Attorneys for the transcontinental railroads have filed with the Commission a brief of exceptions to the recent report of Examiner W. A. Disque in the transcontinental rate case. They argue that the record does not warrant a finding that the present basis for constructing through class rates, from official classification territory to the destinations named in Idaho, Montana, Utah, Wyoming and New Mexico, is in any respect in violation of the interstate commerce act and that the rates proposed by the examiner are unduly low.

The commission has issued an order in the tap line case providing that from the effective date of the increased rates authorized in the general rate advance case, the switching charges or divisions which may be paid to tap lines, parties to the tap line case, by the trunk lines, out of the rates on interstate shipments of lumber and forest products from points on the tap lines to the various groups defined in the tap line report, shall not exceed the following:

For one mile or less from the junction, $3.30 a car; one mile to three miles, $4.50; over three miles and not over 10 miles, 3 cents per 100 lb.; 10 miles to 20 miles, 4 cents per 100 lb.; 20 miles to 40 miles, 5 cents per 100 lb.; over 40 miles from the junction, 6 cents. These divisions are to be the net amounts that may be paid out of the trunk line rates from the junction, and when the rates from points on the tap lines are made by the addition of an arbitrary, the amount of such arbitrary shall accrue to the tap line.

Court News

The district court at Duluth, Minn., recently held the director general of railroads liable for damages for a fire which swept through Cloquet, Minn., on October 12, 1918, an account of which appeared in the *Railway Age* of October 25, 1918 (page 726). The decision is the outcome of a test case heard before five judges of the district court as to whether or not the Cloquet fire had its origin in a fire alleged to have started on the right-of-way of the Great Northern. This test case was finally agreed upon by counsel for the director general and the plaintiff, inasmuch as there were several hundred cases involving losses in the city of Cloquet alone. As the decision of the judges was in favor of the plaintiff, it is understood that counsel for the director general will move to have the finding of fact changed, and if it is not changed, it is expected that the record will be submitted to the Supreme Court of the state.

Foreign Railway News

Freight Handled by Contract at Tampico

A contract to handle all its freight at the Tampico, Mexico, terminal has been awarded by the National Railways of Mexico to E. M. Rowley & Co., a stevedoring concern of that city. All the railway's freight handling equipment has been turned over to the contractors and new equipment to the value of $200,000 has been ordered.

Germany Re-Establishing International Transit Construction

BERLIN, Sept. 5.

Germany is again taking up its international transit connections which were cut off during war time. Up to now Germany has direct connection with the following cities in former enemy countries, Berlin-Rome, Berlin-Brussels, Berlin-Paris, Berlin-London (via Olissingen and Folkestone) and Berlin-Milan.

Railway to Connect Salvador With Atlantic

The construction of a railway connecting central Guatemala with Salvador, which was postponed during the war, is about to be undertaken again. This line will connect with the railway which runs from Barrios, on the Atlantic, to San Jose, on the Pacific, and will give Salvador direct rail communication with an Atlantic port. The new line will be 157 miles long and will cost between $7,000,000 and $8,000,000. About three years will be required to complete the work.

Belgian Railways Approach Normal Again

Belgian railways are steadily being restored to normal, according to a report received at Washington this week from Trade Commissioner Samuel H. Cross at Brussels. Several of the lines put out of commission by the war have been completely restored. The repair shops report their efficiency at 50 per cent of that of the pre-war days. A premium system for enginemen to encourage economy in repairs and fuel consumption is reported to be producing favorable results.

Proposed Electrification of Highland Railway

LONDON.

An announcement has just been issued regarding the proposed electrification of the Highland Railway (Scotland) from Perth to Inverness. The scheme in question would utilize the powers available at Loch Ericht, Loch Laidon, Loch Rannoch aand Loch Tummel, and is estimated to cost about £1,500,000 (approximately $6,000,000) and to yield about 42,000 h.p. A definite announcement as to the intentions of the Highland Railway Board or of the Ministry of Transport is expected to be made shortly.

A Clash of Unions

LONDON.

As an example of the jealousy of trade unions in England may be mentioned the following news item in the London Times:

"Two hundred blacksmiths employed in the Glasgow & South-Western Railway works at Kilmarnock and Barassie struck on Saturday, owing to the refusal of a hammerman to join the craft union. The National Union of Railwaymen, to which the man belonged, has threatened to call a strike on the system if the man is not allowed to work as a member of the N. U. R. only."

Free Services on English Railways

LONDON.

A strong protest has been made on the part of the commercial interests in Great Britain at the proposed withdrawal from the free category of certain services which heretofore have been rendered by railways in connection with freight traffic. The Railway Rates Advisory Committee intends recommending that where services have been given without payment, a charge be made in the future, and that, where a nominal charge has been imposed, this charge be increased. Strong action against this proposal is being taken by the Federation of British Industries, which is supported by other important bodies including chambers of commerce and the Mining Association.

Russia Contracting With German Locomotive Manufacturers

LONDON.

It is stated in the Dagens Nyheter that the Russian representative, Professor Lomonosov, recently visited Berlin, where he made a contract with the Locomotive Manufacturers' Trust for the delivery of 1,500 locomotives within one year. It is stated that the Saxon Engineering Company, formerly Richard Hartmann & Co., of Chemnitz, has received an order for some of these locomotives to the value of 30,000,000 marks (approximately $500,000).

Proposed Construction of a French Locomotive Plant in Jugoslavia

Consul K. S. Patton reports from Belgrade, under date of August 26, 1920, that three French engineers, representing important French industrial concerns, have proposed to the Jugo-Slav government a project by which their concerns would found in Jugoslavia several railway branch factories, which would manufacture locomotives, freight cars, and other railway rolling material. The output of the factories would be used in Jugoslavia, as well as on the French railways in the Near East, such as Asia Minor, Syria, etc., and for French exportation by the French concerns in the neighboring Orient.

Prices for Railway Material in England

LONDON.

It is reported in the Great Western Railway magazine that the prices that company is now paying for different classes of material is as follows:

	1920 £	s.	d.	1920 $	1914 £	s.	d.	1914 $
Locomotive coal		36	5	7.30		12	0	2.40
Steel rails (per ton)	23	0	0	92.00	6	15	0	27.00
Rail chairs	14	0	0	56.00	5	0	0	20.00
Chair bolts	50	10	0	202.00	17	10	0	70.00
Boiler plates	29	10	0	118.00	9	0	0	36.00
Steel (per ton)	38	0	0	152.00	9	10	0	38.00
Locomotive axles (per ton)	45	0	0	180.00	15	0	0	60.00
Buffer springs	49	10	0	198.00	16	10	0	66.00
Freight car wheel tires	30	10	0	122.00	9	15	0	39.00
Bar iron (per ton)	30	10	0	122.00	8	5	0	33.00
Rape oil (per ton)	133	0	0	532.00	30	0	0	120.00
Locomotives (per ton)	120 to 150	0 to 0	0 to 0	480.00 to 600.00	40	0	0	160.00

(The pound sterling in the above is considered equal to $4.00)

England's Exports of Railway Materials

LONDON.

According to the Board of Trade returns, the following railway material was exported during the seven months ended July 31, 1920:

	7 Months ending July 31, 1920 £	$ (at $4 to £)	7 Months ending July 31, 1919 £	$ (at $4 to £)
Locomotives	2,977,655	11,910,620	517,331	2,069,324
Rails	2,387,030	5,548,120	1,055,043	4,220,172
Passenger cars	851,270	3,205,080	249,882	999,528
Freight cars	3,195,889	12,783,556	646,913	2,587,652
Tires and axles	764,791	3,059,164	525,380	2,101,520
Rail chairs and metal sleepers	448,851	1,795,404	145,381	581,524
Miscellaneous permanent way material	1,394,349	5,577,396	475,737	1,902,948
Total permanent way	5,180,745	20,722,980	1,700,060	6,800,240

The quantity of rails exported during the period ending July 31, 1920, was 73,746 tons, as against 65,621 tons for the same period of 1919, and of rail chairs and sleepers 21,021 tons, as against 8,938 tons.

Another Railroad Strike in Germany Imminent

BERLIN, Germany.

To guard German neutrality declared by the German Government in the Polish-Russian War, German railroad employees have founded a central committee with corresponding local committees provided with the power to examine all trains travelling through Germany, and to stop all trains transporting warfaring materials. These committees consist of members of the workshop committees, of members of trade unions, and finally of members of the various socialistic parties. The German railroad minister

Groener has declared his permission to have all trains near the German boundaries examined by German railroad workers or employees, but has refused to acknowledge the above-mentioned committees. This refusal has led to serious difficulties. In case the railroad employees should deem it necessary to strike, German organized labor has declared to grant every help necessary, or, in other words, if necessary, German organized labor is willing to join in the proposed strike. The situation is all the more serious as various railroad authorities are taking steps against workshop committees and refusing to acknowledge their rights.

Japanese Seek Monopoly of Chinese Eastern

That the Japanese are trying to monopolize the Chinese Eastern is the unanimous report of a commission composed of an American, an Englishman and a Frenchman, advisers of the President of China, which was sent by the Chinese government to investigate political conditions in Manchuria. The members of the commission were: J. C. Ferguson, political adviser; E. Lenox-Simpson, statistician, and M. Padoux, financial adviser. The report said that on the surface the Japanese attitude was irreproachable, but that quietly they were exerting every effort to interfere with the working of the lines and to acquire commanding positions at every point along the railway.

English Railway Statistics

LONDON.

The railway statistics issued by the Ministry of Transport for the four weeks ended July 18, show an increase of 1,340,859 tons or 5.2 per cent in the total freight traffic as compared with the previous four weeks. The estimated receipts per ton-mile, excluding cost of collection and delivery, were as follows:

	Four weeks ended	
	July 18, 1920	June 20, 1920
General merchandise	2.486 pence	2.561 pence
Coal, coke and patent fuel	0.870 pence	0.925 pence
Other minerals	1.078 pence	1.122 pence
Total freight	1.444 pence	1.517 pence

Note: 1 penny equals 2 cents.

The passenger train mileage run during the four weeks ended July 18, 1920, was 609,968 miles in excess of the previous four weeks. The average freight carload increased from 5.40 tons to 5.47 tons, the trainload from 132.84 to 134.33 tons, and the train-miles per engine-hour from 3.30 to 3.31. The net ton-miles worked per engine-hour, namely, 444.70, are in excess of those of any previous period in the current year.

Receipts and Expenditures on English Railways

LONDON.

The Ministry of Transport has recently issued a statement showing the financial results of the working of the railways during the four months ending July 31, 1920. The total revenue earned is £81,178,629 (approximately $324,714,516 at the present rate of exchange). The total expenditure was £77,993,264 (or approximately $311,973,056), giving a balance of revenue earned over expenditure of £3,185,365 (or $12,741,460). The standard year proportion of net receipts under the given guarantee was £15,828,000 (or $63,312,000), to which is added for interest on capital works brought into use £369,000 (or $1,476,000). Thus the net government liability for the four months ending July 31, 1920, is £13,515,677 (or $54,062,708).

The traffic revenue earned was distributed roughly as follows:

Passenger train traffic	£39,829,584 or $159,318,336
Goods train traffic	44,875,442 or 179,501,768

The report also shows a charge of £11,707,097 (or $46,828,388) for maintenance and renewal of way and works and a charge of £15,131,103 (or $60,524,412) for maintenance and renewal of rolling stock.

New Zealand Railway Electrification

According to an announcement appearing in Engineering, London, the British trade commissioner at Wellington, New Zealand, has recently cabled to the Department of Overseas Trade the award of a contract to the English Electric Company for the electrification of a section of the Midland Railway of New Zealand. The section to be electrified is known as "Arthur's Pass." It is the connecting link between the government railway system of the east coast and west coast of South Island. At present the whole of the railways in New Zealand are steam operated, and it is not proposed at present to electrify more than the section covered by this contract. The section to be electrified includes a tunnel over 5 miles long and three steel bridges. A great portion of the section is on a grade of 3 per cent and the summit is about 2,400 ft. above sea level. The contract includes the provision of the power plant, the tunnel lighting installation, the overhead transmission line and the complete equipment for the electrical operation of the section of the railway referred to. The system to be used is 1,500 volts direct current overhead contact. The power-house must be at Otira station, which is 1,260 ft. above sea level, and the power will be generated by geared turbine direct-current sets. The boilers, it is proposed, should be operated on dust fuel in order to utilize the product of a number of local coal mines which is too fine for ordinary consumption.

Air Brakes on Swedish Railways

It is now announced that the "Kunze-Knorr air brake," a German invention, with which the rolling stock of the State Railways in Sweden are to be equipped, will involve an expenditure of no less than 30,000,000 crowns, which at normal rate of exchange represents $8,150,134.

The railway officers estimate the annual saving from the use of this particular air brake at 5,500,000 crowns, or $1,474,530 at normal exchange, and this because of the consequent reduction in the number of railway employees. These Kunze-Knorr air brakes are to be made in Sweden, Aktiebolaget Nordiska Armaturfabrikerna, at Lund, having made a contract with the German company to manufacture them.

The Swedish private railroads have been reluctant to adopt air brakes, but it is probable that sooner or later they will follow in the footsteps of the State Railways. It would, therefore, be well, says Consul General Dominic I. Murphy, who sends the above information to Commerce Reports, for American manufacturers of air brakes to get in touch with the private railroad companies in Sweden, as it is quite certain that the German company cannot undertake to equip them at least for a year or two.

Railroad Extension in Morocco

Reports have been received from Paris, says Commerce Reports, that a convention has been concluded between the Moroccan Protectorate and a group consisting of the Paris-Lyons-Mediterranean and the Paris-Orleans railroads, the Compagnie Générale of Morocco, and the Compagnie Morocaine for the construction of a railroad with standard gage. The share capital of this group will consist of 50,000,000 francs ($9,500,000 at par value). The cost of constructing the six lines contemplated is estimated at 970,000,000 francs ($184,300,000). Its share in the scheme is to be 70 per cent of the first 300,000,000 francs ($57,000,000) and 10 per cent of the remainder. The line from Fez to the Algerian frontier is excepted from this arrangement, as its construction will be particularly difficult, owing to the nature of the soil traversed. The Shereefian government has provided a special grant of 120,000,000 francs ($22,800,000). In addition to this measure, Parliament has approved the floating of a Moroccan loan of 744,140,000 francs ($141,386,600). This loan has no connection with the railroad scheme, but is to be used for purposes of social and economic improvement. The expenditure is to extend over 12 years.

Improved Conditions for Women and Girl Railway Clerks

LONDON.

An agreement has recently been signed by the Committee of General Managers of the English Railways, acting for the Ministry of Transport, providing for improved conditions of service for all women and girl clerks on the railways. The agreement operates as from August 1, 1919, and payment for the arrears of pay from that date will be made. It provides for three scales of pay, the lowest having a maximum of 60 shillings (approximately $12) at the age of 31 for clerks performing routine work. Clerks in the second class will rise to a maximum of 70 shillings ($14) after four years' service. For those performing duties of more than ordinary importance there is no fixed maximum, but the minimum

is above 70 shillings and the rates will be determined by the nature of the duties performed.

In addition to the foregoing, a "cost of living bonus" will be paid to the women and girl clerks at the rate of 1 shilling and 6 pence (approximately 30 cents) for every five points above the standard of 125 per cent over the normal figures of 1914. The payment of this bonus operates in accordance with the cost of living figures from April 1, 1920. The agreement also covers payment for overtime and Sunday duty, and makes new arrangements for holidays. It is estimated to affect something over 10,000 women and girl clerks.

The Plight of Russian Railways

London.

An article in the Times Engineering Supplement by Allan Monkhouse, A. M. I. E. E., gives an indication of the sad plight of the Russian railway transport system. Moscow, the center of many great industries, is practically isolated from the oilfields of the Caucasus, the coal mines of the Donetz basin, the cotton fields of Turkestan and the vast mineral resources of the Ural Mountains. Petrograd, which in the past received its supplies of fuel and raw material either by sea from other countries or by one of the great trunk railways from the south, is even worse off, and Tula, Harkov, Ekaterinoslan and the isolated manufacturing towns on the Volga and its tributaries and in the Urals are in the same plight.

It is an irony of fate that the Bolshevists themselves destroyed the organization which might have enabled Russia successfully to reconstruct her railways, once the exhausting stress of the war with Germany was removed. In 1917, and 1918, the Bolshevists removed the technical administration of the workshops and traffic staffs and substituted their own committees. Within a year they realized their error and recalled these men, but in the meantime the majority had suffered the fate of thousands of their class and had either died or fled.

Contrary to the general idea prevailing, Russia has the resources to effect reconstruction if only she had the technical staff and could get the workpeople back into the workshops. The whole of the lines were equipped and run with Russian personnel. The locomotives and rolling stock were, up to the outbreak of war, of entirely Russian manufacture. Imperial laws made it imperative that contracts for railway materials and machinery should be let to Russian firms; thus it was that from 1895 onwards enormous works were developed in Russia to supply the country's needs for railway material.

South African Experience with Narrow Gage Railways

London.

An article in the Times Engineering Supplement states that considerable experience has been acquired in South Africa with regard to the operation of narrow-gage feeder lines. The narrow-gage lines of South Africa are 2-ft. and 2-ft. 6-in. gage. There are just under 700 miles of narrow-gage lines in operation (exclusive of lines in the Southwest Africa Protectorate), representing about 7 per cent of the total mileage of the Union of South Africa. The lines vary in length from 177 miles long to short lines of about 25 miles.

Sir William Hoy, the general manager of the South African Railways, in the course of an analysis of the advantages and the disadvantages of narrow-gage feeders, which was recently published in the South African Journal of Industries, has little to say in favor of narrow-gage lines. He states that while the first cost in a great many cases is cheaper, there are many objections with regard to the operating side. These are, he points out, the impossibility of pooling rolling stock between the narrow-gage line and the main line, which is laid to a gage of 3-ft. 6-in., inability to use old main line engines and rolling stock on narrow-gage feeders, the necessity for providing repair shops and engine sheds for each narrow-gage line, the expense and delays occasiond by trans-shipment at junctions, and the impossibility of through running of trains. He is, however, not opposed to the construction of short narrow-gage lines in cases where they are never likely to be extended to link up with another main line, but these lines should be laid and worked as tramways rather than light railways. The track should be of 20-lb. rails and no stations or staffs should be provided other than the driver of the train, who, with the assistance of one or two native workmen, can attend to the entire operation of the line. The residents of the district served should themselves load and unload freight in trucks.

Taking seven narrow-gage lines, aggregating 472 miles in length, the average capital cost per mile was £3,619 (or approximately $17,600), ranging from £793 ($3,850) to £3,966 ($19,300). The average cost for 13 light standard 3-ft. 6-in. gage branches, aggregating 648 miles, was £5,177 (or approximately $25,200) per mile. Of these the cheapest cost £3,155 per mile (approximately $15,300), which is considerably less than the most expensive narrow gage, but as the standard-gage line in question runs through comparatively flat country and the narrow-gage line traverses much more broken ground, the two cases are hardly comparable.

With regard to the relative cost of operation, the average working expenditure (including depreciation and interest charges at 3½ per cent) for the seven narrow-gage lines was 4.30 pence (or 8.4 cents) per ton mile, while for the 13 standard gage lines the cost was 3.40 pence (or 6.8 cents). On the other hand the average cost per train mile was 6 shillings 8 pence (or $1.60) and 7 shillings 7 pence ($1.82), respectively. From these figures it will be seen that while the cost of running a narrow-gage train was slightly lower than that of a standard-gage train, the greater loads carried by the latter reduced the actual cost of working to almost one penny (2 cents) per ton mile below the amount for the narrow-gage line.

Electrification of Railways in South Africa

The South African Government has been for some time past considering the question of electric traction and investigating the possibility of the electrification of certain of the State owned railways of the Union, and a memorandum on this subject is among recent parliamentary papers. The continued and rapid rise in railway expenditure, together with the increased cost of coal has drawn the attention of the authorities to the advantages to be derived from the substitution of electricity as the motive power for these railways. In the early days the South African railways were built without adequate provision for the prospective growth of traffic, and certain sections must shortly be expanded to meet future requirements. With the growth of population and trade these sections have become incapable of meeting the heavy demand now made upon them and this is going on in an increasing ratio. The time has, therefore, come when electrification must be taken into account. A memorandum on this matter has been issued by the general manager of railways in the form of a white paper for the information and convenience of members of parliament, and has commended itself in responsible quarters as a clear proof of the practical and financial benefits of electric traction.

Engineers who have been consulted on the question of the electrification of the union railways have recommended that this should be carried out in the first place on certain suburban and other sections, in the Cape Peninsula, at Durban, Glencoe and Witbank, at a total cost of £15,427,382 ($75,000,000). The railway Administration has approved of this principle, the work to be undertaken in sections and spread over a number of years. It is recommended that funds be devoted immediately to the electrification of the Capetown-Simonstown line and of that from Durban to Maritzburg, a total distance of 100 miles and that work on these two be commenced at the earliest possible date, at an estimated cost of four and a half millions sterling.

It is also recommended that some measure of unification of the various electricity undertakings throughout the country, whether municipal or private, should be adopted in the future and that power stations installed for supplying railway requirements should form part of such unified scheme. Besides representing an exhaustive and constructive criticism of the report of the consulting engineers which has already been laid on the tables of both houses of parliament, the memorandum indicates the extent to which other countries have, with advantage, adopted the system of electric traction. From the views expressed in the report of the engineers, as well as in the memorandum by the general manager, the railway board can see no reason why, if this system of traction were applied, as suggested, to the South African railways, the results should not be similarly advantageous. Indeed, the arguments in favor of its application are so convincing, and the advantages, financial and otherwise, to be derived thereby so considerable, that the board has no hesitation in recommending for favorable consideration at the hands of the government that what is advocated by the general manager in his memorandum should be carried out.

Equipment and Supplies

Locomotives

THE MANILA RAILROAD has ordered 10 Mogul type locomotives from the H. K. Porter Company.

THE CHICAGO & NORTH WESTERN is having repairs made to a number of locomotives at the plant of the Manitowoc Ship Building Company, Manitowoc, Wis.

THE WESTERN MARYLAND has ordered 20 Consolidation locomotives from the Baldwin Locomotive Works. This is in addition to the 20 ordered from the same builder and reported in the *Railway Age* of September 24.

Freight Cars

THE WABASH RAILWAY is in the market for 10 box cars.

THE BALTIMORE & OHIO is getting prices on 200 additional box car bodies.

THE GREAT SOUTHERN LUMBER COMPANY, Bogalusa, La., is inquiring for 50 freight cars.

THE PITTSBURGH & LAKE ERIE is having 1,000 hopper car bodies rebuilt at the Newcastle, Pa., shops of the Standard Steel Car Company.

THE UNITED FRUIT COMPANY, Pier 9, North River, New York, is inquiring for 100 flat cars, for use on the Truxillo Railroad, Honduras.

THE AMERICAN RAILWAY EQUIPMENT COMPANY, Philadelphia, Pa., is in the market for 100 flat cars with steel underframe, 250 box cars and 175 steel gondola cars.

THE CLARKSON COAL MINING COMPANY, Cleveland, Ohio, has ordered 500 composite hopper cars, of 55 tons' capacity, from the Haskell & Barker Car Company.

THE WESTMORELAND COAL COMPANY, Philadelphia, Pa., has ordered 100 new 55-ton steel hopper cars from the American Railway Equipment Company, Philadelphia.

THE GREAT NORTHERN, reported in the *Railway Age* of September 24 as inquiring for 400 refrigerator cars, is now asking for 500, 30-ton and 500, 40-ton refrigerator cars.

THE WEST INDIA SUGAR FINANCE CORPORATION, 129 Front street, New York, is inquiring for 250 three-compartment cane cars, of 20 tons' capacity, for export to San Domingo.

THE DELAWARE, LACKAWANNA & WESTERN, reported in the *Railway Age* of September 10 as inquiring for 20 caboose cars, has ordered this equipment from the Mount Vernon Car Manufacturing Company.

THE UNITED FRUIT COMPANY, New York, has ordered 25 ballast cars from the Koppel Industrial Car & Equipment Company, and 30 ballast cars from the American Car & Foundry Company. All these cars are to be of 30 tons capacity.

THE UNION RAILROAD, reported in the *Railway Age* of September 24 as about to convert 450 high-side all-steel 50-ton capacity cars to lowside gondolas, is having the repairs to 200 of these cars made at the works of the Koppel Industrial Car & Equipment Company.

THE GULF COAST LINES, reported in the *Railway Age* of October 1 as having withdrawn its inquiry for 1,000 cars, have ordered 500 box cars and 50 tank cars from the American Car & Foundry Company, and 400 gondola cars from the Mount Vernon Car Manufacturing Company. Financial negotiations now pending must be completed before these orders will be carried out.

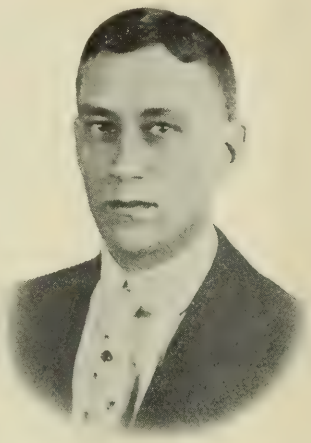
Supply Trade News

The **American Steam Conveyor Corporation,** Chicago, announces that a change has been made in the corporate name to **Conveyors Corporation of America.** There is no change either in the personnel or policy of the company.

The Lancaster Steel Products Corporation, Lancaster, Pa., recently opened a New York office in the National Association building, 25 West Forty-third street. The office is in charge of **L. E. Vesey,** as district sales manager. Mr. Vesey, for the past year and a half, has been in the Chicago office of this company.

The T. J. Moss Tie Company, St. Louis, Mo., contemplates the construction of a tie treating plant on property recently purchased at the Valley Junction yards of the Terminal Railroad Association at East St. Louis, Ill. This company will also build a tie treating plant at Granville, Wis., 10 miles north of Milwaukee.

A. E. Harrold has been appointed manager of railway sales of the **Willard Storage Battery Company,** with headquarters at Cleveland, Ohio. Mr. Harrold was born on February 19, 1883, and he is a graduate of the electrical engineering course of Pennsylvania State College. From 1907 to 1908 he served as assistant instructor at the Massachusetts Institute of Technology, and then for three years as director of the testing section of the National Lamp Works of the General Electric Company. From 1911 to 1914 he was electrical engineer of the Wood & Spencer Engineering Company, Cleveland, and since 1914 has been employed by the Willard Storage Battery Company as manager of its stationary battery department.



A. E. Harrold

The Wholesale Equipment & Supply Company, has been established in the Farmers Bank building, Pittsburgh, Pa., by **D. R. Sterrett** of Pittsburgh and **S. F. McLeod,** who was formerly puchasing agent for the Duluth, Missabe & Northern. This firm acts as sales agent for a line of mine and mill equipment and supplies, including heavy duty lathes, milling machines, planers, power and drill presses, lumber, wood and metal pattern, etc.

R. A. Bull, vice-president of the Duquesne Steel Foundry Company and formerly president of the American Foundrymen's Association, has resigned to become consulting metallurgist for the Electric Steel Company, Chicago; Fort Pitt Steel Castings Company, McKeesport, Pa.; Isaac G. Johnson Company, Spuyten Duyvil, N. Y.; Lebanon Steel Foundry Company, Lebanon, Pa.; Michigan Steel Castings Company, Milwaukee, Wis.; and the Sivyer Steel Castings Company, Milwaukee, Wis.

The Safety Car Heating & Lighting Company and the **Pintsch Compressing Company** have removed their sales service, treasury and engineering departments from 2 Rector street, New York, and the purchasing, accounting and manufacturing departments from Jersey City, N. J., to their new plant at the corner of Dixwell and Putnam avenues, New

Haven, Conn. The executive offices and sales office for the northeastern district will be located at 2 Rector street, New York, as heretofore.

An arrangement has been made whereby the **General Electric Company,** Schenectady, N. Y., has acquired a substantial interest in the **Locke Insulator Corporation,** Baltimore, Md., and the present directors of the corporation are: **G. E. Emmons, C. W. Appleton, D. R. Bullen, J. W. Upp, George P. Baldwin, C. J. Symington, Walter T. Goddard, Donald Symington,** president, **John F. Symington,** vice-president, and **F. H. Reagan,** vice-president. The treasurer is **W. G. Hoffman, Jr.,** and the secretary is **J. F. Douty, Jr.** This arrangement will result in full engineering and research co-operation between the two companies with respect to insulator problems and will further extend the usefulness of the Locke Insulator Corporation in the electrical field. The Locke company will now produce the well-known Hewlett high tension transmission insulator, using its new plant at Baltimore, Md. Such engineering and research co-operation is desirable, for prior to this time insulation improvements and developments have had great difficulty in keeping pace with the rapidly changing electrical art.

Trade Publications

Keep the Guesswork Out of Welding.—The American Welding Society, Chicago, an organization of manufacturers and users of welding apparatus, has issued a small booklet outlining the objects of that organization in raising the standards of welding practice. The booklet also contains the constitution and by-laws of the association.

Mill Buildings.—The National Lumber Manufacturers' Association, Chicago, is issuing a new series of technical bulletins prepared by its engineering bureau. These are prepared in loose-leaf form in sheets 8½ in. by 11 in., and the initial issue, which has just been released, covers mill building construction, including such matter as design, cost, kind of timber, specifications and details of construction.

Type "B" Erie Shovels.—The Ball Engine Company, Erie, Pa., has recently issued Bulletin S-16, 24 pages, illustrated, devoted to a description of the type "B" steam shovel manufactured by that company. The photographs show the various sizes of this type shovel operating under a wide variety of conditions, and also how it may easily be converted for crane service. The data is complete, giving sizes, capacities and results obtained in different classes of service.

Private Control Permanent.—The operating genius of American railroad men is reacting to the mighty task ahead of them in a way which ought to reassure the skeptics over the permanency of private control.—*Baltimore Sun.*



The Spencer Glacier on the Seward Division of the Alaskan Government Railway

Railway Construction

Atchison, Topeka & Santa Fe.—A contract has been let by this company to J. E. Nelson & Sons, Chicago, to construct a machine shop at Albuquerque, N. Mex., to cost approximately $1,250,000. This shop will be the central structure of a group of six other buildings to be constructed later. This building will have 24 exterior walls of steel and glass construction, a composition roof and a mastic floor. There will be 26 engine pits. It is to be heated by a fan system placed in the upper structure. Altogether, 3,640 tons of steel will go into the building.

Atlantic Coast Line.—This company has resumed construction on its line from Goodno, Fla., to Immokalee, a distance of 26 miles. All the work will be done by the company's own construction forces. The terminus of this line, Immokalee, is in the northern Everglades in undeveloped timber country.

Chicago & Alton.—This company has awarded a contract to Ed. Page, Marshall, Mo., for the construction of a frame passenger and freight station at Grain Valley, Mo.

Chicago, Rock Island & Pacific.—This company has awarded a contract to the T. S. Leake Construction Company, Chicago, for the remodeling of the main freight house at Rock Island, Ill., to provide larger warehouse facilities.

Chicago, St. Paul, Minneapolis & Omaha.—This company has let a contract to the Ogle Construction Company, Chicago, for the construction of a 150-ton frame coaling station at Clayton, Wis.

Grand Trunk.—Work will be started early this month on the construction of a two-story building, for the use of the Canadian Express Company, at Stuart street, Hamilton, Ontario. The building will be of brick construction on a concrete foundation and will cost about $25,000. The work will be carried out by the company's forces.

Illinois Central.—Construction has started on a third track from Peotone, Ill., to Tucker, a distance of 13 miles, which is estimated to cost approximately $475,000.

Midland Valley.—This company has awarded a contract to the Ogle Construction Company, Chicago, for the construction of a 100-ton frame coaling station at Pawhusca, Okla.

Pennsylvania Lines.—Negotiations are under way between the city of Akron, Ohio, and the Pennsylvania, the Erie and the Baltimore & Ohio, for the separation of grades in Akron. The original estimate made in 1916 called for an expenditure of $3,000,000, of which the city was to pay one-third and the railroads the remainder. Officers of the Pennsylvania, who are now engaged in designing the proposed work, now contemplate an expenditure of approximately $5,000,000. Preliminary plans for the project have been agreed upon by the parties concerned, and surveys are now being made. It is expected that construction will be undertaken early in 1921.

Sante Fe-Northwestern.—This company of which the notice of incorporation appears elsewhere in this issue, contemplates the construction of a line, extending from a connection with the Atchison, Topeka & Santa Fe at Bernalillo, N. M., northwest through Sandoval County to La Ventana, a distance of 55 miles.

Texas & Pacific.—This company contemplates the construction of yard tracks at Dallas, Tex., in the new industrial district north of Pacific avenue and Akard street, at a cost of approximately $100,000. Upon the completion of this improvement and the removal of main tracks in Pacific avenue, the Texas & Pacific will be able to operate its trains around the south limits of Dallas, over a portion of a new belt line now being constructed by the Houston & Texas Central.

Union Pacific.—A contract has been let to O. P. Chedron, Salt Lake City, Utah, for the construction of a reservoir at Leroy, Wyo.

Railway Financial News

BALTIMORE & OHIO.—The Interstate Commerce Commission has approved the making of a loan of $3,000,000 to this company to aid it in the making of additions and betterments to its way and structures.

This company has applied to the Interstate Commerce Commission for authority to issue $7,586,000 of refunding and general mortgage, Series B, 6 per cent bonds, the proceeds to be used in reimbursement of sums expended for extensions and improvements and for the retirement of maturities.

BOSTON & MAINE.—This company has been authorized by the Interstate Commerce Commission to issue, as of June 1, 1920, $3,843,000, 10-year, 6 per cent bonds, to be designated as Series F, under the mortgage dated December 1, 1919, made to the Old Colony Trust Company and S. Parkman Shaw. The proceeds are to be used for the purpose of retiring $3,843,000 of bonds, maturing on June 1, July 1, and October 1, 1920.

CAROLINA, CLINCHFIELD & OHIO.—The Interstate Commerce Commission on October 6 certified to the Treasury Department its approval of the making of a loan to this company of $1,000,000 for the purpose of aiding the carrier in meeting its maturing indebtedness.

CHICAGO & WESTERN INDIANA.—The Interstate Commerce Commission has issued an order authorizing this company to issue $7,000,000 of 15-year, 7½ per cent collateral trust sinking fund gold bonds, and to pledge $9,800,000 of its first and refunding mortgage 5 per cent gold bonds as security for the collateral trust bonds, which are to be used for the purpose of paying or retiring the company's 1-year, 6 per cent collateral trust gold notes, payable on September 1, 1920. The company has also been authorized to issue $1,000,000 of 15-year, 6 per cent collateral trust gold notes, and to pledge $1,250,000 of its first and refunding mortgage, 5 per cent gold bonds as security, the proceeds to be used for the purpose of paying or retiring $1,000,000 of 1-year, 5 per cent collateral gold notes, payable September 1. The company is also authorized to pledge $10,500,000 of its first and refunding mortgage, 5 per cent gold bonds with the Secretary of the Treasury as security for a loan of $8,000,000 in the United States.

CHICAGO, ROCK ISLAND & PACIFIC.—The Interstate Commerce Commission has authorized this company to issue $1,000,000 of 4 per cent general mortgage gold bonds of 1988 and to pledge them with the Central Union Trust Company of New York as part security for an issue of $1,000,000 of first and refunding mortgage 4 per cent gold bonds, the issue of which is also authorized by the commission, which are to be held in the treasury to be used as collateral for such short term loans as the company may find it necessary to make from time to time until the market for the bonds improves.

DELAWARE, LACKAWANNA & WESTERN.—The Interstate Commerce Commission has announced a proceeding of investigation and a hearing at Washington on October 15, before Director W. A. Colston, of its Division of Finance, on the application of this company for authority to increase its capitalization by the issuance of additional stock to the amount of its surplus.

GRAND TRUNK.—An issue of $25,000,000, twenty-year, 7 per cent sinking fund gold bonds has been sold to Wm. A. Read & Co. The bonds will be dated October 1, and will mature October 1, 1940. An annual sinking fund of $500,000 is provided to purchase bonds offered in the open market at prices up to 100 and interest.

ILLINOIS CENTRAL.—This company has applied to the Interstate Commerce Commission for authority to issue $8,107,000 of equipment trust certificates, proposed to be sold to Kuhn, Loeb & Co. at a rate to cost about 7½ per cent, for the purchase of $13,515,918 worth of equipment now being constructed. The commission has acted upon the company's application for a loan of $4,480,000, to be used in the purchase of the equipment in connection with the proposed equipment trust.

MIDI RAILROAD (FRANCE).—A syndicate, headed by A. Iselin & Co., Hemphill, Noyes & Co., and Gude, Winnill & Co., will offer 50,000,000 francs, 6 per cent bonds, of the Midi Railroad of France. The bonds, redeemable by drawings not later than 1960, bear 6 per cent interest and will be offered to yield 6.35 per cent. This is an exclusive American issue, with coupons and principal payable in New York. They are exempt from all French taxes for non-residents of France and are convertible at the option of the holder at par into a French series of the same issue quoted on the Paris stock exchange. The bonds are in coupon form, in denominations of 1,000 francs, with interest payable June 1 and December 1.

The entire proceeds of the American issue of these bonds are to be used in the United States. Payment of principal and interest of the Midi Company's bonds and 10 per cent annually on its entire capital stock is secured by guarantee of the French Government.

PITTSBURGH & LAKE ERIE.—On application of the company the Interstate Commerce Commission has issued an amendment of its order of September 11, so as to provide that the equipment trust certificates to be issued under the agreement establishing the "Pittsburgh & Lake Erie Railroad Equipment Trust of 1920" shall bear interest at the rate of 6½ per cent instead of 7 per cent, and that they may be sold at a price which will net the applicant not less than an average of 95 per cent of par, plus accrued interest thereon, instead of 97 per cent; and that trust agreement and certificates shall be dated October 1, 1920, instead of July 15, 1920.

PITTSBURGH & WEST VIRGINIA.—A special meeting of stockholders will be held on November 15 in Pittsburgh to vote on the proposed acquisition of the property of the West Side Belt Railroad, the proposed increase of the company's capital stock to the extent of 74,000 shares, of which 30,000 are to be preferred and the balance common shares. Upon the acquisition of its property the West Side Belt Company will cease to exist, and its outstanding liabilities, consisting of $379,000 of first mortgage bonds and $1,443,000 of equipment trust notes, will become outstanding obligations of the Pittsburgh & West Virginia. The increase of $7,400,000 in capital stock of the Pittsburgh & West Virginia is for the conversion of the acquired company's liabilities, now in possession of the former road, totaling $1,080,000 in stock and $6,320,000 in funds advanced. The new stock will remain in the company's treasury for future needs.

RICHMOND, FREDERICKSBURG & POTOMAC.—This company has been authorized by the Interstate Commerce Commission to indorse demand notes of the Richmond Terminal Railway in an amount not to exceed $250,000, and to negotiate the notes so indorsed on a basis of interest at the rate of six per cent per annum, the proceeds arising to be used solely for the purpose of paying in part the obligations of the applicant to its employees.

UNION TERMINAL.—This company has applied to the Interstate Commerce Commission for authority to enter into extension agreements with the holders of its notes, aggregating $550,000, due October 10, to make them mature October 10, 1921.

WABASH.—This company has been authorized by the Interstate Commerce Commission to continue the issuance of its five per cent profit-sharing preferred stock A, the aggregate amount to be issued under this authority not to exceed $7,576,120.89, and of its common stock, the aggregate amount to be issued under this authority not to exceed $7,576,120.89, and the exchange of the preferred stock and common stock for its five per cent convertible preferred stock B, now outstanding, in the aggregate of $15,152,241.79 par value, the exchange to be at the rate of $50 par value of preferred stock A, and $50 par value of common stock for each $100 par value of preferred stock B.

WEST SIDE BELT.—See Pittsburgh & West Virginia.

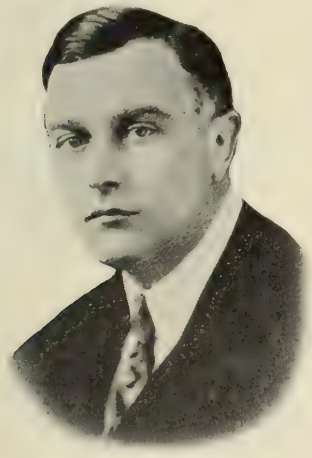
WHEELING & LAKE ERIE.—The Interstate Commerce Commission has approved the making of a loan of $2,460,000 to this company to aid it in meeting its 1920 short-term maturities and in making additions and betterments to roadway and structures. The carrier itself is required to finance, on account of its 1920 short-term maturities, $1,200,000.

Railway Officers

Executive

H. L. Traber, whose promotion to vice-president and general manager of the Kansas, Oklahoma & Gulf, with headquarters at Muskogee, Okla., was announced in the *Railway Age* of September 24 (page 550), was born at Kansas City, Mo., on April 27, 1880. He entered railway service in August, 1898, with the Kansas City, Fort Scott & Memphis, as a clerk in the general freight office at Kansas City, Mo. When the Kansas City, Fort Scott & Memphis was taken over by the St. Louis-San Francisco in 1901, he became export clerk in the office of the assistant general freight agent, and during the next eleven years served continuously with the 'Frisco as contracting agent and chief clerk to the commercial agent. In 1912, he was appointed commercial agent of the Missouri, Oklahoma & Gulf, and in 1919 was promoted to general freight and passenger agent, with headquarters at Muskogee, Okla. Mr. Traber was appointed vice-president and general manager of the Okmulgee Northern and the Oklahoma, Kansas & Missouri, with headquarters at Kansas City, Mo., in March, 1920, but resigned on September 1 to become traffic manager of the Kansas, Oklahoma & Gulf, the position he held at the time of his recent promotion.

James A. McCrea, vice-president of the Bankers' Trust Company of New York, and formerly general manager of the Long Island, has been elected vice-president of the Pennsylvania with headquarters at Pittsburgh, Pa., in charge of the Central region, succeeding R. L. O'Donnel who died recently. Mr. McCrea was born in Philadelphia in 1875. He graduated from Yale University in 1895. He began railroad work the same year at Pittsburgh as rodman in the chief engineer's office of the Pennsylvania Lines West. In 1896 he was transferred to the maintenance of the way department of the Cleveland and Pittsburgh division and in 1897 was again transferred to the Philadelphia division, Lines East. In May, 1899, he was appointed assistant engineer maintenance of way and in August of the same year was promoted to engineer maintenance of way of the lines east. In June, 1901, he returned to the western lines upon being promoted to superintendent of the Cincinnati division which position he retained until 1906. He was then appointed general superintendent of the Long Island and in 1911 became general manager, occupying the position until October, 1917, when he was appointed to the staff of Brigadier General W. W. Atterbury and assigned to France as colonel. He was awarded the Distinguished Service Medal of the United States Government and made an Officer of the French Legion of Honor for his service first as general manager and later as Deputy Director General of Transportation in the latter of which positions he had charge of the activities of the Transportation Corps in the advanced sections of the battle lines, occupied by American troops. He became vice-president of the Bankers' Trust Company after his return to the United States in 1919.



J. A. McCrea

Floyd H. Millard, whose appointment as assistant to the president of the St. Louis Southwestern was announced in the *Railway Age* of October 1 (page 593), was educated in the engineering school at the University of Colorado, followed by post-graduate courses at the Universities of Illinois and Colorado. He entered railroad service in the bridge designing department of the Chicago, Milwaukee & St. Paul, and in 1911 he withdrew temporarily from railroad work to accept a position as instructor of engineering at the University of Illinois. From 1913 to 1915 he was employed by the railroad commission of Wisconsin as a special investigator, with duties which included the preparation of state statistics, cost studies of individual roads and groups of roads, as well as the analysis of exhibits filed with the commission. After serving in 1915 and 1916 with the Interstate Commerce Commission and the Public Utilities Commission of New Jersey, he took up private work, being retained by the railroads in various commerce cases. In 1918 he was attached to the Statistical Bureau of the Western Lines of the United States Railroad Administration, and in April, 1919, he was appointed assistant to the director of traffic. When the roads were returned to private control he returned to the statistical bureau, with which he was connected at the time of his recent appointment.

Financial, Legal and Accounting

C. F. Krebs, whose promotion to controller of the Chicago Great Western, with headquarters at Chicago, was announced in the *Railway Age* of September 24 (page 550), was born at Louisville, Ky., on October 4, 1855. He entered railroad service in March, 1873, as a telegraph operator on the Louisville, Cincinnati & Lexington (now part of the Louisville & Nashville). In May, 1874, he was employed by the Louisville, Paducah & Southwestern (which has also been consolidated with the Louisville & Nashville) as telegraph operator and assistant train despatcher at Louisville. From February, 1877, when he left the Louisville, Paducah & Southwestern, to July, 1882, he was successively telegraph operator, superintendent's clerk, clerk to the general superintendent and private secretary to the vice-president of the Louisville & Nashville. In July, 1882, he was appointed chief clerk to the general superintendent of the Chesapeake, Ohio & Southwestern and in 1884 was promoted to assistant to the vice-president of that road. In June, 1892, he was again promoted, to auditor of the Newport News & Mississippi Valley, and the Chesapeake, Ohio & Southwestern. He was appointed auditor of disbursements of the Illinois Central in July, 1897, and served continuously with this road as assistant controller and controller until January, 1911, when he was appointed auditor of the Chicago Great Western. In July, 1915, Mr. Krebs was promoted to general auditor of the Great Western, the position he held at the time of his recent promotion.

Operating

W. A. Jackson has been appointed assistant superintendent of telegraph, of the Michigan Central, with headquarters at Detroit, Mich., effective Sept. 1.

H. I. Battles has been appointed general manager of the Peoria Railroad Terminal Company, with headquarters at Peoria, Ill., effective September 26.

N. A. Ryan has been appointed trainmaster of the Chicago, Milwaukee & St. Paul, with headquarters at Milwaukee, Wis., effective September 12, succeeding **C. A. Turney,** who has been assigned to other duties.

L. L. White has been appointed trainmaster of the Chicago and Hammond Terminal division, of the Erie, with headquarters at Hammond, Ind., effective October 1, succeeding **Thomas Eaton,** who has been assigned to other duties.

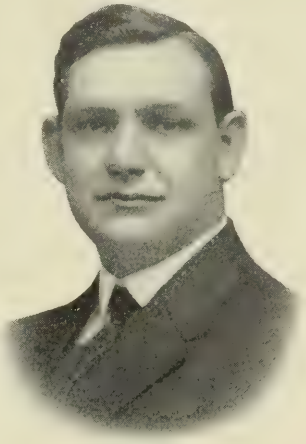
O. M. Stevens, supervisor of refrigerator service of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has been appointed special assistant to the vice-president, in charge of operation, with the same headquarters, effective September 12.

Robert D. Hawkins, who has been appointed general superintendent of motive power of the Atlantic Coast Line with headquarters at Wilmington, N. C., as noted in the *Railway Age* of September 24 (page 552), was born on May 22, 1873, at La Fayette, Ind. He graduated from the School of Mechanical Engineering at Purdue University in 1893. He began railroad work in August, 1899, with the Great Northern as chief draftsman. Afterwards he became mechanical engineer, then general master mechanic and later assistant superintendent of motive power. He was promoted to superintendent of motive power on March 10, 1910, and retained that position until October 20, 1917, when he entered military service and was commissioned lieutenant-colonel, being assigned to Russia with the Railway Engineers. While in Russia he was given command of the Mechanical Section of Railway Engineers under the command of Colonel Emerson. He returned to the United States on January 5, 1920, and was appointed an assistant to the president of the Great Northern, doing special work in connection with mechanical matters. He held that position until his recent appointment, effective September 15.



R. D. Hawkins

Hugh W. Purvis, who has been appointed general superintendent of the Seaboard Air Line, with headquarters at Savannah, Ga., as noted in the *Railway Age* of August 27 (page 378) was born on November 10, 1878, at Montreal, Nelson County, Va., now known as Shipman, Va. he received a high school education and studied at the University of Virginia. He began railroad work with the Norfolk & Western in 1897 as telegraph operator and agent and later became operator and yard clerk. He went to the Seaboard Air Line on August 18, 1900, as operator and yard clerk at Hamlet, N. C. In June 6, 1903, he was appointed train despatcher of the North Carolina division at Raleigh, N. C. He became chief despatcher of the South Carolina division on July 15, 1906, with headquarters at Jacksonville, Fla., and in 1907 he returned to the North Carolina division in the same capacity. He was appointed trainmaster of the North Carolina division with headquarters at Hamlet, N. C., on October 10, 1909 and transferred to the Alabama division with headquarters at Americus, Ga., in 1912. He was promoted to superintendent of the South Carolina division in November, 1912, and retained that position until 1918, when he was appointed terminal manager of all terminals at Jacksonville, Fla., under the Railroad Administration. On July 1, 1919, he resumed his duties as superintendent of the South Carolina division and held that position until his recent appointment on August 15.



H. W. Purvis

E. Bodamer, terminal superintendent of the Yazoo & Mississippi Valley, with headquarters at Memphis, Tenn., has been appointed trainmaster, with jurisdiction over the Memphis terminal territory of the Illinois Central, effective September 1, with the same headquarters.

F. E. Lewis, superintendent of the Northern division of the Chicago, Indianapolis & Louisville, with headquarters at La-Fayette, Ind., has been promoted to general superintendent, with the same headquarters, effective October 1, succeeding **W. H. Fogg**, who has been appointed superintendent of the Northern division.

T. W. Fatherson, engineer maintenance of way on the Chicago Great Western, with headquarters at Des Moines, Iowa, has been promoted to superintendent of the Western division, with headquarters at Clarion, Iowa, succeeding **S. V. Rowland,** who has been transferred to the Northern division, with headquarters at St. Paul, Minn. Mr. Rowland succeeds **C. W. Berry,** who has resigned. The appointments are effective October 1.

F. F. McCauley, superintendent of the West Iowa division of the Chicago & North Western, with headquarters at Boone, Iowa, has been appointed acting superintendent of the East Iowa division, with headquarters at Belle Plaine, Iowa, succeeding **F. O'Brien,** who has been granted a leave of absence, effective October 1. **S. A. Morrison,** superintendent of the Northern Iowa division, with headquarters at Eagle Grove, Iowa, has been transferred to succeed Mr. McCauley; **G. E. Bonner,** trainmaster, with headquarters at Eagle Grove, Iowa, has been appointed acting superintendent of the Northern Iowa division, with the same headquarters, succeeding Mr. Morrison; **G. E. Cole** succeeds Mr. Bonner.

Mechanical

A. H. Eager, mechanical superintendent of the Canadian National with headquarters at Winnipeg, Man., has been appointed general superintendent of rolling stock of the Canadian National and Grand Trunk Pacific, with the same headquarters, effective September 11. The office of mechanical superintendent has been abolished.

R. C. Hempstead, division master mechanic of the Chicago, Milwaukee & St. Paul, with headquarters at Madison, Wis., has been transferred to the Kansas City division, with headquarters at Ottumwa, Iowa, effective September 12, succeeding **C. W. Taylor,** who has been assigned to other duties. **W. C. Kenney** succeeds Mr. Hempstead.

Charles James, mechanical superintendent of the Hornell region of the Erie with headquarters at Hornell, N. Y., has been transferred to the Ohio region with headquarters at Youngstown, Ohio, succeeding A. G. Trumbull, resigned; **F. H. Murray,** shop superintendent at Susquehanna, Pa., has been appointed to succeed Mr. James and **J. Todd,** general foreman at Susquehanna, has been appointed Mr. Murray's successor, effective October 1.

C. E. Brooks, superintendent motive power of the Grand Trunk Pacific, with headquarters at Winnipeg, Man., has been appointed mechanical assistant of the locomotive department of the Canadian National and the Grand Trunk Pacific, with headquarters at Toronto, Ont., effective October 1. Mr. Brooks will assist S. J. Hungerford, vice-president, in mechanical matters and attend to other duties as assigned. **G. E. Smart,** general master car builder at Toronto, has been appointed mechanical assistant in the car department to assist Mr. Hungerford in mechanical matters also.

James Simpson, whose promotion to general master mechanic of the Northern Pacific lines, west of Paradise, Mont., with headquarters at Tacoma, Wash., was announced in the *Railway Age* of September 10 (page 467), was born at Shrewsbury, England, on September 26, 1859. He entered railroad service in 1879 as a machinist's apprentice in the shops of the Michigan Central at Jackson, Mich. From March, 1883, when he became a machinist at Brainerd, Minn., Mr. Simpson has been continuously in the service of the Northern Pacific. In 1885, he was transferred to Mandan, N. D., where he was employed as machinist until 1890, when he was promoted to night foreman, with headquarters at

Jamestown, N. D. Three years later he was appointed machine shop foreman at Mandan and he was later transferred to Fargo, N. D. In 1897 he was promoted to general foreman at Mandan and afterwards was transferred to Staples, Minn. In June, 1907, he was promoted to master mechanic with headquarters at Dilworth, Minn. He was transferred to Livingston, Mont., in 1912, and in October, 1918, was appointed master mechanic of the Idaho division, with headquarters at Spokane, Wash., the position he held at the time of his recent promotion.

Engineering, Maintenance of Way and Signaling

P. A. Pheney has been appointed general track supervisor of the Oregon Short Line, with headquarters at Pocatello, Idaho, effective September 20.

G. R. Smiley has been appointed chief engineer of construction of the Louisville & Nashville, with headquarters at Louisville, Ky., effective October 1, succeeding **H. C. Williams,** who has resigned.

C. B. Brown, chief engineer of the Canadian National and the Grand Trunk Pacific with headquarters at Moncton, N. B., has been appointed engineering assistant to S. J. Hungerford, vice-president, with headquarters at Toronto, Ont.

E. B. Cushing, engineer of maintenance of the Southern Pacific, with headquarters at Houston, Tex., has resigned from railroad service, effective September 15. Mr. Cushing was born on November 22, 1862, at Houston, Tex. He graduated from the Texas Military Academy and began railroad work in 1879 as chainman for Galveston, Harrisburg & San Antonio. Afterwards he served as land surveyor and assistant engineer. In 1882 he left that road, but returned in 1883 as division engineer. Later he was promoted to construction engineer and retained that position until 1887, when he went to the Gulf, Colorado & Santa Fe as office engineer and chief clerk of construction. He became assistant engineer roadways, buildings and bridges of that road in 1888, and in 1889 resident engineer of the Southern Pacific, the Galveston, Harrisburg & San Antonio, and the Texas & New Orleans, with headquarters at Houston. He was appointed engineer maintenance of way of the Southern Pacific lines in Texas and Louisiana in 1901. He became general superintendent Southern Pacific lines in Louisiana in 1904, and in March, 1908, was appointed chief engineer of construction of the Sunset-Central system in Texas and Louisiana. He was promoted to assistant general manager in 1916, and shortly before federal control was appointed to the position from which he has just resigned. When the United States declared war on Germany he was commissioned lieutenant colonel of engineers, and served with the American Expeditionary Forces as director general of transportation. After the armistice was signed, he went to Coblenz as colonel in charge of ship and railway transportation in Holland and Belgium, including the despatch of supplies on the Rhine. He was twice cited for conspicuous service and decorated by the French Legion of Honor.



E. B. Cushing

Purchasing and Stores

W. W. Morris, assistant to the general purchasing agent of the Pennsylvania, with headquarters at Philadelphia, Pa., has been appointed purchasing agent of the Northwestern region of that system, with headquarters at Chicago, effective October 1. Mr. Morris succeeds **I. B. Thomas,** deceased.

Traffic

Allen Gould has been appointed assistant passenger traffic manager of the Chicago & North Western, effective October 1.

L. H. Trimble, division freight and passenger agent on the El Paso & Southwestern, with headquarters at Tucson, Ariz., has been appointed general agent, with headquarters at Phoenix, Ariz.

D. Crombie, general superintendent of the Grand Trunk Pacific and the Canadian National with headquarters at Toronto, Ont., has been appointed transportation assistant to S. J. Hungerford, vice-president, effective October 1.

Special

William L. Barnes, special assistant to the advisory committee of the American Railroad Association, who has been appointed executive manager Car Service Division with headquarters at Washington, D. C., as noted in the *Railway Age* of September 17 (page 492) was born in Henderson County, Ill., on September 12, 1857. He began railroad work on March 23, 1873, as telegraph operator for the Chicago, Burlington & Quincy. Later he became agent and served until 1880 when he was appointed train despatcher and continued in that capacity until 1893 when he was promoted to trainmaster. From 1895 to 1902 he was chief train despatcher and then became superintendent of car service, retaining that position until 1906, when he was appointed superintendent of transportation. He became connected with the Car Service Commission in February, 1917; served as manager Refrigerator Department from June, 1918, until March 1, 1920; was appointed special assistant to the president of the American Railroad Association in May and special assistant to the Advisory Committee on July 1.



W. L. Barnes

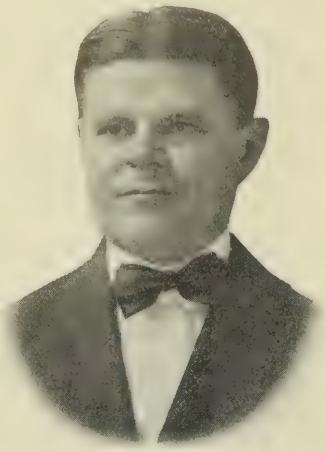
W. C. Kendall, who has been appointed manager of the railroad relations section of the Car Service Division, American Railroad Association, with office at Washington, D. C., as noted in the *Railway Age* of September 17 (page 492), was born May 22, 1877, at Pompanoosuc, Vt. He was graduated from St. Johnsbury Academy in 1895 and from Dartmouth College in 1899. For 10 years previous to 1899 he worked at various times as operator and relief agent for the Boston & Maine and he entered the service of that road permanently on August 16, 1899, as operator in the general telegraph office at Boston. He was later chief clerk in the office of the general superintendent of the western division, clerk in the office of the vice-president and general manager, secretary and chief clerk to the assistant general manager, chief clerk to the general superintend-



W. C. Kendall

ent, and on March 1, 1912, he was appointed superintendent of transportation. In 1917 he was appointed a member of the Commission on Car Service of the American Railway Association and in 1918, when this was taken over by the Railroad Administration, he was appointed manager of the Car Service Section. On March 1, 1920, he was appointed chairman of the Commission on Car Service and on September 1, in connection with its reorganization as the Car Service Division, he was appointed manager of the railroad relations section.

W. J. McGarry, who has been appointed manager of the field work section of the Car Service Division, American Railroad Association, with office at Washington D. C., as noted in the *Railway Age* of September 17 (page 492), began railway service with the car service department of the Delaware, Lackawanna & Western at Scranton, Pa., and held every position in that office up to general chief clerk. In November 1, 1916, he left the Lackawanna to become superintendent of car service of the Lehigh Valley at Bethlehem, Pa., and on December 15, 1917, he was promoted to superintendent of transportation. On July 15, 1918, he was appointed assistant manager of the Car Service Section of the Railroad Administration, at Washington, and on March 1, 1920, he was appointed a member of the Commission on Car Service. Effective on September 1 his title has been changed to manager of the field work section.



W. J. McGarry

A. G. Gutheim, who has been appointed manager of the public relations section of the Car Service Division, American Railroad Association, with office at Washington, D. C., as noted in the *Railway Age* of September 17 (page 492), was born in 1878 at Cambridge, Mass. He entered railway service with the Fitchburg Railroad, now a part of the Boston & Maine system, in 1896. He was connected with the accounting department of that road and of the Boston & Maine until 1906, when he resigned to become a special agent of the Bureau of Corporations of the United States Department of Commerce and Labor. He was then chief clerk in the general accounting office and had just been promoted to traveling auditor. He had studied law and been admitted to the Massachusetts bar and for a time had practiced law. On October 1, 1908, he went to the Interstate Commerce Commission as an examiner of accounts and later became special agent, assistant chief of the Division of Inquiry, attorney for the commission in several investigations, attorney-examiner, and in connection with work for the commission acted as special United States attorney in different districts on numerous occasions. In July, 1917, Mr. Gutheim was appointed a member of the Division of Car Service of the Interstate Commerce Commission and in 1918, after the organization of the Railroad Administration, was appointed assistant manager of its Car Service Section. On March 1, 1920, he was appointed a member of the Commission on Car Service of the American Railroad Association, which has just been changed to the Car Service Division.



A. G. Gutheim

D. E. Spangler, who has been appointed manager of the Open Top Car Section of the Car Service Division of the American Railroad Association, with headquarters at Washington, D. C., as noted in the *Railway Age* of September 17 (page 492), was born on May 31, 1863, at Circleville, Ohio. He graduated from the Circleville High School in 1879. He then began railroad work as warehouseman and loading clerk for the Scioto Valley, now part of the Norfolk & Western. Later he served the same road in various clerical capacities. In 1880 he became telegraph operator and in February, 1882, station agent. He was promoted to train despatcher in November, 1891, and in 1897 was appointed chief despatcher, which position he occupied for only a short time when he was promoted to trainmaster. In 1898 he became car service agent, which position he retained until 1903, when he was appointed superintendent of transportation. In 1917 he was promoted to general superintendent of transportation, with headquarters at Roanoke, Va. He served as transportation assistant to the regional director during part of federal control. He became supervisor of signals of the eastern region of the Pennsylvania, with headquarters at Williamsport, Pa., in 1919.



D. E. Spangler

L. M. Betts, who has been appointed manager of the closed car section of the Car Service Division, American Railroad Association, with office at Washington, D. C., as noted in the *Railway Age* of September 17 (page 492), entered railroad service in 1900 as stenographer to the chief engineer of the Chicago & Western Indiana and Belt Railway of Chicago. He later occupied the same position in the operating department, advancing to chief clerk to the general superintendent and general manager. In 1911 he was appointed car accountant of the Belt Railway. In February, 1918, he was appointed supervisor of car service of the North Western Region, United States Railroad Administration, later becoming supervisor of transportation in the same region. In March, 1920, he was appointed assistant director of the division of transportation of the American Petroleum Institute. In May, 1920, he was appointed a member of the Commission on Car Service, delegated to represent the railroads west and north of Chicago, and put in charge of closed car distribution. In connection with the recent reorganization of the Commission on Car Service his title has been changed to that of manager of the closed car section.



L. M. Betts

EDITORIAL

Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

In the general news department of this issue, there is chronicled another step in the rehabilitation of the nation's railroads. In this instance the rehabilitation is not one of the physical properties but of public opinion and of the things which a railroad should stand for. Soon after the return of the roads to private operation, C. H. Markham, president of the Illinois Central, saw that we were entering a new era in railroading and entered upon a policy of announced co-operation with patrons of that road. This new work has been developed through advertising, publicity and the solicitation of complaints until now, direct interviews are being obtained with the farmers along the line concerning Illinois Central service and the needs and views of its farmer patrons. The facts brought back by the interviewer and placed before the officers and employees of that line, cannot but reveal defects in service and give new incentive to officers and employees to aid in the rehabilitation of public opinion.

Rehabilitation of Public Opinion

An interesting example of newspaper enterprise is shown by a series of articles now running in the New York Tribune. The articles are to be twelve in number and will discuss the problems and experiences of the carriers since the return to private management; each will be signed by a railroad president or chairman. This is written on the day on which the first of the articles has appeared. It is signed by Julius Kruttschnitt, chairman of the executive committee of the Southern Pacific and if the other eleven get down to basic facts as well as he does, the Tribune's idea will "go over big." However, besides admitting the value of the plan of publishing these twelve articles, recognition must also be paid to the fact that the executives have an appreciative audience. The public is interested now as it never was before. It will no doubt read the statements of the executives with interest and with a readiness to recognize that the railways are working with all the force at their disposal to give American business the transportation service it needs.

The Railroads Today

The recent slump in commodity prices and the general reduction in business activities may lead some railway officers to the self-comforting assurance of a lessened burden of traffic on the railroads this winter. However, with the movement of coal and grain far in arrears, it is doubtful if any appreciable reduction in transportation demands will take place, but even if this does develop, the responsibility on the railroads will not be greatly affected. This is especially the case in the maintenance of way department. The increased supply of labor came so late that its influence has been scarcely felt after a summer working season of extreme labor shortage. As a consequence, the tracks on many roads are not yet in proper condition for the winter and it behooves all maintenance officers to do their utmost in the remaining weeks of good weather to perfect the preparations for cold weather. In view of the fact that labor is now more plentiful, the managements can greatly aid and encourage these eleventh hour activities by delaying contemplated reductions in the maintenance of way forces as long as open weather prevails.

There Are Still a Few Weeks Left

The railroads of the United States and Canada are making progress in increasing the efficiency of their operations, as is evidenced by the increase in their average daily movement of cars, the reduction of the number of cars under load awaiting movement, etc. These results, which are being attained in the face of an adverse bad-order car situation, a shattered morale among the employees, and an accumulation of traffic greater than ever before experienced, indicates the rapidity with which the roads are "coming back." At the same time, the railways are still far from being "out of the woods." There is still an acute shortage of cars in many localities, an extraordinarily heavy coal movement must be maintained if the needs of the country are to be met, and cold weather with its interruptions to service is only a short time off. The need for an intensive drive for a maximum car movement, therefore, prevails unabated. A leading operating officer recently summarized the problem in the one word "policing," or intensive supervision—supervision to see that *each* shipper loads *each* car promptly and to its capacity; that *no* car is delayed in movement necessarily and that the myriad operations incident to the movement of cars are performed expeditiously. The problem is nation-wide; it extends over entire systems, but fundamentally its solution depends upon the local officer watching the individual car.

Supervision and More Supervision

The Locomotive Inspection Act was framed primarily to prevent unsafe practices in the operation of locomotives. Its provisions are reasonable and should be observed by all railroad employees even if no penalties were prescribed for failure to live up to the rules. Nevertheless minor infractions of the law seem to be quite common and occasionally glaring violations are brought to notice. This was the case in the investigation of an accident that occurred last July which has been made the subject of a report by the chief inspector. While a Pacific type locomotive was drawing a passenger train, the crown sheet failed causing fatal injuries to both the engineer and fireman. The investigation showed that the locomotive, which had a straight top radial stay boiler of the usual type of construction, bore no evidence of overheating or strain, but in the section which failed 37 crown stays were found broken and the sheet pulled off 12 others so that the steam escaping from the holes entered the cab causing the deaths of the crew. In order to guard against broken staybolts, the Locomotive Inspection Act requires that they must be inspected monthly and their condition noted on the inspection report posted in the cab. The records showed that this locomotive was inspected 20 days before the accident occurred and the crown bolts found in good condition. However, the investigation following the explosion disclosed that the ends of the broken

Disregarding Locomotive Inspection Rules

bolts were covered with scale which the inspector regarded as conclusive proof that they were defective at the time the last monthly inspection was made. Further inquiry developed that the inspector, under oath, swore to work which he did not perform. Furthermore, the safety valves were reported to have been set though the locomotive had not been fired up on the date given. The rules require that two steam gages shall be used in setting safety valves but this provision also was disregarded. The chief inspector in commenting on the accident recommends that tell-tale holes be required in all crown stays and staybolts and also renews the recommendation that automatic fire doors be required. Regardless of the necessity for these additional safeguards, it is evident that due respect for the law and strict observance of the provisions of the act would have avoided this accident. When such disregard of the law is shown to have existed on one road, it might be well for the officers of other roads to assure themselves that similar practices do not exist in their territory.

The Ninth Fuel Commandment: Discrimination

Fuel economy commences with the selection of the fuel. Discrimination in the purchase of locomotive coal is essential to locomotive efficiency and may therefore be regarded as one of the ten fundamental fuel commandments. It would not be possible to discriminate in the purchase of locomotive fuel coal without a thorough knowledge of the available fuel supply, the characteristics of the seams from which the coal will be mined, the facilities for cleaning and for sizing the coal. Chemical analyses do not furnish a reliable index to the value of fuels for locomotive service; extensive locomotive tests under practical service conditions should invariably be conducted to establish the relative value of available fuels. The cost of such tests, even if conducted on the most elaborate scale, is a trifle compared to the amount that may be saved to the railroad through the judicious purchase of fuel. Purchasing agents would do well to respect relative fuel values as determined in this manner even where the tests indicate that the most efficient fuel cannot be purchased at the lowest price. It is one of the most obvious duties of a department responsible for the economical use of fuel to determine the relative value of every available fuel and assemble this data in such form that it will constitute a practical basis for future fuel purchases.

Queen Catherine's Policy

One of the greatest and the wisest of Europe's former rulers, Queen Catherine of Russia, attributed the successes of her reign in a large measure to a fixed policy regarding her advisers. Having once selected a man for an important post she never permitted the office to change hands. Her appointments were made with great discretion and, knowing that they would receive her unwavering support, her statesmen in turn were enabled to develop strong policies for the good of the nation without fear of interruption or thought of personal disfavor. The railroads are now in a better position to work for the future than they have ever been, they can adopt constructive policies looking toward the future with a greater assurance than they have ever felt as to the ultimate outcome. It is of more importance now than ever that they may rely upon a competent personnel for the execution of these plans for the future upbuilding of the property. What stronger assurance of this would be possible than the confidence of every young subordinate officer in the belief that his best interests lay in the future development of the road? What would destroy that confidence quicker than a shifty policy in respect to filling higher offices? What more destructive influence can you imagine than the feeling on the part of every young officer that his best interests lie elsewhere? The railroads have been granted the prospect of a brighter future than has been looked for in at least ten years. They should extend the same assurance of a future to every deserving employee.

A. R. E. A. Declines to Join Federation

The action of the Board of Direction of the American Railway Engineering Association in deciding by unanimous vote not to join the proposed federation of American engineering societies is of much interest to members of this organization and other civil engineers in railway service. Because of the long record for constructive, aggressive work which the Railway Engineering Association has built up for itself, its action in this matter will carry much weight with other organizations such as the American Society of Civil Engineers, whose members are now being polled on this question. The question of the formation of a federation or an affiliation of engineering societies has been prominently before engineers for several years. Engineering Council came into being as a result of this agitation but certain conditions inherent in its form of organization tended to prevent its functioning completely and there has been a demand for a more representative organization which will offer a stronger appeal to a larger number of engineering societies. In declining the invitation to join the proposed federation of engineering societies, the American Railway Engineering Association undoubtedly reflects the sentiment of the majority of civil engineers in railway service, who are in favor of co-operation among engineering societies on matters of common interest, but who are opposed to the particular form of federation which has been proposed. To view this action in any other light is without justification.

The Pyrometer in Locomotive Operation

A recent editorial in the *Railway Age* pointed out the need for improved forging and heat treating equipment in railway shops, strong emphasis being placed on the value of pyrometers in securing more efficient furnace operation, thus saving fuel and reducing the amount of spoiled work. The field for the use of pyrometers is by no means limited to railway shops, however. Tests have shown that these instruments when applied to superheater locomotives give the enginemen a knowledge of operating conditions that can be obtained in no other way. The increased tonnage rating of locomotives equipped with superheaters and the saving in coal are proportional to the number of degrees of superheat attained. Anyone of a dozen conditions may operate to decrease the effectiveness of superheaters and some means must be provided to place a check upon their operation. Simple, rugged pyrometers, designed to withstand severe vibration, have given satisfactory results under actual service tests and afford a constant check on locomotive performance. The thermo-couple usually is inserted in the steam pipe above the valve chamber, the pyrometer indicator being placed where it can best be seen by the engineman. A low reading of the pyrometer indicates at once that something is wrong. The flues may be plugged up; there may be a steam or air leak in the front end; the damper may remain closed; or, the water level may be carried too high. In addition, it is claimed that a locomotive operated on a small proportion of its tonnage rating will show a proportionately low pyrometer reading due to decreased draft. While not indicating just which of the defects exists, the pyrometer is an effective check on the efficiency of locomotive operation. That this fact is becoming more fully appreciated by railroad officers is illustrated by the recent purchase of 20 superheater locomotives to be equipped with pyrometers.

Among the most interesting features of the financial news of the day are the rumors that are being originated concerning proposals for consolidations of various railroad lines. There have been so many of these that few roads have been left out of consideration. Several observers who have noticed this extensive crop of rumors have drawn attention to the provisions of the Transportation Act relative to this matter. Section 5 of the Interstate Commerce Act (as amended by the Transportation Act) begins: "The commission shall as soon as practicable prepare and adopt a plan for the consolidation of the railway properties of the continental United States into a limited number of systems." With this provision of the law in mind it would hardly seem likely that any extensive plans for consolidations would be announced, at least until the commission's plan is made public. Another interesting side light on the whole matter is contained in the report of the committee on railroad securities of the Investment Bankers Association which held its meeting in Boston last week. The report said: "The logic of the situation unmistakably points towards consolidations where economies can be effected and the satisfactory handling of traffic promoted. While in the judgment of the committee the law has wisely made such consolidations permissive rather than compulsory, sound business judgment will perceive the business opportunities and can be relied on to bring about this logical solution of many of the problems involved." It is not to be denied that some of the consolidations covered by the rumors seem to follow out the idea represented in this statement. At any rate, the matter of consolidations is of great moment at the present time and indications of progress to that end will be watched for with interest.

Proposed Railroad Consolidations

Railways Should Be Enabled to Pay Their Bills

THE CREDIT FACILITIES of the entire country have constantly been under a severe strain for months. One of the by no means unimportant reasons for this has been that many railway companies have fallen far behind in the payment of their bills to concerns from which they have bought equipment, materials and fuel. The failure of the railways to pay so large a part of their bills has been largely due to conditions arising from government control. The government owes most of them large amounts of money. The companies being rendered short of money by this situation have resorted principally to two devices. One has been to borrow large amounts from the banks and the other has been to stand off indefinitely the concerns from which they have bought equipment, materials and fuel. The concerns to which the railways owe money on current accounts have been obliged to resort to the banks and borrow large sums of money. Many railway equipment, supply and fuel concerns in consequence of this situation have practically exhausted their credit.

All this is bad business. It ties up large amounts of funds which ought to be set free and put to work. The railway companies are not principally responsible for the situation, although we suspect that some of them do not pay their bills as promptly as they could. At any rate, co-operative efforts should be begun at once by government officials, bankers and railway managers to remedy the situation. The treasury department's course in withholding from the companies loans which the Interstate Commerce Commission has authorized under the provisions of the Transportation Act is aggravating and threatens to still more seriously aggravate conditions. The plain intent of the act was to provide funds to tide the railway companies over the period of transition from government to private control and the failure thus far of the treasury department to proceed in accordance with the spirit of the act calls for condemnation. Settlements of accounts between the Railroad Administration and the railroad companies should be expedited as much as practicable, even though this requires compromises in which both sides will have to forego some of their demands. The railway companies should pay just as much as they can of what they owe to the concerns from which they have made purchases and pay it as promptly as possible. With the nation's supply of working capital as short as it is now, the protracted withholding of hundreds of millions of dollars from concerns to which it rightfully belongs and which need it to enable them to carry on their normal business operations has an adverse influence upon the prosperity of the entire country.

Is One Million Carloads Weekly the Limit?

WE RAISE AGAIN this week a question we raised last week in an editorial entitled "The Significance of the Recent Carloading Statistics." This question is whether, with existing facilities, 1,000,000 cars of freight is practically the maximum number the railways can load and move in a week.

The Class I railways in the week ended September 25 set a new record for carloadings in the year 1920, and when more complete data is available it may be shown that they broke all past records. They loaded 994,687 cars as compared with 987,041 in the same week of 1919, and the record made in the corresponding week of 1919 was one of the highest ever attained in any previous year. It will be noted, however, that the carloadings reported again failed to reach the 1,000,000 mark, although the traffic offered continued to be heavy and the railway managements were putting forth great efforts to increase efficiency.

It seems certain from the data now available that when complete reports are compiled it will be found that in September and October, as well as in August, the railways under private operation have loaded and moved more freight than ever before in any equal period under either private or government operation. Theoretical considerations certainly suggest that it ought to be possible with the existing facilities to increase still more the amount of business handled. On the other hand, facts are stubborn things, and the fact is that, while since the first week in June these roads have increased the number of cars loaded from 768,974 to 994,687, the increase in the number of carloads moved within the last ten weeks is comparatively small. The number moved in the first week of August was 942,150. In the last week of August it was 985,064. That was the highest record reached until the week ended September 25, and in the latter week the record made, although the best of the year, was less than 10,000 cars better than that made in the last week of August.

It is to be hoped that while business continues heavy, and weather conditions are still favorable, railway officers from the highest to the lowest will make still greater efforts to increase the amount of traffic moved. The question of what is the maximum business it is practicable to handle with existing facilities is one of great importance. The settlement of it will give us a good measure of what increases in facilities are required.

There are those, on the one hand, who have contended that efficiency of operation could be so increased that with existing facilities the railways could handle a much larger business. There are those, on the other hand, who have taken the position that it is practically impossible to handle much more business with existing facilities, and that future substantial increases in the amount of traffic handled must be gained, if gained at all, by enlargement of facilities. Theories as to what can be done, or ought to be done, are all right in their place, but when facts persistently refuse to fit theories,

logic requires the conclusion to be reached that there is something wrong with the theories.

In the long run there is no appeal from facts, and it is still a fact that with all the efforts that are being made the Class I roads do not succeed in moving more than around 1,000,000 loaded cars per week.

Increasing Confidence in Railroad Securities

THE TENDENCY of the prices of railroad securities during the year 1920 affords material for an interesting study. The joint committee of Congress reported the revised Esch-Cummins bill to both houses on February 17. It provided for the return of the railways to private operation, and also for a plan of regulating rates and a plan of settling labor controversies which many believed would, if adopted, go far toward solving the problems of securing to the railways adequate net returns and of preventing serious labor disturbances. In consequence, there followed at once small increases in the prices of railway securities.

Developments indicated, however, that investors were "from Missouri" and after all the years of unwise and unfair regulation had to be "shown" that there was really going to be a change made in the government's policy of dealing with the railways. President Wilson signed the Transportation Act on February 27, 1920. The changes in the market prices of railway securities showed that even the Transportation Act becoming a law did not have much effect upon them. The return of the railways to private operation was followed by several adverse influences, including especially the "outlaw" switchmen's strike. In consequence, right up to the time when the Interstate Commerce Commission rendered its decision in the great rate advance case the prices of railway securities remained almost where they were when the Esch-Cummins bill was favorably reported by the joint committee to Congress.

Since the rate advance decision was rendered on July 31 railway securities have lost their sluggishness and have pretty steadily advanced in price. There also has been a large increase in the number of them bought and sold on the New York Stock Exchange. Table I shows the changes which have taken place in the prices of certain of the principal bond issues of twelve railway systems located in different parts of the country. It will be noted that for some reason the prices of most of these bonds do not show very large increases since the Transportation Act was reported to Congress. Almost all of them, however, show increases and some of them substantial increases since the rate advance decision of the Interstate Commerce Commission was rendered.

Table II gives the prices at which the stocks of the same railways sold at the high points in 1916, and also the prices at which they have sold at certain times during the present year. It will be noted that the prices of most of these stocks advanced slightly within the ten days between the time when the Transportation Act was reported to Congress and the date on which it was signed by President Wilson. Most of them subsequently declined, with the result that they were lower on the day before the Interstate Commerce Commission decided the rate advance case than they were when the Transportation Act was signed.

Since the rate advance decision was rendered the prices of all of them have substantially increased. The lowest prices paid for them on the day before the rate decision was rendered averaged $67.00, while in the week ending October 9 it averaged $78.00, an increase of $11.00 a share. Some of the stocks showed quite notable advances. Atlantic Coast Line increased from $85.00 to $99.25; Baltimore & Ohio from $31.125 to $46.50, Norfolk & Western from $88.25 to $101.00, and Northern Pacific from $70.625 to $89.00. The number of railroad shares traded in in the week ending October 2, 1920, was 1,683,700, while in the week ending October 9 it was 1,884,300.

The average high mark reached in 1916 by the stocks of the twelve trunk line railroads selected for comparison was $104.00. The average price of the same stocks in the week ending October 9, 1920, was only $78.00. The difference between the prices of 1916 and 1920 is large, and with the average of the stocks of these companies only $78.00, and with only three of them selling at practically par or better, it is evident that these companies could not at present do much financing by the sale of stocks. On the other hand, the increase in prices which has occurred since the end of July is by no means discouraging, especially in view of the conditions under which it took place. Interest rates have been so high for a long time as to hinder investments in bonds bearing low rates of interest, and in stocks. The present high income tax rates also tend to interfere with large investments in tax bearing securities. It is a notable fact, however, that while formerly industrial stocks constantly were advancing while railroad stocks were declining, recently the tendencies have been reversed. The railroad stocks have been advancing while industrial stocks have been declining.

TABLE I

Bonds	Low, Feb. 17, 1920, day before R.R. bill was reported	Low, July 30, 1920, day before rate increase was announced	Close, week ending Sept. 24
A. T. & S. F. Gen. 4's	76	73¼	76⅝
Atlantic Coast Line Con. 4's, 1952	75	72¼	76
B. & O. 1st 4's, 1948	63	59⅞	69
Illinois Central Ref. 4's, 1951	82	81⅛	81
C. M. & St. P. Gen. 4½'s, 1989	74	68¾	74
C. R. I. & P. Ref. 4's, 1934	63¾	64⅛	68½
N. Y. C. 4's, 1931	83	77½	83
Nor. & West. Con. 4's, 1996	75½	71⅜	76½
Nor. Pacific Prior Lien 4's, 1997	75	73¼	76½
So. Pac. Ref. 4's, 1949	69½	66	70
Southern Ry. Con. 5's	83⅝	80	86½
Union Pacific 1st 4's, 1940	81⅝	81	80½

On the whole, the figures show that the rate advance decision of the Interstate Commerce Commission has had a strong tendency to increase the confidence of investors in railway securities. If the net returns earned by the companies on the new rates prove to be as large as the Commission estimated when it rendered its decision, the advance in the prices of railway securities should be continued. While under conditions of great general business activity and prosperity most railways cannot hope to earn and pay as large returns as the more successful industrial companies, the rate-making provisions of the Transportation Act should have the effect of making the return which the railways will earn much less uncertain than the returns of industrial concerns. Certainty of return is quite as attractive to many investors as the possibility of large returns when this possibility is obtained at the risk of receiving only small returns when business is bad.

TABLE II

Railroad stocks	High, 1916	Low, Feb. 17, 1920, day before R. R. bill was reported	Low, Feb. 27, 1920, day before President signed R. R. bill	Low, July 30, 1920, day before rate increase was announced	Close, week ending Oct. 9, 1920
A. T. & S. F.	108⅞	78¼	81½	79½	88
Atlantic Coast Line	126	86¾	87	85	99¼
B. & O.	88½	29½	33¾	31⅛	46½
Illinois Central	109⅞	84	85½	83	95
C. M. & St. P.	102½	31½	36¾	32½	40⅝
C. R. I. & P.	45¾	25¾	32¾	34⅛	38
N. Y. C.	114¼	68	69½	67½	79⅛
Nor. & West.	147⅛	91	95	88¼	101
Nor. Pacific	118⅞	71½	74½	70⅝	89
So. Pacific	104⅛	91½	92½	89½	99
Southern Ry.	36¾	20	23⅜	27	31⅛
Union Pacific	129¾	113¼	116⅛	114½	126½
Average	104	66	69	67	78

Letters to the Editor

The Qualifications of a Terminal Superintendent

MINNEAPOLIS, Minn.

TO THE EDITOR:

In reading the editorials in recent issues of the *Railway Age* in which you have pointed out those measures which should be adopted by the railroads to increase the efficiency of their operation, I think that you have failed to place sufficient emphasis on one of the most important features of railway work—the efficient operation of terminals. Without their proper functioning, the entire railway machine is thrown out of gear, as was demonstrated very forcibly on some of the roads during federal control.

Too many terminals are in the charge of men of the old school, while others are in charge of young engineers or chief clerks without experience in this work. The operation of a terminal requires more than executive ability. The fact that a man has made a good division engineer or a good agent will not fit him for a position as terminal superintendent or terminal trainmaster. Rather I think that the roads should pick out their strongest engine foremen, men, with good education, transfer them into the yard office as clerks or assistant chief clerks for a time and then make yardmasters out of them. On the other hand, a good, live, chief yard clerk can be put out in the yard as a switchman or an engine foreman for a time, and later developed into a high grade assistant yardmaster and fit himself for promotion through this channel.

The trouble with the average yardmaster in charge of a large terminal today is that he is working along the lines of the least resistance, doing things in the same way in which he did them 15 years ago and seeming to be satisfied to let things drift along, finding it easier to make excuses than to install a system which will move cars properly and efficiently. During federal control I was connected with the central organization of the Railroad Administration at Washington, in which capacity I traveled over the country checking terminals and terminal work. This afforded me an opportunity to see how the different roads were operating their terminals and to study their organizations. In the majority of the yards I found that the men in charge had been there for years and that, with few exceptions, they were handling the work about the same way in which it had been handled for the past 10 or 20 years. Of course in many places they were handicapped by a lack of proper facilities, but at many points I found that they were not taking advantage of the facilities which they had.

Many yards are in bad shape on account of an utter lack of classification. Without proper classification there is sure to be much unnecessary rehandling and reswitching of cars. The rehandling of these cars or at least a large part of it can, in my opinion, be eliminated if the yardmaster will devote a little time to providing a proper classification. As a traveling yardmaster on one of the largest trunk lines in the New York territory, I was called upon to straighten out some badly congested terminals, and in most cases I found that the cause of a yard being blocked was due to it being out of classification.

There also seems to be a lack of proper organization of the clerical forces, some of the old-time yardmasters having little idea about the building up of an office organization, and paying little attention to this phase of their work. Few yardmasters understand that it is just as important to move an empty car from an industry promptly and start it on its way to be loaded again as it is to place the load in the first place to be unloaded. Cars standing still, either loaded or empty, are not earning money. There is nothing on a railroad that will earn more money for it than the speeding up of the movement of cars through terminals.

Not long ago I was general yardmaster in the unified terminals at Seattle, at a time when the superintendent wanted to make a special effort to see how much he could speed up the terminal switching. We made a check of the manner in which several days' business was handled before the beginning of the drive and then checked the cars handled during the drive, as a result of which we found that without any additional power or expense we had reduced the time required per car from the time of its arrival until its departure, an average of 30 hours. This was brought about by simply getting after every one to move cars promptly. I have always found it advisable to employ an extra yardmaster who can be assigned to the industrial territory to call on the patrons of the line to see how they are being served and at the same time to hasten the release of cars.

In my travels around the country I have come to the conclusion that much can be gained by the railways if they will give more thought to the organization of their terminals, instead of resorting to strong-arm methods every time they are confronted with congestion.

F. H. GARNER.

Solution of the Freight House Problem

CLEVELAND, Ohio.

TO THE EDITOR:

Investigation of many large terminal freight houses will show far more inbound merchandise waiting to be unloaded than can be handled with present methods. The result is temporary embargoes which reflect on the outbound operation at other points. The same is also true of the outbound platforms.

This condition has been attributed to three causes: lack of equipment, inefficiency of labor, and lack of co-operation on the part of shippers or receivers in moving freight promptly on its arrival. However the real reason for congestion in most of the freight houses is the antiquated methods used to handle freight. There is also a general tendency on the part of the officers to ease up in their old time efforts to instil loyalty in their men, and to secure efficient work. There is only one solution to the freight house problem—the installation of methods and appliances that will develop more intense effort, and increase production per man.

The following indicates what can be accomplished along these lines. During 1917 the writer was assistant depot master at one of the large freight houses on a middle western road. This house then handled, and has continued to handle up to the present time, an average of 100 tons per day per gang of one checker, one truck loader, and two hand truckers. In the latter part of 1917 the writer was called to a large terminal on the same road to assist in making an analysis of the operating conditions of a double deck freight house. The records showed that during October, 1917, eighty men handled a total of 6,798 revenue tons of L. C. L. freight through the house, with hand trucks, at a cost of 99.6 cents per ton including supervision, approximately 85.3 tons per month per man. After studying the problem, a plan was suggested whereby 48 men would handle 6,798 tons with hand trucks, electric tractors and four-wheel platform trucks at a cost of 72 cents per ton including supervision. The proposed method indicated a saving of 27.6 cents per ton, and an increased output of 56 tons per man per month.

The plans were approved, equipment purchased and installation made in December, 1917.

Analysis of operation in January, 1918, showed that 42.3 men handled 6,106 revenue tons at a cost of 72.8 cents per ton—0.8 cent above the estimated cost. The output figure developed was 144.3 tons per month per man, or three tons above the estimate, reducing the man power approximately 47 per cent and the cost per ton 27 per cent and increasing the production per man 69 per cent. Assuredly this was prior to government control and General Order 27, Supplement 7, and various addendas. However, government control did not alter the situation. A check on the operation of the same freight house was again made, covering 1919 when an analysis of monthly operation showed 71.8 men handling 13,578 revenue tons at a cost of 74.2 cents per ton. This included all increases in wages granted in various awards up to January 1, 1920. The output per man per month was 189 tons. Comparing this with the 1917 operation, we find that with 8 less men, 6,780 revenue tons more per month were handled at a decrease in cost of 25.4 cents per ton, or 189 tons per month per man in 1919 against 85.3 tons per month per man in 1917.

On January 1, 1920, additional changes were necessary, due to the "national agreement terms." To determine the effect of these changes, a study was made covering the month of March, 1920, two years and four months after the first installation of efficient methods for handling freight. This study revealed 67.5 men handling 17,025 revenue tons at a cost of 79.9 cents per ton including supervision, and an output of 255 tons per man per month. With 12.2 men less in 1920 than in 1917, almost three times as many revenue tons were handled, the cost still remaining 20 cents per ton less than in 1917. The output per man per month in 1920 was 252 tons, as against 85.3 tons in 1917.

This is a fair example of what can be accomplished by more intense methods of increasing the output per man. They can be duplicated in the majority of terminal freight houses of the country. The studies were made by the writer, and after the installation of equipment the operation was turned over to the local operating force, to whom the entire credit is due for the remarkable showing during the past two years.

W. G. Bridgeman,
Terminal Engineer, The Lakewood Engineering Company.

Icicles of Inactive Material

To the Editor:

"Frozen Material Stocks," your editorial in the issue of August 27, appeals to the officers directly in charge of the handling and accounting of material stocks. Practically every one so concerned will welcome the day when the necessity of accurately accounting for all unapplied material is appreciated. But the writer heartily agrees with the general storekeeper in his communication, "The Cart Before The Horse," in the *Railway Age* of September 17, and believes that no comparison can be made until such a time as the proper facilities are furnished those handling stores. On certain roads the general storekeeper and staff are without adequate buildings, help and equipment.

It takes as long to develop material men as it does skilled mechanics, and in a great many cases they are paid less than even mechanic helpers. The horse in this case seems to be the storage facilities and material men who must ultimately be depended on to make an accurate record of unapplied material possible. Is there not some way to arouse interest in the material assets to the extent that means would be provided to properly protect this investment?

Another obstacle in arriving at any comparison of material stocks between roads, is the fact that some companies have adhered more closely than others to standard equipment, and the writer personally knows of cases where the same class of car or locomotive requires numerous designs of the same detail. Further, changes of design are of frequent occurrence and the material in question would barely be received before it is obsolete. Material stocks cannot be transferred or built up anywhere near as quickly as designs can be changed by mechanical engineers. Frequent change of design provides an ideal climatic condition for icicles of inactive material.

Division Storekeeper.

Suggestions for the Railroad Section of the A. S. M. E.

Beech Grove, Ind.

To the Editor:

The letter of Prof. A. J. Wood, published in your September 17 issue, commenting on the new Railroad Section of the A. S. M. E. and the suggestion that ten subjects be submitted for discussion, prompts the writer to suggest the following subjects.

In their selection it is recognized that they are in some respects already under investigation by existing committees of the various branches of the American Railroad Association, but since the personnel of the Railroad Section of the A. S. M. E. will differ from the personnel of the A. R. A. committees and sections, in that the Railroad Section of the A. S. M. E. will be made up of representatives of the supply and manufacturing companies, various specialists in the field of consulting engineering, members of the engineering faculty of various universities, and those actively engaged in railroad work, it is reasonable to assume that even though discussions and investigations may parallel one another, on account of the more general viewpoint which members of the Railroad Section of the A. S. M. E. may have as compared with the A. R. A., nothing can be lost in such parallel discussions or investigations.

No attempt has been made to arrange the following in the order of their importance:

1. Development of the standard service test code for the testing of various locomotive and car specialties.
2. Investigation and possible revision of existing ratios of locomotive proportions and designs.
3. Development of a standard analytical method of steel freight car construction, in proportioning and connecting component parts.
4. Investigation of possibilities of automatically controlling the cut-off of locomotives and the probable utility of such devices.
5. The investigation and development of improved methods and practices in journal lubrication, particularly on freight cars.
6. Discussion of the design and development of shop equipment for the repairs and maintenance of steel freight cars.
7. The relative merits of compressed air and electric power as a means for the operation of shop tools, both as to economy of generation and distribution.
8. Discussion of the general subject of electrolysis or pitting of locomotive boiler tubes.
9. The relative merits of the specific applications of the various methods of freight train loading or tonnage rating systems.
10. The mechanical aspects of freight handling and crating, both from the standpoint of its quick and economical handling in freight houses, as well as improved methods in crating and stowing in cars.

E. S. Pearce,
Mechanical Engineer.

Some Impressions of South American Railways

S. T. Henry, Vice-President of American International Corporation, Writes of His Trip on the Transandine

S. T. Henry, vice-president of the American International Corporation, New York City, now traveling in South America has written a very interesting memorandum regarding his trip over the Andes mountains from Valparaiso, Chile, to Mendoza, Argentina, on the Transandine Railway, from which the following is abstracted because of its interest to American railway men:

The Andes mountains rise to heights of from 12,000 to 19,000 ft. in the vicinity where the Transandine crosses them. The Transandine Railway saves about 20 days between Buenos Aires and Valparaiso as compared with the time required to go around through the Straits of Magellan by steamer. It also actually enables passengers from Buenos



The Top of the Andes Mountains

Aires and vicinity to reach New York as quickly by steamer from Valparaiso up the West coast of South America and through the Panama Canal as by direct steamer up the east coast. Travelers from the United States to South America usually go down one coast and return via the other, using the Transandine. Travelers from the east coast of South America destined for Pacific ports make a great saving in crossing the Andes by this route. People on the west coast, south of Antofagasta, Chile, usually go to Europe from the east coast ports, which they reach over the Transandine. These various currents of international travel bring together on this line a great mixture of nationalities, personalities and types. In describing his trip, Mr. Henry said:

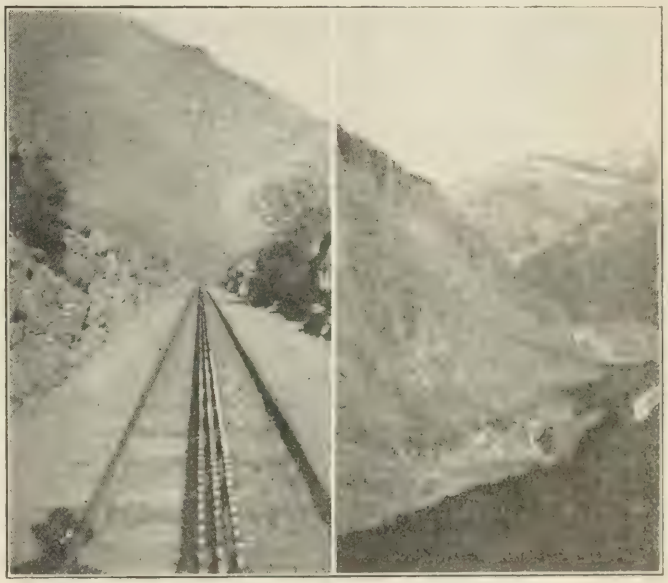
We were aroused at 5:30 in the dark of an early winter morning in the mountains, with no heat in the hotel. None of us took a bath that morning, not even the English. After a breakfast of rolls and coffee—I had provided apples in advance—we boarded the train at 6:45.

The train was made up of a locomotive, a baggage car and five passenger cars. The gage of the track is a meter, or about 40 in. The cars were surprisingly clean, comfortable and easy riding. Each passenger was assigned to a seat. The seats are arranged the same as sections in a Pullman car, so the four of us had a section to ourselves. It was well that we did, for every passenger seemed to have all the hand baggage that could possibly be mustered. And thereby hangs a tale:

Each passenger is allowed only 50 kilos or about 110 lbs. of baggage. The excess is charged for at the rate of about 15 cents (U. S.) gold a pound. There is a limit on hand baggage, but it never seems to be enforced. The passengers usually are on long trips requiring clothing for all seasons. Many of them are going for permanent residence elsewhere. This combination produces heaps and heaps of hand baggage. Every available space in the cars is stacked high. And so it is on all South American trains.

About 15 minutes before leaving-time, a gong was sounded by some railroad employee. A little later a large bell was rung. After another few minutes, the conductor walked up and down the platform loudly clapping his hands. A couple of minutes of this convinced him it was safe to blow the police whistle he carried. Finally, the engineer blew the locomotive whistle and we were off. More ceremony than launching a 10,000 ton ship. But so it is in Chile, and in the rest of South America as well, to a greater or less extent. Starting a train is a real event.

For about an hour we followed a mountain stream, the narrow valley gradually shut in more and more. The mountains became closer and higher on all sides. The track was higher and higher above the water. The big snow-capped tops were now where we could make out the depth of the perpetual snow on them. Gradually we went right into the heart of the mountains, until suddenly they were ahead of



On the Left, the Triple Rack on the Seven Per Cent Grade. On the Right, a View on the Way Up the Seven Per Cent Grade. The Track at the Point from Which the Picture Was Made Is About Half a Mile Almost Directly Over the Track That Shows Below

us, behind us and on both sides, with only a narrow streak of sky above us.

From this point on we saw such scenery as is visible from none of the railroads we had ever traveled in the United States or Canada. The trip over the northern routes in the States is wonderful. The Colorado routes are splendid. The Canadian Pacific trip cannot be excelled. Nor does the scenery on the Transandine lead one to depreciate any of these. It is totally different.

The difference lies chiefly in that the railroad is in the big mountains. It does not pass by great wonders like Mount Stephen on the Canadian Pacific nor over them in the

way that the Moffat road does, but right in among tremendous towering ranges that come together with only narrow V-shaped gorges between.

Seven Per Cent Grades

The railroad grade is developed at from 5 to 7 per cent up the side of these V-shaped gorges. When well toward the head of the gorge the line crosses and returns on the other side. Grades of 3 per cent on the Rio Grande in Colorado seem mighty steep. When the train started up a long 7 per cent stretch on the side of the gorge, one wondered what would happen if a coupling broke or the engine blew a cylinderhead. The couplings seem to preclude any possibility of the train breaking in two. Even if they should let go, the cars have two tremendous chains between them. The whole train also has about twice the normal amount of air-brake capacity, and each car is fitted with special automatic hand brakes.

After one has convinced himself that the cars are not likely to break loose, he begins to wonder how in the world the locomotive lifts the train up a grade of 7 feet in every 100 ft. Most of our states now have maximum grades of 6 per cent in their highways, for example.

At the first stop we had a look at the locomotive. At every stop after that we had another look, and at the top, where we stopped for some time, we went over it thoroughly. It was some locomotive! The main frame carries both the boiler and the tender. Water tanks are placed on both sides of the boiler and in the tender, making a saddle tank arrangement about like the Lackawanna uses. There are eight drivers under the forward end and a separate set of six drivers under the rear end. Each set of drivers has a separate pair of cylinders and is driven by side rods.

In connection with each set of drive rods is a set of three gears, which mesh in three toothed racks between the rails. These gears thus enable a locomotive to crawl up the steep grades without relying on rail friction traction. An ordinary



The Beginning of the Steep Climb. To the Left and Above the Left-Hand Chimney on the House May Be Seen the Cut in Which the Line Goes Along That Side of the Mountain

side-rod locomotive, would, in fact, be helpless on such grades.

From the beginning of the heavy grades the insecure formations on the surface of the steep slopes of the mountain sides was very noticeable. In many places the surface appeared as the slopes of great newly-made earth dumps which had not settled. In other places there were great, loose, gravelly beds with surface slopes apparently far too steep to be stable.

The Bad Winters

The railroad grade had to be cut through these unstable formations. Since the snowfall is heavy every winter, and during some winters is of tremendous depths, the line is subjected to serious slides at many points. The track also is blocked by snow for from a few weeks to four or five months each year. In the winter of 1919 the line was closed by slides and drifts from May to December. When we crossed on May 15, 1920, there had been practically no snow and no slides. The appearances were that the line would probably not be blocked before late June.

Casual observation leads to the conclusion that comparatively little could be done to stop the slides which cause so much damage to the line. Footings for concrete or masonry walls could not be found where most of these slides occur.



The Locomotive with Two Engines, Which Pulls the Train Over the Steep Grades on the West Side of the Mountains. Each Set of Drivers Carries a Set of Gears Which Mesh in a Triple Rack

Even if walls were built, they would be pushed out like sand before a torrent of water. Blockades due to snow could certainly be reduced by building more snow sheds. The length of sheds already built is negligible. Timber and lumber are so expensive in the vicinity that the cost of sheds would apparently not be justified by the traffic over the line. Without studying the topography closely it appears that a long tunnel would eliminate most of the slides and much of the trouble from snow. But the earnings of the line could hardly be expected to justify the great investment necessary to build such a tunnel. Travelers and shippers will thus apparently have to use the line when it is open.

When the line is closed, many travelers cross the mountains on mule-back. A broad trail on fairly good grade generally paralles the railroad. The time taken by journey depends on conditions. When one goes through in a train in fair weather he is greatly tempted to try the mule-back trip in order to have a real look at some wonderful scenery. Men who have been over when the snow is deep relate some desperate experiences.

At the Summit

Near the summit the train stopped a few minutes at a lake probably half a mile long by a quarter of a mile wide. This body of water, the Lake of the Incas, is at an elevation of nearly 10,000 ft. It is in among a lot of great towering sharp rock peaks that were all more or less covered with snow when we were there. With the sun shining on the whole landscape the lake looked like an immense vivid emerald rimmed around with a gigantic setting of frosted rock points.

At the summit we came to the boundary between Chile and the Argentine, and to the Argentine customs police. For the first time since we left home our passports and credentials were examined. It was no perfunctory examination either. We found that the Argentine officials really do a job of the enforcement of their unusually rigid laws regarding immigration and entrance into their country.

After leaving the summit on the descent into the Argentine, the character of the country changes rapidly. The eastern slope of the Andes is much less abrupt and rugged than the western slope. The railroad grade ranges from 1 per cent to 2.5 per cent and the curvature is neither unusually sharp nor excessive. On the trip down the scenery is, in fact, not greatly different from much of what one sees in some of the more mountainous parts of New Mexico, Arizona and the western part of Colorado. We arrived at the Argentine end of the line at Mendoza at 8 p. m., 13 hours after we started.

In Argentina

Upon arrival in Buenos Aires, Mr. Henry expressed a few of his impressions of Argentine railways in a letter to the editor of the *Railway Age,* in which he said in part:

"The Argentine Railways make a wonderfully favorable impression. As you are aware, they are practically all owned by English capital. British standards of construction, maintenance, rolling stock and operation are universal. There are quite a lot of American cars and a few American locomotives, however. These are reported to be giving uniformly good service, in spite of the general prejudice against anything American on the part of the operating officials.



A Stop Near the Summit of the Mountains

The future market for American rolling stock in the Argentine seems certain to be limited almost entirely to the few State railroads.

"Due to restrictions for the last five and a half years on the use of English capital outside of the British Empire, track maintenance and repairs to rolling stock have been only enough to keep the lines in service. At present the track work is in fairly good shape. Rolling stock, and especially freight cars, are generally in bad condition. No new rolling stock has been provided for several years, and practically no new main-line track has been built. As a result the roads have not kept pace with the rapid development of the country. In fact, lack of transportation is seriously hampering many well developed agricultural sections and various industries.

"This all sounds familiar at home. Down here the people have become quite exercised over the situation. 'British rail monopoly' and 'Foreign Restriction of National Development' or expressions to that effect frequently are heard. The British do however, deserve great credit from the Argentine for what they have done in this country. Not only have they pioneered in the railways, but they have shown great enterprise and ability in many other lines. In spite of all this, there appears to be a growing local sentiment in favor of capital from other nations in these great works which so seriously affect the nation's future.

"While American capitalists at present scarcely could even consider investments in railways or other industries in this country, on account of the demand for money at home, conditions may change sooner than seems possible now. Meanwhile private wealth in this country is growing very rapidly. Before many years much capital for large projects can be raised locally."

New Embargo Regulations

WASHINGTON, D. C.

THE CAR SERVICE DIVISION of the American Railway Association has issued Circular CSD-87 (Cancelling Circular CCS-5 of March 5, 1920) prescribing new regulations which will govern the handling of embargoes, effective October 15 as follows:

Circular CSD-87

1. GENERAL INSTRUCTIONS

A. The Car Service Division will supervise the distribution of embargo notices between railroads. For this purpose the United States and Canada have been divided into 10 embargo districts, and each railroad has been assigned to one district. Each district is under the supervision of a district chairman, who will be responsible to the Car Service Division for the proper handling and prompt transmission of embargo information.

B. Each railroad will designate an officer who will issue and receive embargoes. His name, title and address must be filed with the district chairman and the Car Service Division and published in the Official Railway Equipment Register.

C. Each railroad may issue, as necessary, embargoes applying to traffic originating on or routed to or via its line.

D. The designated embargo officer should carefully analyze conditions before embargoes are placed in order to avoid issuance and distribution throughout the country of embargoes of a trivial nature; or covering purely local conditions which can and should be corrected without the use of the embargo; or the issuance of embargoes to relieve a consignee or to relieve the railroad of responsibility for the correction of abnormal conditions.

E. Advantage should be taken of Service Order No. 1, issued by the Interstate Commerce Commission under date of May 20, 1920, to avoid when possible the necessity for issuing embargoes.

F. The advisability of a permit system should be given consideration to avoid when possible a complete embargo.

G. A road placing, modifying, extending or cancelling an embargo will immediately transmit a copy of such embargo, modification, extension or cancellation to:

1. The Car Service Division.
2. The Embargo Chairman of the District to which such road is assigned.
3. The designated embargo officer of direct connections involved in the embargo, except short line connections assigned to another road or where inapplicable.
4. Local agents and other representatives of the embargoing line.
5. Its assigned short lines as indicated by Appendix "C," except where the embargo is manifestly inapplicable.

H. The district chairman will immediately transmit all embargo notices received from railroads in his district to:

1. All railroads in his district, except immediate connections of the issuing road, roads shown in Appendix "C," and where the embargo is manifestly inapplicable.
2. All other district chairmen, except where the embargo is manifestly inapplicable.
3. All local committees on car service in his district.

All embargo notices received from other district chairmen will be immediately transmitted to:

1. All railroads in his district, except where the embargo is manifestly inapplicable, and roads shown in Appendix "C."
2. All local Committees on Car Service in his district.

I. Local embargoes applying only to traffic originating at and destined to points on the same railroad will not be reported to the district embargo chairman. However, copies of such embargoes should be furnished the Car Service Division and interested local committees on car service.

J. Embargoes and extensions of embargoes become effective 24 hours from 11:59 p. m. of the date of issue. Modifications and cancellations of embargoes become effective immediately upon receipt of notice, unless otherwise specified. Freight loaded and billed prior to the embargo becoming effective shall be accepted by the embargoing road.

K. Each railroad will distribute promptly all embargo notices received from the district chairman or their direct connections to:

1. Its local agents and other representatives.
2. Short line or terminal connections assigned to it for embargo purposes as shown in Appendix "C."

L. To attain prompt and effective application of embargoes, it is suggested that each railroad divide its line into one or more local districts under the general supervision of the designated

embargo officer, with a local chairman over each district whose duty shall be:

1. To maintain a complete and accurate file of embargoes in effect on all railroads.
2. To be responsible for preventing the loading of freight in his district contrary to embargoes.
3. To inform local agents in his district whether or not freight can be accepted for shipment.
4. To inform shippers in his district concerning the status of embargoes on all roads.
5. To keep the designated embargo officer informed as to local conditions affecting the placement or release of embargoes.

Each important freight-loading station should be a district by itself; all smaller stations to be grouped as may be convenient, and the agent held responsible for consulting his local district chairman in cases of doubt before accepting freight. Quick methods of communication should be provided, and this factor should be considered in forming the local districts.

II. Application

A. The embargo is a means for stopping the loading of freight to a destination or via a route where conditions temporarily prevent the handling of such traffic. It is not a remedy for conditions of a permanent or indefinite nature, where relief should be obtained through tariff regulations, freight classifications, operating rules, etc. For illustration, it is not proper to issue an embargo to prevent the acceptance of:

1. Freight via circuitous or unfavorable routes.
2. Freight in certain classes of cars, such as automobiles in open cars; or during winter months, bulk material in open cars and perishable freight in common box cars.
3. Freight for lines or stations that have been permanently abandoned (except as a temporary emergency measure.)
4. Cars loaded in excess of a specified weight.
5. Freight on other than specified days, or for movement in a specified class of service.
6. Freight not loaded or crated in accordance with specified rules, or when loaded in certain containers.
7. Freight on which charges are not prepaid or guaranteed; refused freight returned to shippers; or freight billed in violation of rules in connection with "order notify" shipments.
8. Less carload freight for handling at specified transfer stations unless the territory affected is definitely described, either by naming specific destination stations affected, or by naming the initial and terminal stations when intermediate points are included.

When necessary to place an embargo on less carload freight for rehandling at a specified transfer station because of accumulation, the embargoing road will be required to furnish revised loading instructions, under which freight not subject to the embargo may be forwarded.

9. Less carload freight when cars contain less than a stated minimum for one destination.

B. Embargo should not be issued at the request of a consignee.

C. When temporary restrictions (so-called "holdback orders") placed account of local congestion or disability, and not intended to stop the loading of freight, cannot be removed within forty-eight hours, immediate action should be taken to cover by regular embargo. When such action is not taken roads adversely affected should report the facts to the Car Service Division and to the local committee on car service where such committee has been established.

D. That embargoes may not be continued longer than necessary each railroad should carefully review, at least once a week, all embargoes of its issue in effect, and modifications or cancellations should be issued as quickly as conditions justify.

III. Supervision

A. The applications of embargoes will be policed locally by each railroad through its designated embargo officer.

B. The committee on car service at the various terminals acting under authority of the Car Service Division and in conjunction with the local committee of traffic officers, will observe the operation of embargoes of any road that affect business moving to or through the terminal district over which such committee has jurisdiction. It will be the duty of such car service and traffic committees:

1. To report to the railroad concerned when in their opinion an embargo placed by such railroad is no longer necessary or should be modified.
2. To recommend to the interested railroads when in their opinion a local condition justifies the placement of an embargo.
3. To recommend to the interested railroads the placement of embargoes against a certain railroad or on traffic through certain gateways when by reason of embargoes placed by other roads, or because of congestion on other lines, an undue amount of traffic is being diverted and likely to cause congestion. In such cases the advisability of a permit system, to avoid where possible a complete embargo, should be considered.
4. To recommend to the interested railroads the formation of neutral committees or traffic control managers to regulate by permit or otherwise the movement of traffic into or through their respective districts when necessary to avoid congestion.
5. To recommend to local committees at other terminals the diversion or regulation of the movement from such territory when necessary to avoid embargoes or other restrictions.
6. To report to the Car Service Division action taken and results obtained in connection with the foregoing.

IV. Construction

A. Great care must be taken in the preparation and wording of embargoes to avoid any possibility of confusion or misunderstanding. Superfluous words should be avoided, and commodities designated in the terms employed in the freight classifications.

B. When practicable, not more than one subject should be included in an embargo. When an embargo is issued to cover specific classes of freight, each kind must be fully described. In laying a general embargo, exceptions thereto must be carefully specified. Points at which shipments originate should be shown, where possible to obtain such information. When placing a general embargo on points within a switching district, all individual stations affected must be named.

V. Distribution

A. Embargoes will be transmitted by the railroads to the Car Service Division and the district embargo chairman and by the district embargo chairman to the individual railroads, to other district embargo chairmen and to local car service committees by telegraph or telephone, except where service by messenger, railroad mail or United States mail will secure an expeditious delivery.

B. In transmitting embargoes the district chairman will make no change in the form of the embargo except where manifestly inaccurate or illegible. In the event of any change he will communicate with the originating line or district chairman from whom the notice was received.

C. Embargo transmitted by wire will be in the following form:

Form of Embargo

1. Number
2. Road placing embargo
3. Cause
4. Commodity.
5. Destination or territory affected

When necessary to apply an embargo to particular consignees, names should follow "Destination."

6. Exceptions to embargo

Form of Supplement

1. Supplement Number
2. Railroad placing
3. Embargo number
4. Item number (if any)
5. Brief identification of embargo
6. "Extend" or "Modify"
7. (When a modification) "To allow to come forward"
   (When an extension) "To include"
8. Or state the change

D. Embargoes transmitted by telegraph or telephone, either from railroads or from the District Embargo Chairmen, must immediately be confirmed by mail. Such confirmation shall give the embargo information in the following form:

East & West Railroad

Embargo No.	Originating railroad	Commodity	Destination, gateway or territory	Consignee	Exception	Cause
15	E & W	All freight	All	All	None	Accumulation
16	E & W	Coal	Blank	All	RR fuel	Accumulation

E. On the 20th of each month all railroads will revise and transmit by mail to the Car Service Division and to their district embargo chairmen a complete statement of all embargoes in effect as of that date. Such statement will be prepared in the form specified in the preceding paragraph.

A COAL SHORTAGE menaces the world, and only the United States and Great Britain are assured of sufficient fuel to operate their industries at capacity during the coming winter, according to an article in the October issue of Commerce Monthly, magazine of the National Bank of Commerce in New York.

Maintenance Painters Promote Improved Practices

Convention at Detroit Considers Permanent Employment, Safety and Economical Use of Tools

THE PROGRAM of the seventeenth annual convention of the Maintenance of Way Master Painters' Association which was held at the Fort Shelby hotel, Detroit, Mich., on October 5-7, inclusive, was unusually well balanced. This would seem to indicate that the members of this organization, while essentially of the foreman and general foreman rather than of the supervisor class, are keenly alive to the fact that increased efficiency in their work can be obtained only by improvement in all phases of their work. Thus the subjects discussed at this meeting may be divided into four heads: Labor and supervision, covering such matters as permanent employment, maintenance and operation of camp outfits and inter-department co-operation; tools and equipment, covering the manner of their economical use and operation, the results obtained with the paint sprayer and the use of the motor car; paint technology, including the frosting of glass, painting of iron and steel structures, interior finishing and fire retardant coatings; and the subject of safety covered in an address by P. Groome, safety agent of the Union Pacific, and a discussion of proper and improper practice in the construction and use of ladders and scaffolds.

From the nature of the personnel of this association and the size of the meetings, the average number present being about 30, the method of procedure naturally assumed the form of roundtable discussions in which all of those present took part. In most cases these discussions were introduced by a paper prepared by an individual member, rather than by a committee, owing to the limited opportunities afforded for committee meetings.

The officers of this association during the past year were: President, H. F. Jones, master painter, Cleveland, Cincinnati, Chicago & St. Louis, Wabash, Ind.; first vice-president, H. B. Wilson, master painter, Bessemer & Lake Erie, Greenville, Pa.; second vice-president, B. E. Darrow, master painter, Atchison, Topeka & Santa Fe, Kansas City, Mo.; secretary-treasurer, E. E. Martin, master painter, Union Pacific, Kansas City, Mo. The secretary-treasurer's report showed a membership of 91.

Employment of Men the Year Round

One of the matters most actively discussed before the convention was the feasibility of keeping gangs employed the year round as a means of attracting a more efficient type of workmen. Most of those who spoke on this subject testified to reductions of force of from 25 to 40 per cent during the winter months which, under present circumstances, afforded them a means of eliminating the less efficient men or those who while able to do rough, outside work were not suited to doing the interior finishing commonly held over for the winter months.

Many agreed that the men whom it was possible to employ for the summer months only are far less efficient than those that were retained on the force the year round.

Another point developed in the discussion was that a number of those present preferred to do outside painting on all except metal structures in the winter rather than in the hottest summer weather. A question was also raised as to the efficiency of the men in cold weather as compared with summer on account of the time that would be occupied in going indoors to get warm. This was answered by several with the statement that men did as much work in dry, cold weather as in summer, although the opinion on this was not unanimous.

Operation of Camp Cars

Various members described the systems followed on their roads for housing and feeding the men, which disclosed a wide variation in the manner of handling this necessary feature of the employment of a gang on road work. The principal methods employed were described as follows: (1) The railroad supplies the cook, the car and the equipment, the cook being carried either on straight salary or with additional compensation for increased size of gangs and the cost of the food being prorated among the men according to the number of meals served. (2) The men are fed by contract which in the case of the small gangs such as are employed in maintenance of way painting is most easily arranged for by the employment of a man and wife, the former as a member of the crew and the latter as the cook, the men being charged a fixed amount for each meal. (3) The men boarding themselves and doing their own cooking, the selection of the cook being determined by rotation or, more often, by the natural selection of the man best adapted to do this work; railway regulations usually requiring that all cooking be done outside of the regular working hours.

From the testimony presented by the various men members, it developed that meals served by contract ordinarily cost the men from 40 to 50 cents, whereas meals served on the co-operative basis with the cook furnished by the company or recruited from the gang, costs from 22 to 30 cents each. The general testimony indicated that the co-operative plan was the most favored by the men and that the necessity for employing a cook depended upon the size of the gang.

A Review of Bridge Painting

Charles E. Fowler, consulting engineer, New York City, presented some general observations on the subject of metal bridge painting, based on his experience over a period of 33 years. Knowledge on the painting of bridges developed with the advancement of bridge engineering. The introduction of structural steel introduced new problems because of the far greater tendency of steel to corrode. The presence of a mill scale which tends to flake off after a period of service is one of the difficulties encountered in steel bridges, which no doubt is the reason why many English specifications provide for the erection of the bridge without any paint coating until the scale has an opportunity to come off.

Mr. Fowler also discussed the cleaning of old paint surfaces for repainting and favored the sand blast. This was used on the Niagara Gorge arch, using a local sand that had sufficient grit in it to be effective. Difficulty was encountered in having the painters do this work so it was finally turned over to the bridge erecting forces. This work cost about one cent per sq. ft. or about double the cost of ordinary scraping and wire brushing. In his opinion it is unnecessary to remove all the old paint if portions of it are still in good condition. As an illustration of the selection of protective coatings for the purposes for which they are best suited, the speaker said that 12 kinds of coverings were used in the recent reconstruction of the arch bridge.

R. L. Hallet, of the National Lead Company, New York City, explained the theory of interior flat coating. Surface finishes are glossy or flat depending on whether they reflect light direct or diffuse it. Diffusion takes place when the surface is slightly rough so that the light striking at a given point is reflected at many angles. In paint, the rough surface is obtained by using a relatively large amount of pigment

and a large proportion of volatile vehicle so that when the latter evaporates there is not enough of the non-volatile vehicle left for the pigment to be entirely submerged in it. Consquently, the pigment particles project in an irregular manner, producing the roughened effect.

A particularly valuable paper from the standpoint of the paint foreman and his men was a detailed discussion of the proper methods pursued in the care of maintenance of painters' equipment and tools, by C. K. Collenberg, master painter, Union Pacific, Cheyenne, Wyo. This was devoted primarily to the proper handling and storage of painters' ropes and hand lines and to the method of breaking in and cleaning paint brushes.

A short paper was presented by C. B. Lyons, De Vilbiss Manufacturing Company, Toledo, Ohio, on the methods, use and results secured with modern paint spraying machines, attention being directed primarily to such information as is required by the painter in the actual operation of machines. This talk was illustrated by lantern slides.

Dr. D. Louis Ireton, chairman of the International Trade Development Committee, New York City, presented a plea for the extension of trade school education. It was his contention that owing to the disproportionate amount of public money being spent on high schools and colleges, the great mass of children who are unable to avail themselves of higher education are being neglected or educated along impractical lines. The great need, he stated, is for utilitarian education that will teach trades in their entirety.

The officers elected for the ensuing year are: President, H. F. Jones (re-elected); first vice-president, P. E. Darrow, master painter, Atchison, Topeka & Santa Fe, Kansas City, Mo.; second vice-president, H. F. Bird, master painter, Philadelphia & Reading, Philadelphia, Pa.; secretary-treasurer, E. E. Martin (re-elected) Buffalo, N. Y., was selected as the place for the holding of the next convention on October 4-6, inclusive, 1921.

The Railway Supply Men's Association composed of representatives of the Carter White Lead Company, Chicago; Detroit Graphite Company, Detroit, Mich.; De Vilbiss Manufacturing Company, Toledo, Ohio; John Lucas Company, Chicago; Patton Paint Company, Milwaukee; Sherwin-Williams Company, Cleveland, Ohio, and the Wolf Brush Company, Pittsburgh, presented an informal display of catalogues and other descriptive literature, samples of paint coatings and paint materials in the convention room. On Thursday evening, the welfare committee of this organization entertained the members of the Master Painters' Association and their families at an informal dinner at the Fort Shelby hotel. Other features of the meeting consisted of a trip through the Ford Motor Works on Wednesday afternoon and a theatre party on Wednesday evening.



Photo by International

Governor Cox's Campaign Special After It Was Derailed at Peoria, Ariz., Recently

Meeting of the National Industrial Traffic League

THE NATIONAL INDUSTRIAL TRAFFIC LEAGUE held a special meeting at Louisville, Ky., from September 30 to October 1, at which several questions were taken up, all of which will serve to focus the attention of traffic men on the annual meeting which will be held in New York on November 18 and 19.

The issue raised by the talk of the bribery of railroad employees was recognized by the League in the following resolution, prepared by special committee, which was adopted:

"Whereas, It has been reported that, in certain quarters, shippers are paying and railroad employees are demanding and accepting payment for service in furnishing, moving and handling empty and loaded cars, and while this is exceedingly difficult of proof, it appears from information received, but there is a large measure of truth in these reports; therefore, be it

"Resolved, That the National Industrial Traffic League go on record as absolutely opposed to and vigorously condemns any such practice, further urging its members, in the interests of clean business and its law-abiding policy, to furnish to the executive secretary any information of reliable character that may be obtained, besides using their individual efforts everywhere to put a stop to this reprehensible practice."

The question of recommending increased demurrage charges, the study of which was delegated to a sub-committee by the executive committee, resulted in a lively discussion between these two committees. The sub-committee, after conferences with railroad officers, recommended an increase in demurrage charges of from $2 and $5, to $3, $6 and $10. The executive committee voted to reject the report of its sub-committee. However, when the issue was brought up for general discussion on the floor, the action of the executive committee was rescinded after a lengthy discussion.

The report of the executive committee also contained the information that there had been some investigation of reports that the railroads proposed to discontinue the agency plans of publishing consolidated tariffs, but that such action seemed improbable. The matter of the restoration of mileage scrip books in effect prior to the war was referred to a special committee. It was not deemed advisable by the executive committee to take action with respect to the proposal to eliminate or modify the 3 per cent war tax on freight charges. As to the war tax on demurrage charges, the executive committee presented the controversy as to just how it should be applied and reported that efforts to have the present government ruling modified had been unsuccessful.

Among the topics discussed or reported upon at this meeting were the following: Embargo regulations, claims against the Adams Express Company, charges for trap or ferry cars, car movement figures, side track agreements, the continuation of national boards of adjustment, proposed standardization of weights and measures, the permitting of railroad boat lines on the Great Lakes, shippers' load and count provisions in bills of lading, re-routing of traffic, allowances to industrial roads and plant facilities, diversion and reconsignment, highway transportation, uniform classification, rate construction and tariff, freight claims, freight handled in refrigerator or heater cars, and rate relationships.

Several of these topics were introduced by progress reports of the committees appointed to investigate and study them and with the exceptions already noted these reports were adopted after discussion. In addition the resolution of the executive committee opposing the National Board of Adjustments, was adopted.

In the discussions at various times opposition was expressed to the charge that freight cars are in the hands of the shippers 37 per cent of the time and a motion was adopted, requesting confirmation of this statement by the railroad officers who have frequently used it.

The meeting closed with a banquet which was addressed by Charles E. Cotterill, general counsel of the Southern Traffic League; Luther M. Walter, of Chicago; J. V. Norman, of Louisville; H. C. Barlow, of Chicago; and Lieut. Governor Ballard of Kentucky.

A. E. R. A. Discusses Heavy Electric Traction*

Advantages of the Various Types of Drives for Electric Locomotives Outlined by Committee

THREE SUBJECTS were assigned to the committee on heavy electric traction for report at the annual convention of the American Electric Railway Association. These subjects were as follows:

1. Recent developments and progress in design of motors and motor drives for heavy traction, both alternating current and direct current, with comparison of weight, space efficiency, etc.

2. Description and illustrations of recent types of electric locomotives since the report of 1916.

3. Electric switching engine in freight yards, comparison with steam. The work of the committee has consisted largely in collecting data; the questionnaires were sent to electrified steam railroads, to interurban railways and industrial concerns operating electric locomotives, and to users of multiple unit equipment, both in this country and abroad.

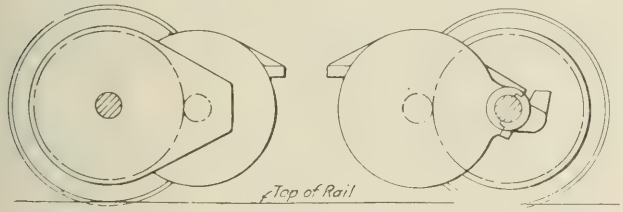


Fig. 1. Direct General Motor Drive

Solid and Flexible Gear Drives

In the simplest form of gear drive, which has practically become standardized for light switching locomotives and multiple unit equipment, the motors are mounted on the truck between the pairs of drivers, the motor shafts being in the same horizontal plane as the driving axles as shown in Fig. 1. Electric locomotives with this type of drive are in service

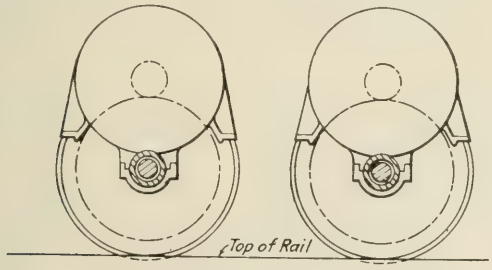


Fig. 2. Single Armature Gear and Quill Drive

both with rigid and with flexible gears, and with gears at one or both ends of the motor shaft. The so-called flexible gear is fitted with springs, the springs acting to absorb shocks. Such a flexible gear used in conjunction with a gear and side rod drive is shown in Fig. 8.

The major limitations that apply to this type of motor mounting are: 1. Gear reduction. 2. Necessary clearance about motor and gearing. 3. Maximum safe locomotive speed. 4. Permissible dead weight on the axle. The length of the motor is limited by the space between the backs of the drivers, less the space required for gear and gear case. The clearance from the bottom of the motor and gear cases to the rail should not be less than about five inches. This with a given driving wheel size, and with gear pitch determined by service requirements, limits the motor diameter and the gear diameter, and number of teeth. The least practical number of teeth on the pinions is determined by service and manufacturing considerations. It is clear that the power limitations are thus fixed by the size of the motor and the gear ratio. The locomotive speed is limited by the maximum safe armature speed.

Gear and Quill Drive

In order to reduce the track distress of heavy dead axle loading the quill drive with spring supports between the motor and the wheels has been successfully developed for passenger, light freight and switching service, the motor being mounted directly above the driving axle. (Fig. 2.) This mounting in addition to reducing the track distress, by the fact of higher center of gravity and spring borne motors, affords opportunity to use larger motors than could be applied to axle mounting. Thus, for example, the quill mounted motor on the N. Y., N. H. & H. locomotive 071 class, could not with proper gear reduction and permissible dead load on axle be applied to axle mounting where the motor shaft is in the same horizontal plane as the axle. The motor, being above the axle, is limited no longer by clearance to rail, but on the other hand, is limited in the space which it occupies

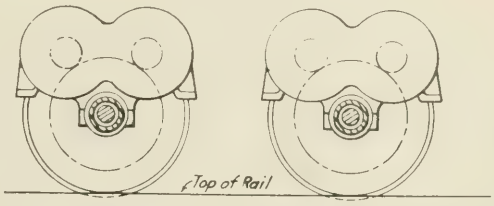


Fig. 3. Twin Armature Gear and Quill Drive

in the cab. Like the axle-mounted motor, it is limited in length, the same limitation applying. The motor may be limited in torque capacity by the amount which may be transmitted through the quill spring, and in speed by the velocity of the armature, spring parts, gearing, journals, or wheels. An example of quill spring is shown in Fig. 7.

In order to secure better weight efficiency, the single motor, quill-mounted, has given place to a twin motor, quill-mounted, the pinions on each armature meshing into a common gear. (See Fig. 3.) The armature of the single motor on the 071 class above referred to is thirty-nine inches in diameter, while the armature on the twin motor on the 073 class or the 0300 class N. Y., N. H. & H. is but 22 inches in diameter. The C., M. & St. P. 10300 class is also of this type. In the application of twin motors, because of smaller armature diameter, higher revolutions per minute are permitted; and this, being suitably geared, secures higher horse power rating per axle.

Side Rod Drive With and Without Gears

The side rod locomotive without gears as applied to the Pennsylvania Tunnel electrification in New York (Fig. 4) possesses the desirable feature of permitting axle loading similar to that of steam locomotive practice. This drive necessitates the use of a few large motors, and is economical as a design for high speed passenger locomotives. It is not, however,

*Abstract of the report of the Committee on Heavy Electric Traction, presented on October 11 at the annual convention of the American Electric Railway Association, held at Atlantic City, N. J.

economical for low speeds such as 15 to 20 m.p.h., because the revolutions of the driving wheels are, as in the case of the direct gearless motor drive, the same as those of the motor armature, and are too low for the most economical design of motor. Such design must make use of peripheral speed of approximately 8,500 ft. per minute maximum.

In order to secure greater economy in motor design, the geared side rod locomotive has been developed for heavy freight service. (See Fig. 5.) By the use of gears relatively higher armature revolutions are permitted. In this case the gears are in the same plane as the driving wheels which permits the utilization of the total distance between locomotive

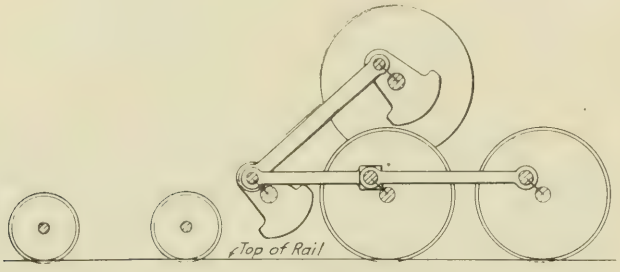


Fig. 4. Side-Rod Drive

side frame for the motor proper. Here it is possible within the limits of space available for the motor to make full use of the permissible rotor peripheral velocity. This type of locomotive makes it possible to drive two or three axles from a pair of motors. Examples of this are the N. & W. heavy freight locomotive and the P. R. R. locomotive of the FF-1 class (See Fig. 8).

Gearless Drive

Since 1906 the gearless motor has been successfully used for passenger locomotive service. The New York Central has applied this type of drive in the bipolar direct current motors with parallel pole faces, the armature, which is mounted directly on the axle (Fig. 6), being free to move vertically between the pole faces. The N. Y., N. H. & H. applied the direct drive with single phase commutator motors, flexibility being secured between the motor armature and driving wheels by means of quill springs installed in spring

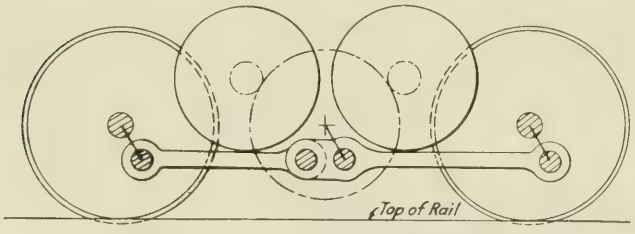


Fig. 5. Gear and Side-Rod Drive

pockets in the driving wheels. In 1919 the C., M. & St. P. applied gearless motors on the 10250 class for passenger service. Like the direct connected side rod locomotive this type is more economical in passenger service than in freight service.

Several stages mark the development of the single phase commutator motor for heavy traction service. The series commutator motor which embodies the use of resistance leads, connected between the commutator necks and copper coils, was the first to be successfully applied in this country. A number of difficult problems attached themselves to the use of these resistance leads. One was the securing of a metal that would withstand the localized stresses of expansion, contraction and vibration. These stresses caused the breaking of the resistance leads immediately at the commutator neck. This has been quite effectively corrected in the later motors of this type of construction by the use of coils of Monel metal. Another problem, which involved a close study of the length and resistance of heat paths and size and location of ventilating ducts, was that of dissipating the heat generated in these resistance leads.

The driving motors used on the multiple unit cars on the Pennsylvania electrification at Philadelphia are single phase commutator motors without resistance leads. These are started as repulsion motors. The omission of the resistance leads produces an armature quite similar in its construction to a low voltage direct current armature. The necessary neutralizing of the injurious sparking voltage is secured by exciting the commutating winding in shunt with the main field and armature circuit. The omission of the resistance leads effects also a slight gain in weight efficiency and at the same time embodies improvement in the details of motor construction. The armature being without resistance leads permits of rugged construction. The necessary commutation characteristics are secured by the use of a commutating interpole winding. The armature reaction is neutralized, and hence the power factor is improved by the use of the auxiliary winding distributed across the pole face. Approximately 25

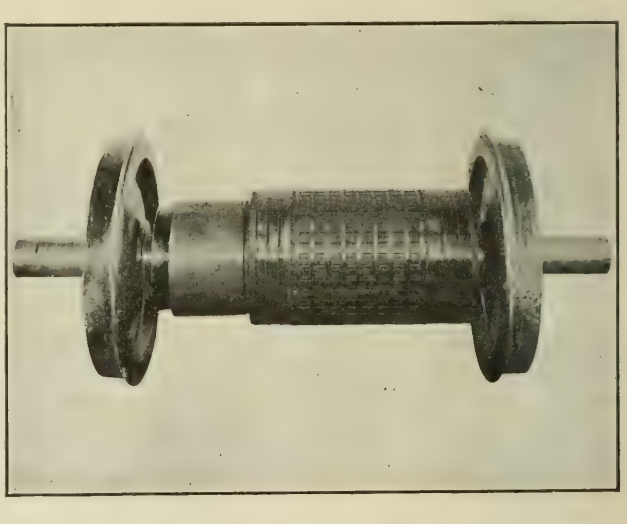


Fig. 6. Rigidly Supported Armature Used on the New York Central

per cent increase in weight efficiency has been secured in this motor over previous designs of single phase commutator motors.

Some features of interest may be noted in connection with the main driving motors on the FF-1 class locomotive for the P. R. R. These motors are of the 3-phase induction type with wound secondaries. The collectors are mounted on a shaft extension outside of the motor windings, which secures for both the collectors and the brush holders very ready means for inspection. The leads to the collectors pass through a portion of the rotor spider and axially through the shaft, and at the end of the shaft are connected by means of flexible copper connections to the collector rings. Such a design secures a maximum of active motor material between the side frames of the locomotives.

The development of the 3000 volt direct current locomotives for the C., M. & St. P. has carried with it every important development in the designs of direct current motors, particularly in its application to this high voltage. The insulation has been very closely studied and important progress marks its use. The motors are normally operated four in series under maximum speed conditions, the voltage across each armature being thus seven hundred and fifty.

As stated above, the committee has issued questionnaires

requesting construction and operating data to a large number of operating companies. The returns from these questionnaires have been extremely slow in coming in, and it has therefore been decided not to publish a comprehensive table this year but to include in the report only the data regarding

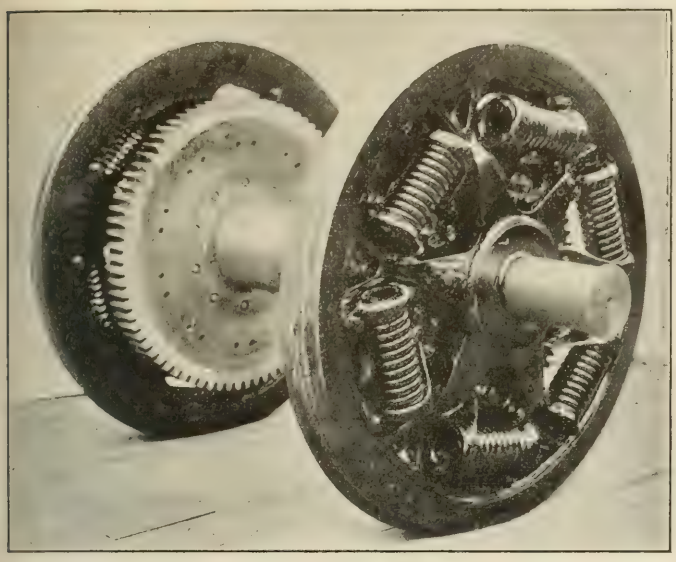


Fig. 7. Quill Drive with Gear

the more important types of locomotives which have been placed in service since the report of 1915. In the meanwhile, the collection of data is being continued and will be compiled at a later date, including American and foreign electric locomotives for main line, interurban, and industrial railroads; and multiple unit equipment.

Description of Locomotives Built Recently

It is realized that in including electrically operated industrial railroads, and multiple unit equipment, the committee has to a certain extent left the field of "heavy electric traction" but the line of demarkation is at best vague, and it is the thought that the addition of this data is justified. In order to keep within reasonable limits, only the industrial locomotives which have at least four driving axles are considered.

Electric Switching Costs

It is extremely difficult to obtain exact data on electric switching costs, as electric operation usually is so mixed with steam operation and other complications that it is usually impossible to separate costs satisfactorily. With one or two exceptions also the aggregate amount of switching is so small that adequate cost figures are impossible.

However, in a few instances, where a considerable amount of electric switching (both passenger and freight) is done, some of the economies and advantages are obvious. Three electric switchers accomplish easily the work of five or even six steam switchers. No relay engine is required, and there is no time lost in coaling, watering, cleaning fires, etc., as is the case with steam power. The electric switcher, therefore, operates twenty-four hours a day, seven days a week, without interruption, between inspections. The yard tracks are thus more intensively used, the yard capacity is noticeably increased, and the labor cost reduced as compared with steam operation. The cost of maintaining electric locomotives is also very much less than is the case with steam, and the ratio

DATA ON RECENT ELECTRIC LOCOMOTIVES FOR HEAVY TRACTION

Railroad	New York Central	Penn. R. R.	N. Y., N. H. & H.		Boston & Maine	Chicago, Milwaukee & St. Paul	
Series No.	T2-B	FF1	068	0300-0304	5005-5006	10250-10254	10300-10309
Number in service	10	1	1	5	2	5	10
Year placed in service	1917-18	1917	1916	1919	1917	1920	1920
Class of service	Pass.	Frt.	Frt. & Swg.	Pass.	Pass. & frt.	Pass.	Pass.
System of traction	D. C.	A. C.	A. C.	A. C.-D. C.	A. C.	D. C.	D. C.
Contact conductor — Voltage	600	11,000	11,000	11,000-600	11,000	3,000	3,000
Contact conductor — Type	3rd rail	Cat.	Cat.	Cat.-3rd rail	Cat.	Cat.	Cat.
Classification	4-4-4-4	2-6-6-2	4-4-4-4	2-6-2+2-6-2	2-4-4-2	6-8-8-6	4-6-2-2-6-4
Wheel order	OOOOOOOO	oOOOOOOo	ooOOOOoo	oOOOooOOOo	oOOOOo	oOOOOOOOOOOOOo	ooOOOooOOOoo
Driving Wheels—							
Number	16	12	8	12	8	24	12
Diameter	36"	72"	54"	63"	63"	44"	68"
Truck Wheels—							
Number	.....	4	8	8	4	4	12
Diameter	.....	36"	36"	36"	41"	36"	36"
Weights (lbs.)—							
Total	268,000	516,000	291,000	346,000	261,800	530,000	550,000
On drivers	268,000	440,500	194,000	231,000	205,000	458,000	336,000
Per driving axle	33,500	73,416	48,500	38,500	51,250	38,166	56,000
Mechanical parts	177,000	.....	.....	187,500	141,800	295,000	351,000
Electrical parts	88,000	.....	.....	161,700	118,200	235,000	199,000
Dimensions—							
Length over all	56'-10"	76'-6¼"	62'-0"	69'-0"	48'-6½"	76'-0"	88'-7"
Width over all	10'-1⅛"	10'-1"	10'-0"	10'-1⅝"	10'-2"	10'-0"	10'-0"
Height, rail to highest point	14'-7⅞"	15'-6"	14'-4"	14'-9¼"	13'-9"	16'-8"	16'-7⅞"
Wheel Base—							
Rigid	5'-0"	13'-4"	10'-0"	26'-9"	7'-0"	13'-11"	16'-9"
Total	46'-5"	63'-11"	54'-0"	59'-6"	38'-6"	67'-0"	79'-10"
Motors—							
Number	8	4	4	12	4	12	6
Type	G. E.-91-A	W.-451	G. E. A-614	W.-409 C-2	W.-403-A.	G. E.-100	W.-348
Horse power, forced vent	325	1,200	345	.....	375	270	700
One-hour rating, natural vent	.....	.....	.....	.....	.....	.....	.....
Method of drive	Direct	Geared and jack shaft	Geared and side rod	Geared	Geared	Direct	Geared
Gear ratio	.....	21:106	35:71	27:87	22:91	.....	24:89
Tractive Effort (lbs.)—							
1-Hour rating, Forced vent	20,000	87,200	27,000	21,000	23,000	46,000	66,000
1-Hour rating, Natural vent	.....	.....	.....	.....	.....	.....	.....
Cont. rating, Forced vent	14,000	73,000	22,200	14,500	20,500	42,000	49,000
Cont. rating, Natural vent	.....	.....	.....	.....	.....	.....	.....
Horsepower of Locomotive—							
1-Hour rating, Forced vent	2,600	4,800	1,800	2,000	1,500	3,240	4,000
1-Hour rating, Natural vent	.....	.....	.....	.....	.....	.....	.....
Cont. rating, Forced vent	2,000	4,000	1,650	1,700	1,337	3,050	3,200
Cont. rating, Natural vent	.....	.....	.....	.....	.....	.....	.....
Speed, M. P. H.—							
Hour rating	49	20.6	23	36	20	26.4	22.7
Maximum safe	85	40	.....	70	30	65	65
Is locomotive equipped for regeneration	No	Yes	No	No	No	Yes	Yes
Is locomotive equipped for multiple unit operation	Yes	No	No	No	Yes	Yes	Yes
Type of collector	3d rail shoe	Pant.	Pant.	Pant. & 3rd rail shoe	Pant.	Pant.	Pant.

of coal saved is greater than in either passenger or freight main line service.

The elimination of smoke is an especially important feature of electric switching operation, because the freight and passenger yards are often necessarily located in thickly populated sections, and the undesirable characteristics of continuous smoke production in a confined area are thus obviously intensified as compared with main line steam operation, where the smoke is discharged only intermittently, or during the passage of a train at any given point.

In passenger service, especially in the case of multiple unit equipment, the advantages of electric switching are more marked than in any other service, as no locomotive is required. At least one large railroad company has equipped all of its multiple unit cars with motors, even though each motor car has considerable trailer capacity, solely in order to obtain the benefits of this unit mobility in switching operations.

The committee has been impressed by the duplication and overlapping of the work of various committees of associations which are interested in heavy electric traction. Several committee reports have been issued this year, which are the result of a large amount of work and are of great value to

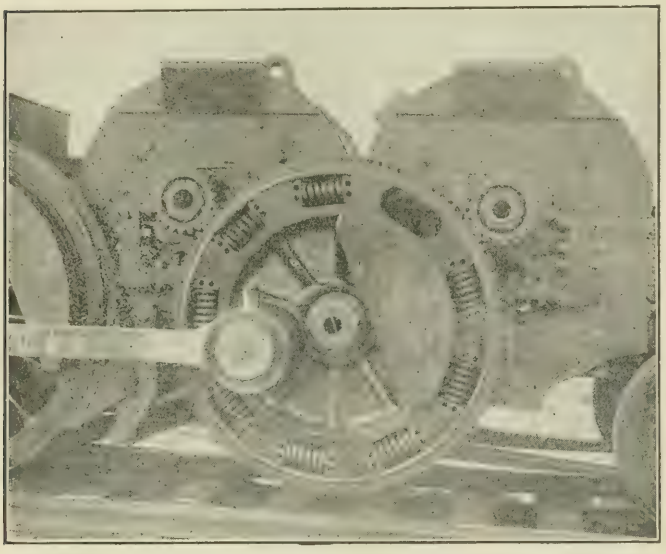


Fig. 8. Type of Flexible Gear and Side-Rod Drive Used on Pennsylvania FF1 Locomotive

the profession. Some of these reports, however, represent a very considerable amount of duplication, especially in connection with the collection of data descriptive of engineering and operation, and it has occurred to this committee that a species of "clearing house" would be appropriate at this time in order that, by co-ordinating the activities of the various engineering organizations which are working along the same lines, duplication of effort might be prevented.

It is recommended that an attempt be made by the American Electric Railway Engineering Association to interest other organizations; such as the American Railroad Association; American Railway Engineering Association; National Electric Light Association; American Institute of Electrical Engineers; American Society Mechanical Engineers; Railway Electrical Engineers, etc., in such committee co-operation, with a view to assigning subjects to the committees and sub-committees of the associations interested and securing minimum overlapping and consequently maximum efficiency. The reports of all the committees might be published as desired by each of the organizations so allied.

The report is signed by Sidney Withington, chairman, L. S. Wells, C. H. Quereau, J. H. Davis, J. C. Davidson, R. C. Taylor, R. Beeuwkes, A. M. Eaton and J. V. B. Duer.

Classifying Ties for Service Requirements

As one step in a program for obtaining the maximum service from the ties used, the Philadelphia & Reading and affiliated lines have adopted a new system of classifying cross ties to insure their use in the service for which they are best suited. To this end instructions have been issued for two classifications of ties, one for accounting purposes and the other for service. The idea is to classify the ties in such a manner that the strongest tie will be placed in the track where it will be subjected to the largest relative mechanical wear. The classification of track and the corresponding classification of ties for accounting and service are given below:

Classification of Tracks

Class 1—Main tracks, frequent heavy tonnage with moderate speed.

Class 2—Main tracks, high passenger speed, mixed traffic, or equivalent.

Class 3—Main tracks of important branches, including third and fourth tracks and running tracks in important yards.

Class 4—Main tracks of unimportant branches and passing sidings of important branches.

Class 5—Station, storage, yard and industrial tracks and passing sidings on unimportant branches.

Accounting Classification of Ties

Group Ua—Black locust, white oaks, black walnut.

Group Ud—Chestnut.

Group Ta—Ashes, hickories, honey locust, red oaks.

Group Tb—"Sap" pines.

Group Tc—Beech, birches, cherry, gums, hard maples.

Group Td—Elms, hackberry, soft maples, spruces, sycamore, white walnut.

Each group has five grades, depending on size and whether hewed or sawed, these being stamped 1, 2, 3, 4 or 5.

Classification for Service

1. Ties shall be divided into two classes according to thickness, namely: 7 in. or 6 in. thick. Ties 7 in. thick shall include all ties 7 in. thick and having at least a 7-in. face. Six-inch ties shall include all ties having less dimensions than those classed as 7-in. ties. For instance: A tie 7 in. thick with 6-in. face would be classified as a 6-in. tie.

2. Ties shall be further subdivided into four service classifications as follows:

"H" (hardwood) shall include Groups Ua, Ta, Tc, Td.

"P" (pine) shall include those pine ties showing heart the entire length of one face—part of Group Tb.

"S" (sap) shall include those pine ties not included under "P"—part of Group Tb.

"C" (chestnut) shall include all chestnut ties, Group Ud.

All ties are to be treated except black walnut, black locust and chestnut.

One end of each tie is stamped at the creosoting plant to show the accounting classification and at the other end to show the year of treatment and the service classification. All ties are placed in tracks in accordance with the following track and service classification:

Tracks—Class 1 on curves, H-7 ties.

Tracks—Class 1 on tangent, P-7, 9-in. face.

Tracks—Class 2 on curves 2 deg. and under, P-7, 9-in. face, and on other curves H-7.

Tracks—Class 2, tangents, P-7, 9-in. face.

Tracks—Class 3 on curves 2 deg. and under, P-7, 9-in. face, and on other curves H-7.

Tracks—Class 3 on tangents, H-6 and P-7, 9-in. face.

Tracks—Class 4 on curves 2 deg. and under, P-7, 8-in. face, and on other curves H-6.

Tracks—Class 4 on tangents, C-7, C-6 and S-7, 9-in. face, and P-6 on sidings.

Tracks—Class 5 on curves, P-6 and S-7, 8-in. face.

Tracks—Class 5 on tangents, C-6, C-7, S-6, and S-7, 8-in. face.

More Priority Ordered for Coal Shipments

Service Orders Nos. 20 and 21, Issued by I. C. C. on October 8, Intended to Assist Increased Production

WASHINGTON, D. C.

A DRIVE TO INCREASE the production of bituminous coal to about 12,000,000 tons a week has been undertaken by the railroads and coal operators, with the approval of and backed by the authority of the Interstate Commerce Commission. Orders giving an additional degree of priority to coal transportation, for the purpose of further increasing the production of coal by increasing the number of open-top cars available for coal shipments, were issued by the Interstate Commerce Commission on October 8, substantially in accordance with a program recommended to the commission after a conference of representatives of the railroads, the coal operators, public utilities and other consumers at a meeting in Washington earlier in the week, although some changes were made by the commission. The orders are intended particularly to provide an increased supply of coal for domestic consumers and others that have not been sufficiently provided for in the previous orders issued by the commission. Service Order No. 20, superseding Service Order No. 15, extends to the eastern boundary of Montana, Wyoming, Colorado and New Mexico, the territory in which the railroads are required to give preference to coal in the use of open top cars. Service Order No. 21, superseding Service Order No. 16, cancels the general preference given to public utilities and public institutions and substitutes a plan by which they will be given a preferential car supply after October 15 only as authorized by the commission in special cases on recommendations made by a committee representing the railroads, the coal operators and the utilities. The commission has also cancelled its permits which have been issued for the use of coal cars for the transportation of other commodities in special cases. It is believed that the program thus adopted will make it possible to increase the weekly production of bituminous coal from about 11,000,000 to 12,000,000 tons a week and to continue to carry out the program of 4,000 cars a week for transshipment across the lakes to the northwest while providing about 2,100 cars a day for domestic use in Ohio, Indiana, Michigan, eastern Kentucky, eastern Tennessee, western Pennsylvania and West Virginia.

The first service orders issued by the commission referred to an emergency existing "because of a shortage of equipment and congestion of traffic, aggravated by unfavorable labor conditions," and also because of "the inability of the carriers properly and completely to serve the public in the transportation of coal." Later orders omitted the reference to labor conditions, after most of the switchmen had returned from their "vacation," and Orders Nos. 20 and 21 omit the reference to the congestion of traffic, as the congestion has been practically cleared up for some time.

Service Order No. 20

Service Order No. 20 provides in part that the coal-loading carriers east of the eastern boundary of Montana, Wyoming, Colorado and New Mexico

Be directed, until the further order of the commission, to furnish such coal mines with open top cars suitable for the loading and transportation of coal (herein termed coal-cars) in preference to any other use, supply, movement, distribution, exchange, interchange or return of such coal cars; provided, that such coal cars may be used in service moving in the direction of the mine or mines to be supplied, on the return movement, after the discharge of the coal lading thereof, upon a route not materially out of line and to points not beyond such mine or mines; and provided further, that the phrase "coal cars" as used in this order shall not include or embrace flat bottom gondola cars with sides less than 38 inches in height, inside measurement, or cars equipped with racks, or cars which, on June 19, 1920, had been definitely retired from service for the transportation of coal and stenciled or tagged for other service.

It is further ordered, That all common carriers by railroad within said territory other than coal-loading carriers (herein termed non-coal-loading carriers) be, and they are hereby, authorized and directed until the further order of the commission to deliver daily to a connecting coal loading carrier or carriers, empty or loaded coal cars up to the maximum ability of each such non-coal-loading carrier to make such deliveries, and of each such connecting coal-loading carrier to receive and use the coal cars so delivered for the preferential purposes herein set forth.

It is further ordered, That all such common carriers by railroad in said territory be directed forthwith, until the further order of the commission to discontinue the use of coal cars for the transportation of commodities otherwise than as hereinbefore specified (a) as to each coal-loading carrier, so long as any coal mine remains to be served by it with coal cars, and (b) as to each non-coal-loading carrier, so long as deliveries of any coal cars to connecting carriers may be due or remain to be performed under the terms of this order.

Service Order No. 21

Service Order No. 21 provides:

That effective October 15, 1920, and until further order of the commission, all common carriers by railroad within said territory to the extent that may be necessary in order that public utilities which directly serve the general public under a franchise therefor with street and interurban railways, electric power and light, gas, water and sewer works; also ice plants which directly supply the public generally with ice; also hospitals, schools, and other public institutions of the United States, state or municipal governments, may be kept supplied with coal for current use but not for storage, exchange, or sale, be, and they are hereby, to the extent that the commission or its agent or appointee thereunto duly authorized shall hereafter from time to time designate in individual cases, but not otherwise, authorized and directed to place, furnish and assign cars to coal mines for the transportation of such coal in addition to and without regard to the existing ratings and distributive shares for mines upon said railroad; provided, that such coal shall not be subject to reconsignment and that a written report of the cars placed hereunder shall be made to the Interstate Commerce Commission by the railroad placing the cars, as often as once each week.

Freer Distribution of Soft Coal Will Be Made Possible

"Through the operation of these two orders," says a statement by the National Coal Association, "a freer distribution of soft coal to householders, manufacturers and public utilities everywhere will be made possible, as an emergency measure. Both orders are intended to relieve shortages in coal supply until the program for supplying the winter wants of the Northwest, which was put into operation last July, is out of the way.

"At the conference of operators and railroad executives, early this week, it was agreed that the Northwestern schedule, which calls for a movement of 4,000 cars a day, or 1,200,000 tons of soft coal a week, up to the close of navigation, about December 1, to the Great Lakes for transshipment to Northwest points. must be rigidly carried out. At that conference the railroad executives promised that from now on they would provide the 4,000 cars a day for that movement. Under the orders a program will be put into effect providing for a movement of 2,000 cars a day for communities in Ohio, Indiana, Michigan, eastern Kentucky and eastern Tennessee, where the greatest shortages in immediate supply exist. Out of this allotment, Ohio will get each day approximately 800 cars, Michigan 500 and Indiana 200. This program was worked out by the operators and railroad executives after conferences

with representatives of public utilities commissions, distributors and retail dealers in the states involved. The increased movement of cars, which the railroads have already started, will provide sufficient coal for the immediate household needs in the states embracing the program, until the lake movement is over, after which ample coal will be at disposal for their winter storage needs."

Committee to Superintend Distribution to Public Utilities

A voluntary committee consisting of W. L. Barnes, executive manager of the Car Service Division; John Callahan, traffic manager of the National Coal Association; and G. W. Elliott, secretary of the National Committee on Gas and Electric Service, is to superintend the distribution of soft coal to public utilities, and working in co-operation with the Interstate Commerce Commission, will endeavor to see that an even distribution of soft coal is made. It was brought out at the conference that while the railroads have made a remarkable record during the past few months in the transportation of coal, much of the complaint as to the shortage has arisen from the manner in which it has been distributed, which is a matter rather within the province of the coal operators than that of the railroads because outside of a certain amount of coal controlled by priority orders they have been free to ship where they desired. When complaints have arisen from communities that had been somewhat neglected in the distribution, they have invariably been met with demands for more cars. It was also brought out that the public utilities in some cases have been able to accumulate more coal than was actually needed for current use under the priority order issued for their benefit, which has now been withdrawn. Abuses are also said to have occurred because, under the extraordinary pressure brought to bear, so many permits had been issued allowing departures from the coal priority orders to allow the use of open-top cars for other commodities, and it is understood that hereafter permits will be issued only in cases of a very serious nature.

Mr. Willard conferred with Secretary Tumulty at the White House on October 7 regarding the coal transportation situation and it is understood that plans were discussed for obtaining the allocation of more vessels for the coastwise shipments of coal.

I. C. C. Issues Statement Explaining Situation

The commission also issued a statement explaining the general situation as to the transportation of coal and the reasons for its orders, and also pointing out the amount of the service performed by the railroads this year, as follows:

Bituminous coal production during 1918 exceeded consumption by approximately 30,000,000 tons. During 1919 the situation was otherwise; consumption exceeded production and there was a net draft on stocks of approximately 40,000,000 tons for that year. The year 1920 began with no substantial stocks, and the demand during this calendar year could be met only as bituminous coal could be produced. Moreover, production this year has been considerably retarded by strikes of coal miners, more particularly in the Indiana and Illinois fields, in the Thacker field and in the Birmingham district; and also by the switchmen's strike, which commenced in April, and by the dispersion of coal carrying equipment early in the year.

Soon after the termination of federal control it became necessary for the commission to adopt measures by which transportation for coal would be increased. This necessitated an increase in the number of cars available for transporting coal. By an order effective June 21, 1920, railroads east of the Mississippi river were required to furnish coal cars to coal mines in preference to any other use. Because of the abnormal demand for coal cars to transport iron and steel, road building and other building material, by a definition of what constituted a coal car, approximately 80,000 flat bottom gondola cars were subsequently excluded from the effect of that order. In addition numerous additional permits have been issued from time to time authorizing the use of coal cars for the transportation of other freight of an emergency character. The demand for coal cars for other freight has been accentuated by the very large building program which is under way.

As the result of the order entered in June, there has been a heavy production of bituminous coal, as is indicated by the following figures for the period from June 5 to September 25 of each of the years shown:

1917	1918	1919	1920
171,124,000	195,963,000	157,272,000	171,650,000

The average production for that period in the years 1917 to 1919 is 174,786,333. The production for the period in question during the current year exceeds the production during the same period for each of the years 1917 and 1919 and, despite various labor disturbances in different fields, approximates the average for the three years. Moreover, the bituminous coal produced up to September 25 this year exceeds that of the same period last year by more than 51,000,000 tons. The production of coal during August, 1920, has never heretofore been exceeded except during August, 1918, when an intensive campaign as a part of the war program was under way. As the demand of the government for coal for war purposes has dropped off, the amount of coal made available for American industry since the first of the service orders of the commission has been substantially equal to or above the average for recent years, despite strikes of miners and switchmen and the recent car congestion.

The increased production has been consumed in a large part by industries, by railroads and other public utilities, by the northwest and by New England, and by exportation. There has not been a sufficient production of the sizes of coal for domestic purposes to satisfy the present demands for such uses. Vigorous complaints have been received in behalf of the domestic users of coal in Indiana, Ohio and Michigan. Complaints have also been received from Oklahoma, Texas and other western states. It is imperative that the production of coal be even further increased. To accomplish this it will be necessary to increase the car supply for coal. As a means to such end, the commission has entered an order requiring all railroads east of the eastern boundary of the states of Montana, Wyoming, Colorado and New Mexico to furnish coal cars to coal mines in preference to any other use. The orders of this character heretofore issued have applied only east of the Mississippi river. The present order runs until the further order of the commission, and will be relaxed as soon as it appears practicable to do so. As a further means of accomplishing the object sought all outstanding permits for the use of coal cars for transporting other freight are cancelled, effective midnight October 10. Thereafter, until the domestic coal situation is well in hand, permits of this character will be issued only upon a showing of public interest. Arrangements will be made for the continuance of the movement of certain essentials, such as sugar beets to factories.

Plans have been worked out in conjunction with representatives of the coal operators and of the railroads by which it is expected the needs of the domestic consumers of coal will be substantially met. The program contemplates that approximately 2100 cars will be transported daily for domestic use in Indiana, Ohio, Michigan, eastern Kentucky, eastern Tennessee, western Pennsylvania, and West Virginia. Attention is also being given to the needs of domestic consumers in other states.

By Service Order 9, entered July 13, authorizing preference and priority in the car supply for transporting coal for the current needs of public utilities and public institutions those utilities and institutions have been kept going from day to day and generally have been able to accumulate some stocks of coal, and are in a much better condition with respect to coal than they were in July. For that reason and to avoid the inequalities in the distribution of cars at the mines which necessarily results from a priority order, a new order has been entered, which indicates that real emergency needs of public utilities and public institutions will be cared for in special cases. After October 14, a preferential car supply to meet such needs will be afforded by the railroads only upon approval by the commission.

Anthracite Coal

Although the railroads serving anthracite mines have furnished such mines close to a 100 per cent car supply, and although the anthracite production up to September 25 exceeds that of the same period last year, the production this year has been retarded by the recent coal miners' strike in the Pennsylvania anthracite mines, and by the switchmen's strike which commenced in April. There is a shortage of anthracite coal in some of the New England states due largely to embargoes placed by certain New England railroads in effect during a substantial part of the time between April and August 24. These embargoes have now been modified, and it is expected that the rail movement of anthracite coal to New England will proceed unhampered.

An idea of the relative quantity of freight transported during

the period June 26 to September 18 this year as compared with the same period for the years 1919 and 1918 can be had from the following figures: For that period during the current year the number of carloads of revenue freight were 11,008,184; during the same period for 1919 the number was 10,699,736 and during the same period for 1918 the number was 11,340,628.

During the first seven months of the year 1920 the number of net tons of revenue and non-revenue freight carried one mile by railroads having annual revenues exceeding $1,000,000, which represent more than 95 per cent of all railroads were 248,999,000,000; for the corresponding periods in former years the net tons carried one mile were 212,706,000,000 for 1919; 247,519,000,000 for 1918; and 245,093,000,000 for 1917. It will thus be seen that the number of net tons carried one mile for the first seven months of 1920 exceeds the net tons carried one mile during a corresponding period in any of the past three years.

Interpretations of Service Order No. 18

Under the operation of Service Order No. 18, recently issued by the Interstate Commerce Commission, which restricts the assignment of cars for railroad fuel supply, a number of railroads have had great difficulty in securing enough coal and have been faced with the probable necessity for confiscating large quantities of coal. Inquiries have been made to the Interstate Commerce Commission as to important questions that have arisen as to the proper interpretation of the order because different carriers have interpreted it in different ways. Chairman Clark of the Interstate Commerce Commission has, therefore, addressed a letter to Daniel Willard, chairman of the advisory committee of the Association of Railway Executives, and also to the Car Service Division and the National Coal Association, communicating a series of interpretations of the order reached by Division 5 of the commission after careful consideration.

The letter explains that for the purpose of breaking up practices and interpretations being placed upon Rule 8 of the coal car distribution rules as amended by the commission's order of April 15, it added in Service Order No. 18, a proviso that railroads may not assign cars for company fuel and fail to count such cars against the mine's distributive share unless the entire output of the mine is taken by the carrier for a period of not less than six months. It was not intended, the letter says, to draw any distinction between contracts which extend over the period of time specified that were or may be entered into after the issuance of the order and prior to November 1, and similar contracts that were in effect at the time of the issuance of the order, which extended to March 31, 1921, or later. It is also stated that the possibilities under the former order were carried to the extreme in some instances and the assigned railroad fuel cars were given to a mine for its entire output for a day or for certain days and the mine was left on a commercial basis for succeeding or intervening days. This is described as an intermingling of the two ideas of taking a part of the output of the mine and counting against it the cars assigned to it for the railroad fuel and the other provision for taking the entire output of a mine.

The modification of this rule contained in Service Order No. 18 was for the purpose of stopping this practice and making it entirely clear that it could no longer be followed. Service Order No. 18 prohibited the assignment of cars and failure to count them against the distributive share of the mine for the day or the assignment of cars in excess of the mine's distributive share for the day, except where the entire output of the mine is taken for not less than six consecutive months. The proviso as to contracts made after the issuance of this order and prior to November 1 and extending to or beyond March 31, 1921, as well as for existing contracts continuing for the period specified, is to be considered in connection with this interpretation. In some instances, Chairman Clark said, contracts for the entire output are made with producing companies owning two or more mines and the custom has been to assign cars to some one of the mines on different days. The order is not intended to interfere with this practice where carried out in good faith, but it must be confined to mines actually owned and operated by the producing firm or company with which the contract was made.

Where carriers have arranged for the purchase of coal on a tonnage basis instead of for a period of time, the commission thinks that such practice should be reduced prior to November 1 so as to cover the entire output.

The Transportation Act—An Important Reconstructive Measure

"The Transportation Act of 1920 is one of the most important reconstructive measures that Congress has enacted. For the first time we have a clear and definite policy from Congress for railroad operation under private control." These remarks were included in the report of the Committee on Railroad Securities presented at the convention of the American Industrial Bankers' Association held at Boston, Mass., beginning October 4. The chairman of the committee was Allen B. Forbes, of Allen, Forbes & Co., investment bankers of New York, but the report was read by the vice-chairman of the committee, John E. Oldham, of Merrill, Oldham & Co., of Boston.

An abstract of the report follows:

In the past your committee on railroad securities has made a number of definite and concrete recommendations for the solution of the railroad problems, and it is of interest to examine the Transportation Act of 1920 to see to what extent their recommendations have been fulfilled. In the annual report of the committee on railroad securities, submitted and approved at the seventh annual convention, the members were in agreement on the following points:

First—The pre-war plan of railroad regulation was a demonstrated failure.

Second—The railroads should not be returned to their pre-war status without providing relief from the burdensome conditions under which they have heretofore operated.

Third—Any plan of future government control should eliminate the conflict of control between state and federal bodies.

Fourth—The Sherman anti-trust law and state anti-trust laws in their application to transportation should be repealed in the interests of efficiency and economy, because such laws are unnecessary under proper governmental regulation.

Fifth—Any plan of governmental control which increases operating expenses and regulates income should assume responsibility for adequate earnings and sustained credit.

Sixth—Opposed to public ownership or permanent public operation and emphatically in favor of an early return to private ownership under such altered methods of regulation as will insure sound railroad credit and an adequate transportation system.

It must be a source of gratification to the Investment Bankers' Association to know that in enacting the Transportation Act of 1920, the congress recognized the fundamental character of every one of the questions mentioned above.

The Transportation Act of 1920 recognizes that the pre-war plan of railroad regulation was a demonstrated failure, and a serious and earnest effort was made to provide relief from the burdensome restrictions under which the railroads had previously operated and to eliminate the conflict of control between state and federal bodies. The Sherman anti-trust law as affecting the railroad industry is nullified under the new railroad legislation and the fundamental principle is recognized that any plan of governmental control which regulates income should assume responsibility for adequate earnings and sustained credit. In addition the operation

of the railroads is definitely established under private ownership . . .

The Transportation Act of 1920 is one of the most important reconstructive measures that Congress has enacted. For the first time we have a clear and definite policy from Congress for railroad operation under private control. While definite progress has been made towards the solution of the railroad problem, it remains to be seen how the new legislation will work out in actual practice, and particularly, if under the new conditions the credit of the railroads will be sustained.

Hardly less than the act of Congress, the prompt and comprehensive action of the Interstate Commerce Commission is to be commended. That body has demonstrated its intention fully to carry out the provisions of the railroad act and do its part in the restoration of railroad credit.

This problem of the credit of the railroads is the question in which we, as bankers and large distributers of railroad securities, are vitally interested. The railroad problem has not been solved unless recognition is given to the need of corporations for sound credit and also for corporations to raise new capital both readily and economically. Moreover, in accordance with sound principles of finance, the credit of the railroads generally must be established on a basis of such soundness and security that they are able to provide a proper proportion of their capital requirements through the sale of capital stock as well as bonds.

Those railroads which have satisfactorily met their financial requirements since the enactment of the Transportation Act have been for the most part those which have had independently a credit which has made it possible.

A moment's reflection, however, shows the combined railroad service of the country is rendered by a combination of units, many of which are not in that happy position. The service they render, however, is vital to the country's needs. How shall railroad credit as a whole be sustained, and a general credit for railroad securities be created, which will make it possible to raise the urgently necessary funds to give the service which the country requires and demands?

The question cannot be fully and satisfactorily answered in a sentence, a paragraph or a report. Some modifications of the law may be found to be desirable, and if so, we feel that a helpful rather than critical attitude may be expected on the part of Congress and the Interstate Commerce Commission.

The logic of the situation unmistakably points towards consolidations where economies can be effected and the satisfactory handling of traffic promoted. While in the judgment of the committee the law has wisely made such consolidations permissive rather than compulsory, sound business judgment will perceive the business opportunities and can be relied on to bring about this logical solution of many of the problems involved.

A Correction

In an article entitled "The Container System of Freight Transportation," appearing in the *Railway Age* of September 24, the statement was made that freight "can be handled at from 300 to 400 per cent less cost than with any of the present methods." This obviously is an impossible performance. The statement was intended to convey the idea that the cost of moving freight by means of the older methods—handling the individual packages—is from three to four times the cost of transporting the same amount of freight when using the container system.

The Narragansett Pier Railroad, 8 miles long, now has a gasoline motor-driven passenger car.

Germany Exporting Locomotives

By Robert E. Thayer,
European Editor of the *Railway Age*

London.

American locomotive builders have been brought face to face with German competition in the loss of an order for 2-8-2 locomotives for the Java State Railways. The order was handled by the Dutch Colonial Office and out of an order for 82 locomotives 58 went to German builders and 24 to Dutch builders who will obtain much of the material for the construction of them from the Germans. The order includes 2-8-2, 4-6-2 and 2-4-2 locomotives of a fair size. An American concern tendered bids on the 2-8-2 engines but lost the order to the Germans as the latter offered the same deliveries and agreed to build at a price which was 40 per cent lower, under the existing rate of exchange than the price of the American bidder.

With the recuperation of European industries, the United States must expect to meet with similar discouraging competition particularly with the rate of exchange as it stands today. With the German mark worth only 1.85 cents and the English pound worth only $3.50 as against a normal parity of 24 cents and $4.86, respectively, the exporters of the United States may well expect to find their foreign business greatly reduced, particularly where their foreign competitors can find the materials with which to fulfill their orders. In this particular case the German locomotive builders are on trial in the matter of delivery. Whereas they promised the same delivery as their American rivals it remains to be seen whether or not they meet their promise although it has been stated that some of the plants which received orders have been accumulating materials for some time and are well prepared to make good on their promised deliveries.

The total order of 82 locomotives was placed as follows: In Holland—24 to the Verkspoor of Amsterdam; in Germany—12 to Chemnitz (Saxony), 10 to Essenhinger, 24 to Henschal and 12 to Egesdorff. Contrary to newspaper reports none are reported to have been placed with Krupps.

The strong financial position of the United States is reacting against our exporters. No successful attempts have been made to even up the great disparities between ourselves and other nations in the value of money. These nations must do a large export business to raise the value of their currency and during this process American industries will suffer. Germany has not been the only country to cut in on America's exports. England with its pound sterling worth $3.50 is underbidding American locomotive builders.



The Train Used by the Prince of Wales Arriving at Geelong, Australia

What Are the Available Tie and Timber Resources?*

Reforestation in This Country and Vast Supplies in South America Will Insure Against Famine

By Dr. Hermann von Schrenk
Consulting Timber Engineer, St. Louis, Mo.

THE FOREST SERVICE estimates the total stand of available timber in the United States at the present time to be 746 billion cubic feet, of which 485 billion is in the form of saw timber and 246 billion cubic feet is in the form of cord wood. Of the standing timber approximately one half is in Washington, Oregon and California; 62 per cent of all standing timber is found west of the Great Plains. Of the total available supply a little over one-fifth is hard woods and the remainder soft wood. The total timber used per year amounts to about 26 billion cubic feet, of which some of the larger items are as follows:

	Thousand cu. ft.
Lumber	8,913,300
Hewn ties	1,050,000
Fencing	1,800,000
Fuel	10,450,000
Destruction by fire	1,080,000
Destruction by insects and disease	650,000

At the present rate of consumption, it will be noted that there is practically 30 years' supply if regrowth is not considered.

The Forest Service estimates that the annual growth on present forested areas is approximately six billion cubic feet. At the present rate of cutting, the forests in New England, the Middle Atlantic, Central and Gulf states will not last very long. Quoting from a recent Forest Service report: "Within the next 10 years the lumber cut will probably drop to one billion board feet; within 20 years most of the timber areas containing high grade timber will be cut off and the remaining timbers will be either on farm wood lots or on a few remaining large tracts and will be made up of second growth or the trees which were left as worthless at the time of first cutting." Similar statements are made for most of the sections. The southern pine forests are being cut out at a rate which, according to a statement recently made by the Southern Pine Association, indicates that approximately 82 per cent of the saw mills now operating in the south will be cut out in 5 years or less and over 97 per cent will be cut out in 10 years or less with a corresponding reduction in the output of 78 per cent. However, this does not mean that the total production will be reduced at this rate because there will probably be many small mills in so-called second-growth tracts.

The outlook for the 30 years' supply above referred to deals with the timber situation as a whole. In all probability the tie supply will extend for a considerable additional period. Almost any kind of tree is now utilized for tie purposes, particularly since most species have been made more or less suitable for use as ties by chemical preservation. Then again, the tie supply is not dependent upon the saw mill. The largest tie supply will come to the railroads in the form of hewn ties, made in many instances in small numbers from farmers' wood lots and so-called cut-over lands. As the output of sawed ties from large mills is reduced, the probability is that small mills will appear here and there as they have already done in many of the eastern states and yield local ties in regions which may have been regarded as wholly exhausted.

*Abstracted from an address given before the Roadmasters' and Maintenance Way Association at St. Louis, Mo., on September 22, 1920.

Railroads Need Not Worry

The conclusions to be reached by a careful study of the Forest Service figures indicate that the American railroads need not worry particularly for some years to come. There will doubtless be changes in the source of supply, changes in the kinds of wood used, changes in the methods to make certain types of wood better fitted for crosstie purposes and probably changes in first cost.

The second source of supply will be from countries in Central America and South America—in other words, possible supplies of tropical hard woods. From time to time during the last 30 years there have been sporadic tie shipments of one kind and another from tropical countries, but this field of supply has practically not been touched. At the present time numerous offerings are being made of various kinds of tropical woods and a brief review of the tropical situation may not be without interest. Mexico, the nearest country with a relatively large timber supply, has a forest area of approximately 20 million acres most of which belongs to the Mexican government. The forest is of two kinds—the mountain and highland forest composed largely of pines, and the tropical forest. Some of the pines are of very superior quality. Most of the pine areas, however, are situated on mountain ranges more or less inaccessible at present. The other, or the tropical forest, extends along the edges of the Central plateau and contains a large number of tropical hard woods. For instance, in the territory tributary to Vera Cruz there are some 85 different species of oak. Guatemala, Nicaragua and other Central American republics have large supplies, most of which, however, are located on the western side. On the Gulf of Mexico side there are considerable pine forests, particularly in Nicaragua, Honduras and Guatemala, many of them easily accessible from the coast and producing a species of pine of highly resinous character.

South American Resources

The chief tropical resources, however, are in South America. It is almost impossible to state the actual extent of these resources. The Andes mountains are forested for practically their entire length and very little of the timber in the mountains has been cut, due largely to difficulties of transportation and lack of demand. Brazil has probably the largest area. According to Zon, the Amazon flows for a distance of 1,860 miles through a virgin forest which stretches 1,100 miles from east to west and 750 miles from north to south and occupies an area of 825,000 square miles. This would be equal to a section of the United States extending from the Atlantic Coast to Colorado and from Chicago to the Gulf. Several years ago a number of the eastern railroads imported a considerable number of species of wood from the Amazon region, which are now in track in New Jersey, New York and Connecticut. The woods are all extremely hard and bear no resemblance whatever to the woods found in the United States. The Guianas are very rich in forest resources and there are numerous rivers which would facilitate bringing out desirable timbers. It is in these countries that the valuable green heart and mora are found. Venezuela and Colombia, although with fewer for-

ests, can also be counted upon for a very large future supply. On the west coast, the mountainous parts of Chile and Peru are extensively forested but there is practically no utilization of their woods at the present time. In fact, these countries import most of their timbers from the United States. The West Indies, while heavily forested in some sections, cannot begin to compare as to quantities available with Central and South America.

While these vast quantities of timber are undoubtedly available in the tropics, attention should be called to the fact that immediate unlimited uses of these resources can hardly be looked for. Tropical timbers grow in dense jungles (excepting the pine forests in Mexico and Central America) and usually a large number of species grow close together. The forest is very different from the northern forests where a certain species may predominate on an acre.

Fitness of Tropical Wood for Ties

In this connection it should be pointed out that the fitness of tropical woods for use as ties in the United States is as yet almost wholly unknown. Most species have very hard woods which in their native lands may have given excellent service in the construction of buildings, or as railroad ties, bridge lumber, etc. When brought to the northern temperate regions, however, many of these very excellent woods fail utterly when used in the form of track ties. These hard woods split and check when exposed to the wide extremes of temperature running from zero to 125 deg. F. or more. In other words, they are unable to withstand the expansion and contraction to which they are naturally subject in most of the regions of the United States. As there is no means of foretelling what any tropical wood is going to do, it is obvious that the purchase of any particularly number of any species must be attended with considerable risk. During the last 30 years a large number of species have been imported but owing to unfavorable records both as to their names, origin and years of service, correct data as to their fitness for tie purposes are wanting in most cases. Sufficient is known, however, to indicate the purchase of tropical woods in the form of ties irrespective of what country they come from should be consummated only after the most careful investigation as to their names and after years of trial in small quantities of definitely identified species in actual track service in the United States.

In considering the forest resources in the United States reference has already been made to the amount of timber cut and grown. No consideration of a possible tie supply would be complete without very definite and positive reference to the supply which could be obtained if proper forest measures were taken by the government and the people of the United States. One should not forget that while trees grow slowly they grow constantly and the cumulative effect of this persistent growth when taken over considerable areas is surprisingly large. United States Forester Graves made a statement last year that if the southern pine forest, covering 124,000,000 acres, were fully covered with trees, it would produce an average of 70 cu. ft. per acre per year or 27½ billion feet board measure per year. One can realize the enormous amount of regrowth which takes place when he considers that a large portion of the yellow pine ties utilized during the last 20 years have grown since the civil war.

Perhaps the best summary of future possibilities is given by Forester Greeley in the forest service report to the Senate. "If all of this land had been cut over in the first place with due regard to securing a future stand and had been protected from fires and excessive grazing after cutting, it would now be producing timber at least three times as fast as at present. Judging from the experiences of other countries and from results obtained where forests have been carefully treated in our own country, it is believed entirely conservative to assume that the 3,260,000 acres could produce at an average rate of 60 cu. ft. of wood per acre per annum or, in terms of timber, 150 ft. b.m. per acre per annum. This would mean a total growth on the present area of cut-over forest land, including that now devastated, of 19½ billion cu. ft. of wood, including 40 billion ft. 6 in. of saw timber. At the same rate or production for the remaining 137,000,000 acres of virgin forest in which there is now no net increment, our total commercial forest area is capable of producing annually after the virgin timber has been cut off, at least 27¾ billion cu. ft. of wood including 70 billion ft. b.m. of saw timber. This exceeds our present rate of use and destruction. With a reasonable per capita consumption it would be able to meet indefinitely the needs of our growing population for wood and other forest products.

Southeastern Express Company

WASHINGTON, D. C.

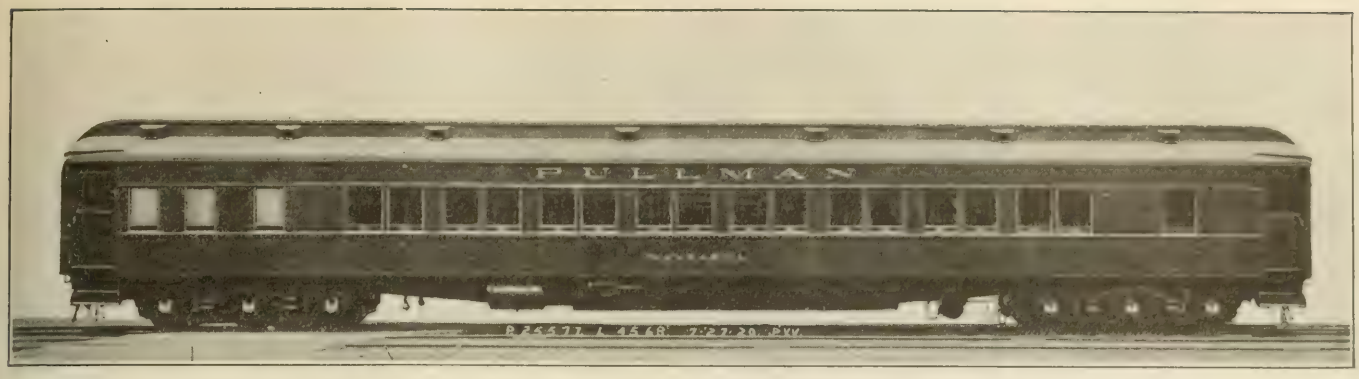
MUCH INTEREST has been created in Washington by the announcement of the organization of the Southeastern Express Company in Birmingham, Ala., articles of incorporation under the Alabama law having been filed with the probate court of Jefferson county on October 6.

It is believed here that this may represent the beginning of a fight which for a long time has been known to be brewing between interests which favor the operation of the express business of the country by a single corporation and those which oppose unified management and wish to return to the territorial handling of the express business which prevailed prior to the taking over of the railroads by the United States Railroad Administration.

As the charter of the Southeastern company empowers it to "own and operate a railway express business in the Southeast and elsewhere" and as its purpose was stated to be "to afford such railway express service and facilities to the Southeastern section of the United States as the public necessities and convenience of that section require," it is believed that the new company has been given assurances of the franchise to do business on some of the prominent railroads of the South and will shortly enter the field as an active competitor of the American Railway Express Company. It is also expected that other companies may be organized in other sections of the country with similar assurances from railways operating in the territory they expect to serve.

There is now before the Interstate Commerce Commission for its approval a form of contract which the American Railway Express Company has prepared and offered to the various railways of the country, this contract being based on the theory of unified operation of the express business. Some railway companies, among them some of the strong companies operating in the South, are bitterly opposed to signing the contract submitted by the American Railway Express Company, claiming that some of the provisions of the contract are unfair to the railways, but basing their opposition mainly on unified operation of the express business.

The officers and directors of the Southeastern Express Company are connected with some of the strongest banks of the South and some of them are directors of leading railroads. Captain Charles A. Lyerly of Chattanooga, Tenn., president, is president of the First National Bank of Chattanooga and a director of the Alabama Great Southern, one of the lines of the Southern Railway System; Robert F. Maddox of Atlanta, Ga., vice-president, is president of the Atlanta National Bank, and a director of the Seaboard Air Line; D. P. Bestor, Jr., of Mobile, Ala., secretary, is vice-president of the First National Bank of Mobile; H. C. Armstrong of Selma, Ala., treasurer, is president of the City National Bank of Selma. The officers, together with George L. Baker, president of the National State Bank of Columbia, S. C., make up the directorate.

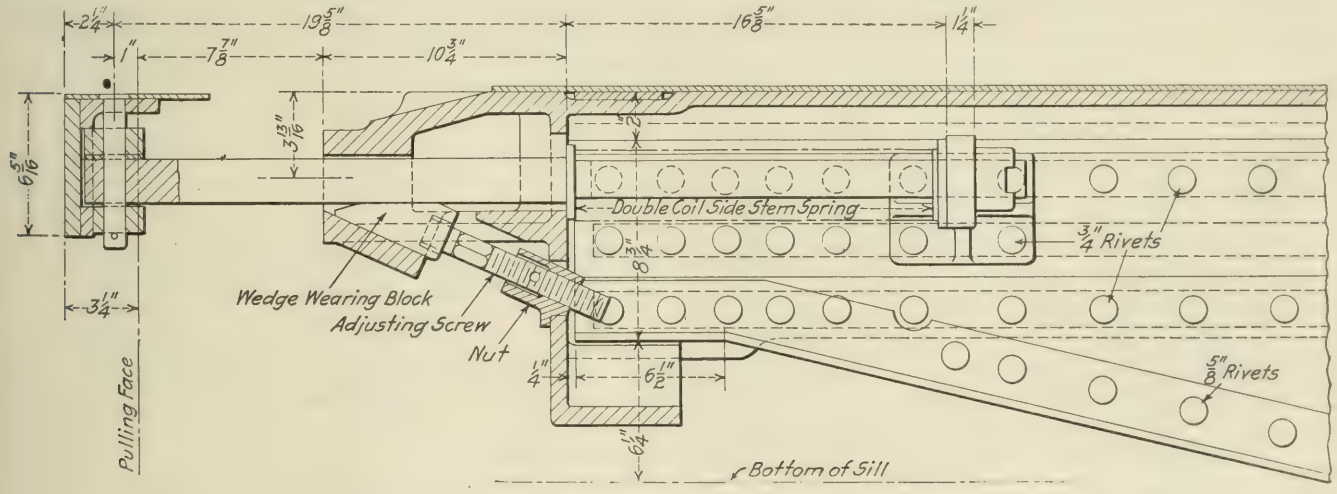


Latest Type Pullman Sleeping Car

Improvements in New Pullman Sleepers

Changes in Details Which Have Been Developed to Add to the Comfort and the Safety of Travel

ALTHOUGH NO CHANGES in basic design have recently been made in its equipment, the Pullman Company has been constantly working on the development of detail improvements most of which have had for their object an increase in the comfort or safety of the occupants of Pullman accommodations. A number of changes of this nature have been incorporated in the new sleeping cars which the company has been building at its Pullman works, Chicago, since the return of the railroads to private operation.



Section Through the Lower Buffer Side Stem, Showing Wear Adjusting Screw and Wedge

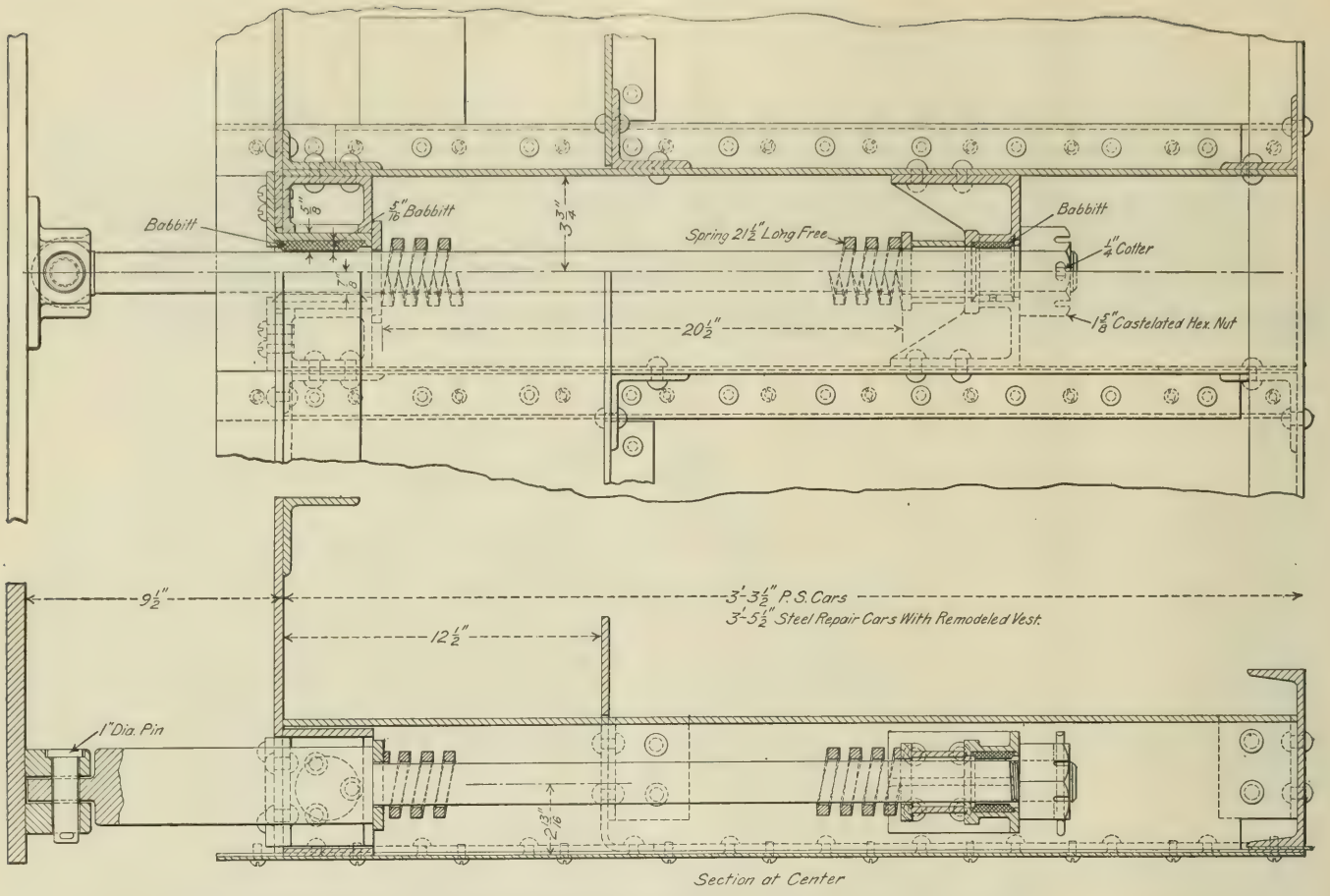
Diaphragm Mechanism

The metal diaphragm is now a standard feature of Pullman car construction and cars equipped with these diaphragms have been in service several years. The clearance between the diaphragm and the sides of the narrow metal pocket within which it telescopes is necessarily limited. But the method by which these diaphragms have been supported has permitted considerable lateral motion at the top and this has tended to increase rapidly as the buffer side stems wear into the surfaces of the openings in the platform end casting through which they pass. These conditions have resulted in the constant slamming of the diaphragm against the sides of the pocket and the noise thus caused led to numerous complaints.

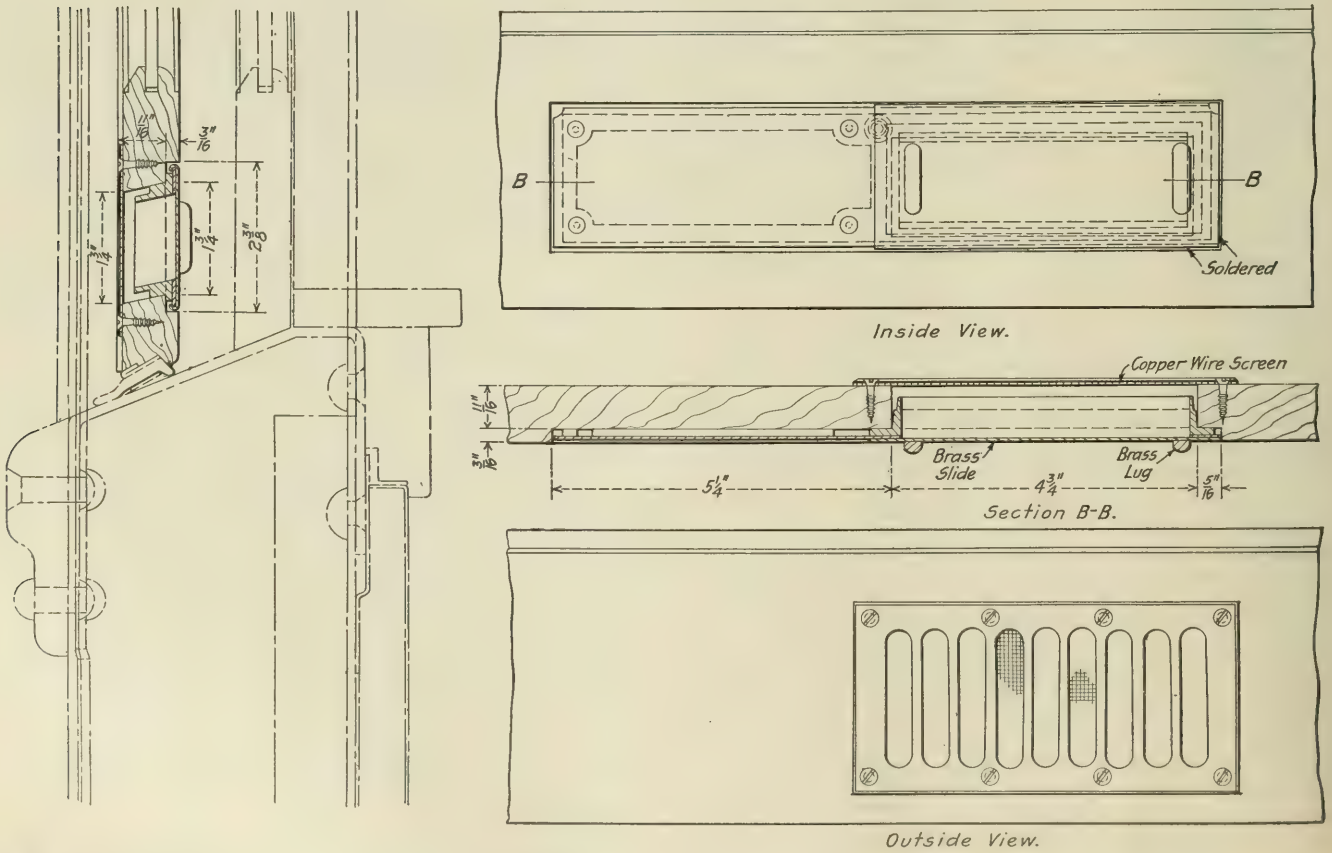
In the new cars both the upper and lower diaphragm buffer mechanisms have been arranged to maintain the alinement of the diaphragm within the limits of the clearance in the pocket, thus eliminating the greatest source of noise at the ends of the car. In this design provision has been made to take up wear so that the diaphragm may be readily restored to its normal position as frequently as conditions require.

The height of the diaphragm is controlled by the surfaces on which the buffer side stems rest. In the new cars these stems are supported on adjustable shims or wedge blocks let into the platform end casting and adjusted as shown on one of the drawings. The adjusting device consists of three pieces, the shim, the adjusting screw and the nut. The parts are readily assembled or removed by turning back the adjusting screw into the nut, which permits the nut to be inserted or lifted out of the opening in the casting. The shim is then free to drop out. When properly adjusted the screw is prevented from turning back by a cotter which passes through slots in the extended portion of the nut and one of two holes drilled through the screw at right angles to each other.

Upper diaphragm buffers either of the semi-elliptic spring type or of the stem and coil spring type have never pro-



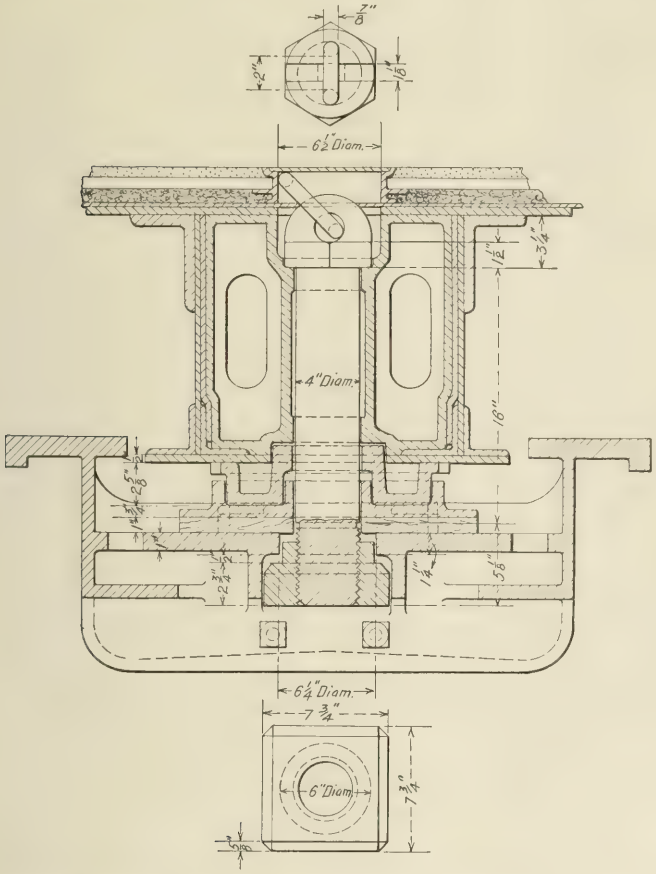
Single Stem Diaphragm Mechanism with Babbitted Centering Plates



Ventilator Applied to the Lower Rail of Outside Sash

vided a satisfactory means of centering the top of the diaphragm. Consequently the entire reaction from the lateral force at the top of the diaphragm caused by the swaying of the cars has been taken by the buffer side stem supports. This has caused excessive wear and a rapid increase in the lateral movement at the top of the diaphragm.

To overcome this a single stem upper diaphragm mechanism has been designed in which the stem is restrained between lateral bearings where it emerges from the end of the car. These bearings are removable malleable iron castings faced with babbitt, inserted from the outside and held in



Locked Center Pin with Full Diameter Effective for Stress Resistance

place by machine screws applied through flanges to the end of the car. When worn they are readily replaced, and after rebabbitting are ready for further service. The buffer stem rear guide is also lined with babbitt, but this casting is riveted in place and is not designed for removal between shoppings.

Sash Ventilators for Lower Berths

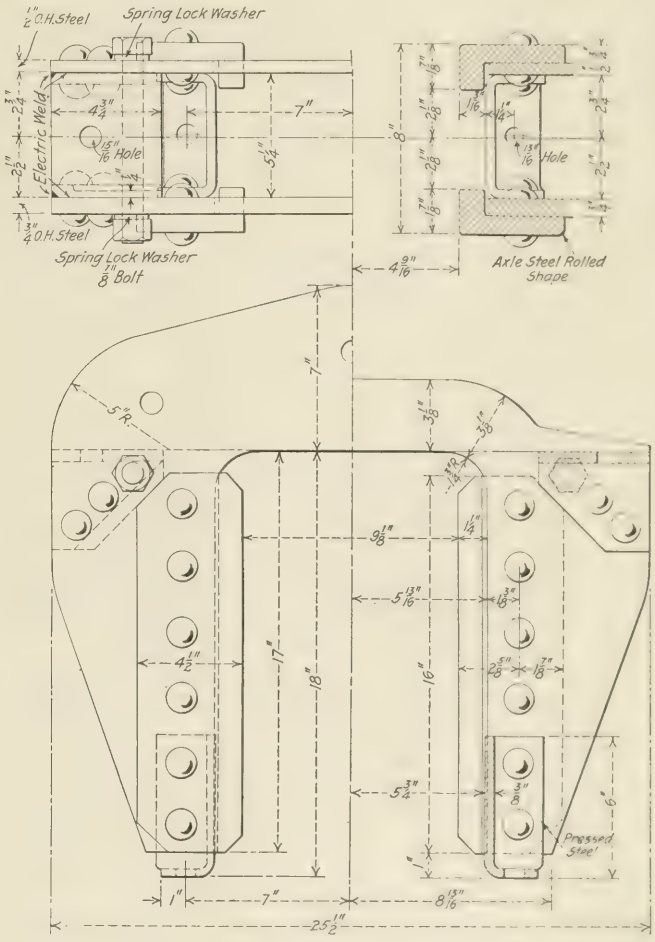
Although an extremely simple device, the sash ventilator which has been placed in the lower rail of the outer or storm sash of the car windows is one which immediately appeals to the occupants of lower berths and it has already been the object of a number of individual expressions of appreciation from the traveling public.

The difficulty in always securing satisfactory ventilation and temperature regulation in lower berths during the seasons when heat is required and the windows are normally kept closed is well known. Under these conditions the only recourse of the occupant of a lower berth who wishes additional ventilation is to raise the inner sash and then slightly open the outer sash, adapting some portion of his personal belongings to serve as a stop to prevent it from working shut. The ventilator furnishes a screen-protected opening, closed with a horizontally operating slide, which provides easy and close regulation of the amount of air admitted.

The Locked Truck Center Pin

While it is impossible to design equipment strong enough to resist destruction under all conditions of collision impact, it is generally recognized that everything which will tend to hold the underframes in the same horizontal plane will exert a powerful influence in the prevention of telescoping, the form of destruction usually responsible for the greatest loss of life in train accidents.

The use of a locked center pin as a means of resisting the tendency of one underframe to climb over the top of another has received considerable recognition and at least one self locking center pin has been developed. The locked center pin is effective only so long as it holds the truck and car body together. The self locking type is open to the possible objection that the full area of the pin section is not available to resist tension or shearing stresses and therefore un-



Built-up Pedestal for Pullman Trucks

der certain conditions might not be as effective in preventing a separation of the truck and car body as a pin of solid section.

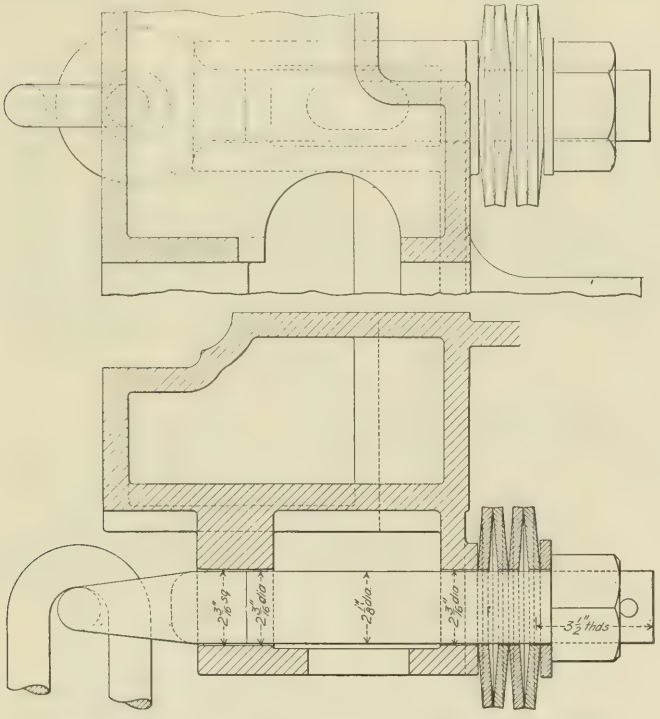
These considerations have led to the design of the center pin shown in one of the drawings. The pin is a forged steel bolt four inches in diameter with a shallow hexagonal head and a square nut of special design. The head sets in a shallow hexagonal socket at the bottom of a pocket in the center sill filler casting. The nut is placed in a square recess in the under side of the truck bolster and two ⅞-in. bolts applied through flanges of the bolster casting hold it in position when the center pin is not in place. In applying the bolt, it is dropped

in place and screwed into the nut, which is held in sufficiently close alinement by the square recess in which it is placed to prevent any difficulty in starting the threads. When drawn up as far as it is possible to turn the bolt, the head is brought into register with the socket and dropped in. This locks the bolt and nut except for the slight turning of the nut due to the curving of the trucks, which it is expected will prevent the nut from sticking and causing trouble when removal is necessary.

The use of check chains has been dispensed with and a plate on which is cast in raised letters the legend, "Locked Center Pin, Remove From Inside," is attached to both side frames of each truck between the center and inner pairs of wheels.

Built Up Truck Pedestals

In order to overcome the occasional failures of cast truck pedestals which have occurred in service a pedestal built up of plate and rolled and flanged sections has been designed



Application of Safety Chains with Spring Washers

and applied to the new equipment now being built. The outside and inside plates are of ¾-in. and ½-in. open hearth steel, respectively, and are separated by steel pressings at the top and bottom. The top pressing is of one-half inch material and is electrically welded and riveted in place. The lower pressing is of ⅜-in. material. The jaw faces are formed by two rolled steel pieces of special angle section which are riveted to the outside of the plates with the short legs turned in. These pedestals are built up and applied as units.

Safety Chain Application

One of the interesting details in the construction of these cars is the use of spring washers on the safety chain anchor bolts. The application is shown in detail in one of the drawings. The washers are 6 in. in diameter and are cupped to a depth of 5/32 in., each, thus providing for a full load travel of the safety chain bolt of ⅝-in. This arrangement, which is common in European practice, acts as a cushion for part of the shock to which the chain and bolt are subjected when brought into action by a failure of the coupler. In the application shown these washers have a full load capacity in the ⅝-in. travel of approximately 50,000 lb.

Payment of Guaranty Delayed

WASHINGTON, D. C.

THE DIFFICULTIES that have been experienced by the railroads in getting money out of the United States treasury, either on account of their guaranty or as a loan from the $300,000,000 fund provided for that purpose, have been brought to public attention by the issuance of an opinion by the comptroller of the treasury, W. W. Warwick, advising the Secretary of the Treasury that he must not pay out money on certificates by the Interstate Commerce Commission for partial payments to the railroads on account of their guaranty for the six months period ending August 31, but must await the filing of claims by the railroads and the determination of the commission as to the exact amounts due to the roads to make the payments in full.

Payments to the roads on account of somewhere between $300,000,000 and $400,000,000, much of which is urgently needed at this time, and the lack of which is causing a number of roads to be threatened by strikes of their employees because of the delay in paying their back wages, is held up as a result of the decision. An appeal for some relief from the decision has been made to the President by Alfred P. Thom, general counsel for the Association of Railway Executives, asking the President to use his influence to obtain a reconsideration of the matter.

Attention was called in these columns two weeks ago to the fact that the treasury department was taking the position that partial payments could not be made under the law after September 1, in addition to the advances which had been made in accordance with specific authority of the law up to that time. At that time it was not known whether the commission intended to press the point but on October 7 the treasury department made public an official decision of the comptroller of the treasury in the case of two certificates submitted to the treasury by B. H. Meyer, as chairman of Division 4 of the Interstate Commerce Commission. The certificates were for $500,000 for the Grand Trunk Western and $250,000 for the Detroit, Grand Haven & Milwaukee.

The amount of the six months guaranty is estimated at about $600,000,000, or the total of the deficit incurred by the roads during the six months period, after paying the retroactive wage increase, and enough to make up half a year's standard return. The exact amount of the August deficit has not yet been reported and the determination of the final amount also depends on what the Interstate Commerce Commission will allow the roads to charge for maintenance. Up to September 1 the commission had issued certificates for about $234,000,000 as advances on account of the guaranty, on applications from the roads for money with which to pay interest, dividends and in some cases current expenses. During the latter part of August there were also a number of applications for additional certificates for money to pay the wage increase, awarded by the Railroad Labor Board of July 20 and made retroactive to May 1. Many roads, however, had not figured the amount of the back wages by September 1 and needed additional sums for that purpose. The commission attempted to meet the situation by certifying additional amounts for less than the full estimated amount of the guaranty to meet the requirements of the roads pending the complicated process of determining just how much the guaranty amounts to for each road. The objection of the treasury department to these certificates was that they were not in proper form because they contained a statement that an additional amount might be necessary later to make good to the carrier the full amount of its guaranty under Section 209 of the transportation act and that the law did not contemplate piece-meal payments after September 1. At least two roads, foreseeing the delay in collecting their guaranty from the government, have asked authority from the Interstate Commerce Commission to borrow money from banks

with which to pay back wages and other items of operating expenses. The Indiana Harbor Belt asked to borrow $2,200,000, saying it expected about $3,000,000 on final settlement of the guaranty, and the Richmond, Fredericksburg & Potomac also asked permission to borrow $250,000 solely for the purpose of paying wages.

As has previously been reported the treasury department had also held up payment on various certificates issued by the Interstate Commerce Commission for loans to carriers under Section 210 of the act, and it also appears that many certificates have been held up that were issued by the commission under Section 204 of the act, which provides for the reimbursement of the short line railroads that were relinquished by the Railroad Administration for their losses during the period of federal control.

As in the case of the guaranty, the determination of the amounts due to the short lines involves some complicated accounting problems and the commission has felt it necessary to issue certificates covering partial payments pending a final settlement. A number of such certificates for partial payments had been honored, but since that time one of them has been submitted to the comptroller of the treasury for a ruling and the commission has recalled the others.

Many of the railroads also have sums due them from the Railroad Administration on account of their guaranty for the period of federal control which they will be unable to collect until they reach a final settlement with it, as it takes the position that it has already paid out as much as it is safe for it to do pending the settlements. The decision of the comptroller as rendered to the Secretary of the Treasury is in part as follows:

Comptroller Warwick's Decision

"I have your letter of September 27 transmitting two certificates which have been submitted to you by B. H. Meyer, as chairman, Division 4 of the Interstate Commerce Commission.

"My decision is requested whether you are authorized under the provisions of paragraph (g) of section 209 of the act of February 28, 1920, 41 Stat., 466, to make payment on the certificates as submitted.

"One of the certificates submitted, No. A-246, is as follows:

INTERSTATE COMMERCE COMMISSION
WASHINGTON

Certificate No. A-246

CERTIFICATE OF INTERSTATE COMMERCE COMMISSION UNDER SECTION 209 (g) TRANSPORTATION ACT, 1920

To the Secretary of the Treasury of the United States:

1.—The Interstate Commerce Commission, hereinafter called the Commission, hereby certifies that the Grand Trunk Western Railway Company, a corporation of the states of Michigan and Indiana, hereinafter called the Carrier, is a carrier as defined in paragraph (a) of section 209 of the Transportation Act, 1920; that the Carrier filed with the Commission, on or before March 15, 1920, a written statement that it accepted all of the provisions of the said section 209.

2.—The Commission has ascertained and hereby certifies to the Secretary of the Treasury that the amount of Five Hundred Thousand Dollars ($500,000) is necessary to make good to said Carrier the guaranty provided by section 209 of the Transportation Act, 1920.

3.—This certification is made subject to the proviso that the Commission may hereafter certify to the Secretary of the Treasury such additional amounts as may be necessary to make good to the Carrier the guaranty of said section 209 of the Transportation Act, 1920.

Dated this 25th day of September, 1920.

By the Commission, Division 4.

(Signed) GEORGE B. MCGINTY,
Secretary.

The other certificate, No. A-247, is identical with this except that it relates to the Detroit, Grand Haven & Milwaukee Railroad Company and is for $250,000.

"Your doubt as to the sufficiency of this certificate arises from the fact that paragraph 2 thereof does not state that $500,000 is the amount necessary to make good the guaranty. It is merely to the effect that said amount is necessary to make good the guaranty and it is qualified by paragraph 3, which reserves to the commission the right thereafter to certify "such additional amounts as may be necessary to make good to the carrier the guaranty."

"Considering the form in which this certificate is made and the amount stated therein it is apparent that said amount is not the amount ascertained by the commission to be necessary to make good the guaranty to this carrier, but is, in fact, only an amount estimated to be within the amount necessary to make good said guaranty. In other words, it is to be regarded as an advance or partial payment or payment on account on the carrier's claim under the guaranty. This raises the question whether the provisions of paragraph (g) authorize such advances or partial payments or payments on account.

"The direction in the statute is that the commission shall, as soon as practicable after the expiration of the guaranty period, ascertain and certify the several amounts necessary to make good the guaranty to each carrier and that the Secretary of the Treasury shall draw warrants for the amount shown in such certificate as necessary to make good such guaranty. From this language it would appear to be clear that paragraph (g) contemplates and authorizes only one payment in each case, said payment to be made after the commission shall have ascertained and certified the amount necessary to make good the guaranty. That such was the intent and purpose of this paragraph is further indicated by the fact that in the succeeding paragraph provision was made for advances during the guaranty period of such sums, not in excess of the estimated amount necessary to make good the guaranty, as are necessary to enable the carrier to meet its fixed charges and operating expenses. Having thus provided for the fixed charges and operating expenses during the period of six months after termination of Federal control and having by release from federal control and by authorizing increased rates enabled the carrier to make its own provision for caring for its financial obligations after the six months guaranty period, I think it is but reasonable to assume that Congress intended that the payments authorized under paragraph (g) should be made only after a carrier had submitted its entire claim under the guaranty and the commission had ascertained the amount due thereon. The law providing for the guaranty was enacted before the beginning of the guaranty period and it must be assumed that all carriers affected thereby were aware of its provisions at the time it was passed. Therefore, if any carrier neglected, during the guaranty period, to avail itself of the provisions of paragraph (h) or to have its records and evidence in proper shape for the presentation of its entire claim under paragraph (g) within a reasonable time after the termination of the guaranty period the responsibility for delay in receiving final payment under the guaranty must rest with the carrier and not the Government.

Making Advances Held Not to Be Within Letter of Law

"It is noted that, notwithstanding the fact that the advances authorized under paragraph (h) are in no case to be in excess of the estimated amount necessary to make good the guaranty, provision is made in said paragraph for securing the United States against the contingency of such advances being in excess of the amount of the guaranty as finally determined by the commission. Since it was deemed necessary to provide against overpayments resulting from erroneous estimates during the guaranty period it must be assumed that similar provision would have been made in paragraph (g) if said paragraph had been intended to authorize payments based on estimates. No such provision having been made the only logical inference is that payments on estimates are not authorized under said paragraph.

"Reading paragraph (g) in the light of the other provisions

of section 209 and considering the number of debit and credit items which may be involved in the determination of the amount payable upon final settlement under the guaranty I am of opinion that the making of advances or partial payments under said paragraph (g) is not within either the letter or the spirit of the law.

"I can find nothing in the law to justify a conclusion to the effect that said paragraph (g) authorizes any payment to a carrier before the amount due under the guaranty has been ascertained by the commission.

"I think it is quite clear that the law does not give to the carrier the right to file its claim piecemeal and to have certificates for payment made by the commission without limit as to number or time.

"If payment is authorized upon certificates made in the form hereinbefore set forth then there is no legal requirement that any settlement made under the provisions of paragraph (g) be regarded as final, and there would be no end to the work of the commission in examining and re-examining the accounts of the carriers as new items of claim might be presented for years to come. I cannot believe that such was the intent or purpose of the law. I think the law contemplated the adjudication and final settlement of these claims as soon after the expiration of the guaranty period as practicable.

"The needs of certain carriers for funds is recognized but this office may not construe the law to authorize the payment of public money except in such amounts and at such times as Congress has authorized by law, no matter how urgent the needs of claimants.

"Answering your question specifically I have to advise that you are not authorized to issue a warrant upon a certificate in the form submitted in this case or upon any other certificate which does not show that the amount stated therein has been ascertained and certified by the commission as the amount necessary to make good the guaranty.

"You ask also whether you are now authorized to make advances under paragraph (h) in cases in which application therefor was filed with the Commission on August 31.

"In reply to this question you are advised that you are authorized to make advances under paragraph (h) on all applications filed with the commission prior to September 1, 1920, subject, of course, to all the conditions and requirements of said paragraph, one of which is that the advance must be necessary to enable the carrier to meet its fixed charges and operating expenses during the guaranty period.

"The carrier having applied in time is not responsible for such delay as may be necessary in action by the Interstate Commerce Commission or the Treasury Department."

Freight Car Loading Continues to Increrse

WASHINGTON, D. C.

THE VOLUME of freight traffic handled by the Class I railroads during the week ending September 25 established a new high record for this year and exceeded that for the corresponding weeks of 1919 and 1918. The number of cars loaded with commercial freight for that week, according to reports compiled by the Car Service Division of the American Railway Association, was 994,687, as compared with 987,041 in 1919 and 991,980 in 1918. The best previous record for a week this year was 985,064 cars, in the week of August 28. For the week of September 18 the total loading was 983,919 cars. For the week of September 25 increases are shown as compared with the corresponding week of 1919 in the loading of grain and grain products, coke, ore, merchandise and less than carload freight, while decreases are shown in the loading of livestock, forest products, coal and miscellaneous freight. The loading of grain and grain products shows an increase as compared with 1919 for the first time this season. As compared with the corresponding week of 1919 decreases in total loading are shown, however in the Eastern, Allegheny, Southern and Central Western districts, the increases being in the Pocahontas, Northwestern and Southwestern districts. The report for the week of September 25 follows:

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

Summary—All Districts: Comparison of Totals This Year, Last Year, Two Years Ago. For Week Ended Saturday, September 25, 1920

Freight Car Loading Continues to Increase

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year 1920	Total revenue freight loaded: Corresponding year 1919	Total revenue freight loaded: Corresponding year 1918	Received from connections: This year 1920	Received from connections: Corresponding year 1919	Received from connections: Corresponding year 1918
Eastern	1920	6,582	2,836	55,802	3,587	8,464	12,643	47,852	100,961	238,527	.....	.....	266,468	.....	.....
	1919	7,258	2,689	57,741	2,815	8,174	6,349	28,704	128,013	.....	241,743	232,320	.....	259,541	259,585
Allegheny	1920	2,820	3,527	64,300	6,752	4,293	15,665	38,990	78,210	214,557	.....	.....	141,860	.....	.....
	1919	3,294	2,922	65,086	4,863	4,686	16,794	43,282	73,947	.....	214,874	229,093	.....	143,348	190,856
Pocahontas	1920	165	417	25,583	741	2,043	245	2,878	7,113	39,185	.....	.....	19,013	.....	.....
	1919	222	422	25,353	621	2,032	272	132	10,093	.....	39,147	42,542	.....	12,601	24,712
Southern	1920	3,381	2,408	25,139	1,319	19,136	2,989	37,236	38,312	129,920	.....	.....	77,267	.....	.....
	1919	3,178	2,845	26,374	285	19,731	2,659	20,228	56,267	.....	131,567	125,867	.....	74,331	71,407
Northwestern	1920	15,598	8,583	11,614	1,548	16,074	47,768	27,501	39,223	167,914	.....	.....	61,592	.....	.....
	1919	14,460	10,117	12,820	595	16,937	39,852	21,431	49,656	.....	165,868	173,978	.....	65,415	82,264
Central Western	1920	11,711	12,933	24,204	375	6,003	3,243	32,505	45,491	136,465	.....	.....	71,275	.....	.....
	1919	11,830	13,702	23,078	314	6,101	3,538	24,500	54,014	.....	137,077	129,182	.....	76,493	68,630
Southwestern	1920	4,362	2,939	6,178	138	8,368	386	17,689	28,059	58,119	.....	.....	82,434	.....	.....
	1919	4,308	2,360	6,972	150	7,462	576	10,618	24,319	.....	56,765	58,998	.....	52,637	49,419
Total all roads	1920	44,619	33,443	212,820	14,460	64,381	82,939	204,656	337,369	994,687	.....	.....	719,909	.....	.....
	1919	44,550	35,057	217,424	9,643	65,123	70,040	148,895	396,309	.....	987,041	.....	.....	684,366	.....
	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	991,980	.....	.....	746,873
Increase compared	1919	69	.....	.....	4,817	.....	12,899	55,761	.....	7,645	.....	.....	36,543	.....	.....
Decrease compared	1919	.....	1,614	4,604	.....	742	.....	.....	58,940	.....	.....	.....	.....	.....	.....
Increase compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	2,707	.....	.....	.....	.....	.....
Decrease compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	26,964	.....	.....

The freight car shortage (deferred car requisitions) shows a further reduction during the week ending September 23 to an average of 89,947 for the United States, as compared with 96,114 the previous week. Of the total 48,741 were box cars and 24,498 were coal cars.

Freight car accumulations during the week ending October 1 were reduced to 45,758, of which 17,845 were held for export and coastwise movement. For the previous week the total was 47,689.

Operating Statistics for July

As indicating the progress made by the railroads in their efforts to speed up the movement of freight, a report just

compiled by the Bureau of Railway Economics on freight car performance for the month of July shows that the mileage made by the average freight car per day, 26.1, was the greatest since the month of October, 1919, when the average daily mileage was 27.3. For July, 1919, the average was 24.1. For June the average was 25, and for each month of this year for which the figures have been compiled there has been an improvement both as compared with the preceding month and as compared with the corresponding month of last year, except in April, when the switchmen's strike was at its height. An improvement of one mile in the average is equivalent to an addition of 100,000 cars to the freight equipment of the country.

The Bureau's report also shows that the average number of tons of freight per loaded car, 29.6, was the greatest for any month since December, 1918, when the average was 29.8 tons. For July, 1919, the average was 27.8 and for June of this year it was 29.

These figures explain in part how it has been possible for the railroads, in spite of inadequate facilities and labor difficulties during the early months of the year, to handle a volume of freight traffic during the first seven months of 1920 greater than during the corresponding period of any of the past three years, as shown by a statement recently issued by the Interstate Commerce Commission.

The figures also show, however, that the average miles per car per day in 1920 has been less in each month than in the corresponding month of 1917 or in 1918 except January and February, 1919, and the tons per loaded car are still less than in some months of 1918. In July and August, 1918, the average was 30.1.

Further information reaching the Car Service Division of the results accomplished through drives conducted for the unloading of cars on Saturday afternoons and Sundays, indicates that on one railroad, during a period of nine weeks, there were unloaded on Saturday afternoons and Sundays 63,495 cars, or an increase of 24,992 cars over normal unloading. This is an average increase over normal of 2,777 cars each week, or 2.66 per cent of the total cars on that line.

Extending this per cent to all Class I railroads, indicates that with similar drives in effect on all such railroads, there would be added to the available equipment of the country 73,586 empty cars per week. This indicates, in a measure, the great possibilities that lie in drives and campaigns of this kind.

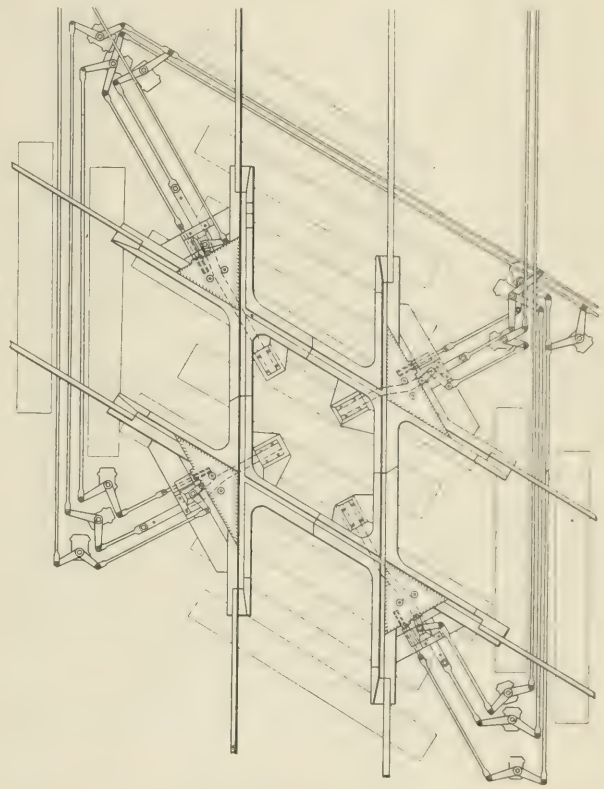
Recent Improvements on the Eymon Crossing

The Eymon continuous rail crossing which has been subjected to actual service tests for the past six years has recently undergone some extensive improvements designed primarily to increase its adaptability for use in interlocking installations. The Eymon crossing depends for its distinctive properties on four triangular blocks of steel placed in the exterior angles of the four corners of the railroad crossing and arranged to slide in a direction perpendicular to the line bisecting the angle of the corner so that either one or the other flangeway will be closed up, thus providing a continuous rail for either track at will.

As a result of the service to which this type of crossing construction has been subjected, it has been found desirable to undertake certain modifications which are designed greatly to extend its adaptability to various classes of service. One change has been to increase the size of the movable blocks so that they have a length of 28 in. on each of the running rail edges. Another change has been to place all of the operating rods on the outside of the crossing so that there will be no movable parts inside the diamond where they would be in danger of injury from dragging brake rigging, etc. Provision has also been made in the flangeways for the clearing out of dust or other foreign matter each time the movable block is shifted.

The design of the crossing has also been simplified so that the movable block is a single solid piece with the operating rods placed on the under side and with provision for the removal of the blocks as required for inspection or renewal without necessity for dismantling the crossing completely.

Another modification has involved a redesign of the connections for interlocking installations. Lugs have been provided at the back of the movable block for the connection of a bell crank to be attached to mechanical bolt locking or to suitable electric locking as the case may be. Arrangements have been made for a plunger lock pin with a standard eight-inch throw so that the use of one of the Eymon crossings in interlocking layouts can be made to comply with standard safety requirements.



General Plan of an Eymon Crossing as Arranged for Control from an Interlocking Tower

These crossings, which are manufactured by the Eymon Crossing Company, Marion, Ind., are adapted to the use of manganese steel construction with the movable blocks made of manganese steel castings of special composition.

The Joint Committee of Stresses in Track, of the American Railway Engineering Association and the American Society of Civil Engineers, is now gathering data in the field on curved tracks on the line of the Delaware, Lackawanna & Western in New Jersey, according to a statement made by A. N. Talbot, chairman of the committee, before the recent annual convention of the American Society of Civil Engineers at Portland, Ore. Following these tests it is expected that the party will go to New Mexico to make further tests on curved tracks of the Atchison, Topeka & Santa Fe. Because of the amount of time required to work up the data the committee does not expect to make more than a progress report at the annual meetings of the two associations next winter.

Oral Argument on State vs. Interstate Passenger Fares

WASHINGTON, D. C.

THE ISSUE between the railroads and the state railroad commissioners as to whether the Interstate Commerce Commission under the terms of the transportation act has been given increased power to remove state discriminations against interstate commerce, was sharply drawn in oral arguments presented before the full membership of the federal commission at Washington on October 11 and 12 in the New York and Illinois passenger fare cases. In these cases the railroads have petitioned the Interstate Commerce Commission to require an increase in the intrastate rates by the percentages authorized by the commission for interstate rates. The case was argued and briefs were filed not only by the railroads and the state commissions directly involved, but also by counsel for the Association of Railway Executives and the National Association of Railway and Utility Commissioners, which appeared on behalf of 42 state commissions in opposition to the position of the carriers, although 31 of the states have allowed the full amount of the advances allowed by the Interstate Commerce Commission. The position of the state commissions, as represented by John E. Benton, general solicitor of the National Association of Railway and Utilities Commissioners and a committee of five, was that in the transportation act Congress had merely written into the law the doctrine of the Shreveport case decision, and had not broadened the powers of the federal commission as to the rates for intrastate commerce, which Mr. Benton said is "none of the federal commission's business." Alfred P. Thom, general counsel for the Association of Railway Executives, on the other hand, contended that the act contains new law on the subject, in that the railroads for the first time have been given the right to complain of a state rate and that the Interstate Commerce Commission is authorized to remove a discrimination against the whole body of interstate commerce, not merely a discrimination against particular localities or persons.

Counsel for the state commissions made much of the fact that the Congressional committees before passing the act had left out the words authorizing the federal commission to remove an "undue burden" on interstate commerce, but Mr. Thom argued that this was immaterial since the law contained language authorizing the commission to consider intrastate rates on one hand and interstate rates on the other and determine whether either discriminates against the other. In other words, he said the commission must consider the whole field of interstate commerce and protect it, while the representatives of the state commissions argued that the roads must show unreasonableness or discrimination in particular rates, not merely that the state rates have not been raised by the same percentage as the interstate rates.

The railroads based their argument largely on the point that the failure of the authorities of 17 states to allow the full amount of the increase allowed as to interstate rates would reduce the amount of net operating income which the Congress and the federal commission had intended them to have and that if that situation were maintained it would be necessary further to increase the interstate rates and thereby increase the discrimination which they said it is the duty of the federal commission to prevent. The state representatives, on the other hand, took the position that in many cases discrimination would be created by applying the full percentages because some state rates are already higher than some of the interstate rates. This point was especially emphasized by the New York commission as to the effect on the fares of the Long Island, which, it asserted, is purely an intrastate carrier with rates already high as compared with those of the interstate lines.

Arguments were presented by R. V. Fletcher, of the Illinois Central; C. C. Paulding, of the New York Central, and Francis I. Gowen, of the Pennsylvania, and by the representatives of the New York and Illinois commissions. The closing arguments were made by Mr. Benton and Mr. Thom.

In both states the fares are now on a three-cent basis, in New York by a statute and in Illinois by an injunction restraining the state from enforcing a two-cent fare law. It was stated in the briefs that according to evidence introduced at the hearings the passenger revenue of the Illinois carriers would be $15,855,453 less on a two-cent fare than on a 3.6 cent fare, and that in New York the reduction in revenue under a three-cent rate as compared with a 3.6 cent rate would be about $12,000,000. Instances were also cited to show the effect of the difference in inducing the purchase of tickets to points on or near state lines to beat the interstate rates and the effect in reducing through interstate rates.

Over the objection of the Illinois commission, Chairman Clark ruled that the record in the advanced rate case, Ex Parte 74, should be considered as a part of the record in these cases. It was stated that in some states the railroads had objected to the introduction of any other evidence, although in one state they had insisted on the decision of the Interstate Commerce Commission being used instead of the record. Mr. Thom said that copies of the record had been supplied to all the state commissions at a cost of about $38,000.

When F. W. Putnam of the Minnesota Commission took the position that no evidence had been submitted in the state cases as to the reasonableness of the interstate rate increases, Commissioner Aitchison remarked that the evidence had been sufficient for 31 states. Mr. Putnam also argued that there had been no evidence as to the unreasonableness of the intrastate rates. In reply to a question by Commissioner Hall, he said that the reference in the law to a 6 per cent net operating income meant income from interstate and foreign commerce only.

Mr. Benton, in his argument, said the case involves the momentous issue as to whether the state regulating authorities shall cease to function as the state laws provide and that the carriers are seeking to "wipe the state commissions off the map." He said the carriers ought not to be heard unless they can show that they have exhausted their remedy before the state authorities and that they have not been deprived of their rights merely because some of the state commissions have not allowed the exact increases authorized for interstate rates.

Mr. Thom said that there has been too much jealousy of the federal power, that its exercise is a part of state government and should not be regarded as the act of a hostile organization. The laws of Congress, he said, are the laws of the states in the national field as well as national laws, because they represent the exercise of powers delegated by the states to the federal government. The federal power sprang from the need of the several states to be protected against the narrow or unfair views of other states, he said, and in this case it is the right of the 31 states that have approved of the national policy in respect to transportation and have agreed to bear their portion of the burden to be protected against discrimination on the part of the other 17 states. If the increases are not spread over the state rates the commission must further increase the interstate rates, which would place an increased burden on the 31 states for the benefit of the other 17.

The transportation act, Mr. Thom said, represents a national view of transportation and the law is to be construed to carry out the national conception of transportation written on every page of it. After the state rates have been brought before the commission by a complaint, the commission is authorized to build up the entire rate structure to the standard prescribed by Congress. The cost of supporting the instrumentalities of transportation must be apportioned among all the users fairly.

General News Department

Twenty per cent reduction in the forces of the shops of the Norfolk & Western is to be made at once, according to a notice posted at Roanoke, Va. The reduction, according to the notice, will begin with laborers and helpers.

The Interstate Commerce Commission has issued a partial advance summary of traffic statistics for Class I steam roads for the month of August, covering 158,000 miles of road operated. This shows a total of net ton miles handled during August by these roads of 28,438,000,000, as compared with 23,527,000,000 in August, 1919.

The Interstate Commerce Commission has ordered Class I railroads to report to the commission for July showing for each occupational class the number of employees, the hours or days of service, the amount of compensation on the basis prevailing before July 20, 1920, and the amount of the increase resulting in each class from Decision No. 2 of the Railroad Labor Board.

The St. Louis-San Francisco reports a freight movement for June amounting to 997,794,477 gross ton miles; and for August 1,015,286,540. The record for June was the best month in the history of the road up to that time, 451,259,347 net ton miles; while for August the net ton miles aggregated 465,686,553. The Frisco lines are making constant and steady progress and are meeting with splendid co-operation from shippers and receivers of freight.

The American Association of Railroad Ticket Agents held its second annual convention at Chicago on October 11. Among the speakers were R. M. Allen, vice-president and traffic manager of the Rock Island; L. W. Landman, passenger traffic manager of the New York Central (Chicago), and E. L. Bevington, chairman of the Transcontinental Passenger Association. The principal topic before the meeting was the establishment of better relations between the public and those railroad employees who handle passenger traffic.

The New York State Railroad Commission, second district, reporting a meeting of its special automatic-stop committee, held in Albany on October 6, says that for the present no consideration will be given to mechanical trip or other contact devices, because it is desired to avoid possible complications in the electric zone of the New York Central, which road is the contemplated field of the proposed experimental installation. The committee hopes to come to a decision, as between the several devices which it has examined, by December 1.

A. D. Mutz, an engineman, and one of six men killed at Piedmont, Mont., when 40 cars of a Chicago, Milwaukee & St. Paul train plunged down a grade into a gravel train, died as a result of his efforts to avert the accident, though he was not on duty at the time. He was standing at the station at Piedmont, with his wife, preparatory to boarding a passenger train for Three Forks, Mont., when he saw the runaway cars plunging down the grade. He jumped on the locomotive and started the gravel train into a siding, but before it was clear of the main line the forward car of the approaching runaway crashed into the gravel train.

Uniformity in railway statistics is the aim of the committee appointed by the Association of Railway Executives "to take up with the Bureau of Railway Economics questions of statistics required or furnished by carriers." The personnel of the committee, announced this week, includes J. Kruttschnitt, chairman of the board of directors of the Southern Pacific; A. J. County, vice-president of the Pennsylvania; J. G. Drew, vice-president of the Missouri Pacific; E. P. Bracken, vice-president of the Chicago, Burlington & Quincy; C. L. Bardo, general manager of the New York, New Haven & Hartford; Geo. A. Harwood, assistant to the president of the New York Central, and C. F. W. Felt, chief engineer of the Atchison, Topeka & Santa Fe. The appointment of this committee was authorized at the meeting of the Association of Railway Executives in Chicago on September 3.

W. W. Gregg, a passenger conductor on the Louisville & Nashville, has secured from the Kentucky Court of Appeals an injunction to prevent his place being taken by a freight conductor who has been promoted in accordance with a decision made by the Railroad Adjustment Board, at Chicago. It appears that the freight conductor is a member of the Order of Railway Conductors, and that Gregg is not; and the appeal to the court is on the ground that the action of the Adjustment Board is unduly favorable to the brotherhood and to the seniority rules embodied in the contract or agreement between the railroad company and the brotherhood. The court seems to have decided the question primarily on the ground that the Adjustment Board had authority only to pass upon disputes submitted before federal administration ceased and therefore had no jurisdiction in this case, which was filed after that time. As to the seniority rule, the judge thought it could not be invoked by a freight conductor to displace a passenger conductor.

A. S. C. E. Nominees

The Nominating Committee of the American Society of Civil Enginers has selected the following ticket for offices to be filled at the annual meeting on January 19, 1921. President, George S. Webster, consulting engineer, Philadelphia; vice-presidents, Andrew M. Hunt, consulting engineer, New York City, and Edward E. Wall, water commissioner, City of St. Louis; treasurer, O. E. Hovey, assistant chief engineer, American Bridge Company, New York City. Among the directors nominated is Frank T. Darrow, assistant chief engineer of the Chicago, Burlington & Quincy, Lincoln, Neb.

N. R. A. A. Board of Directors Meet

The Board of Directors of the National Railway Appliances Association met in Chicago on October 4 to plan for the exhibit which will be held at the Coliseum, Chicago, next March, simultaneously with the convention of the American Railway Engineering Association. Although invitations to apply for space were only sent to the members in July, more applications have already been received than at this time in any previous year. Other manufacturers contemplating exhibiting are urged to send in their applications promptly, and in any event before November 6, as space will be allotted at that time. In view of the prospects for more than the usual demand, the Board of Directors has in contemplation plans which will increase the amount of floor space available.

Nebraska Enlarges Powers of Commission

The Commission regulating public utilities of the state of Nebraska was given largely increased powers by special vote of the people on September 21, some 41 amendments to the state constitution having been adopted at this election. One of them provides that every public utility corporation or common carrier doing business in Nebraska shall report, under oath, to the commission on all such matters as it may require. This amendment was opposed by municipal ownership advocates because it will enable the commission to require municipally-owned corporations to make reports on the same forms as other utilities. This amendment was carried by vote of four to one. Another amendment creates an industrial commission similar to that of the state of

Kansas, which is intended to provide a means by which strikes may be prevented in the public service. This commission may require the submission to it of all such controversies where the public is endangered, and is empowered to determine the issues of the controversy.

The A. S. C. E. Votes on Proposed Constitutional Amendments

Of the seven proposed amendments to the constitution of the American Society of Civil Engineers, the four amendments designated as A, B, F and G, and opposed by the more progressive members of that society, were defeated by a narrow margin of from 224 to 448 votes out of a total of about 4,500. These amendments were opposed chiefly because of the fact that they were vague and uncoordinated and that though introduced in an endeavor to democratize the society they tended toward the establishment of a political machine in which the average member would probably have taken but little interest. The other three amendments, designated as C, D and E, and relating to dues, honorary membership, etc., were carried.

The A. R. E. A. and the Proposed Federated Societies

The Board of Direction of the American Railway Engineering Association at its meeting, October 11, 1920, resolved against the invitation of the Federated American Engineering Societies to become a charter member of that body. In brief the resolution stated that the A. R. E. A., believing in the co-operation of engineering societies, had become a member of Engineering Council and that the work of the latter body had been of great benefit. Furthermore, the Board of Direction did not believe that the work of the Engineering Council should be interrupted or jeopardized by the formation of a new organization, as a result of which Engineering Council would be disbanded and its work turned over to a new body. It was, therefore, resolved that the American Railway Engineering Association "does not deem it advisable to become a member" of the proposed federated society and that the association "continue its membership in Engineering Council."

Farmers' Views Solicited by Illinois Central

President C. H. Markham, of the Illinois Central, has further developed his plan of co-operation with the patrons of his line by sending a personal representative to interview farmer patrons in regard to their views and needs. The first of these direct interviews has just been reported from Cherokee county, Iowa. The interviewer says that the farmers in this county thought first of the car shortage, although in general the railroad management was not blamed for the shortage.

All of this material has been accurately reported, regardless of what the persons who were interviewed had to say, and will be circulated throughout the territory served by the Illinois Central and among all of the employees of that line. In discussing the principles behind this work, Mr. Markham said that "the highest degree of railroad service cannot be given unless the officers and employees of the railroad understand the problems of those whom the railroad serves, and unless those whom the railroad serves, in turn, understand the problems of the railroad."

A Definition of "Engineer"

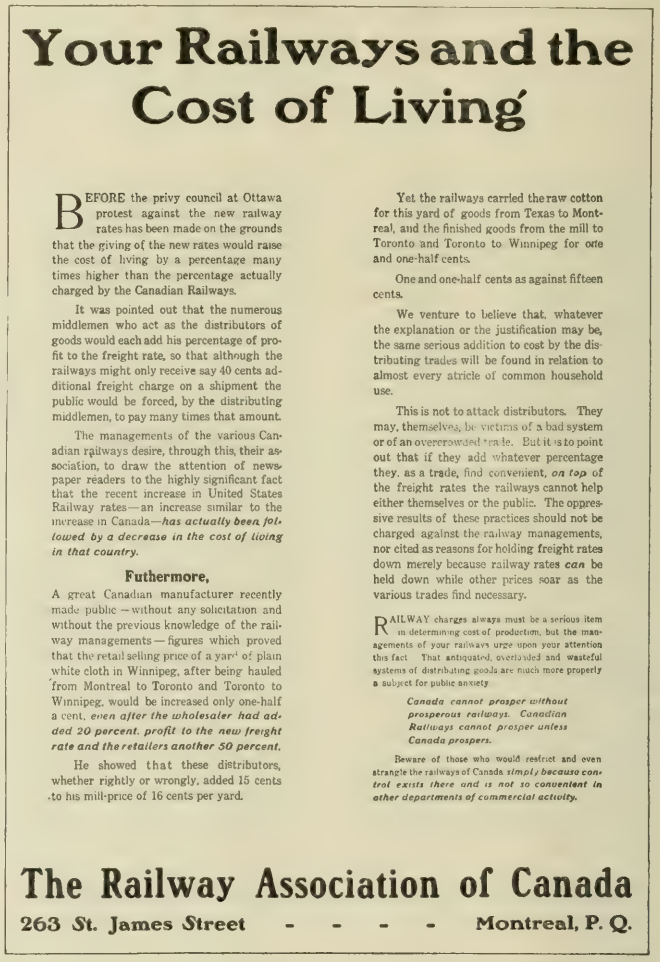
A committee of the American Association of Engineers, consisting of George W. Hand, assistant to the president, Chicago & North Western, and Chairman of the National Railroad Council of A. A. E., J. B. Jenkins, valuation engineer of the Baltimore & Ohio; C. C. Burritt, office engineer of the Southern Railway and R. C. Bailey, district secretary of the association in Washington, presented to the Interstate Commerce Commission on October 1, a request for a new definition of the term "engineers of mechanics." The definition recommended by the committee is as follows:

"The American Association of Engineers recommends that there shall be included in the group within the term 'subordinate officials' the following:

"Technical Engineers. This class shall include all professional engineers, assistant engineers, engineer assistants, instrumentmen, rodmen, chairmen, designers, draftsmen, computers, tracers, chemists, architects, engineer supervisors, engineer inspectors, and all other employees engaged in office or field work in any department and performing engineering work. None of the foregoing who have authority to employ, discipline or dismiss subordinates shall be included."

Strangling the Railroads Because It Is Convenient

Railway freight and passenger rates can be held down; prices of other things usually cannot. This brief and pungent explanation of "the railroad problem," as it exists in many places,



Your Railways and the Cost of Living

BEFORE the privy council at Ottawa protest against the new railway rates has been made on the grounds that the giving of the new rates would raise the cost of living by a percentage many times higher than the percentage actually charged by the Canadian Railways.

It was pointed out that the numerous middlemen who act as the distributors of goods would each add his percentage of profit to the freight rate, so that although the railways might only receive say 40 cents additional freight charge on a shipment the public would be forced, by the distributing middlemen, to pay many times that amount.

The managements of the various Canadian railways desire, through this, their association, to draw the attention of newspaper readers to the highly significant fact that the recent increase in United States Railway rates—an increase similar to the increase in Canada—*has actually been followed by a decrease in the cost of living in that country.*

Futhermore,

A great Canadian manufacturer recently made public—without any solicitation and without the previous knowledge of the railway managements—figures which proved that the retail selling price of a yard of plain white cloth in Winnipeg, after being hauled from Montreal to Toronto and Toronto to Winnipeg, would be increased only one-half a cent, *even after the wholesaler had added 20 percent. profit to the new freight rate and the retailers another 50 percent.*

He showed that these distributors, whether rightly or wrongly, added 15 cents to his mill-price of 16 cents per yard.

Yet the railways carried the raw cotton for this yard of goods from Texas to Montreal, and the finished goods from the mill to Toronto and Toronto to Winnipeg for one and one-half cents.

One and one-half cents as against fifteen cents.

We venture to believe that, whatever the explanation or the justification may be, the same serious addition to cost by the distributing trades will be found in relation to almost every article of common household use.

This is not to attack distributors. They may, themselves, be victims of a bad system or of an overcrowded trade. But it is to point out that if they add whatever percentage they, as a trade, find convenient, *on top* of the freight rates the railways cannot help either themselves or the public. The oppressive results of these practices should not be charged against the railway managements, nor cited as reasons for holding freight rates down merely because railway rates *can* be held down while other prices soar as the various trades find necessary.

RAILWAY charges always must be a serious item in determining cost of production, but the managements of your railways urge upon your attention this fact. That antiquated, overloaded and wasteful systems of distributing goods are much more properly a subject for public anxiety.

Canada cannot prosper without prosperous railways. Canadian Railways cannot prosper unless Canada prospers.

Beware of those who would restrict and even strangle the railways of Canada *simply because control exists there and is not so convenient in other departments of commercial activity.*

The Railway Association of Canada

263 St. James Street - - - - Montreal, P. Q.

One of the Advertisements Now Appearing in Canadian Newspapers

is a salient feature of a manifesto which has been issued by the railroads of Canada, and which appears in current issues of Canadian newspapers. A facsimile of one of the advertisements reduced in size, is given herewith.

The Superpower System

At a meeting of the New York Electrical Society held on October 7 at 29 West 39th street., New York, William S. Murray, chairman of the Superpower Survey, organized by the United States Government, outlined the progress which has been made by his organization.

The boundaries of the zone have been extended to include a little more of the Northeast Atlantic seaboard and the total area of the zone is now about 60,000 sq. mi., or about 2 per cent of the total area of the country.

As originally outlined, the Superpower System would provide an estimated machine capacity of 17,000,000 h. p., of which about 10,000,000 would be used for industrial purposes and 7,000,000 for the railroads. The total amount of machine capacity is now estimated to be somewhat in excess of this amount.

With the aid of lantern slides Mr. Murray outlined the advantages which would be gained by such a system. He pointed out that the average steam engine load factor is 10 per cent, that existing central stations have a load factor of about 30 per cent and with such a superpower system a 50 per cent load factor should be possible.

Both steam and water power plants will be used to develop the power required, about 15 per cent of which will be water power. This percentage will shrink as the total power demands grow. The power plants under consideration will develop from 300,000 to 400,000 kilowatts each. The average station now operating in this area has a kilowatt capacity of 3,000 and uses 4.7 lb. of coal per kilowatt hour.

In speaking of the trunk line railroads, which will receive power from this system, Mr. Murray pointed out that electric traction must be warranted by density of traffic and tunnel and terminal conditions. He expressed the opinion that not more than 25 per cent of the steam railroads in this area would be electrified for a long time to come, and that both alternating current and direct current will be used.

Work Begun on Consolidation Plan

The Interstate Commerce Commission has begun consideration of a tentative plan for the consolidation of the railroads into a limited number of systems in accordance with the terms of the transportation act. Prof. William Z. Ripley, of Harvard University, has been retained to assist the commission in working out such a plan and has been engaged on the work for about a month, reporting to Commissioner H. C. Hall. It is understood that one of the first phases of the work is a collection and examination of the various plans which have been worked out by various individuals or committees. The Senate railroad bill contained a plan for compulsory consolidation of the railroads into a limited number of systems, but this was changed by the conference committee which finally wrote the transportation act to a provision that the Interstate Commerce Commission shall as soon as practicable prepare and adopt a plan for the consolidation of the railway properties of continental United States into a limited number of systems so organized that competition shall be preserved as fully as possible and that, wherever practicable, the existing routes and channels of trade and commerce shall be maintained. Subject to the foregoing requirements, the law provides that the several systems shall be so arranged that the cost of transportation as between competitive systems and as related to the value of the properties through which the service is rendered shall be the same so far as practicable, so that these systems can employ uniform rates in the movement of competitive traffic and under efficient management earn substantially the same rate of return upon the value of their respective railway properties. When the commission has agreed upon a tentative plas, it is to give the same due publicity and upon reasonable notice, including a notice to the governor of each state, hear all persons who may file or present objections thereto. The commission is authorized to prescribe a procedure for such hearings. After the hearings it is to adopt a plan for such consolidation and publish it, but it may at any time thereafter, upon its own motion or upon application, reopen the subject for such changes or modifications as, in its judgment, will promote the public interest. The voluntary consolidations on application of the railroad companies, as provided elsewhere in the law, are required to be in harmony with the commission's plan.

AT THE REQUEST of J. H. Townsand, secretary and manager of the Southern Hardwood Traffic Association, a meeting of the general superintendents of the railroads operating in the southern territory was held at St. Louis on October 6, to discuss co-operation in an effort to expedite the handling of logs to the mills and the movement of lumber outbound. At this meeting it was agreed to allow the Southern Hardwood Traffic Association to decide on what basis the mills should be rated, and the amount of each day's cut will be decided after a conference with the Southern Pine Association.

Traffic News

William G. McEdward, division freight agent of the Pere Marquette, with headquarters at Bay City, Mich., has resigned from railroad servcie.

Resolutions declaring the freight rates on ice are "excessive" and result in an "unjust" charge to the consumer were adopted at the closing session of the annual convention of the National Association of Ice Industries at St. Louis, on October 7.

The Railroad Commission of Kentucky has authorized the American Railway Express Company to make a general advance of 13.5 per cent in rates for the transportation of merchandise. This, with a previous advance, makes a total increase of 26 per cent in 1920.

The Louisiana Railroad Commission has authorized the American Railway Express Company to increase its Louisiana intrastate rates in the same measure and to the same extent as authorized on interstate traffic by the Interstate Commerce Commission. The increase is about 12½ per cent.

The Board of Railroad Commissioners for Canada has issued an order under which the Fuel Administration of any province, after due notice, may seize carloads of coal not unloaded within six days and sell the same to the municipality or to the dealer offering the highest price therefor.

The Chicago, Burlington & Quincy, the Chicago, Rock Island & Pacific, and the Great Northern, have announced the opening of a joint city ticket office at 524 Second Ave., South, Minneapolis, Minn., effective September 27. J. F. McElroy, joint agent, will have charge of the office.

A Farm Marketing Bulletin has been issued by the Seaboard Air Line for the benefit of agricultural interests along the road, and it is proposed to issue the sheet monthly. Information is given concerning state fairs in Virginia, North Carolina, South Carolina, Georgia, Florida and Alabama. The Bulletin is to be posted in the stations of the road and other prominent places.

The use of tickets interchangeably between the Pennsylvania Railroad on the one hand and the Philadelphia & Reading and the Central of New Jersey on the other, is to be discontinued at the end of this month. Tariffs announcing the change have been issued, to take effect November 1 on certain sections, and November 5 on other sections. After these dates the tickets of each road will be accepted only on its own trains.

With a shortage in California of 1,249 refrigerator cars and the demand in other states reported as increasing rapidly, the refrigerator department of the American Railroad Association, Car Service Section, has taken drastic steps to meet the situation. All railroads in California have been notified to serve notice on dealers that those holding shipments in excess of five days will have an embargo placed against further business for their account until they make satisfactory arrangements to release cars promptly.

Coal Production

The production of bituminous coal fell off sharply during the week ended October 2, according to the weekly bulletin of the Geological Survey. The output is estimated at 11,348,000 net tons, a decrease as compared with the preceding week of 506,000 tons. The bulletin says the cause of the decrease is not yet clear. The total production during the first 234 working days of the year has been 404,114,000 net tons, an increase of 51⅓ million tons as compared with 1919 and a decrease of about 45¼ million tons as compared with 1918. No recovery in the dumpings at Lake Erie ports was reported during the week. The cumulative lake movement from the opening of the season now stands at 15,749,000 tons as against 22,822,000 in 1918 and 19,174,000 in 1919. The movement to tidewater increased again during the week of October 2, but the all-rail movement of coal to New England again fell below the 1919 level.

Commission and Court News

Interstate Commerce Commission

The commission has suspended until February 8, the operation of increased rates on sulphur, l. c. l. from Byron Mound, Freeport, Gulf Hill and Damon, Tex., to Beaumont and Port Arthur for export.

The commission has suspended until February 8, the operation of an exception to the Western Classification, providing for the elimination of the application of class C rating on ginger ale, c. l., and in mixed carloads with other beverages, between points in Texas, and from Shreveport, La., to Texas destinations, leaving the rating provided for in the Western Classification applicable instead.

The Commission has suspended until February 6, the operation of a supplement to a Pennsylvania tariff which provides for the cancellation of the existing proportional class arbitrary rates from Norfolk, Va., to United States Naval Operating Base, Hampton Roads, Sewalls Point, Va., applicable on l. c. l. traffic from points on the Pennsylvania Railroad and connecting lines in eastern territory, leaving local rates applicable instead.

The commission has announced a hearing at Salt Lake City on November 1 before Examiner W. A. Disque on the refusal of the Utah Public Utilities Commission to permit increases for intrastate traffic similar to those permitted by the federal commission for interstate traffic. The rates in question are those on coal and ore and on passengers where the present fares are in excess of 3 cents a mile; also passenger fares on electric lines.

The railroads have filed with the Interstate Commerce Commission tariffs providing for a general increase in demurrage rates, as agreed upon with a committee representing the National Industrial Traffic League, which the commission is asked to make effective on five days' notice. It is proposed that the general demurrage charge on all cars after expiration of free time shall be $3 for each of the first four days, $6 for each of the next three days and $10 for each succeeding day, and that under the average agreement after a car has accrued four debits the charge will be $6 for each of the next three days and $10 per day thereafter; debits which are not offset by credits will be charged at $3 each.

State Commissions

The Railroad Commission of Louisiana, by Order No. 2,359, following an examination of a tariff issued by the Louisiana & Arkansas, cancelling certain l. c. l. commodity rates without authority, and without authority therefor under the decisions of the Interstate Commerce Commission in the "Natchez Case," imposes a fine of $5,000 on the railway company.

The Illinois Public Utilities Commission on September 29 ordered all railroads to give priority to the transportation of coal into Chicago; coal will take precedence over all freight except livestock, and the mines are to have first call on open-top cars. This action has been supplemented by the United States District Attorney, who has warned all labor unions engaged in any way in handling coal, that strikes would bring about federal prosecution.

Personnel of Commissions

Wilbur LaRoe, Jr., has resigned as chief examiner of the Interstate Commerce Commission.

Robert E. Quirk, now assistant director of the Bureau of Service of the Interstate Commerce Commission, has been appointed chief examiner, succeeding Wilbur La Roe, Jr., resigned. Mr. Quirk has been connected with the commission for nine years and has served in various departments.

Court News

Liability for Misinformation as to Train Time

A passenger who had been misinformed as to the time of departure of a train and as a result had missed the train, procured an automobile and, wearing inadequate clothing, drove across country on a cold, stormy night, suffering discomfort and inconvenience The North Dakota Supreme Court holds that he was not entitled to recover damages for the discomfort and inconvenience, as the negligent or wrongful act of the railroad was not the proximate cause thereof. At the time the information was given it was correct, but the departure of the train before the time stated was caused by a subsequent change of orders by the train despatcher. The company's employees did what they could to communicate the change to intending passengers. There was therefore no basis for a finding of oppression, fraud, or malice.—Weeks v. Great Northern (N. Dak.) 175 N. W. 726.

Safety Appliance Act—Switching or Train Movements

In an action for penalties for four alleged violations of the air brake provision of the federal Safety Appliance Act by moving four cuts of cars without having the air brakes coupled and under control from the engine, the Circuit Court of Appeals, Fifth Circuit, holds that testimony tending to show that in the opinion of the witnesses it was safer for the trainmen to handle the trains with the air brakes uncoupled, and that it would cause the railroad great inconvenience and delay to comply with the law was inadmissible, as were printed copies of railroad rules tending to show that the movements of the cars in question were interpreted by the defendant to be switching movements, not covered by the law, and not requiring the air brakes to be coupled; this evidence being held irrelevant and immaterial because under the facts, as interpreted by the court, the movements of the cars were train movements and covered by the act.—Galveston, Houston & Henderson v. United States, 265 Fed. 266.

Liability for Crossing Flagman's Negligence

In an action against a railroad by an automobile passenger who was injured at a crossing after having been signaled by the railroad's flagman to cross, the Indiana Appellate Court holds that in such an action the railroad cannot be held liable because it employed or retained in its employment an incompetent flagman; that the only liability it owed the plaintiff was to respond in damages for the flagman's negligence.—L. E. & W. v. Griswold (Ind.) 125 N. E. 783.

In an action against the railroad, arising out of the same circumstances, for damage to the automobile, it is held that where a railroad company employs a flagman as required by an ordinance, and he negligently signals to a traveler to cross when an approaching train is so close that the traveler cannot by exercising ordinary care avoid being struck, his negligence is chargeable to the railroad.—L. E. & W. v. Sanders (Ind.) 125 N. E. 793.

Decisions Under Federal Employees' Liability Act

The Circuit Court of Appeals, Second Circuit, holds that a foreman of a wrecking train crew employed in connection with interstate commerce, required before leaving his train at night to prepare it for immediate service, remains in the interstate employment until the day's work is finished by completing preparation.—Director General of Railroads v. Ronald, 265 Fed. 138.

A member of a train crew, whose run was from a point in another state to Chicago, had eight hours off duty in Chicago and returned with another train. He was killed during the eight-hour period while sleeping in the caboose, which was being transferred from one point to another in the Chicago yards. The Circuit Court of Appeals, Seventh Circuit, holds he was not at the time employed in interstate commerce within the act.—Bishop v. Delano, 265 Fed. 263.

The Kentucky Court of Appeals holds that the fact that an employee when injured was assisting in loading old rails on a car for shipment after having been sold, does not show that he was employed in interstate commerce.—Illinois Central v. Probus (Ky.) 218 S. W. 724.

Foreign Railway News

Extension of Railways in Morocco Planned

An agreement has been entered into between the Moroccan protectorate and a group made up of the Paris-Lyons-Mediterranean and the Paris-Orleans railways, the Compagnie Generale of Morocco and the Compagnie Marocaine for the construction of a 1.44 meter gage railway in Morocco at a cost of approximately 970,000,000 francs (about $194,000,000 par).

New Uruguay-Argentina Line Proposed

A project to build a railway from Montevideo direct to Colonia, where a ferry service to Buenos Aires would be inaugurated, is being seriously considered by the Administrative Council of Uruguay, according to a report from Vice Consul S. H. Avery at Montevideo. It is pointed out that this project would not only reduce the transportation expense between the two cities but that a saving in time of four hours would be effected.

South Manchuria Railway

LONDON.

The South Manchuria Railway Company proposes to spend on improvements during the next five years the sum of $32,544,000, as follows: $12,898,000 for double tracking and other improvements between Mukden and Changchun; $16,290,000 for locomotives and cars; $600,000 on alterations of couplings for use in connection with the Chinese railways; and $2,756,000 for extension of the present buildings, warehouses, etc.

Huge Credits Granted for New Lines in Japan

Although the Railway Department of Japan failed to secure the Diet's approval of its project for extensive electrification, new credits of 155,000,000 yen (about $77,500,000) for the construction of 224 miles of new lines of the regular 3 ft. 6 in. gage, and 400,000,000 yen (about $200,000,000) for 772 miles of light railway were approved. The railway authorities intend to bring up the electrification project again at the next session.

Chilean State Railways Poorly Equipped

Reports from Valparaiso say that the Chilean State Railways have reached their maximum carrying capacity, which meets about half of the transportation needs of the country. Owing to the difficulty of negotiating a foreign loan for the purchase of equipment abroad, the government is being urged to stimulate the manufacture of railway supplies in Chile. It has been about eight years since new equipment in large quantity has been purchased. In the meantime needs for new rolling stock to provide for additional business and for deteriorated equipment have grown apace.

School for Railway Employees in Berlin

BERLIN, Germany.

A school for railway employees was founded in Berlin about a year ago and the first annual meeting was held on July 15, 1920. At this meeting it was stated that owing to the success of this school, 20 branch schools were opened in the Prussian-Hessian railroad district during the year and that about 18,000 pupils are registered. It is planned to open a further 36 schools in the near future. It is the aim of the school to give all progressive employees the possibility of further education. It therefore has established courses on general educative subjects given by well-known teachers of high schools and universities, and in addition special courses on railway matters. As both the workers and the employees' trade unions are in favor of and are co-operating in the scheme, the government has declared its willingness to promote and further the movement as far as possible.

Exports of Steam Locomotives in August

The exports of steam locomotives in August totaled 125, valued at $5,424,588. Of these 32, valued at $1,857,000, were destined for Belgium, and 32, valued at $1,123,722, for Cuba. The detailed figures by countries, as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Number	Dollars
Belgium	32	1,857,988
Poland and Danzig	3	139,500
Roumania	15	975,000
Spain	15	656,580
Canada	1	15,368
Honduras	1	3,700
Mexico	6	70,500
Jamaica	1	21,800
Cuba	32	1,123,722
Brazil	5	98,290
Chile	1	8,400
Colombia	2	63,940
Philippine Islands	1	21,800
French Africa	10	368,000
Total	125	5,424,588

China Standardizing Its Railways

The Chinese Ministry of Communications is making good progress in determining standards for the government railways of that country. The Commission on Railway Technics was organized in 1918 to make observations and recommendations regarding standards for all phases of railway work. It is expected that, once uniform materials and equipment are decided upon, those manufacturers who can supply the specified materials most efficiently will secure the Chinese trade. The Ministry desires to have some of the railway supply industries locate in that country if possible.

Exports of Car Wheels and Axles in August

The exports of car wheels and axles in August had a total value of $469,413. The largest shipments were to Japan, Scotland, Cuba and Canada, in the order named. The detailed figures by countries, as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Dollars
Denmark	286
Greece	266
Italy	18,415
Spain	32,262
Scotland	64,593
Canada	48,316
Costa Rica	2,585
Honduras	54
Nicaragua	44
Panama	1,859
Salvador	348
Mexico	588
Newfoundland and Labrador	1,400
Jamaica	85
Cuba	62,355
Dominican Republic	1,314
Argentina	17,299
Bolivia	700
Brazil	10,260
Colombia	46
Peru	989
Uruguay	581
China	30 000
British India	2,840
Other British East Indies	131
Japan	91,610
Australia	39,765
New Zealand	528
Philippine Islands	12,364
British South Africa	530
Egypt	27,000
Total	469,413

Railway Rates Increased in Korea

LONDON.

At the end of the last financial year the government lines in Korea showed a deficit of about $160,000, and it was estimated that the loss for the current year would amount to about $800,000 unless steps were taken to provide an increased revenue. The authorities decided, therefore, to increase the rates. Accordingly, the freight rates were raised from 10 to 30 per cent in most cases, and to 50 or 60 per cent in the case of goods of high market value. Special rates were provided for animals, dangerous goods (kerosene), vehicles, explosives, etc. Passenger fares were increased from 25 to 40 per cent and storage charges from 30 to 100 per cent.

The Market for Cars in Cuba

That Cuban sugar mills are large owners of rolling stock is pointed out by Trade Commissioner H. A. Chisholm in a recent report to the Canadian Department of Trade & Commerce from Havana. There are 193 sugar mills operating now in Cuba and it is estimated that they own 15,000 cane cars and 600 locomotives. Most of the railway lines operated by these mills are of standard gage. American cars are favored in the Cuban tariff by a reduction of the ad valorem duty from the 31.25 per cent, which manufacturers of other nations must pay, to 11.25 per cent. This gives American manufacturers a decided advantage over foreign competitors. Some Cuban railways are, however, under British control and there is a disposition to favor British bidders when it can be done without increased cost.

Exports of Railway Track Material in August

The exports of rails in August totaled 56,160 tons, having a value of $3,661,174; of spikes, 2,699,131 lb., of a value of $114,213; and of switches, frogs, splice bars, etc., of a value of $566,710. The detailed figures by countries as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Spikes		Steel rails		Switches, frogs, splice bars, etc.
	Pounds-	Dollars	Tons	Dollars	Dollars
Denmark	.....	.....	.....	.....	11,351
Finland	.....	.....	.....	.....	357
France	.....	.....	.....	.....	2,659
Greece	.....	.....	1,316	79,872	7,900
Roumania	.....	.....	.....	.....	1,749
Spain	.....	.....	118	6,913	2,321
Sweden	.....	.....	4,465	306,000	.....
England	.....	.....	2,838	145,309	11,163
Ireland	.....	.....	120	7,743	.....
Bermuda	200	23	.....	.....	.....
British Honduras	2,200	125	.....	.....	.....
Canada	7,963	340	2,588	125,740	36,478
Costa Rica	.....	.....	.....	.....	73
Guatemala	12,852	792	.....	.....	.....
Honduras	58,855	2,775	788	43,887	651
Nicaragua	11,885	787	113	6,780	.....
Panama	.....	.....	.....	.....	3,118
Salvador	20,000	1,140	.....	.....	.....
Mexico	210,964	10,970	362	19,197	46,985
Jamaica	.....	.....	4,148	316,510	1,934
Cuba	1,299,875	51,862	9,348	562,437	150,331
Dutch West Indies	5,836	800	.....	.....	.....
French West Indies	1,600	121	.....	.....	.....
Dominican Republic	10,315	508	107	7,200	27,848
Argentina	.....	.....	2,882	176,034	.....
Brazil	401,600	14,608	5,220	351,340	15,878
Chile	11,090	599	212	16,987	541
Colombia	3,600	206	108	5,384	3,965
Ecuador	10,000	860	.....	.....	5,811
British Guiana	.....	.....	200	17,500	264
Paraguay	.....	.....	385	23,427	1,053
Peru	53,120	2,984	126	8,666	7,793
Uruguay	.....	.....	.....	.....	5,024
Venezuela	.....	.....	.....	.....	566
China	47,016	1,549	169	12,221	3,328
Kwantung	22,896	893	284	19,362	743
British India	34,000	1,700	833	43,344	2,407
Straits Settlements	.....	.....	756	49,679	21,626
Other British East Indies	.....	.....	.....	.....	378
Dutch East Indies	51,755	4,420	3,587	258,416	67,663
Japan	412,977	15,818	13,717	963,584	72,542
Australia	.....	.....	.....	.....	22,032
New Zealand	.....	.....	.....	.....	230
French Oceania	.....	.....	.....	.....	247
Philippine Islands	8,532	333	865	57,848	22,298
British South Africa	.....	.....	104	7,775	6,392
Portuguese Africa	.....	.....	401	22,019	1,013
Total	2,699,131	114,213	56,160	3,661,174	566,710

Well Known English Railway Engineer Dies

LONDON.

The late Sir James Benjamin Ball, chief engineer of the London, Brighton & South Coast Railway, who died September 16, was appointed to this position in February, 1917. He joined the staff of the Great Northern in 1890 and subsequently assisted in the construction, among other works, of the Lancashire, Derby & East Coast Railway. In 1899 he became engineer of this railway, which position he held until the line was absorbed by the Great Central, on the staff of which he was appointed assistant engineer (new work) in January, 1907. In 1911 he was made engineer-in-chief of the Great Central. During his service with the Great Central, Sir James Ball was responsible for a large amount of new construction. In 1917 he was appointed controller of timber supplies and in 1918 he received the honor of knighthood in recognition of his services.

Exports of Cars in August

Steam railway freight cars, 2,643 in number, of a value of $4,181,391, were exported from this country in August. Of these 1,700 valued at $2,425,000 went to Poland and Danzig. For railways other than steam lines, 410 cars valued at $320,477 were shipped from American ports. Of these the greatest number, 149, went to Cuba. Exports of car parts were valued at $1,611,825. No passenger cars were exported. The detailed figures by countries, as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Steam				Parts of cars, Dollars
	Freight and other		For other railways		
	No.	Dollars	No.	Dollars	
France	.....	.....	...	.....	31
Poland and Danzig	1,700	2,425,000	...	.....	200
Spain	.....	.....	...	.....	730,935
England	.....	.....	...	.....	16,331
Yugoslavia, Albania and Fiume	.....	.....	...	.....	386
Canada	99	148,967	83	146,282	60,590
Salvador	.....	.....	...	.....	27,443
Mexico	26	27,925	8	780	3,957
Newfoundland and Labrador	.....	.....	...	.....	2,514
Jamaica	8	2,400	...	.....	.....
Trinidad and Tobago	.....	.....	1	1,431	.....
Cuba	366	637,713	149	94,699	126,368
Haiti	.....	.....	...	.....	29
Dominican Republic	2	2,490	26	14,337	17,737
Argentina	.....	.....	...	.....	21,145
Bolivia	.....	.....	...	.....	876
Brazil	30	169,760	1	14,200	33,755
Chile	.....	.....	1	2,044	27,033
Peru	12	7,136	...	.....	1,629
Uruguay	.....	.....	...	.....	5,166
China	.....	.....	...	.....	194,123
Kwantung	.....	.....	...	.....	15,683
British India	.....	.....	...	.....	18,413
Other British East Indies	.....	.....	...	.....	13,940
Dutch East Indies	.....	.....	135	8,910	.....
Hongkong	.....	.....	...	.....	1,737
Japan	.....	.....	...	.....	152,629
Australia	.....	.....	...	.....	1,018
British South Africa	.....	.....	6	37,794	54,798
Egypt	400	760,000	...	.....	83,359
Total	2,643	4,181,391	410	320,477	1,611,825

Military Disturbances Upset Chinese Railway Operation

PEKING, August 15, 1920.

At the beginning of July the operating revenues of the Chinese Government Railways showed an increase of about $6,000,000, or at the rate of about 15 per cent for the year. All of that increase, and more, has been wiped out by the disturbances of the past six weeks.

The impending cabinet reorganization, reported in May, developed through June into an *impasse*. By July 1, troop movements in all directions toward Peking were requiring a considerable portion of railway equipment. By July 10, Peking was practically under siege. Five days later passenger service on both the Peking-Mukden and Peking-Hankow lines was suspended on account of fighting. Simultaneously, the Shanghai-Nanking line was broken by troops endeavoring to create a diversion in favor of the besieged Peking party, and about July 20 the Tientsin-Pukow line was cut south of Tenchow to protect the arsenal there from Shantung forces favorable to Peking. The Peking-Suiyuan line was commandeered by the military from the first, but some civilian traffic was carried sporadically from time to time.

According to the Boxer Protocol, the Peking-Mukden line must be kept open from Peking to the sea (Shanhaikuan). Accordingly, after two or three days' interruption, the foreign military authorities in Tientsin formed a "military special" and attempted to run through to Peking. But the first two or three attempts took them not further than 20 miles. In the meantime, a foreign adviser of the Ministry of Communications, assisted by a secretary of the British Legation, brought two trains through from Peking. A special in the opposite direction which started immediately afterward was wrecked in collision with a military train running "wild." During the following week, military "foreign specials" were forced through to Peking, and at least one train a day each way has been run since. At the present writing, the Peking-Mukden is running about half its regular passenger service, and a minimum of freight service. At one time Chingwangtao harbor was full of ships tied up for lack of coal.

The Shanghai-Nenking break was repaired within a few days. The damage is estimated at only $150,000. The Tientsin-Pukow

remained out of commission on the northern section for nearly two weeks. But the Peking-Hankow and the Peking-Suiyan are not running through trains yet.

The quarrel which has occasioned all of this disturbance is variously described. It is between an alignment of leaders—one denominated as the "Anfu Club" and the other as the "Chihli faction." The Anfu Club has been held responsible in popular opinion for the weakness of the Chinese Government in the face of Japan. Its higher members were the men supposed to be getting rich on Japanese money secured by "secret agreements." The ex-minister of communications who was driven from office last year was a member. His successor became the treasurer of the Anfu Club. Japanese officers were instructors in the "Frontier Defence Army," which was principally the Anfu Club army. Upon the defeat of the Anfu forces, their principal leaders fled to the Japanese Legation for protection. The other legations refused to receive any Chinese for protection. The Japanese Legation denied the presence of these men for over two weeks. But the Chihli commanders posted armed forces at every entry to the Legation Quarter, and nailed up pictures of ten of the "wanted" Anfu leaders with instructions to scrutinize every passerby Finally, during the past week the Japanese Minister in a formal letter to the foreign office has admitted the presence of nine of the ten men.

Among the "wanted" men is the minister of communications, Tseng Yu-chun and Tinge Shih-yuan, director-general of the combined Peking-Hankow, Peking-Suiyuan lines. It is alleged that the former is short in his accounts by several millions. The director of the railway department, Y. C. Whang, was kept under guard in the ministry for about a week and made to give an explanation of all items during an audit of the ministry's accounts. The results of this audit have not been made public.

New Cabinet Announced

A new cabinet has just been announced. As minister of communications, Yeh Kung Cho is an excellent appointment. He has twice been vice-minister, is responsible for the unification of accounts and standardization of equipment and engineering standards, now under way, and was technical delegate to the peace conference. Many Americans in New York, San Francisco, and other cities will remember meeting him, with Dr. C. C. Wang, as they were proceeding to Paris. A constructive program is expected to proceed from this appointment.

One of the first acts of the new administration is to revoke the order amalgamating the Peking-Hankow and the Peking-Suiyuan lines. They have, in fact, been operated as separate lines all the time, and the accounts have been merged only as a total. It is expected that a careful audit of the accounts of these two lines will next be ordered, and certain questionable contracts for materials may be the subject of review.

Short of Money

In the meantime, the ministry of communications is undoubtedly in close quarters for money. The Anfu officers drew upon the lines to the last dollar possible before they were ousted. During hostilities, the Chihli forces sent an armored car up and down the Peking-Hankow line collecting from the stationmasters en route. Heavy interest payments and loan installments are due in October. It is probable that some sort of loan financing will have to be resorted to as a temporary shift.

It is reported that the American adviser to the ministry of communications, John Earl Baker, has been re-engaged for a term of three years.

The efforts of Japanese interests to get access to the coal and iron deposits of Shansi have been referred to in these notes several times. The latest development has occurred in the south of that province. Ore is now being taken out by mules to the Yellow River some 70 miles to the south, and shipped in barges to Tsinanfu, where it is loaded for Tsing Tau via the Shantung railway. To mask the forces behind it, German engineers are in charge, claiming themselves to be Finns. One of these men became seriously ill and the nearest physician was an American missionary, who before leaving ferretted out the whole story.

Drought in North China

North China is suffering from the worst drought since the Boxer year 1900. This will not immediately affect railway revenues, as it will stimulate shipments of grain from remote districts, but the distress will unavoidably set back progress in this region very considerably.

Equipment and Supplies

Locomotives

The Los Angeles & Salt Lake has ordered 10 locomotives from the American Locomotive Company.

The Camoa Quarry Company, Havana, Cuba, has ordered one locomotive from the Vulcan Iron Works.

The Lunghai Railroad, China, will ask for prices soon, through a New York Japanese export house, on 8 Mikado type locomotives.

The Marion & Eastern is in the market for one second-hand Consolidation type locomotive, also for a small ditcher with extra long boom.

The Gulf Coast Lines, reported in the *Railway Age* of September 24 as inquiring for 3, 4-6-0 type locomotives, have ordered 5 locomotives from the American Locomotive Company.

The Los Angeles & Salt Lake has ordered 10 Mikado type locomotives from the American Locomotive Company. These locomotives will have 26 in. by 28 in. cylinders; a total weight of 300,000 lb., and will be equipped with superheaters.

The Tennessee Central, reported in the *Railway Age* of August 20 as inquiring for some locomotives, has ordered 4 Mikado type locomotives from the American Locomotive Company. These locomotives will have 20 in. by 28 in. cylinders; a total weight in working order of 197,000 lb., and will be equipped with superheaters.

The South Buffalo Railway has ordered 2 six-wheel 0-6-0 type locomotives and 1 eight-wheel 0-8-0 type locomotive from the American Locomotive Company. The six-wheel locomotives will have 20 in. by 26 in. cylinders and a total weight of 154,000 lb. in working order. The eight-wheel locomotive will have 22 in. by 28 in. cylinders and will have a total weight of 209,000 lb. These locomotives will be equipped with superheaters.

Freight Cars

The New York, Chicago & St. Louis is inquiring for 6 caboose car bodies.

The Canadian Pacific is inquiring for 500 hopper coal cars of 75 tons capacity.

The Carolina, Clinchfield & Ohio is inquiring for 100, 40-ft. flat cars of 50 tons capacity.

The Southern Railway is asking for prices on 2,500 steel center sill box cars of 40 tons capacity.

The Seaboard Air Line is asking for alternate bids on 350 composite hopper cars in place of 350 steel cars.

The El Paso & Southwestern, reported in the *Railway Age* of Sept. 24 as inquiring for 75, 10,000-gal. tank cars, has ordered from the general American Tank Car Corporation.

The West India Sugar Finance Corporation, 129 Front street, New York, reported in the *Railway Age* of October 8, as being in the market for 250 cane cars of 20 tons capacity, has ordered this equipment from the Magor Car Company.

Passenger Cars

The Southern Railway is inquiring for 50 coaches and 50 baggage cars.

The National Biscuit Company, New York, is inquiring for one Arms Palace horse car.

The New York, New Haven & Hartford is inquiring for 8 steel motor cars and 14 trailer cars.

The Cuba Railroad has ordered 4 sleeping cars and 10 combination baggage and express cars from the Pullman Company.

Pekin-Suiyuan Railway.—Car builders have an inquiry for 60 passenger cars to be used on this road and the Pekin-Hankow.

Supply Trade News

Horace B. Hench, vice-president of **Templeton, Kenly & Co., Ltd.,** Chicago, has resigned.

F. Rodger Imhoff, field engineer at Detroit, Mich., for the **Precision & Thread Grinder Manufacturing Company,** Philadelphia, Pa., has been appointed sales manager.

R. E. Bressler, manager of the Jordan Company, East Chicago, Ind., has resigned to accept a position with the **Western Wheeled Scraper Company,** Aurora, Ill.

The American Car & Foundry Company, Madison, Ill., has awarded a contract to the Wimmer Construction Company, St. Louis, Mo., for a new one-story spring works building, to cost approximately $50,000.

A. L. Greenbaum, supervisor of work equipment and motor cars of the Chicago, Rock Island & Pacific, with headquarters at Chicago, has been appointed manager of the **O. F. Jordan Company,** East Chicago, Ind., effective September 15.

A special committee appointed by the Secretary of War to investigate charges of irregularity in the award of $2,200,000 to the Standard Steel Car Company for the settlement of claims arising out of the cancellation of war contracts, has made a report which was made public by the War Department that the award of $2,200,000 was an adjustment made under the Dent act "upon a fair and equitable basis" and that it did not "include prospective or possible profits or any part of the contract beyond the goods and supplies delivered to and accepted by the United States, and the reasonable remuneration for expenditures and obligations or liabilities necessarily incurred in performing or preparing to perform said contract or order." The committee moreover finds no fraud in the settlement and completely exonerates the contractor and all government officers connected with the settlement from any such imputation. The committee is of the opinion that the government exercised good business judgment in making the award for the amount and at the time it did.

Iron and Steel

The Minneapolis & St. Louis has ordered 5,000 tons of rails from the United States Steel Corporation for 1921 delivery.

The Chicago & North Western has ordered 910 tons of steel from the American Bridge Company for ore dock work at Ashland, Wis.

Holst & Vadillo, 161 Maiden Lane, New York, have ordered 40 tons of railroad spikes from the Consolidated Steel Company, for export to Cuba.

The St. Louis-Southwestern has ordered deck plate girder spans amounting to 264 tons from the American Bridge Company for work at Plano, Texas, and Addison.

The Government of the Netherlands, Colonial Department, 17 Battery Place, New York, is inquiring for 20,000 tons of 82-lb. rails for use on the State Railways in Java.

Signaling

The Chicago & Alton has authorized the continuance of the installation of automatic block signals on double track between Nilwood, Ill., and Rinaker, a distance of about 11 miles.

The Great Northern has ordered from the General Railway Signal Company, Rochester, N. Y., an electric interlocking, Model 2, unit lever type, 64-lever machine, for Carlton, Minn., to be installed by the railroad company's forces.

The Atchison, Topeka & Santa Fe has ordered from the General Railway Signal Company, Rochester, N. Y., an electric interlocking machine for Newkirk, Okla. The machine will have 15 working levers, and will be installed by the company's forces.

Railway Construction

Atchison, Topeka & Santa Fe.—This company is accepting bids for the construction of two lavatory buildings, one a two-story structure, and the other a one-story building, at Shopton, Iowa, to cost approximately $45,000.

Chicago, Rock Island & Pacific.—This company has awarded a contract to the Railway Water & Coal Handling Company, Chicago, for the construction of a water station and treating plant at Valley Junction, Iowa, to cost approximately $85,000. The Railway Water & Coal Handling Company will also install a fire protection system in the company's shops at Shawnee, Okla., at an approximate cost of $17,000.

Canadian National.—This company contemplates improvements to its plant at Thaudiere Junction, Quebec, to cost approximately $200,000, which will include an extension to the enginehouse and the installation of a coaling plant.

Chicago Union Station.—This company contemplates the construction of a viaduct on Madison street, Chicago east, extending from Canal street to the bridge across the Chicago river, and it is understood that the company will shortly accept bids for the structural steel required for this work.

Detroit & Ironton.—The Interstate Commerce Commission has announced a hearing at Lansing, Mich., on October 19, on the application of this company for a certificate of public convenience and necessity for the construction and operation of a new line in Wayne county, Michigan.

Grand Trunk.—This company contemplates the construction of a frame engine house at Kalamazoo, Mich. The company has awarded a contract to the Roberts & Schaefer Company, Chicago, for the installation of electric elevating equipment in the coaling station at its Milwaukee Junction yards in Detroit, Mich.

Michigan Northern.—The Interstate Commerce Commission has announced a hearing at Lansing, Mich., on October 21, on the application of this company for a certificate authorizing it to construct and operate a new line in Midland, Isabella, Gratiot, Clinton, Eaton, and Ingham counties, Michigan.

Minneapolis & St. Louis.—This company contemplates the rebuilding of its terminal facilities, including its roundhouse, at Fort Dodge, Iowa.

Missouri Pacific.—This company has awarded a contract to J. E. Nelson & Sons, Chicago, for the construction of a reservoir, dam, pump house, and water lines, at Wagstaff, Kans., at an approximate cost of $90,000.

Oahu Railway & Land Company, Honolulu, T. H.—This company is constructing 13 miles of second main line track of 3 ft. gage. Sixty pound rails are being used. The improvement will necessitate the construction of five new concrete bridges and a few additional sidings, the purchase of 16 automatic block signals and the making of several cuts.

Pennsylvania.—This company has under construction an addition to one of its electrical substations at Philadelphia, Pa., in which new equipment to cost about $100,000 will be installed. The building will be 30 ft. by 30 ft. and 60 ft. high, of brick, terra cotta and reinforced concrete, and will cost approximately $60,000. The contract for the construction of the building has been let to F. A. Havins Company, Philadelphia, Pa. The city officials of Jersey City, N. J., have approved the proposal of this company that it construct a new overhead vehicular bridge over its tracks at Tonelle street to replace the present structure. The engineering department is now working on plans. This bridge will have a total width of 50 ft. and will be 97 ft. long, allowing for the passage of eight tracks under it—two more than the present structure provides space for. The superstructure of the new bridge will be of steel, while the bridge itself will be of concrete construction with an asphalt wearing surface on the cover deck.

Pere Marquette.—The Interstate Commerce Commission has announced a hearing at Lansing, Mich., on October 20, on the application of this company for a certificate authorizing it to abandon a branch line in Kalkaskia county, Michigan.

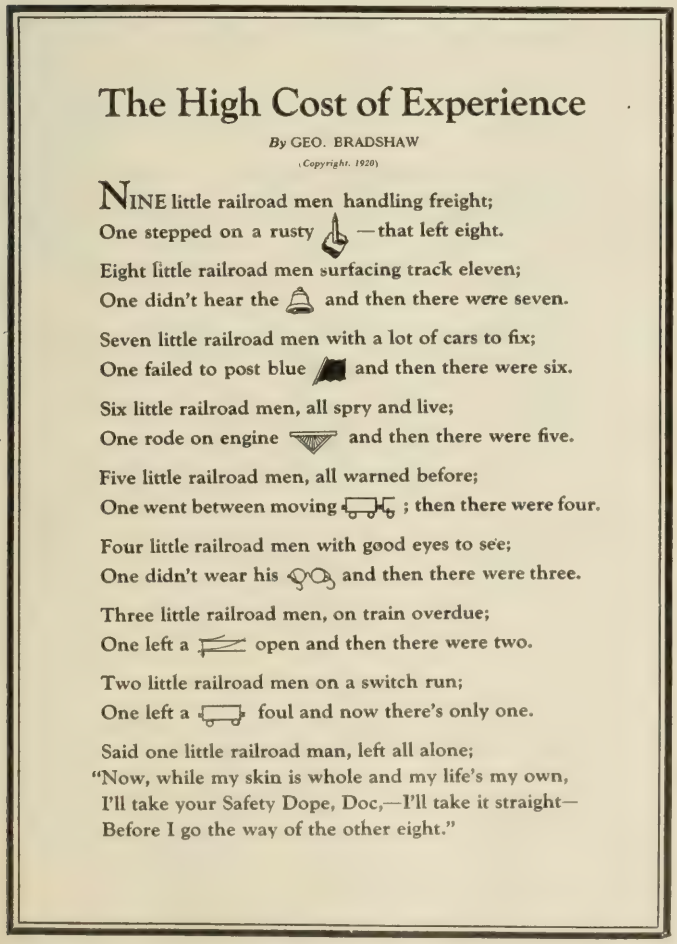
Tampa Southern.—This company has again taken up the construction of a 9-mile belt line from Gillette, Fla., to Palmetto, via Ellenton, which work was held up during the war period. The country to be traversed is relatively flat. Little grading and no bridges, other than small culverts, will be necessary. The contract for grading has been let to E. C. Stover, Tampa, Fla. The purpose of the new line is to expedite the movement of perishable foodstuffs around Tampa Bay.

Texas Central.—This company contemplates the rebuilding of its station at Albany, Tex., which was burned recently.

Wisconsin & Michigan.—This company has applied to the Interstate Commerce Commission for authority to resume the operation of its connection between Faithorn Junction and Aragon Junction, Mich., a distance of 7.17 miles, on which the rails had been taken up. The Interstate Commerce Commission has announced a hearing at Lansing, Mich., on October 26, on the application of this company for a certificate authorizing it to resume the operation of its abandoned line.

Wenatchee Southern.—Articles of incorporation have been filed by this company at Olympia, Wash., contemplating the construction of a road from Wenatchee, Wash., to Pasco and Kennewick, connecting the Great Northern, the Chicago, Milwaukee & St. Paul, the Northern Pacific, and the Union Pacific.

Western Pacific.—This company has applied to the Interstate Commerce Commission for a certificate authorizing it to construct a branch line of 1¾ miles from its main line at or near Bidwell, Cal., to connect with a logging road.



An Effective Safety Poster Prepared and Distributed by Geo. Bradshaw, Supervisor of Safety, Pere Marquette.

Railway Financial News

Baltimore & Ohio.—This company has applied to the Interstate Commerce Commission for authority to issue $3,000,000 of refunding and general mortgage, series B, 6 per cent bonds, to be exchanged for an equal amount of series A, 5 per cent bonds heretofore issued under the same mortgage, and to pledge $3,000,000 of series A, 5 per cent bonds and $10,000,000 of series B, 6 per cent bonds with the director general of railroads in anticipation of a settlement with the Railroad Administration as security for $9,000,000 of a general balance due the government to be funded for 10 years. It is the purpose of the company to obtain bonds paying a higher rate of interest more nearly in conformity with the present rates of interest and to obtain a higher value for the purpose of the pledge. The company has executed or is about to execute an agreement with the director general under which it will issue its promissory note for $9,000,000 at 6 per cent.

Boston & Maine.—A special meeting of stockholders has been called for October 26 to act on amending the equipment trust agreement, dated January 15, 1920, on an issue of $10,000,000 bonds to be secured by present mortgages; also on authorizing equipment trust agreement to provide for purchase of 50 locomotives through equipment notes not exceeding $3,000,000; on a loan from the United States and on authorizing issue of bonds or notes as prescribed by the government in connection with the loan; to act on an issue of bonds for paying or refunding bonds of the Boston & Lowell and Connecticut River Railroads aggregating $609,000, which mature January 1, 1921.

Chicago, Milwaukee & St. Paul.—This company has effected a final settlement with the Railroad Administration of the accounts in favor of and against the government for causes arising out of the federal control of its property, by which it receives a lump sum payment and funds its indebtedness to the government for capital expenditures for 10 years. The Railroad Administration has not announced the amount of the settlement, pending action on it by the company's board of directors. The company has paid off its loan of $11,500,000 from the War Finance Corporation.

Chicago, Rock Island & Pacific.—The Interstate Commerce Commission has approved the making of a loan of $2,000,000 to this company to aid it in meeting its 1920 maturing indebtedness. The carrier itself is required to finance in connection with its maturing indebtedness approximately $6,000,000.

Detroit & Ironton.—The Interstate Commerce Commission has announced a hearing at Lansing, Mich., on October 19, on the application of this company for authority to issue its corporate stock and assume certain obligations as lessee respecting the securities of the Detroit, Toledo & Ironton.

The lease of the Detroit, Toledo & Ironton to the new Detroit & Ironton Company, controlled by Henry Ford, was upheld by Justice Finch in the New York State Supreme Court on October 7. His opinion was given in answer to the petition of minority stockholders for an injunction to prevent the directors from leasing the line to the Ford interests.

Kansas City, Mexico & Orient.—The Interstate Commerce Commission on October 11, upon a supplemental application, certified its approval of a loan to William T. Kemper, receiver, of $2,500,000 to aid him in meeting maturing indebtedness, consisting of receiver's certificates due December 1, 1920. The loan covers the full amount of the applicant's maturities and was approved after a conclusive showing that operation of the carrier would have to be suspended unless the aid of a loan were given.

Long Island.—The Interstate Commerce Commission on October 4 certified its approval of a loan to this company of $718,000 to aid the carrier in purchasing four switching locomotives and six 10-wheel standard freight locomotives at an estimated total cost of $437,000, and in making additions and betterments to roadway and structures at a cost of $500,000. The carrier itself is required to finance $218,000 of the cost of the equipment to meet the loan of the government.

Missouri Pacific.—The Interstate Commerce Commission on October 11 approved a loan to this company of $8,671,760, to aid it in meeting its maturing indebtedness and in providing itself with new equipment and additions and betterments to way and structures.

New Orleans, Texas & Mexico.—This company has applied to the Interstate Commerce Commission for authority to issue eight promissory notes for $25,000 each at 7 per cent, secured by an equipment trust obligation covering 10 steel passenger coaches and 5 steel baggage cars being constructed by the American Car & Foundry Company. It also asks authority to assume an obligation dated June 1, by which the company agrees to pay to the War Department $12,500 per annum for nine years at 6 per cent as the balance of the purchase price for 5 Russian locomotives. It also asks authority to issue $800,000 of its first mortgage 6 per cent gold bonds and $530,000 of 5 per cent non-cumulative income bonds, to be deposited as collateral for a loan from the government, and to issue non-cumulative 5 per cent income bonds not exceeding $280,000, and its capital stock or voting trust certificates not exceeding $175,000, to be delivered to citizens of France and Belgium holding bonds issued under the mortgage of May 17, 1910, and depositing them in compliance with the plan of organization of August 25, 1915.

New York, New Haven & Hartford.—The stockholders at a special meeting at New Haven, Conn., on October 11 approved the directors' recommendations to put a general mortgage on the company's properties to assist in financing the indebtedness of the company to the government. Final action will be taken at a meeting on November 11.

Philadelphia & Reading.—Charles H. Ewing and George M. Shriver have been elected directors to succeed George F. Baker and Daniel Willard.

Southern Railway.—Exclusive of $4,195,000 in wages that were made retroactive to May 1 by the award of the Railroad Labor Board, this company in the first six months following the termination of federal control earned $642,078 in excess of the government guaranty, which it could have accepted, but did not. Referring to the results of operation, President Harrison said: "If, by reason of the addition to its expenses for four months of the period of approximately $4,195,000 in increased wages, under the award of the Railroad Labor Board on July 20, 1920, without a contemporary compensation of increased rates, the Southern proper failed to secure the equivalent of the full guaranty in the period, nevertheless its 'railway operating income' was $3,449,734 greater than that from the government operation of the same lines in the corresponding months of 1919, and, moreover, the Southern earned its preferred stock dividend for the period by its own operations. Comparing like with like, the result of operation of the Southern was thus more than $7,500,000 better than the government operation."

Texas & Pacific.—The stockholders on October 21 will vote upon the following: The approval and ratification of a proposed agreement between this company, the Trans-Mississippi Terminal Railroad, the Missouri Pacific, J. L. Lancaster and Charles L. Wallace as receivers of the Texas & Pacific, the holders of the extended 6 per cent three-year gold notes of the Trans-Mississippi Terminal Company and the Equitable Trust Company of New York, trustee, further extending and guaranteeing jointly and severally with the Missouri Pacific and J. L. Lancaster and Charles L. Wallace, receivers of the Texas & Pacific, as to principal and interest, $3,653,000 of the extended three-year gold notes of the Trans-Mississippi Terminal Company for the term of three years from the date of their maturity as extended, November 1, 1920, to November 1, 1923.

Trans-Mississippi Terminal.—See Texas & Pacific.

Western Maryland.—This company has applied to the Interstate Commerce Commission for authority to issue $2,700,000 of first and refunding mortgage 5 per cent bonds dated July 1, 1917, and maturing in 1967, to be pledged as collateral security for a loan from the revolving fund. The company has filed an application for a loan of $1,372,800 for the purchase of 20 freight locomotives, costing $750,000, and additions and betterments, costing $622,000, and has since filed a supplemental application for $750,000 for the purchase of 20 additional freight locomotives.

Railway Officers

Executive

J. S. Hungerford, assistant vice-president of the Canadian National, with headquarters at Toronto, Ont., has been elected vice-president in charge of operation, with the same headquarters; **C. S. Gzowski,** special engineer, with headquarters at Toronto, has been appointed assistant to Mr. Hungerford, effective October 1.

H. S. Rubens, vice-president and director of the Cuba Railroad, with headquarters at New York, has been elected chairman of the board; **W. V. Griffin** has been elected vice-president, with headquarters at New York; **J. M. Gruber,** formerly vice-president of the Great Northern, has been elected vice-president in charge of operation, with the same headquarters.

Financial, Legal and Accounting

William H. Baker, assistant secretary of the Cuba Railroad, with headquarters at New York, has been appointed secretary, with the same headquarters, succeeding Henry W. Bull, resigned.

Daniel Taylor, assistant general attorney of the Chicago, Rock Island & Pacific, with headquarters at Chicago, has been promoted to general attorney, succeeding A. B. Enoch, effective October 1.

P. J. Farley has been appointed general paymaster of the Canadian National and the Grand Trunk Pacific, with jurisdiction over the lines west of Port Arthur, Ont., and with headquarters at Winnipeg, Man.

E. S. Benson, controller of the Chicago & Alton, with headquarters at Chicago, and **J. H. Howard,** general claim agent, Chicago, have had their jurisdiction extended over these respective departments of the Peoria Railroad Terminal Company, effective September 26, with the same headquarters.

H. G. Foreman, assistant treasurer of the Canadian Northern, with headquarters at Toronto, Ont., has been appointed treasurer of the Canadian National and the Grand Trunk Pacific, with the same headquarters. **F. J. Buller, T. J. Macabe,** and **C. H. Hickie,** have been appointed assistant treasurers, with headquarters at Toronto, Ont.

Oscar M. Longnecker has been elected treasurer of the Southern Pacific lines in Texas, together with the Rio Bravo Oil Company, the Direct Navigation Company and the Southern Pacific Building Company, with headquarters at Houston, Texas, effective October 1, succeeding C. B. Udell, who has retired. Mr. Longnecker entered railroad service with the Southern Pacific as a clerk in the Houston office in October, 1898. He was promoted to cashier in 1902, a position which he held until federal control, when he was made corporate treasurer of the Southern Pacific lines in Texas and Louisiana. In March, 1920, he was elected assistant treasurer of the Texas lines and was serving in that position at the time of his recent promotion.

Operating

L. Holladay has been appointed train master of the Denver & Salt Lake, with headquarters at Tabernash, Colo., effective October 7.

J. J. Jordan has been appointed assistant superintendent on the staff of the general manager of the Southern Pacific, with headquarters at San Francisco, Cal., effective August 16.

G. J. Shreeve, superintendent of the Belt Railroad, with headquarters at Clearing, Ill., has been promoted to general superintendent, with headquarters at Chicago, effective September 21. **J. C. Hemming,** assistant superintendent, with headquarters at Clearing, succeeds Mr. Shreeve.

E. E. Carter, assistant superintendent on the St. Louis-San Francisco, with headquarters at Neodesha, Kansas, has been appointed superintendent of terminals, with headquarters at West Tulsa, Okla., effective October 11, succeeding **F. C. Gow,** who has been assigned to other duties.

M. Sheffer, road foreman of engines on the Chicago, Great Western, with headquarters at St. Paul, Minn., has been appointed train master of the Northern division, with the same headquarters, effective October 1, succeeding G. J. Congden, who has resigned. **A. K. Rowe** succeeds Mr. Sheffer.

E. R. Gorman, assistant superintendent of the Eastern division of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at Eau Claire, Wis., has been promoted to superintendent of motive power and machinery, with headquarters at St. Paul, Minn., effective September 15, succeeding J. O. Enockson, deceased. **A. J. Strouts** succeeds Mr. Gorman.

H. J. Plumhof, assistant to the vice-president in charge of operation of the Union Pacific, with headquarters at Omaha, Neb., has been appointed general superintendent of the Southern district, with headquarters at Kansas City, Mo., effective October 1, succeeding E. Stenger, resigned. **W. H. Guild,** assistant to the general manager, succeeds Mr. Plumhof.

E. L. King, superintendent of telegraph of the Southern Pacific, with headquarters at San Francisco, Cal., has been promoted to superintendent of the Salt Lake division, with headquarters at Ogden, Utah, effective October 1, succeeding **B. A. Campbell,** who has been appointed assistant superintendent of the Western division, with headquarters at Oakland Pier, Cal. **Edward Entelman,** assistant superintendent of the Western division, with headquarters at Oakland Pier, Cal., succeeds Mr. King.

W. A. Kirkpatrick, whose promotion to superintendent of transportation of the Canadian National, with headquarters at Saskatoon, Sask., was announced in the *Railway Age* of September 24 (page 550), was born at West Louie, Ont., on August 28, 1883. He entered railroad service in July, 1898, with the Michigan Central, being stationed as operator and agent at various points on the Canadian division until September, 1902, when he became a despatcher on the Pere Marquette. After two years of service with this road, he became an operator and ticket agent on the Canadian Pacific, but soon left that road to accept a position as operator and despatcher on the Canadian Northern, now consolidated with the Canadian National. In December, 1906, he was promoted to chief clerk to the superintendent of that road, and chief clerk to the general superintendent, successively, positions which he held until 1910, when he was again promoted to inspector of transportation. Three years later, Mr. Kirkpatrick was promoted to train master of the Canadian Northern, with headquarters at Neepawa, Man., the position he held at the time of his recent promotion.

L. F. Muncey, whose promotion to superintendent of the Canadian National, with headquarters at Kamloops, B. C., was announced in the *Railway Age* of Sept. 24, (page 551), was born at Kensington, Prince Edward Island, on March 15, 1876. He entered railway service in August, 1891, as an operator on the New Brunswick & Prince Edward. In August, 1896, he became an operator on the Prince Edward Island and served with that company as relief agent and clerk in the auditing department until June, 1901, when he was appointed relief agent on the Canadian Northern. During the next 18 years Mr. Muncey was employed continuously with that road. He was made traveling auditor in 1902, and served both in that position and as chief traveling auditor until 1909, when he became an agent at various points on the line. From December, 1914, to May, 1919, he was general chairman of the Order of Railroad Telegraphers of the Canadian Northern, leaving that position to accept an appointment as assistant superintendent on the Canadian National, with headquarters at Vancouver, B. C., the position he held at the time of his recent promotion.

C. H. Brown, whose promotion to superintendent of transportation of the western lines of the Canadian National, with headquarters at Edmonton, Alta., was announced in the *Railway Age* of September 24 (page 550), was born at Oswego, N. Y., on August 24, 1869, and entered railroad service in 1887, as an agent and operator on the Rome, Watertown & Ogdensburg, now part of the New York Central. In 1893 he became a despatcher on the New York Central at Oswego, N. Y., and served in that capacity and as chief despatcher until 1902, when he was employed by the Grand Trunk as a despatcher at Belleville, Ont. In 1904 he returned to the New York Central, where he was appointed successively yard master, assistant train master and train master of the Oswego division. From 1906, when he again became a despatcher on the Grand Trunk, with headquarters at London, Ont., Mr. Brown has served continuously with Canadian lines. In 1909 he was promoted to chief despatcher on the Grand Trunk at Stratford, Ont., in 1910 he was made train master at Hamilton, Ont., and from 1912 to 1920 he served on the Grand Trunk Pacific, as despatcher, chief despatcher, and finally, as assistant superintendent, the position he held at the time of his recent promotion.

Traffic

F. A. Edmondson has been appointed commercial agent of the St. Louis-San Francisco, with headquarters at Chicago.

A. E. Lee, general freight agent of the Chicago & Alton, with headquarters at Chicago, has resigned from railroad service.

W. G. Kidd has been appointed general agent of the Wabash, with headquarters at Birmingham, Ala., effective October 1.

Daniel A. Gerlach has been appointed general agent of the New York Central, with headquarters at New Haven, Conn., effective October 1.

E. W. Green has been appointed general agent of the Kansas City, Mexico & Orient, with headquarters at Chicago, effective October 1.

Theodore Dehon, general southern agent of the Carolina, Clinchfield & Ohio with headquarters at Spartanburg, S. C., has been appointed general freight agent with headquarters at Johnson City, Tenn., effective October 1, the office of general southern agent having been abolished. **Sam C. Smith** has been appointed commercial agent, with headquarters at Johnson City, effective the same date.

J. H. Cummings has been appointed district passenger agent on the Chicago Great Western, with headquarters at Chicago, effective October 1, succeeding T. N. Butzen, who has resigned; **L. N. St. John** has been appointed general agent, with headquarters at New Orleans, La., effective October 10; **W. F. Stewart** has been appointed general agent, with headquarters at Spokane, Wash., effective September 20.

Care L. Senter, who has been appointed traffic manager of the Georgia, Florida & Alabama, with headquarters at Bainbridge, Ga., as noted in the *Railway Age* of September 24, (page 551), was born at Blue Springs, Tenn., on November 23, 1886. He received a high school education at Chattanooga, Tenn. His first railroad work began on May 20, 1903, with the Cincinnati, New Orleans & Texas Pacific, at Chattanooga. In 1906 he became rate and quotation clerk of the Atlantic Great Southern, now part of the Southern. In 1908, after a year spent out of railroad service, he became chief rate clerk of the Seaboard Air Line and retained that position for 2½ years. He then became route clerk of the Atlantic Coast Line at High Springs, Fla. Later he served in clerical capacities for the Georgia, Florida & Alabama at Wilmington, N. C., and Savannah, Ga. He was afterwards promoted to chief clerk to the traffic manager at Bainbridge, Ga., which position he held at the time of his recent promotion.

E. F. Benson, who has been appointed manager of the newly-created department of immigration and industry of the Northern Pacific, with headquarters at St. Paul, Minn.,

was born at Swan's Island, Maine, on February 2, 1861. He graduated from Boston University Law School in 1881, and served for 25 of the past 35 years with the Northern Pacific. All of this service was in the land department of the road, and most of it was at various points in the state of Washington. From 1908 to 1910, he was chief land examiner of the Northern Pacific, with headquarters at Miles City, Mont. In 1913 he was appointed receiver of the Hanford Irrigation & Power Company, operating in the state of Washington, and in 1915 he added to his other duties the receivership of the Attalia Land & Irrigation Company. At the time of his recent appointment, Mr. Benson was serving as commissioner of agriculture of the state of Washington, a position to which he had been appointed by Governor Lister, and in which he had continued under the present incumbent, Governor Hart.

Mechanical

Thomas M. Allison has been appointed road foreman, with headquarters at Pasco, Wash., effective October 5, succeeding C. A. Wirth, promoted.

A. B. Clark, master mechanic on the Southern division of the Chicago Great Western, with headquarters at Des Moines, Iowa, has been promoted to superintendent of shops, with headquarters at Oelwein, Iowa, effective October 1, succeeding M. H. Oakes. **H. Brinkman** succeeds Mr. Clark.

T. M. Allison has been appointed road foreman of engines on the Northern Pacific, with headquarters at Pasco, Wash., succeeding **P. A. Wirth,** whose promotion to master mechanic, with headquarters at Pasco, was announced in the *Railway Age* of September 10, (page 468).

J. J. Connors, who has been appointed superintendent of motive power of the Denver & Salt Lake, with headquarters at Denver, Colo., effective September 15, was born at Milwaukee, Wis., in 1860, and entered railroad service in 1875 in the shops of the Chicago, Milwaukee & St. Paul, at Milwaukee. During the next 43 years he served continuously with the St. Paul, being promoted successively to foreman, general foreman, master mechanic and assistant superintendent motive power. In 1918 Mr. Connors became general superintendent of the Morrison Foundry Company, the position he held at the time of his recent appointment.

Engineering, Maintenance of Way and Signaling

W. C. Allen has been appointed assistant valuation engineer of the Fort Worth & Denver City and the Wichita Valley, with headquarters at Fort Worth, Tex., effective August 21.

Samuel P. Coffin, supervisor of bridges and buildings of the Boston & Maine, with headquarters at Boston, Mass., has been transferred to Salem, Mass., effective October 1, succeeding B. F. Pickering, deceased.

A. F. Stewart, chief engineer of the Canadian National, Eastern Lines, and the Canadian National, with headquarters at Toronto, Ont., has been transferred to Moncton, N. B., succeeding C. B. Brown, promoted; **H. T. Hazen,** engineer maintenance of way, with headquarters at Toronto, will perform temporarily the duties of chief engineer in addition to his own, effective October 1.

Purchasing and Stores

William W. Morris, who has been appointed purchasing agent of the Northwestern region of the Pennsylvania System, with headquarters at Chicago, succeeding I. B. Thomas, was born in Philadelphia, Pa., on October 3, 1879, and entered railroad service as a clerk in the general offices of the New York, Philadelphia & Norfolk, at Philadelphia, on November 1, 1896. In 1898 he became clerk to the secretary of the Norfolk & Portsmouth Belt Line, in addition to his duties in the office of the president of the New York, Philadelphia & Norfolk. Four years later he was made chief clerk in the purchasing department of the New York, Philadelphia & Norfolk, and at the same time became chief clerk to the auditor of the Norfolk & Portsmouth Belt Line. In January, 1909, when the New York, Philadelphia & Norfolk was taken over by the Pennsylvania, he was transferred to the purchasing department of the latter road, with headquarters at Philadelphia, where he remained until February, 1918, when he accompanied Samuel Porcher, purchasing agent of the Pennsylvania Railroad, to Washington. During his service with the Railroad Administration, Mr. Morris was made secretary to the Central Advisory Purchasing Committee, and later, when that committee was abolished, became assistant to the Director of Purchases. When the roads were returned to private control, on March 1, 1920, he returned to the Pennsylvania as assistant to the general purchasing agent, with headquarters at Philadelphia, the position he held at the time of his recent promotion.

Railroad Administration

George M. Huss, whose appointment as assistant to the director of the Division of Liquidation Claims of the Railroad Administration was noted in last week's issue, has also been reappointed chairman of the Committee on Claims, the position which he held prior to his resignation on June 1 on account of illness.

D. C. Porteous, who was recently appointed acting director of the Division of Finance of the Railroad Administration, succeeding Swagar Sherley, resigned, has now been appointed director of the division. Mr. Porteous was formerly assistant director of the division and has been connected with the Railroad Administration since its organization. He was formerly secretary of the Seaboard Air Line.

Obituary

W. A. Hall, assistant engineer in the construction department of New York Central, died recently at Morrisville, N. Y., at the age of 46.

David J. Curran, treasurer of the Cincinnati, Indianapolis & Western, with headquarters at Indianapolis, Ind., died October 10, at the age of 48, at his home in Indianapolis.

E. Tiffin, formerly general traffic manager of the Intercolonial and the Prince Edward Island, now parts of the Canadian National, with headquarters at Moncton, N. B., died recently at Preston, Ont.

W. N. Foreacre, general manager of the Southern, Lines East, with headquarters at Charlotte, N. C., was found dead in his private car at Hendersonville, N. C., on October 12, his death being attributed to acute indigestion.

THE DELICATE POSITION OF THE BOSTON & ALBANY.—It is reassuring to read what a well-known British journalist, H. W. Nevinson, has recently said about us. He thinks that New England is notable for the charming politeness and modesty of its people, and suggests that this may be derived from the primitive Christianity of the Pilgrims—from their grave living, their indifference to temporal things; from minds fixed upon the eternal, and a sense of the equality in the presence of God. * * * But are our manners as good as Mr. Nevinson thinks or as bad as we ourselves think? In Boston, recently, the manners of Boston & Maine trainmen have been singled out for praise, and this agrees with the observations of a New York man, who says that the dividing line between spontaneous courtesy and indifferent breeding in New England is the line of the Boston & Albany Railroad. His meaning is not that Boston & Albany employees are discourteous, but that this line marks the division between the driving industrial and commercial atmosphere of southern New England and the easier-tempered agricultural north. The difference, if it exists, is probably due, in part, to the effects upon character not only of different occupations, but of the forced contacts of life in the cities and industrial towns, which have made the native population more self-centered and more standardized, less simple and less kindly. In the rural districts of northern and western New England, Jeffersonian democracy had its stanchest adherents, and, simultaneously, that revolt against the cruelties of Calvinist doctrine, which was embodied in the free-will Baptist and Christian movements. was sweeping through Maine, New Hampshire, Vermont and northwestern Massachusetts.—*Springfield Republican.*

EDITORIAL
Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

A Remarkable Record of Increased Efficiency

WHILE THE ADVOCATES of government operation are finding fault with the management of the railways under private operation, the railways are going ahead making records of increased efficiency that are vindicating the wisdom of the public in having them returned to private operation.

Statistics already made public regarding the number of carloads of freight moved in August have shown that in that month more freight was handled than in any previous August in history. Statistics more recently compiled by the Interstate Commerce Commission disclose the fact, which even those in close touch with traffic conditions did not know, that even in July, when the effects of the switchmen's strike were still felt, the railways handled more business than in July of any preceding year. The number of tons moved one mile in July, these statistics of the Commission disclose, was 40,232,000,000 as compared with 39,347,000,000 in July, 1918, the record up to this time. One of the important reasons for the increase in the traffic handled, which the statistics of the Commission disclose, is that the average number of tons loaded per car in July showed a large increase, being 29.6 tons, as compared with 27.8 tons in July, 1919.

The commission's statistics also disclose the fact that in spite of the "outlaw" railroad strikes the total amount of freight handled by the railways in the first seven months of 1920 was greater than in the same period of any preceding year, being 249,000,000,000 tons carried one mile, as compared with 247,500,000,000 ton miles in 1918 and 213,000,000,000 ton miles in 1919.

With the facts now before us, it is safe to predict that the total amount of freight handled in the entire year 1920 will be greater than in any earlier year in history. The number of cars loaded week by week still continue to show increases over the corresponding weeks of previous years. In the week ending October 2, the latest for which a report has been made, the number of cars loaded by the Class 1 roads was 975,946, as compared with 957,596 in 1919 and 971,895 in 1918. In the week ending October 9, as the statistics of the United States Geological Survey show, the number of tons of bituminous coal transported was 12,075,000, which sets a new record for this year and closely approaches the highest record ever made in any past year. Since the statistics of the Interstate Commerce Commission show that even back in July the railways moved more freight than ever before in that month, it may be predicted with the utmost confidence that when complete data are available they will show that all previous records have been broken in every subsequent month.

The Interstate Commerce Commission's statistics for July throw a new light upon the increases in operating efficiency which have been secured since the railways were returned to private management. Reference already has been made to the large increase which has been made in the average number of tons loaded per car. This has been largely due to the energetic co-operation which the shippers of the country have been giving to the railways. In addition, the average miles that each freight car was moved daily was 26.2, as against 24.1 in 1919. The number of serviceable cars had been increased to 92.8 of the total, as compared with 91.2 in the same month of last year, and the average number of tons per train was 769, as compared with 761.

One of the most important results the railways have obtained is the practical elimination of all congestions in their terminals. When they were returned to private operation on March 1, the number of loaded cars accumulated in the terminals awaiting movement was almost 100,000. In the week ending October 8 this had been reduced to 41,135, of which nearly 18,000 were being held at the ports for ships in the transoceanic and coastwise service. The accumulations of cars are now so small that it may be said without exaggeration that congestions have ceased to exist.

With this record of increased efficiency already established, the railways do not need to fear captious criticisms of persons who, regardless of facts, apparently are still determined to try to show the superior efficiency and desirability of government operation. As long, however, as a large shortage of cars is still reported, and vast amounts of freight, especially coal and grain, are still waiting to be moved, the most energetic efforts should still be put forth to increase efficiency. The increases in efficiency which are being obtained not only make practicable the movement of the country's business, but also help to keep down expenses, and if, under the new passenger and freight rates, the railways are to earn adequate returns the utmost economy of operation consistent with adequate maintenance of the properties must be secured.

Tell the Men About It

There has probably never been a time in the history of American railroading when the rank and file of the employees have been so keenly alive to the necessity for the conservation of cars as the present. The message has been brought to them verbally by the local supervisory officers, by posters and printed appeals, through the employees' magazine and in various other ways. The history of most campaigns of this character is that interest is allowed to lag as soon as the emergency passes. This should not be permitted to occur in the campaign now under way, for even when the time comes that the roads are able to provide a sufficient number of cars to meet the needs of traffic, the economies resulting from the loading of cars to capacity and of keeping them moving will be sufficient to warrant and demand a continuance of these efforts. The present campaign can be sustained indefinitely only by maintaining the interest of the employees in these measures. This can be done in no more effective manner than by the managements taking the employees into their confidence, telling them of the results secured and thus creating in them an interest in the success of their roads. By thus showing them at frequent intervals that their efforts are bringing results, they will be stimulated

to greater and more prolonged efforts. Railway officers can well afford to give this subject serious consideration at the present time in order that they may not lose the results of the drive which they are now conducting but may continue them permanently.

The Tenth Fuel Commandment: Stabilization

Unquestionably the most important problem relating to fuel with which the railroads must deal today is that of stabilizing fuel supply. The control by every railroad of at least 40 per cent of its fuel supply is vital; it may be effected by lease or the purchase of mining properties. Many railroads have long appreciated this fact, but there are many who annually switch from one character of coal to another, and in time of stress must cling to the sweepings of the most insignificant of wagon mines and endure the agony of engine failures that follow in their wake. As the man who failed to shingle his house in fair weather, because it was not necessary, and could not shingle it in stormy weather, so there are railroads that have failed to stabilize their supply in the days when many mines were selling excellent locomotive coal for less than one dollar per ton. The purchase of railway fuel coal in a dull market at less than cost is just as unfair to the mining industry as the exorbitant fuel prices are unjust to the railroads. If locomotive fuel is uniformly good, the fuel problem is simple. If locomotive fuel is uniformly bad, the problem is difficult. But when the quality of locomotive fuel changes with every new purchase necessitating the redrafting of locomotives and a change in firing methods, the problem is impossible. Prior commandments have dealt with the purpose, the scope and the conduct of an organization to promote fuel economy on the railroads, the tenth fuel commandment outlines the only broad policy wherein the management of every railroad can fully co-operate with fuel conservation and wholly safeguard the best interests of its property.

Advantage of a Comprehensive Bridge Program

A very large part of the railroad bridges in this country still fall under the classification of temporary structures of which a more or less definite percentage must be renewed each year. Many of them are replaced in kind, but under a policy that looks toward their ultimate elimination, a portion of these temporary bridges are replaced by some form of permanent construction. Under the usual practice the preparation and approval of the budgets covering such projects are governed by the general policy of the management as outlined from time to time and as influenced by changing financial conditions, but each year's work is largely a law unto itself. One road, however, has found it to advantage to anticipate the capital requirements to this end for several years in advance by adopting a tentative program for the elimination of virtually all the remaining temporary structures on its main lines within a fixed period of time. This plan is not absolute but represents a "mark to shoot at," which may, however, be subjected to adjustment as subsequent circumstances direct. The object of this outline is to equalize capital requirements, obtain a better balance in the demands on the construction forces from year to year and to secure greater economy in the maintenance of the old structures. Under this arrangement, the bridge engineer's plan provides for the replacement of approximately an equal length of trestle construction on each division each year. The various structures are then slated for renewal at dates which meet this plan as far as possible. Of course, questions of future change of grade or other uncertainties make it necessary to leave certain structures out of this program. It should also be understood that the tentative adoption of this plan does not relieve or deny the management of its prerogatives in passing on each annual bridge budget in detail. Nevertheless, the plan permits of a more expeditious supervision of the bridge renewals than is usually possible.

The Heat Treatment of Springs

It is generally conceded that spring making in the majority of railroad shops is carelessly handled; and this in spite of the fact that a few shop managements, having secured extremely desirable results with modern machinery and equipment, are perfectly willing that others should study and duplicate their practices. The difference between strong and weak springs is largely a question of heat treatment; in one instance the adoption of proper heat treating equipment, including pyrometers, in a certain shop, made possible an increase of 50 per cent in the life of the springs. The importance of this subject and the possibilities of saving can be appreciated when it is considered that the output of one spring shop for a single division of one railroad is 400 elliptic springs per month. These springs are used under all classes of equipment and include truck springs, driver springs and trailer springs for locomotives; also truck springs for tenders, coaches, cabooses, etc. Quantity of spring shop output must not be secured at the expense of quality. If a locomotive or car, after undergoing general repairs, is found to have a defective spring it must be replaced and the total loss in delayed equipment is out of all proportion to the value of the spring. Reliable springs, able to stand up under severe duty, must be secured. The part of the work most often carelessly performed is drawing the temper, although overheating, or uneven heating and cooling when hardening, is not uncommon and will produce serious results. Experience in making springs has shown the importance of proper heat treatment and the necessity for adequate equipment including furnaces, water-cooled oil tanks, sodium nitrate or other baths, and pyrometers. The best results can be secured only with an accurate knowledge of conditions and temperatures, and it is time that guesswork methods were discarded.

Can Engineering Positions Be Made More Permanent?

One objection often raised to railway employment, particularly for the engineer, is its lack of permanence. It is true that the insecurity of engineering positions with the railroads has not been a serious stumbling block in the recruiting of the technical graduates fresh from school, but it has served to turn many thoroughly seasoned railway engineers into other channels of opportunity. One or two bitter experiences with unemployment after periods of untiring, faithful service are enough to chill the ardor and love of almost any man for his chosen field. This problem is closely related to that of compensation, and the successful solution of the former will do much to reduce the difficulty of the latter. Railway engineers have suffered more than members of other departments because their work is largely related to capital expenditures which are increased or diminished as financial considerations dictate. Except in the case of the line officers of the maintenance of way or the mechanical departments, the work of the engineer is not such as to make him an indispensable cog in the transportation machine. Consequently, his services have been often dispensed with at the first signal for retrenchment. Much of engineering work is of a transitory nature, but there is opportunity for bettering the lot of the engineer by providing for the useful employment of larger proportions of the corps during the slack periods.

One lesson is to be found in the fact that some railroads have been able to pursue a fairly consistent policy with respect to improvements, thereby obtaining many advantages not to accrue in the case of erratic spasmodic programs, under which employment is especially uncertain. Another suggestion is the more complete preparation of engineering plans in advance of actual construction. Too much work has been done with a rush by new corps hired at the eleventh hour. Greater attention to the human element in laying the plans for projects should usually enhance the attractiveness of the work without detracting from its economies.

On Swapping Officials in Midstream

When things are not going right, when one department appears to be falling down, the first impulse on the part of some executives is to make a change, to get someone on the job who it is thought can straighten things out. In only one case out of ten is it safe to say that the fault lies in the personality or incapacity of the official whom it is decided to replace. More often the new official is no better equipped for the job than his predecessor, and he is usually handicapped by lack of familiarity with local conditions. But even if he makes good, there is the example of an outsider replacing the man who has come up in the organization to act as a damper on the aspirations of every man on the lower rungs of this particular official ladder. More than likely it was some fundamental condition that caused the trouble in the first place; possibly the management did not stop really to analyze the situation when it made the change. There ought to be someone on every railroad whose business it is to ascertain the real cause whenever the railroad appears to be faced with the necessity for dropping or demoting a man who must once have been regarded with favor and doubtless made good for a time in the position from which it is thought necessary to remove him. Men of any promise whatsoever are too scarce these days to be cast by the roadside; it might, for instance, be considerably cheaper to invest in some new shop facilities every ten years than swap master mechanics every ten months.

The Loaded Car Is the Revenue Producer

Since the revenue which a railway derives from the transportation of freight is based upon the weight of the shipments, while the cost of handling it is measured largely in car miles, it has long been recognized that a heavy car loading contributes to large net earnings. A railway, therefore, has every incentive to encourage the maximum loading of cars. Under present conditions, when there are not enough cars to meet the traffic demands of the country, the shipper likewise has an incentive to load cars heavily, for it is only by such means that he can secure sufficient equipment to transport his products. The attainment of the goal of an average loading of 30 tons per car, set by the railway executives recently, will therefore result to the benefit of the railways and their patrons alike. For this reason we urge that employees of both contribute their ideas on the means by which this goal may best be reached by preparing discussions for the contest on Means of Increasing the Average Loading of Cars which was announced in our issue of October 8. To stimulate interest in this contest, prizes of $50 and $35 are offered for the two best papers received, and we will pay our regular space rates for others accepted and published. Papers should preferably not exceed 1,200 words in length and should be confined to practical measures within the ability of the railways and the shippers to put into effect at the present time. To be included in the contest, all papers should be sent to the editor of the *Railway Age*, 608 South Dearborn St., Chicago, and must be mailed before November 10.

Moving Cars Is the Railway's Business

A division superintendent on an important Eastern railway recently asked one of his trainmasters to concentrate his attention on the elimination of delays to cars. After a few days the trainmaster stated that in carrying out this assignment he found that it required him to give attention to all of the problems which had previously come under his supervision. In other words, in investigating delays to cars in a terminal, it was necessary for him to ascertain the defects in the operation of that yard. The same was true of other investigations. His discovery still remains to be made by some operating officers—namely, that the business of a railway is to *move* cars and that in doing this most efficiently other operating problems will be solved at the same time. When *all* railway men learn that a yard is designed as a means for forwarding cars rather than as a place to store them, and that other facilities of a railway are for the same purpose, the goal of maximum car mileage will be in sight.

New Books

Exporter's Gazetteer of Foreign Markets. Compiled and edited by Lloyd R. Morris, research editor of the American Exporter. 808 *pages; 6 in. by 9 in. Bound in cloth.*

This is a ready reference guide to the imports and exports industries, shipping, banking, products, climatic and other local conditions of every foreign market. The countries of the world have been grouped in alphabetical order by continents and other major geographical divisions so that adjoining markets are found together. Under each country will be found detailed information as to area and population, commerce, production and industry, railroads, telegraphs and telephones, money, weights, measures, commercial language, local advertising media, principal shipping routes, customs tariffs, consular regulations and consular representatives, cable rates, mail time, postal rates, and regulations respecting parcel post, money orders and reply coupons. The section under each country dealing with commerce contains tables showing the value of the total foreign trade for a series of years, and the value of imports and exports by commodities and countries.

Commodity Classification. Compiled by the Railway Accounting Officers' Association. Secretary, E. R. Woodson, Woodward building, Washington, D. C.

This is the second edition of this book, the first edition having been published early in 1920 at the time that the Interstate Commerce Commission made its new classification of commodities and increased the number of classes to 70. The Railway Accounting Officers Association referred the work of preparing a list of commodities and separating them into the 70 classes prescribed by the commission to a sub-committee of the association's committee on freight accounts. It has now been found desirable to revise the commodity classification as published at the beginning of the year, and this revision has been made in the most thorough and comprehensive manner possible. It is intended to be final, unless the commission again changes its prescribed classification. The Commodity Classification is used by accounting officers, clerks in accounting departments, waybill clerks, agents and others who prepare waybills or compile data on which freight traffic statistics are based and is a necessary work of reference in understanding the figures underlying them.

Letters to the Editor

Crosstown Movements Within Terminals

San Francisco, Cal.

To the Editor:

Soon after the organization of the San Francisco Committee on Car Service, it started an investigation to determine the necessity, if any, of restricting the use of railroad equipment in dray and crosstown service. It found that the practice had grown to an alarming extent, advantage being taken of carriers' terminal and switching tariffs by scrap iron dealers and others interested only in buying and selling at a profit based on cheap railroad transportation as compared to movement by trucks and drays, the average number of cars amounting to some twenty to thirty per day in the San Francisco and Oakland terminals alone. The average delay to cars used in this service amounted to about five days and the average length of haul was less than five miles.

This abuse of equipment represents a serious economic loss to the public in withdrawing from line haul a large number of cars, reducing the average miles per car per day, congesting the terminals and requiring the service and time of switch engines and yard and clerical forces, no doubt in many cases at an actual loss to the carriers.

In view of this condition, this committee on June 20 caused to be published in the daily papers of San Francisco and Oakland, and through the Chamber of Commerce of the two cities, notice to the public that beginning on July 1 a positive embargo would be laid against the use of railroad equipment in crosstown and trap car service and no cars would be furnished except on permit from the committee. An open meeting was held in the Chamber of Commerce rooms in Oakland, prior to its adoption, at which the object of the permit system was explained to some 50 traffic representatives of industries and railroad agents and representatives. The cheerfulness with which this committee's efforts to conserve cars has been met by the public has been a source of great satisfaction to this committee.

The use of the permit system by this committee has proven to its entire satisfaction that there has been an enormous economic loss to the public as well as the carriers in the past by reason of the abuses under the terminal tariffs, the correction of which will not only save to the shipping public a great number of cars for movement of highly important commodities, but also enable the carriers to increase the supply of cars by increasing the average miles per day per car, a result so much desired at this time.

In view of the facts thus far developed and mindful of the carrier's obligation to furnish adequate transportation at all times, it is the feeling of the committee that a nation-wide attempt be made to render a great service to the shiping public by modification of tariffs to restrict the use of railroad equipment to absolute necessities in order to assist as much as possible in the movement to obtain more and better use of equipment.

In accordance with this idea, the following resolution was unanimously adopted at the regular meeting of the San Francisco Committee on Car Service on August 27, at which all members were present:

"Whereas, the urgent necessity for increased rail transportation to meet the requirements of the shipping public has become so great, and the obligation of the carriers to furnish such service so insistent, that this committee deems it a duty not only to the public but to the carriers as well to make the following recommendations:

"*First*—That the use of railroad equipment in crosstown and trap car service within the limits of the terminals served by this and numerous similar committees throughout the country, has become a serious economic loss, and

"*Second*—The elimination of such service in this and other terminals by the adoption of a permit system in effect for the past sixty days has conclusively shown how great the abuses have grown to be under present terminal tariffs, and

"*Third*—In order to meet the demands of the public for increased transportation there is absolute necessity to increase the average miles per car per day.

"*Therefore:* Be it resolved—that it is the recommendation of this committee that the carrier lines within its jurisdiction and the American Railroad Association be urged to arrange at once for a modification of terminal and switching tariffs to restrict the use of railroad equipment to movements in connection with line haul only, except that cars may be furnished for the handling of oils, acids and other liquids in tank cars, and for such other specified commodities too heavy or bulky to handle by trucks and drays, and that carriers withdraw permanently from competition with trucks and drays in crosstown movements within terminals.

"K. M. Nicoles,
"Chairman, San Francisco Committee on Car Service."

Unit Containers for Freight Shipments

New York.

To the Editor:

Referring to the interesting article on "The Container System of Freight Transportation" appearing on page 515 in your September 24, 1920, issue.

There is another important advantage of the proposed method of loading freight, which may be of interest to the technical men who are engaged in designing these unit containers, and to the operating men who are in favor of promoting their use.

Shortly after the Bureau of Explosives was organized experiments were conducted at Altoona, Pa., in co-operation with the Pennsylvania Railroad, for the purpose of ascertaining what stresses are liable to be created by the shifting of freight in an ordinary freight car subjected to coupling shocks. The information was needed in order to prepare reasonable rules governing the loading and bracing in these cars of explosive packages. It was necessary to devise and construct special apparatus to measure these stresses. Engineers interested in the subject can obtain detailed information by consulting an article "The Measurement of Impact Stresses" published in the proceedings of the American Society for Testing Materials, Volume 9, 1909.

It was found that when a freight car moving at a speed of five miles an hour collides with a string of cars, causing it to be brought to a sudden stop, there is a strong tendency for all freight in the car to be moved along the floor, and if this movement is prevented, stresses are produced which tend to rupture packages. A stress equivalent to five times the weight of the package is probably considerably less than the maximum to be anticipated where coupling shocks occur which the average railroad man will not admit to reflect rough treatment of the freight car. If the floor of the car is completely covered by packages of freight, the package at the end receiving the impact will be compressed by a force not less than five times the total weight of the column of packages. This force will be reduced in proportion to any reduction that can be made in the length of the column. The suggested use of five-unit containers will result in the

reduction of this destruction force to one-fifth of the force that would be exerted under the same conditions in an ordinary car.

It is reported that the railroads of the United States are now paying more than one hundred million dollars per annum on account of loss and damage to freight. A large part of this loss is undoubtedly due to the effect on packages of these destructive forces produced by rough handling of cars. It is important to do all that can be done to induce greater care in the handling of cars, but at the same time it would be of great benefit in this particular problem to have the freight loaded in unit containers as suggested in the article referred to.

B. W. DUNN,
Chief Inspector, Bureau of Explosives.

The Uniflow Engine

SYRACUSE, N. Y.

TO THE EDITOR:

We have read with great interest the letter in your issue of August 27, signed by J. Snowden Bell, and agree with what Mr. Bell says in his last paragraph with one exception. Mr. Bell terms the central exhaust engine the "Stumpf" engine, but the fact that a number of inventors before Stumpf have tried the central exhaust engine without success, and that the Stumpf engine is successful, should prove that there is a cardinal difference between them. The reason for the success of the Stumpf engine is that Stumpf was the first man properly to understand the requirements of efficient handling of steam in a single cylinder engine, of which the central exhaust feature is only one part.

The main loss in a single cylinder engine using a high ratio of expansion is, and has always been, initial condensation, and the central exhaust alone is unable to avoid initial condensation, as has been proved by the attempts of the early inventors. The only way to eliminate initial condensation is to admit the steam into a space of equal or higher temperature than the live steam, and the means to accomplish this is the compression combined with jacketing of the cylinder ends. This simple addition produces an immense difference in the final compression temperature, so much so that in an engine running on saturated steam with 27 in. vacuum the final compression temperature may be from 200 to 300 deg. F. higher than the live steam temperature, as has been shown by tests. A central exhaust engine without head jackets could never reach a compression temperature in excess of the live steam temperature. The combination of the central exhaust with the head jackets was the means by which Stumpf accomplished his results, and which are the reason for the success of the Stumpf engine.

As Stumpf says in the specification of his U. S. Patent No. 1,047,168—"The object of the present invention is to improve the thermal working conditions in such engines so as to enable a high ratio of expansion to be carried out with maximum efficiency in a single cylinder. This result is obtained primarily by the provision of means for heating the steam near the inlet end during expansion and compression, and secondly by using in conjunction therewith means for bringing the working steam at the end of expansion into layers of decreasing dryness towards the exhaust while the piston uncovers the exhaust ports to let this wettest steam pass off and then on the reversal of its motion covers the exhaust ports and retains them covered while the cylinder heated, drier steam is trapped and compressed up to the inlet end. By proceeding in this way the thermal temperature conditions of the cylinder are such that a high ratio of expansion may be carried out in a single cylinder without incurring the well known losses which in the past have forced engineers to have recourse to multiple expansion engines."

STUMPF UNA-FLOW ENGINE COMPANY, INC.

Statistics to Eliminate Waste

CHICAGO.

TO THE EDITOR:

The prevalent statistical program in vogue on most of the railroads may be characterized as the "Hill School of Statistics," being the outgrowth of the lines of thought and statistical programs developed on the Hill lines, the predominating characteristics of which is a tonnage measure of all accomplishments. This program has led to a tremendous development and splendid results in the increase of utility of practically all railway facilities *when used*, but this line of statistics does not make any comparison between the production and the unit of equipment employed, at least so far as the general application has reached.

By this, I mean that while we have a good increase in "tons per train," in "tons one mile per mile of road," in "tons per car mile" and "tons per locomotive mile," we have not made conspicuous the ton miles produced *per locomotive per year*, or *per car per year*, by which to observe the comparative utility of the units of equipment employed. Neither do we produce by this method any data indicating the waste in the use of equipment. In this connection, I make reference to the fact that the locomotives in freight service throughout the United States have averaged less than 70 miles per day. At an average of 10 miles per hour, this means that the engines are in motion 7 hours and are standing still 17 hours per day. The time standing still may not be all waste, as a certain amount may be necessary for repairs and care, but included in this 17 hours is a large proportion of idle time during which the locomotive is neither being repaired nor cleaned, and such time represents unutilized or potential value. These figures as to the utility of locomotives have reference to the miles per day per serviceable locomotive, and do not include locomotives out of service for necessary reasons.

Taking the same thought as to the utility of a freight car; a freight car is actually in motion about 2½ hours per day, and standing still 21½ hours. The time standing still represents that consumed in loading, unloading, being repaired, handled empty, and certain other necessary factors, but, included in this 21½ hours, there is a large proportion of unutilized or potential carrying capacity which may be properly characterized as *waste*.

Following this line of reasoning, the way appears to be open for the compilation of statistics in such a manner that a critical analysis of them will reveal that data which is related to *waste*. Admitting that the statistics compiled according to the "Hill" method reveal correct results as to the activities which result in productive units, it appears that the natural line of progress which presents the largest possibility is in the direction of the development of that information which will lead to the elimination of waste, rather than to attempt to increase the "load per car" or the "load per train" or the size of productive units (except, of course, to always endeavor to maintain the maximum load and increase the small units to that standard), but merely to increase the number of the productive units resulting from the use of each unit of equipment.

To illustrate: Assuming that a locomotive is in motion 7 hours and there is probably 7 hours of waste, outside of necessary activities, if by studying the conditions surrounding the 7 hours of waste they may be turned into 7 hours of use, the productive units resulting from that unit of equipment might be doubled. The same applies to the freight car with equal force and probably larger opportunities.

The development of a higher utility of locomotives lies entirely within the scope of the activities of the railway officers who are charged with manipulating equipment of this class.

The development of a higher utility of freight cars opens

the way for the exercise of all of the ability of the railway executives charged with the duty of manipulating the freight cars, and also opens the way for co-operation on the part of the shipping public who are probably responsible for the larger portion of the actual waste (as already indicated herein) in the use of freight-car equipment through their failure to co-operate with railway officers in the matter of ordering, loading and unloading cars.

Probably the largest single factor tending to waste in the use of freight cars is the inattention which is given to the movement of empty freight equipment.

The entire line of supervision growing out of the impetus given by the "Hill" school of statistics to operating officers concentrates their attention upon the movement of loaded cars. Any failure in the manipulation of empty cars (particularly in the matter of idle empties) is not reflected through this school of statistics, and naturally not being reflected, does not attract the attention and the effort of the operating officers. This particular field when properly developed will unquestionably yield remarkable results.

C. F. BALCH.

It Is Up to the Yard Master

NEW YORK.

TO THE EDITOR:

After all that has been written and said about speeding up the movement of cars, it is surprising to see how little has been accomplished in some terminals, due to the indifference of the general yardmasters and terminals superintendents in charge who are dying of dry rot. The reason for this inefficiency is the lack of interest and the following of systems that have been in use for 20 years or more and the failure to make the necessary changes to speed up the movement of cars through our terminals.

I have in mind a large railroad where for years a hump yard has been operated 8 hours out of each 24 hr. period. The hump crews are seldom if ever able to clean up and leave from 200 to 400 cars to be switched, which of course are not handled for 24 hours later. Cars that are humped and classified and are ready for delivery to connections or to industries are seldom delivered until some time the following day, and cars that should be in the industries ready for unloading at 7 a. m. the morning following the day they are put over the hump finally find their way in to the industry tracks from 24 to 48 hours after they have been classified. In this yard practically every loaded car is delayed from 48 to 72 hours getting over the hump and out of the classification yard. The reason for not operating a two-shift crew on the hump is the old plea of economy. Another engine and a few men would earn this company thousands of dollars each month, instead of which they are losing not only the revenue from the cars standing still but are also losing enough per diem each day to more than pay for the additional power and crews.

This delay and misuse of equipment, which is almost criminal in a time like this when every railroad officer is putting forth every effort to expedite the movement of cars, is brought about by a general yardmaster who is indifferent and a trainmaster and a superintendent who have allowed themselves to become hardened to conditions of this kind, who are justifying the delays by various alibi, and have taken unto themselves that self-satisfied feeling that "my division is the best on the railroad and I should be congratulated for doing as well as I am."

What we need now more than ever before is general yardmasters, terminal trainmasters and superintendents who are alive to the importance of the quicker movement of cars. If we speed up our terminals the balance of the railroad will speed up automatically. I don't think we are in a position to ask the shippers to hurry the loading and unloading of cars when we are using from four to six days in getting cars under load placed at industrial tracks to be unloaded.

INSPECTOR OF TERMINALS.

Investments in South American Railways

NEW YORK.

TO THE EDITOR:

The article in your issue of October 1 referring to the railroads of Colombia touches very briefly on a matter which should be of real interest to Americans interested in foreign developments.

Colombia in many respects offers one of the most attractive fields to American railway men and investors of any of the South American countries. It is comparatively entirely undeveloped from a transportation standpoint; it is rich in natural resources; it has a fairly good supply of labor, and the financial standing of its government is good. Colombia is near us and very convenient of access by frequent sailings of comfortable steamers.

There are, however, several difficulties in the way of our active participation in these developments, all of which could undoubtedly be overcome if we really desired it.

First, there is the general apathy of the American investing public toward foreign securities of any kind. This, however, is being overcome, as is shown by the oversubscription of the recent Swiss, French and Norwegian loans. These loans, however, have only been sold because these countries, have been willing to meet the price which has to be paid for money in the American market.

The transportation development of Colombia must be financed by an issue of Colombian government securities, in such form as will be acceptable to the American investing public. It is improbable that capital will be available dependent for its return on the profits of the enterprise.

Heretofore Colombia in common with most of the other South American countries has been slow in realizing the extent of the change brought about by the war from the investment conditions required in Europe in the pre-war period.

A country like Colombia which also needs so much development must concentrate on those things most needed. At present there is a dozen or more widely scattered projects, all having some merit, asking for capital.

Perhaps it is asking too much of a democracy to lay out a comprehensive plan and concentrate only on its fulfillment, but if this could be done, if the plan were formulated by engineers and traffic men of known ability, and a policy announced whereby the government would agree to concentrate its resources on this only, much would be accomplished.

There is a further point which I regard as most important, and that is, the flotation of a substantial part of any loan for these or similar purposes, in the country of origin. It would strengthen our offerings here immensely if it could be stated that say 25 per cent had been underwritten by the prominent banks in the country asking for the loan.

These countries of South and Central America must inevitably look to the United States for most of their financing because, strive as they may, in order to protect their trade interests, Great Britain and the other European countries cannot begin to supply the demand. South Americans, therefore, must realize that they must meet the demands of this market if they are to get money, and that the requirements are vastly different from those of pre-war days in Europe.

By the way, Manizales is the capital of the Department of Caldas, and is not in Antioquia, as was inadvertently stated in your article.

F. LAVIS.



The New Shop Building Lies Just West of the Old One

Large Shop Marks Development of Western Road

New Locomotive Facilities at Cheyenne Exemplify the Rapid Growth of the Union Pacific

ONE OF THE MOST distinctive projects of the Union Pacific's general program to increase its motive power facilities is the locomotive repair shop recently completed at Cheyenne, Wyoming. It comprises an entirely new layout, and its magnitude represents one of the best measures of the westward progress of intensive railroad development in America. In proportions and arrangement the building is not unlike a number of other plants completed during the past year or two, but it embodies a number of features that warrant detailed consideration.

The plant is of the transverse type following what has become a more or less standard arrangement with parallel bays for the erecting, heavy machinery and light machinery departments respectively, the proportions of each bay being varied to suit the requirements. The main building has ground dimensions of 194 ft. 10½ in. by 409 ft. 8 in., being only 4 ft. narrower and 12 ft. shorter than the shop of the Pennsylvania Railroad at Logansport, Ind., which has a very similar layout. The erecting bay is 82 ft. wide center to center of columns and 56 ft. 8 in. high from floor to underclearance of roof trusses. In the same terms, the heavy machinery bay is 70 ft. wide and 36 ft. 8 in. high and the light machinery bay 40 ft. 7 in. wide by 20 ft. high.

The bay heights were determined very largely by the crane requirements. The heavy machinery bay is equipped with a crane runway for two 20-ton cranes with top of rail 28 ft. 6 in. above the floor. The erecting bay is similarly equipped and in addition has a 250-ton crane on a runway 44 ft. 6 in. above the floor. This large crane has two trolleys of 135 tons capacity, each of which is equipped with two 70-ton hooks. All five are Whiting cranes.



The Heavy Machinery Bay with Machine Tools Partly Installed

As an auxiliary to the main structure there is a lean-to 209 ft. long by 30 ft. wide placed symmetrically against the outer wall of the light machinery bay. This contains an office, locker and lavatory room, a toilet room and a fan heater room. The wash and locker room contains 158 individual white enameled iron wash basins, each equipped with hot and cold water taps, and 400 steel lockers. The

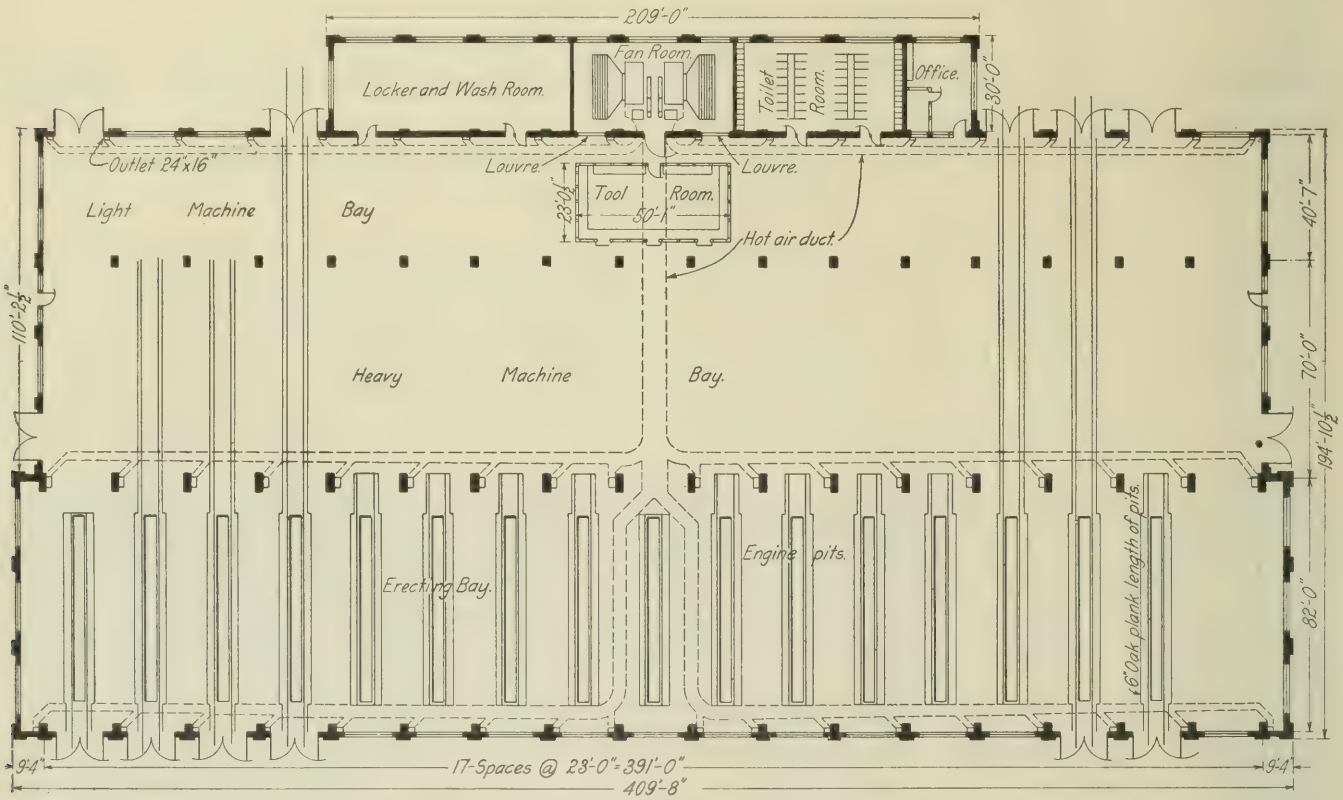
tool room occupies a large portion of the three central panels of the light machinery bay, comprising a cage 23 ft. by 50 ft. located so as to be clear of the walls on all four sides.

The erecting bay is divided by the column spacing of the building into 17 transverse panels 23 ft. wide center to center of columns and all of these panels, except the one at the south end of the building, is equipped with a track and engine pit. The tracks on six of these pits communicate with the outside through doors in the west wall of the building; five of them are also extended across the heavy machinery bay and of these, three extend through doors in the east wall. With the idea that more of these tracks may eventually be extended into the heavy machinery bay or through the west wall of the building, all underground ducts have been designed with I-beam covers at all points where they would be required to carry track loading. Several of the doors are provided with bottom sections that may be opened independently to permit the passage of a push car on the track, a detail of no little value in winter time in maintaining proper temperature in the building during extreme cold weather.

Another variation is the extension of the erecting bay 9 ft. 4 in. beyond the ends of the end bents of the structural steel framing, thereby making this bay 18 ft. 8 in. longer than the rest of the structure.

The wall and column loads of the structure are carried on natural foundations about 7 ft. below grade with the aid of reinforced concrete spread footings. The floor is of concrete 5 in. thick covered with a 1½-in. layer of Johns-Manville mastic. The engine pits have walls 3 ft. thick to provide ample jacking space outside the rails and they have reinforced concrete bottom slabs. Where the tracks are not supported by the engine pits, the concrete floor construction is dropped so as to pass under the ties.

An abundance of natural light is afforded by large window areas forming about 50 per cent of the total wall space in addition to the glass areas of the monitor and saw tooth roof. About 17,000 panes of glass are used, all set in fenestra sash. With the exception of the three lower tiers of panes which are fitted with clear glass, the glass used in the building is factory ribbed wire glass. An ample proportion of the sash in the walls and roof lights are pivoted to provide for ventilation. These are operated by chain pulls.



General Floor Plan of the New Cheyenne Shop

Structural Features

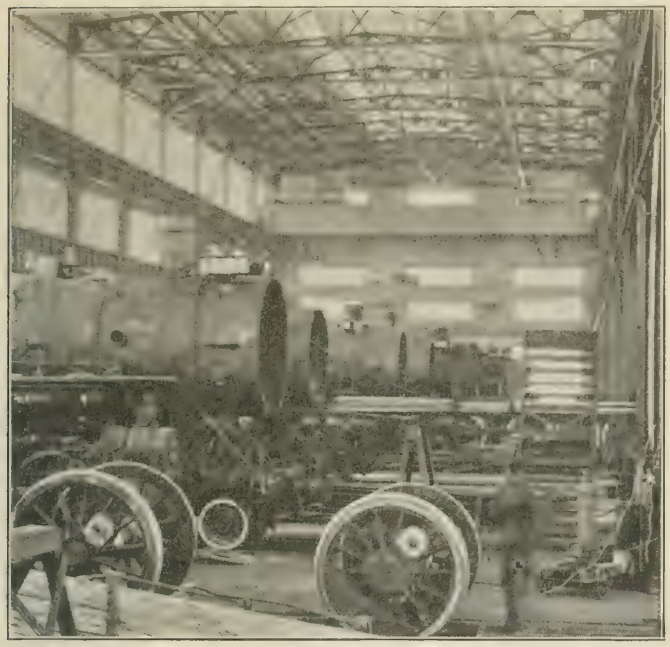
The building embodies no marked departures from usual practice in industrial building construction, and comprises a structural steel frame with brick walls and large glass areas. The erecting bay has a monitor type roof while the two machinery bays are equipped with longitudinal saw teeth. One departure from usual construction is seen in the combination of structural steel and timber in the roof construction. The supporting trusses are of structural steel while the monitor on the erecting bay and the saw teeth on the other two bays have timber frames. The roof purlins also are all of 6-in. by 14-in. timbers. The roof planks are 2-in. by 6-in. D. & M., covered with tar and gravel roofing except that the roofs of the saw teeth are covered with 24-gage galvanized Toncan metal with standing seams.

Natural illumination is afforded by Mazda electric lamps in enameled steel reflectors secured to the bottoms of the roof trusses. In the erecting bay, there are two 750-watt lamps to each bay, in the heavy machinery bay two 500-watt lamps and in the light machinery bay two 300-watt lamps. All current used in the shop is purchased from the Cheyenne Power & Light Company, being received as 2,300-volt, 60-cycle, three-phase, alternating current which is reduced by transformers to 440-volt, three-phase, 60-cycle current. Rotary converters are also provided to supply 230-volt direct current which is used to operate the cranes.

Ample Heating Capacity

The plant is heated by the forcedraft, hot-air system now so commonly applied to industrial buildings. The heating

plant occupies the central portion of the lean-to structure as mentioned above. Here two No. 17 Bayley fans having 85-in. wheels, 7/8 housed, take air heated in steam coils and drive it through underground conduits to various parts of the house. The heating plant for each fan comprises five Chinook steam heater units. No air inlet duct is provided



The Heavy Machinery Bay Is Well Lighted

to communicate with the outside of the building. Instead the inlet ends of the heaters are open to the interior of the room about 5 ft. clear from the two side walls. Thus, the air may be taken either from the outside through windows along the outside wall of the room or from the interior of the shop through louvres in the wall separating the fan-room from the shop. The fans are operated by 75-hp. 60-cycle, 440-volt, induction motors. The fans and heaters are designed to deliver 210,000 cu. ft. of air per minute and raise the temperature from 20 deg. F. to 130 deg. F. Actual tests during the past winter demonstrated the ability of the heating plant to keep the shop comfortably warm during extremes of temperature and high velocity winds. To safeguard the heating plant against failure of steam line, two independent steam pipes from the power plant serve the steam coils.

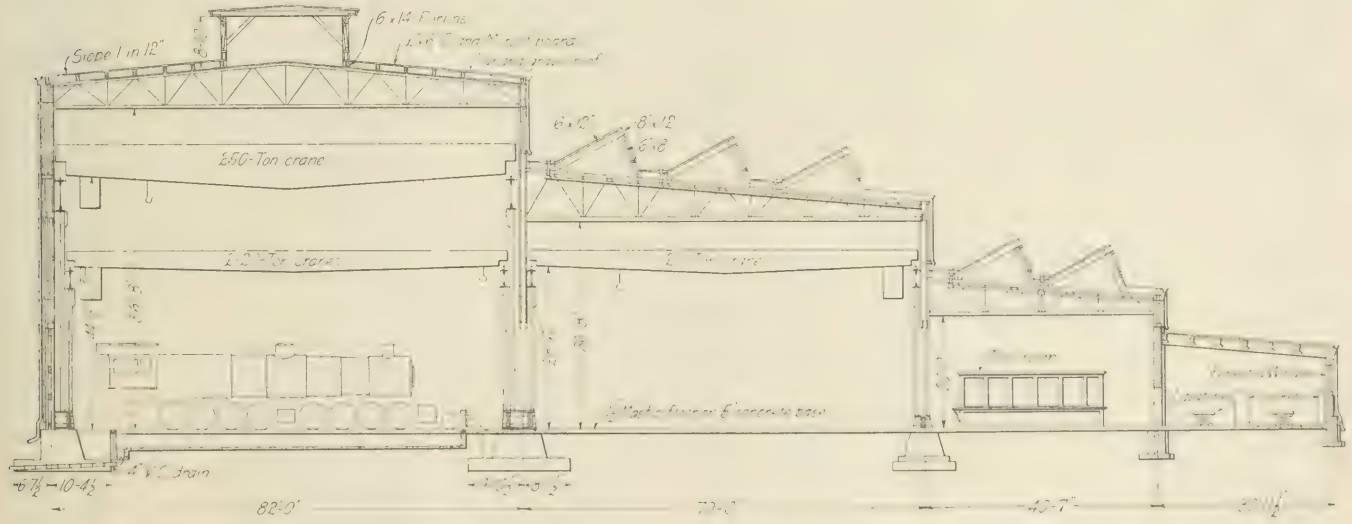
The distribution system for this heating plant consists of a main conduit extending across the house with north and south laterals extending along the east and west walls of the shop and along the line of columns between the two main bays of the building. One feature of the distribution system is the delivery of the air into the room through sheet metal boots having outlets 6 ft. above the floor level.

Water, steam, air and electric current service is supplied in the shop building at convenient intervals. Along the west wall of the erecting bay, two 3/4-in. air outlets and two light circuit plugs are provided on every column with 2 1/2-in. water and steam connections on every alternate column. On all of the columns between the erecting bay and the heavy machinery bay, there are two 3/4-in. air connections and two electric light plugs, while on every alternate column there is an electric outlet for power current. A 2 1/2-in. water hose connection is provided on columns at each end of the building and on one near the center.

Relation to the Old Facilities

The map of the shop yard shows the relation of the new shop to the other facilities. The new building is located between the old machine shop building and the roundhouse on the site of the transfer table that served the old machine shop and also on a portion of the ground formerly occupied by a boilershop and a tinshop. No transfer table has been provided for the new shop, it being the opinion of those responsible that the 250-ton crane in the erecting bay will afford adequate means for the delivery and removal of locomotives.

The project for the improvement of the facilities at Cheyenne included the remodeling of the old machine shop so that it could serve as a boilershop, tankshop, steam pipe shop, etc., to take the place of the facilities removed to make way for the new building. The chief problem offered by this plan lay in the provision of some measure of locomotive repair facilities at Cheyenne from the time that the old buildings were wrecked until the new building was ready for use. Conditions were complicated still further by the fact that the removal of the transfer table interfered very seriously with the use of the existing shop building.



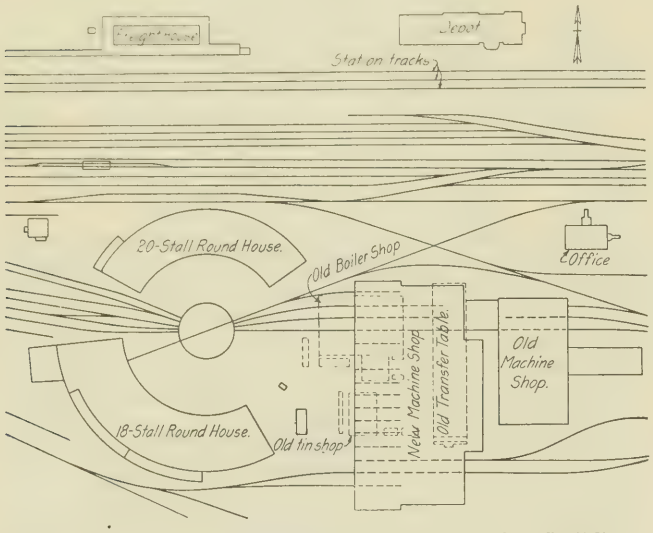
The Transverse Section Gives an Idea of the Relation of the Several Bays

To overcome this difficulty, the doors along the west side of the old shop building which had been used for access to the transfer table were all boarded up or replaced by windows. The tracks over the four north pits in this building were extended to the east wall through which doors were cut so that these tracks could be connected with a lead on

the east side. In addition, an extra temporary engine pit was installed on each of these tracks east of the existing pits, thus making eight engine pits available in this building for locomotive repair purposes.

Additions to Power Plant

To heat the increased shop space afforded by this improvement, it was obviously necessary to increase the boiler capacity of the shop power plant. The existing power plant contained seven 256-hp. Babcock & Wilcox boilers with Laclede-Cristy stokers with space for one additional boiler of the same kind. This, however, was not a sufficient addi-



Position of the New Shop Relative to the Old Building

tion, so besides provision for this one new boiler the power plant was extended to make room for two 236-hp. Babcock & Wilcox, type Q14 boilers with Green stokers. In lieu of additional chimney capacity an indirect draft system was installed for the three new boilers and one of the old ones, while coal handling facilities, boiler feed pumps, feed water heaters, etc., were provided as required.

The new shop facilities at Cheyenne were designed and erected under the general direction of the Engineering Department of the Union Pacific, Omaha, Neb. Joseph E. Nelson & Sons, Chicago, were the contractors for the new shop building.

The Ambitious Station Agent

EVERY FREIGHT or passenger agent who supervises the work of a station employing from five to, say, fifty or more men, will answer, presumably, to the foregoing appellation; and it is assumed that he will find interest in a lecture recently delivered by E. G. Fosdick, station supervisor, before a convention of agents of the Cleveland, Cincinnati, Chicago & St. Louis, at Cleveland, Ohio, extracts from which are given below. Mr. Fosdick says:

Are we as careful and scientific in the hiring and training of employees as we should be? While a certain care is exercised in hiring, we have no specific standards to which we require an applicant to qualify. In judging an employee we have no records with which we could show a disappointed man that standards had not been reached nor maintained. In all cases the entire matter has been left to the judgment of the employing officer; so today we have some square pegs in round holes, and round pegs in square holes. I believe that there can be a set of standards established that would give the employer, by the use of test questions, some idea of the capabilities, fitness, temperament and character of each applicant. When I say test questions, I have in mind something similar to those used by the government while organizing the army and navy for the Great War. Not having such standards and not giving sufficient attention to training, we have no doubt lost many a good man who might have entered the "College of Railroading," and who might later have made a member of the "faculty" of the college.

We all know that today there is a shortage in the supply of efficient railroad executives, and I sincerely believe such shortage is due to the fact that we have not in the past given sufficient thought to the hiring and training of the beginners in the railroad game. It is true that conditions in the last few years have not been ideal with regard to the available supply of labor, and until recently we have not been in position to make our work as attractive financially as other industries. But the reward for earnest effort is as great in our business as it is in others. On us, however, is the responsibility for proper selection in the first place and for supervising the training of every new man.

This training must necessarily be such that it not only imparts knowledge of the correct and efficient way to perform multitudinous duties, but it must embrace other factors. I will name two: Personal Interest and Fair Dealing.

In one of our larger stations there are three department heads who, a few years ago, came into that organization as messenger boys. I fully believe that the reason these three young men are in the positions they hold today can be traced to the fact that some one "higher up" manifested a personal interest in their training, and thereby made them feel that they had a chance. They also worked for the reward that opportunity and application afforded them, and the result was but natural. In another one of our large stations some few years back we had the experience of hiring over 30 employees in a calendar month, and before the expiration of that same period over half of them were out of the service. And that condition prevailed to a lesser extent for some time.

Not every man or woman who may apply for railroad work would make a railroader; but if these men and women were properly selected and trained and shown the possibilities of success, there would have been no such turn-over of the employes in that particular office.

There are cases where a promising employee has been taken into an organization, and from the very fact that no one in authority took any personal interest in him or his welfare, said employee stuck to his job only for a few days or weeks; this simply because he felt that if no one was interested in him he would not get anywhere in that institution. It is said that Abraham Lincoln made it a rule on meeting and getting acquainted with a stranger to extract from that person some knowledge of his personal affairs, and then make it a point to remember it, and at the next meeting make reference to that subject. He gained their confidence and their eternal friendship as well. The employer must command the confidence and cultivate the friendship of the employee if he hopes to impart anything inspirational to him.

Fair dealing is a vital factor in training which is some times overlooked. An authority on Efficiency says:

"Men will not do what you ask them because it is easy or right or because of their pay. They will do what you ask them to do when they like you; and they will not like you unless you first like them." True friendship is fundamentally necessary; sympathy in connection with a sense of justice. Justice without sympathy is too cold and uninspiring. Our knowledge of the ability of the employee is mental and not documentary, as it should be. I believe each employer should make documentary record of the ability or disability of all employees under his jurisdiction. From such evidence of record he would be in position to deal out justice, and also to exact as much from the employee.

Importance of the Human Element in Railroading*

New York Railroad Club Devotes an Evening to Consideration of Personnel Departments and Morale

By William S. Wollner
General Safety, Fire Prevention and Welfare Agent, Northwestern Pacific

During 1919 the railroads of the United States spent $1,609,000,000 for material and $2,810,000,000 for labor. Nearly twice as much was spent for labor as for material and this makes pertinent the question whether the same thought and attention has been given to the selection and use of labor as has been used in the procuring, application and maintenance of material. Our transportation system is possibly the country's greatest purchaser of equipment, material and supplies, and this has led railroad managements to surround its purchase, application and maintenance with every scientific and practical device that will assure the securing of the material best suited to its purpose, its economical use, and proper maintenance.

But what about the human element? Is it not possible that during the rapid growth of the railroads we have lost track of the value of our man power and that we have not given nearly the attention we should have to its selection and use? Is it not possible that because all equipment, material and supplies used by a railroad is procured and disbursed through a central organization that its purchase, application and maintenance has been developed along scientific as well as practical lines, whereas, a railroad's man power is recruited from so many different sources by so many different departments and officials in so many different ways that there has not been proper opportunity for the development of a scientific plan that would assure the railroads securing the men best suited to their use and the greatest efficiency from their use after they have been secured.

Let us compare railroad operation of 40 or 50 years ago, when a man was taken into the service because of what was personally known of him to the employing officer or employee, with present day practices. A small road has two or three thousand men on its payroll, and some of the larger ones nearly a hundred thousand. Departmental lines are so clearly drawn that the employing officer who is taking a new man into the service about whose antecedents he probably knows nothing, considers how this man will fit into his own organization but gives no thought as to how he will fit into the general organization of the road. Boys and men are taken into the service to meet the need of the moment and not because of the part they are to play in the future history of the property.

Creation of Morale

There is one way and one way only in which the railroads of the United States can be made adequate to the task that confronts them and that is through the establishment of a morale that will make every man in railroad service give of the best that is in him, not because of a hope for increased returns to himself, but for the sake of the reputation of his fellow railroad men and the property upon which he is employed. His thoughts must not be of shorter hours, but of his part, small though it may be as compared with the problem as a whole, in moving the commerce of a nation. "A railroad can only prosper as does its employees, and the employees can only prosper as does the road itself." Management and employees must work shoulder to shoulder for mutual prosperity. Either or both striving only for its own prosperity will result in failure to achieve the very thing for which it is striving. Mutual understanding that both management and employees are striving for the same objective, mutual prosperity, is the first essential to the creation of a spirit of morale.

Proposed Plan for a Railroad Personnel Department

The mere fact that almost two-thirds of every dollar spent by a railroad company is paid out in wages is sufficient warrant for the establishing of a department whose sole function should be the selection of the railroad's personnel and securing efficient service from it. By the same warrant the officer in charge of the personnel department should be of equal rank at least with the officer in charge of purchases and supplies.

The personnel department should be in charge of the relation of the employee to the company from before his selection as an employee until and after he is placed upon the railroad's pension roll.

A railroad company should not be content to accept as employees those who solicit employment in its service. The initial function of the personnel department should be to bring to the attention of desirable applicants the opportunities for employment and advancement in railroad service.

It seems desirable that no vacancy be filled except upon authority from the department of personnel. This of course does not apply to common labor, but to other positions supposed to offer opportunity for advancement and where the men employed are not considered itinerants. Stated briefly, one of the most important elements in securing efficiency from the human element in railroading is to obtain the best material with which to work. It is as useless to try and secure one hundred per cent service from a fifty per cent man as it is to endeavor to operate a Mallet locomotive over a thirty-pound rail.

First Impressions

Of all impressions made upon the human mind, the first impression is the strongest and most lasting. Having selected the person it is intended to employ, the greatest care should be taken to see that he is given the proper attitude toward his employment from the very start.

Under present methods used in recruiting railroad forces the first thing that the applicant does after having been employed is to fill out a personal record form, and in many cases to subject himself to a physical examination. The very formality of this procedure gives the applicant an improper mental attitude toward the prospective position. Many questions of a personal nature, a record of past employment and references, are asked for in this form and its entire purport appeals to the man who is filling it out to be to permit the railroad company to satisfy itself that its suspicion that the applicant would prove an undesirable employee was correct. The examining surgeon passes on a great number of applicants in the course of a short day or he may sandwich these examinations into his regular practice. In any case his attitude does not seem to the applicant to be to find him in proper physical condition for employment, but rather to find physical defects that will militate

*Abstract of address before New York Railroad Club, October 15, 1920.

against his employment. How much better it would be if, upon being employed, the applicant was told in a friendly way of the company's attitude toward its employees, that it is anxious to make employment in its service as pleasant as it possibly can be made, and of the opportunities for advancement, etc.

Promotions by Merit Versus Seniority

Promotion by seniority has proven a failure wherever it has been used. The only excuse for the use of this plan is to insure the man who is one of a mass gaining promotion in due course where the fact of his being one of a great number might militate against his right to promotion. The basis of the theory of promotion by seniority lies in the belief that superior officers are not capable of selecting those fitted for promotion or that they will not exercise justice in their selection. Promotion by seniority having proven a failure, why not remove the reasons advanced against the system of promotion by merit?

It should be the duty of the personnel department to keep a card index record of every employee in the service. Most roads now maintain such records for the use of pension, and other departments. These same records could, with additions to the information now shown, be used by the personnel department. As stated before, no vacancy should be filled without the personnel department having first been consulted. Notice of a position having been vacated should be accompanied by a recommendation from the officer by whom the position would normally be filled as to the person who should be advanced to fill the vacancy. If there be an employee within the department where the vacancy exists fitted to fill the position he would of course be placed in it. If there is not an employee in line for immediate advancement the personnel department should recommend one from another department or division or office for whom it would be a promotion. In the event of there being no one in the service fitted to fill the vacant position for whom it would be an advancement, the personnel department would recommend its being filled by someone upon its list of applicants for positions.

Any employee should be privileged to call to the attention of the department of personnel what he believes to be the qualifications that entitle him to promotion. It may be that a man in train service may think that he has qualifications fitting him for more rapid advancement in some other department, and it is certain that many men do get into occupations for which they are unfitted, who would fit very well into some other kind of work. It should be one of the principal duties of the personnel department to transfer the square pegs from the round holes to the square ones.

Not only should this be done in justice to the employee but because of its dollars and cents significance to the company. The cost of employing and training a man for railroad service has been variously estimated and I will not attempt to name a figure to cover this cost for fear that the figure that I believe would cover it would astonish you. But after you have made this initial investment in a man it should not be cast aside as a total loss if there is any chance of regaining it, in part at least, through transferring the man to work that he is fitted to do rather than to discharge him from the service.

Employees' Aids

Having inaugurated a system for advancing men in the service, the railroad has the right to ask the employees to consider the possibility of advancement as part of the compensation they are receiving. In other words, the possibility of official advancement must be measured along with dollars and cents compensation.

There are maintained at present on different railroad properties throughout the United States the following aids to employees: Hospital departments, club houses, Y. M. C. A.'s, libraries, recreational and athletic associations, educational departments, mutual benefit associations, insurance funds, savings funds, stock ownership participation plans, pension funds, etc. Time does not permit of giving detailed descriptions of these various employees' aids, and as their character and plan of operation are so generally understood nothing further will be said other than that each of these aids, if properly directed, fulfills a need in the railroad service.

Railroads establish employees' aids in the hope of earning dividends on the sums invested. It is hoped that an employee will be physically benefited or that his attitude of mind will be directed in a way that will recur to the railroad in increased effort or loyalty.

While there are many ways of improving the employee's condition, and incidentally his attitude toward the company, there are two things that may be said about them all—they must not be paternalistic in character and they must be under a common direction, preferably the department of personnel. It not infrequently occurs that while a road is supporting many employees' aids it is getting practically no return from them because of the lack of common direction that results in each trying to pull the employee in its direction and, unconsciously perhaps, from the others. It is the long, strong pull of the combined employees' aids that draws out the best part of the man's nature and that is all that is necessary to assure his assuming the proper attitude toward his employment and his employer. It is the combined attitude of contented employees that spells morale.

Efficiency of the Human Element

Having provided the human element it devolves upon the personnel department to see that it functions efficiently. Studies should be made by the personnel department of the adaptability of different nationalities to different kinds of work and an attempt should be made to recruit forces in accordance with the findings. Men accustomed to directing the same operations for long periods of time sometimes overlook the possibility of increasing production through improved methods, and improvements are most often effected by minds that are comparatively new to the particular problem. The personnel department can therefore well afford to keep an oversight of all operations involving the use of the human element with the idea of suggesting changes that will increase its efficiency.

Another matter that vitally affects human efficiency and should therefore be closely watched by the personnel department is housing, which includes all the means provided employees for securing rest while not on duty. A man who has not had the proper rest is not only inefficient, but is a positive menace from the standpoint of safety. Sanitary conveniences, drinking water supplies, and other facilities having a bearing on human efficiency should come in for their share of attention from this department.

Other Personnel Department Activities

The efficiency of the human element in railroading having been assured, the next step should be to so distribute this human element as to secure the greatest possible efficiency of the plant as a whole. Just as the general distributes his forces so as to best meet the attacks of the enemy so should the director of personnel plan to meet the changing requirements of divisions, shops, terminals and other units. It is entirely too common to see men being discharged at one point of a system while every effort is being put forth at another point to fill an urgent need. Instead of releasing men from the service when they were no longer needed, under the plan suggested, the personnel department would be notified as far in advance as possible of the availability of the men for service elsewhere and it would endeavor to arrange for their transfer to the place at which their services are required.

Most railroads span distances that do not permit of the

employees or even the officials becoming personally acquainted, and the house organ (employees' magazine) overcomes this difficulty by permitting the men on one portion of the system learning what their fellows are doing elsewhere. It permits the establishing of friendly rivalry between divisions and other units of operation, and most important of all, if properly edited with this in mind, it permits of the company's bringing to the attention of the men the things that it is doing in the hope of creating morale. If this is not done the unthinking employee may accept all that is offered without realizing the necessity for reciprocity.

As the personnel department must supply the officer material as well as man power, it should by all means include in its activities an educational bureau for training men in the things they must know to fit them for promotion. The educational program must not be confined to educating officer material only, but should be active in Americanization work and providing a general education for those who did not have the opportunity of securing it before entering railroad service.

Safety propaganda offers an excellent opportunity for assisting in the establishing of morale and for this reason, as well as because it deals directly with the human element, it should be under the direction of the personnel department.

Fuel conservation campaigns, the moral hazard phases of fire prevention work, and other activities that have a morale building effect or assist in improving human element efficiency should be co-operated in, if not directed, by this department. There are so many activities that may get inaugurated by the director of personnel or in which he may assist that it is not possible to even touch upon them here.

Things to Be Avoided

The principal thing to be avoided in setting up a plan for a department of personnel is the placing of an unnatural barrier between the employee and his supervising officer or foreman. Natural lines of authority should never be interfered with and the department should exercise particular care to not participate in any way in matters affecting wages or working conditions.

While not interfering with the relations of employees to their superiors in authority the director of personnel should not overlook the necessity of a campaign of education among foremen and officials to acquaint them with the company's policy in employee relations matters and in particular with what the management expects their attitude to be toward those placed under their direction. Probably the greatest difficulty that will be encountered in endeavoring to build up morale via the plan outlined herein will be the outspoken or silent opposition of foremen and officials who have been long in the service and believe that the old ways are still the best. The best method of overcoming this opposition is by making it clearly understood that there will be no attempt to interfere with the direct lines of authority as at present established, but to the contrary every effort will be made to assist the foreman and officer by making his task of supervision a pleasanter one.

Can It Be Done?

Nothing has been here proposed that has not been successfully tried in some industry; many have proven successful in railroad operation. The main differences between the railroads and other industries are the number of men employed and the wide distances that railroads traverse, and these differences in conditions can be easily overcome if an honest desire to do so exists.

The first essential is a recognition by railroad management of the dollars and cents possibilities of the practical application of this vision. The second, and perhaps even more important element in the success of the plan, is the securing of the right man to conduct the experiment. "Many can imitate but few can initiate" was never truer than when applied to the carrying out of this ideal. Once the plan has proven successful on a sufficiently large scale to warrant its adoption elsewhere, it will not be difficult to find those who can profit through the mistakes that have been made and the successes that have been scored to follow in the footsteps of the pioneer. The finding of the pioneer whose steps will be worthy of the following will be the main difficulty.

The man who pilots the destiny of the first railroad personnel department of the scope visioned in this paper must be first of all a railroad man in all that the term applies. He must be experienced not only in a single branch of the service but must have a knowledge of as many of the departments of railroading as a single man can get in a well rounded out career, and he must most of all be a railroad man at heart having the ultimate good of the rail transportation system as his only ambition. But he must be more than merely a railroad man; he must be a man who has had a wide experience in dealing with the social problems of the age, a man experienced in all phases of industrial relations. He must not be a "company man" and he must not be a representative of the employees; he must blend the interests of the company with those of the men, and with it all combine an energy of thought and action and a sense of justice that can not be blinded by prejudice or fear or favor.

Discussion

There was a lively and prolonged discussion of Mr. Wollner's address, the meeting not adjourning until almost 11:30 p. m.

J. C. Clark, assistant to the general manager of the Oregon Short Line, Salt Lake City, Utah, spoke at some length and made many practical suggestions. In effect he said that it was advisable to organize a personnel department in order to bridge over the gap which has grown between the management and the men under modern industrial conditions. The head of the personnel department should hold a major staff position, should have requisite authority and the support of the highest executive officials.

One of the big leaks in railroad operation is caused by the labor turnover. Millions of dollars are lost every year and a thorough analysis of the labor turnover and its cost should be made on every road. Such an investigation will automatically locate weaknesses in the organization. American industries have gone into this matter thoroughly with excellent results and while the conditions differ greatly between these industries and the railroads, the underlying principles in relation to labor turnover do not differ. Mr. Clark outlined the basis on which a study of the labor turnover should be made on the railroads.

The second step in starting a personal department, according to Mr. Clark, is to organize and establish an employment service. This will include the selecting, placing and distributing of labor for all departments. Each department should report its requirements daily, so that the personnel department will be enabled intelligently to transfer men from places where there are surpluses to fill shortages elsewhere.

The personnel department should also be charged with the duty of supervising the training of the men. It is difficult to train men in the mass; in order to do this work most effectively means must be found for selecting men who are most greatly in need of instruction and then seeing that they get it. One way to do this is by means of the method of "limited impressions." For instance, the chief qualifications which are desirable should be decided upon and periodical reports should be made by their superiors covering every man in the organization. The important qualifications mentioned by Mr. Clark include intelligence, judgment, sense of responsibility, obedience to rules, vigilance or alertness, teamwork, power of observation, punctuality or steadiness,

knowledge of equipment, loyalty, character and habits, disposition and temperament. By using figures from one to ten to denote the standing of the men as to these qualifications, it is possible to average the figures and determine upon the percentage for the ability of the man as a whole. If the standings of all of the men for an entire division are averaged, then those who are below the general average will include the men who are most in need of further training and coaching; moreover, study of their report cards, assuming that at least three periodical reports have been made in each case, will indicate exactly where the men need special attention. Obviously, reports of this kind could also be used to excellent advantage in selecting men for promotion. Mr. Clark stated, however, that promotion for any position should not be given to the man who has the highest average, but the 10 best cards, say, should be selected and then a selection made from among these 10 men.

The personnel department, according to Mr. Clark, should also include a service division which should have supervision over what is ordinarily designated as welfare work, and including safety, sanitation, housing, etc., or anything that concerns the welfare of the employee. Incidentally, special attention should be given to the health of the employees, this to include periodical examinations, etc.

A. S. Lyman, general attorney of the New York Central, said that the railroads do not want college men that "dawdle" through college and don't know what they want; they need rather men who have enthusiasm and a sense of service and power. He paid a high tribute to the Railroad Y. M. C. A. and said that it inspired the men "to do right because it is right, and for no other reasons."

Robert M. Forrester, president of the newly formed Erie Railroad Company Accounting Department Employees' Welfare Association, emphasized the fact that the employee, in order to do his best work, must be happy and must not believe that the employer is trying to "put something over" on him. The association of which he is president was organized last March and represents about 1,200 employees in the accounting department at the New York office. Thirty-three delegates are elected by the different departments and are divided into three committees, known as the Welfare, Co-operative Purchase and Educational committees. The Welfare committee investigates complaints of employees and studies working conditions, the Co-operative Purchase committee has charge of a co-operative store which is doing about $1,600 worth of business a week, and the Educational committee provides lectures every Tuesday evening and is developing other educational measures.

Miles Bronson, general superintendent of the New York Central, spoke on the work of the Railroad Y. M. C. A., as did also Ward W. Adair, secretary of the railroad branches of the Y. M. C. A. in New York City. Briefly, they developed the fact that this is the only organization in the railroad field which deals with the realm of conscience, which is a most vital factor in developing safety on the railroads and securing efficient service.

W. F. Jones, general storekeeper of the New York Central at West Albany, N. Y., said that the low morale in railway service is due to the fact that the men are giving too much attention to discussing "what their rights are, rather than what their duties are."

LITIGATION OVER THE PROPOSED BRIDGE over the Hudson river at Castleton, N. Y., 8 miles below Albany, has ended and the New York Central is free to build the structure after its original design. The litigation arose because of the objection of some interests to the type of structure it was proposed to erect. The cost of the bridge which the New York Central intends some day to build is variously estimated at from $10,000,000 to $20,000,000.

Attorney General Asked for Opinion on Payment of Guaranty

WASHINGTON, D. C.

THE QUESTION as to whether any relief can be afforded to the railroads from the decision of the comptroller of the treasury that the railroads cannot receive partial payments on account of their guaranty for the six months' period ending August 31 has been referred by the President to the Attorney General for an opinion. Alfred P. Thom, general counsel for the Association of Railway Executives, had appealed to the President to use his influence to bring about a reconsideration of the decision. There is a precedent under which it is believed the Attorney General may hold that the question of how the guaranty shall be paid to the railroads is within the discretion of the Interstate Commerce Commission and that the Treasury Department has nothing to do with the matter except to honor its certificates.

There is a suspicion in some quarters that the Treasury Department has been resorting to technicalities to delay the payment of money to the railroads because it is having difficulty in providing the necessary funds and is obliged to borrow money frequently on temporary certificates of indebtedness. The Secretary of the Treasury, in an address before the American Bankers' Association on Wednesday, said that earlier plans and expectations of the Treasury Department "were disarranged by the unexpectedly large burdens placed upon the Treasury by the Transportation Act," and that "according to the estimates there will be paid on account of the railroads during the current fiscal year probably a billion dollars, of which one-quarter billion has already been called for and paid." "It is obvious," he said, "that these payments will limit the progress which the government had expected to make in the retirement of the public debt. It is expected, however, that perhaps the heaviest payments on this account will have been completed by the spring of next year."

In response to inquiries made concerning the amounts of money which have been advanced to carriers under Section 209 of the Transportation Act, on applications made by the railroads before September 1, and loaned under Section 210 of the same act, the Treasury Department has issued the following statement, showing advances and loans to October 20, pursuant to certificate of the Interstate Commerce Commission:

Total advances to carriers under Section 209, Transportation Act, 1920	$233,719,974
Total loans to carriers under Section 210,, Transportation Act, 1920	56,190,325

The carriers to whom loans have been made, and the amount of each of the loans, are as follows:

Boston & Maine Railroad	$ 5,000,000
Salt Lake & Utah Railroad Co.	300,000
Carolina, Clinchfield & Ohio Railway	3,000,000
Bangor & Aroostook Railroad Co.	20,000
Atlanta, Birmingham & Atlantic R. R. Co.	200,000
Great Northern Railway Co.	15,900,000
Western Maryland Railway Co.	300,000
Chicago & Western Indiana R. R. Co.	8,000,000
Erie Railroad Co.	8,000,000
Terminal R. R. Association of St. Louis	896,925
Seaboard Air Line Railway Co.	6,073,400
Chicago, Rock Island & Pacific R. R. Co.	2,000,000
Baltimore & Ohio Railroad Co.	3,000,000
Virginian Railway Co.	1,000,000
Kansas City, Mexico and Orient Railroad Company, W. T. Kemper, Receiver	2,500,000

DENVER & RIO GRANDE.—The sale of this road has been ordered by the federal court at Denver, Col., for November 20. No bid under $5,000,000 will be considered and each bidder will have to deposit $100,000 three days before the date of the sale as evidence of good faith. The stockholders' protective committee is preparing a petition asking for a postponement of the sale.

Railway Fire Protection Association Meeting

Every Railway Employee Should Be Enlisted in the Fight to Reduce Fire Waste

THE RAILWAY FIRE PROTECTION ASSOCIATION held its seventh annual meeting at the Southern Hotel, Baltimore, Md., this week, beginning on Tuesday, October 19, E. B. Berry (Southern Ry.) president of the association in the chair, and about 150 members, associate members and guests in attendance. The gathering was welcomed to the city by the mayor, Hon. W. F. Broening, who invited the association to take a trip around the harbor, on Thursday afternoon, on a municipal boat.

President's Address

President Berry in his address said, in part:

The splendid increase in membership during the seven years of our existence is evidence of the economic importance of our work. We have now 225 members, representing 98 railroads, working together to curtail fire waste and to create a cogent unit for progressive action and improved conditions. Our efforts for the elimination of hazards and for the installation and maintainance of adequate fire protection, must be augmented by a supreme, concerted and constant effort to enlist the interest of individual employees. Interest in fire prevention is impossible to obtain unless the individual employees comprehend the reason prompting our recommendations and the necessity for conservation. During the year 1918 over 27,000 recommendations were made by railroad insurance engineers, 14,000 of which were carried out. But the elimination of the 14,000 physical hazards did not develop a reduction in the gross fire loss. A larger percentage of the fires, with consequent loss, were caused by the careless acts of employees, and it would seem justifiable, if not mandatory, that a reasonable part of the time of inspection work be devoted to stimulating loyal and comprehensive interest in fire prevention.

The most neglected asset in industry is the brain power of our workers. Some of the recommendations of insurance engineers are carried out without the faintest idea of why the recommendation was made. If we could give the employee something to think about he would find his work interesting, congenial and attractive, and inspectors should educate the personnel of railroads to see through our eyes and to absorb some of our enthusiasm.

Loss ratio, the yard stick of our efforts must be reduced; that it can be was demonstrated in 1917 when by concentrated effort the loss ratio in railroad property classified as piers and wharves was reduced from 23 per cent in 1917 to 1.2 per cent in 1918. The abnormal loss in 1917 due to the activity of German agents bent upon destruction, forced recognition and acceptance of the personal obligation, which was immediately reflected by the reduction in loss ratio for 1918.

Standard construction and strict observance of clearance rules will without doubt ultimately develop reduced losses; but as 90 per cent of railroad structures are non-standard, we must, to obtain immediate results, develop the loyal interest of railroad personnel to the point of acceptance of individual responsibility. Fully 75 per cent of the fires are caused by failure of the human element, and the wage earner must realize that he has to contribute to replace property which is destroyed. If we can make a man think fire prevention, to guard and protect property under his care, we reduce losses, and we can class each structure in which employees are so developed as a preferred risk. A freight station or warehouse of wooden construction, with unfavorable conditions is operating with more safety from a fire standpoint if prevention features are guarded, and occupants are accepting individual responsibility, than a brick structure in which carelessness and indifference prevail. To ignore or discourage fire prevention rules is to come perilously near applying ridicule to the struggle which we are making to attain a thoroughly practical ideal. During the coming year, our membership should be obligated to enlist 200,000 railroad employees in our fight to reduce fire waste; the next year we can do more, and eventually we can find every employee consciously or sub-consciously associating fire prevention with every thought. Let us declare a moratorium on careless or haphazard acts. Until this is done we may rest assured that our goal, a reduced loss ratio, will not materialize.

Committee Reports

Following the president's address the report of the executive committee was presented by W. F. Hickey (N. Y., N. H. & H.) who congratulated the association on an increase of membership in the last year of 95 per cent. Dues received have amounted to $1,011, and the treasury is in good condition.

The committee on resolutions, E. A. Ryder (B. & M.) chairman, presented a comprehensive set of resolutions setting forth the striking facts of the enormous annual fire-loss of the United States and calling on every railroad employee to do his duty as a conserver of railroad properties. Every day should be a fire-prevention day.

The committee on statistics, G. R. Hurd (Ill. Cent.) chairman, presented a table classifying both by origin and by kind of property the fire losses on 75 railroads in 1919. The table shows losses also in 1918 but the comparison is imperfect because in the earlier year, by the action of the United States Railroad Administration, 419 roads reported. This work of the Administration, by the way, has awakened many roads so that the statistics gathered now are much more satisfactory than was the case in 1917.

The total of the losses reported by the 75 roads in 1919 was $8,560,473 in 9,194 fires; mileage of roads reporting 193,991 miles; average loss per mile of road $44.13. The chairman emphasized the more serious causes. Fires started on adjacent property, $1,158,860, caused more than double the loss of those in that class in 1918. Class 2, Ashes and Cinders, was also much larger, indicating the need of stricter regulations. Heating Appliances, Class 13, $811,378, also doubled the 1918 figures. Sparks from locomotives, Class 17, showed, however, a very gratifying decrease. Class 21, Smoking, is still heavy, indicating a letting down of well-known precautionary measures.

The committee was thanked for its good work, and every inspector is exhorted to study the report.

Bridges and Trestles

The most complete and elaborate report presented on Tuesday morning was that of the Committee on Fire Protection of Bridge and Trestles, DeWitt Rapalje, chairman. This report presented a classification of bridges and discussed the principal hazards. The precautions needed in everyday practice are set forth succinctly and numerous recommendations are made. In the year 1918 on the railroads under government operation there were 946 fires which destroyed bridge property to the extent of $461,208. This was 4½ per cent

of the total railroad fire loss for that year. Steel bridges with ballasted floors, which come next to masonry bridges, as regards safety from fire, have done good service. Ballasted floors have served well as a protection from fire of wooden bridges and trestles. Newly creosoted bridge timbers and ties should be coated with sand or cement, and boxes of sand in service, creosoted timber becomes less inflammable. The committee suggests that long wooden structures should have in the middle a concrete span to serve as a fire break. Water barrels and pails are so persistently neglected that the committee recommends the use of metal bucket tanks containing a non-freezing mixture.

Each large bridge should be treated as a special problem. Every draw-tender's shanty and the signal towers near by should have chemical fire extinguishers of 2½ gal. capacity. On bridges which cross waterways at a low level there should be provided buckets having ropes attached. Small motor cars equipped with hand pumps and suction hose to reach water below the bridge have proved of good service.

In the discussion on this report several members cited their practice in various details. Several roads have experimented with Barrett roofing on wooden decks. W. S. Wollner (N. W. P.) told of fires started by hot metal from contact shoes of electric motors and from hot brake shoes. Two fires (on bridges not supplied with barrels of water) were started by hot coals thrown out of a dining-car kitchen. Firemen who disobey the rule forbidding them to shake grates when running, start fires in that way.

The recommendation of the committee that fire-fighting apparatus should be fitted to all locomotives was criticised as too far beyond actual practice. The provision of fire pails was discussed at some length, the most novel point brought out being the United States Steel Corporation uses large numbers of powder kegs, fitted with bails, for this purpose. These are not attractive to thieves. J. H. Howland, of the National Board of Fire Underwriters, recommended two water barrels for every combustible bridge, even the shortest. The Indiana Harbor Belt operating in a dense manufacturing territory has fire-fighting apparatus on all switching locomotives; this has quickly paid for itself. M. Ryder (B. & M.) mentioned the importance of having ladders at all roofed wooden bridges.

This report was accepted and ordered printed in the proceedings, certain modifications proposed in the discussion to be first made in the text by the committee.

Inflammable Compounds and Liquids in Shops

The first report discussed on Tuesday afternoon was that of the committee on inflammable and explosive compounds and liquids in shops. The report was presented by C. P. Beistle, chief chemist of the Bureau of Explosives, chairman. It embodied an exhaustive discussion of the hazards connected with gasolene, benzine, paints, oil, waste, alcohol, lacquer and compressed gases. Gasolene, being more dangerous to handle and use than kerosene, should not be used for cleaning triple valves; and casing head gasolene should not be used in shops for any purpose. If blow torches are used for removing paint, the gasolene tanks should be in an underground pit, detached from buildings. For removing tires the committee would recommend kerosene or fuel oil rather than gasolene.

In the discussion several members cited dangerous practices which they had observed. One of them is the use of gasolene with rubber cement in fastening air-brake hose. In the offices of some shops, located in the second story, girls were found to be using gasolene to clean addressograph machines. There was a strong sentiment favorable to absolute prohibition of gasolene for heating tires. Kerosene oil is extensively used for this purpose; why not forbid anything more volatile than that? With a safe fuel this work may be done indoors, thus meeting the objection of workmen to going outdoors in cold weather. James Labor saw that on his road crude oil, sprayed under pressure, was used for heating tires; a tire can be heated in ten minutes. A light distillate, the flash point of which is 280 deg. F. is used. In many shops the use of gasolene for cleaning triple valves has been forbidden. On the New York Central there is a strong sentiment in favor of gasolene, because of the difficulty otherwise, of cleaning out the paraffine used in triples; and it is deemed desirable to provide a separate building for this work rather than stop the use of gasolene.

The committee's mention of a single form of extinguisher, the foam type, for putting out oil fires was criticised as unfair to other designs; and, after considerable discussion the meeting voted to approve all forms of extinguishers which have been approved for this purpose by the underwriters laboratory; but there was a large minority who voted against this approval.

With many expressions of praise for its thoroughness the report was accepted unanimously.

Freight Car Heaters

E. A. Ryder (Boston & Maine) was chairman of a committee which reported on freight car heaters. This is a very terse and illuminating report on hard coal stoves, wood stoves, the Eastman heater and other devices. Coal stoves, properly designed, set-up and cared for have been used with success on one road for 15 years in 100 cars equipped for l. c. l. shipments with only two small fires in that time, both due to careless loading.

Wood stoves require constant and intelligent care and the rules for maintaining proper distances between wooden fixtures and the fire, as also for providing gravel or sand under the stove, must be rigidly enforced. The Eastman heater is a wickless oil stove carried in a box under the car. The oil is carried in a 25-gal. tank, oil feeding to the burners by gravity through an automatic governor. With a tank full of oil the heater will operate from four to nine days, according to the weather. The Moore patented refrigerator heater has a stove installed in a box near the center of the car. The stove is operated from the outside and the fuel is pea coal. With all freight car heaters the responsibility for fire prevention is mainly on the agents, conductors and car inspectors.

This report had been discussed at a former meeting and the present issue is a revision with some additions. In its present form it was declared by one enthusiastic member to be a classic, and was adopted unanimously.

In the brief discussions W. E. Cathcart (Penn.) suggested the desirability of placarding heater cars with full details as to loading, and instructions as to needed care. Placards seem to be neglected on many roads, being left on cars after their function is accomplished. But the rules concerning explosives, which constitute a criminal status, forbid putting explosives next to a car containing a fire; and a placard is necessary to enable trainmen to comply with this prohibition. A clause recommending placards was finally ordered added to the report.

Fire Protection on Passenger Trains

This was briefly discussed, E. W. Osborne (N. P.) chairman of the committee, making an informal report. The merits and demerits of different types of extinguishers were mentioned. None of those on the market comply with all of the ideal requirements. Tetrachloride extinguishers were criticised by some as liable to be leaky; but others said there was no trouble on that point, the real trouble was absence; they were stolen. On the ferry boats of the North Western Pacific the deck hands patrol the boat with extinguishers, as many as 120 automobiles being carried on a boat at a single trip.

This report was accepted as one of progress.

The Moral Hazard

This was the title of a paper by W. S. Wollner (N. W. P.) scheduled for Wednesday but read on Tuesday. A flagrant moral hazard, for example, is where our unsuccessful farmer or merchant decides to get even with fate by committing arson. On railroads the term can be said to include damage from acts of mental defectives (trespassers), carelessness on the part of all classes, and lack of sense of responsibility. The pump man rarely seen by his super may become careless; there is a fault on the part of the employer. It is not safe to assume that the good record of a pump man—or if an agent at a lonely station, is due wholly to his competency. It may be good luck, the duty of instructions and of maintaining the human touch is inescapable.

Illustrating by the case of a proprietor with one hired helper, the speaker set forth the essential of the true relation between employer and employee, no matter what the size of the establishment, whether one or 100 or 10,000 employees.

The speaker was complimented on the lucidity and thoroughness of his essay and was given a rousing vote of thanks.

The remaining sessions of the convention will be reported in next week's issue.

D. L. & W. Wants to Capitalize Its Surplus

WASHINGTON, D. C.

A HEARING on the application of the Delaware, Lackawanna & Western for approval by the Interstate Commerce Commission of the capitalization of its surplus of about $90,000,000 by the issuance of new stock to be distributed to the present holders as a stock dividend of approximately 200 per cent, was held before W. A. Colston, director of the commission's Bureau of Finance, at Washington on October 5.

W. S. Jenney, vice-president and general counsel of the railroad, said that the proposed segregation of the company's coal properties, which it expects the commission to make a condition of any order it may make approving the increase in capitalization, could be accomplished in one of two ways that had been discussed, either by a transfer to a new company the stock of which would be distributed to the railroad shareholders, or by the formation of a new company which would give bonds to the railroad in part payment, but that in either case the railroad would retain no voting interest in the coal property, although for a time the stockholders of the two companies would be the same.

As the witness placed the minimum value of the coal properties at $60,000,000, whereas the capital stock of the railroad amounts to about $42,000,000, Mr. Colston asked if a distribution of this amount in stock of a coal company would not be equal to an additional 150 per cent stock dividend to the railroad shareholders, which with the 20 per cent now paid would make a total of 370 for one year. It was admitted that this would be so but the railroad witnesses said that they did not consider that the stockholders would be receiving anything they do not already own. Mr. Jenney said it was proposed to capitalize only surplus earnings of the railroad which might have been paid as cash dividends and that the new stock could be considered as merely a receipt for the money of the stockholders that has been used in building up the railroad. He said the company desired to increase the stock by the amount of the surplus, or such part of it as the commission would approve, less about $2,000,000 which has been invested out of railroad earnings in the coal properties.

He explained that while retaining the operation of its coal properties, the company had not been able to take advantage of the general railroad laws of Pennsylvania and had, therefore, been unable to increase its capital stock since 1877 except on two occasions—in 1909, when it merged some companies by exchange of its capital stock for that of the other railroads, which made its stock issue $30,000,000, and five years later when its stock was increased to $42,000,000 for the construction of a new line.

Up to 21 years ago, when W. H. Truesdale became president, Mr. Jenney said, no serious effort has been made to engage in a general railroad business, but the railroad had been operated to serve the coal mines. Since that time it has largely been rebuilt out of earnings, while about $30,000,000 has been expended on the coal properties to reduce mining cost. The Delaware, Lackawanna & Western and its leased line have approximately $95,000,000 of stock and $68,000,000 of bonds, of which $8,000,000 of stock and $15,000,000 of bonds are held in the treasury. The Lackawanna company proper has no bonded debt, but about 70 per cent of the system's mileage is operated under leases which provide for the payment of a fixed percentage on the stock of the leased lines. From 1853 until the present, the company's net earnings from transportation operations have been $208,476,000 and from the coal properties $66,900,000, while other income has amounted to $40,840,000. The company has paid in round numbers $14,000,00 in interest and $210,000,000 in dividends, leaving an accumulated surplus of upward of $90,000,000 and the property has been so well maintained that undoubtedly the management could have shown a larger surplus if it had desired to do so. About $40,000,000 of the surplus is in such shape that it could be distributed to the stockholders as a cash dividend.

Director Colston asked a number of questions to develop the amount of stockholders' contribution or "sacrifice" in the way of original investment. Mr. Jenney took the position that the stockholder has actually invested, in addition to the amount of his stock, the surplus earnings which might have been declared as dividends. He said that the segregation of the coal properties would not materially reduce the profits of the railroad as it never had had difficulty in declaring a dividend and increasing its surplus out of the railroad earnings alone. Director Colston asked if a 200 per cent stock dividend would not be open to criticism as stock-watering by the same persons who object to the high rate of dividend which the company now pays. Mr. Jenney said he thought public opinion would recognize the propriety of giving the stockholders some evidence of what has been done with their money if the commission, after an investigation, should give its approval of such an issue. Some discussion followed as to whether the amount of the stock could not be brought into consideration in connection with the fixing of rates. Mr. Jenney said that under the transportation act the amount of stocks and bonds has nothing to do with the valuation on which the commission fixes the rate level.

Mr. Colston read a telegram from the attorney general of Pennsylvania to the commission, which stated that if the company divested itself of its coal properties and accepted the provisions of the state constitution of 1874 it might legally capitalize its surplus and issue stock therefor, but not otherwise. R. B. Ferguson, general auditor of the Delaware, Lackawanna & Western, and G. J. Ray, chief engineer, also testified as to details regarding the company's accounts and its property valuation to show that the investment account had been kept conservatively and does not in effect reflect the full value of the property.

President Truesdale of the railroad was present and counsel offered to put him on the stand, but Director Colston replied that the other witnesses had sufficiently covered the ground. The company was given 10 days in which to file a brief. No one appeared at the hearing in opposition to the granting of the application.

Labor Board Opens Hearings On Short Line Wages

THE UNITED STATES Railroad Labor Board began hearings on October 18, at Chicago, to determine what wages should be paid employees of the various short line railroads. All of the first four sessions of the board, held on October 18 and 19, were devoted to the presentations of various electric interurban lines which maintain that the Board has no jurisdiction over the wages to be paid their employees. This dispute made it necessary for the Labor Board to divide its hearing into two parts, taking up first the solution of the jurisdictional dispute and later the determination of the wages to be paid employees of the lines not represented at the hearings which terminated with the Board's $625,000,000 award of July 20.

Oren Root, president of the Hudson & Manhattan, at the opening session, outlined the general physical and operating characteristics of that road to aid in the solution of the question as to whether or not the Board was granted jurisdiction over a road of that type by the terms of Section 300 of the Transportation Act. Following Mr. Root's testimony, the representatives of the employees present were asked to participate in the discussion and refused, stating that it was their desire that the Board first decide what roads properly come under its jurisdiction.

Mr. Root was followed by Frank Karr, representing the Pacific Electric, who besides outlining the general physical and operating characteristics of that road, outlined in detail the objections based on interpretation of Section 300 of the Transportation Act, which the electric interurban lines are making to any ruling of the Labor Board.

The afternoon session of October 18 was opened by C. E. Bickel, superintendent of the Litchfield & Madison. Following Mr. Bickel's presentation, which was similar to the testimony presented at the morning session, a discussion arose as to how it is possible to determine when an electric line is or is not part of a general system. Mr. Bickel was followed by Mr. Robinson of the Louisiana & Pacific, who requested that the presentation of that road be postponed until a later date. Mr. Robinson's request was granted.

Objects to Individual Hearings

Mr. Whitted of the Denver & Interurban, then began the presentation for that line. However, L. E. Shepard of the Brotherhood of Railway Conductors objected to individual hearings for each objecting line, stating that it would take a great deal of time and expense if the representatives of each line disclaiming the jurisdiction of the Labor Board be heard. Considerable discussion ensued as to the feasibility of the presentation of this testimony to the Board in writing. It was finally decided that those roads which desire will be allowed to file written answers with the Board. Mr. Whitted as followed by Mr. Knabb, representing the Copper Range, the Delaware & Northern and the Lake Erie & Franklin Ferry; Mr. Barron, representing the Butler County Railroad; Mr. Taylor, representing the Piedmont & Northern; F. J. Meyer, representing the Chicago, Lake Shore & South Bend and Mr. Shortell representing the Interurban Railway.

Practically all of the testimony presented at this session brought out questions as to the relation of the roads in question to their connections as to their traffic arrangements with the larger steam roads, the manner in which tickets were sold and the manner in which labor controversies have been handled in the past.

Testimony from various electric interurban lines and from representatives of their employees regarding the jurisdiction awarded the Board by the terms of the Transportation Act over lines of that character occupied both sessions of the Board's hearings on October 19. W. R. Dwyer, representing the Fort Dodge & Des Moines & Southern, and C. H. Crooks, general manager of that line, testified as to the definition of the term "interurban."

B. M. Jewell, representing the associated standard recognized labor organizations, announced to the Board that these organizations did not wish to enter into the jurisdictional dispute. He added, however, "The only thought we desire to convey is that, if you do decide you do not have jurisdiction, the Board will take into consideration the possibility that such decision might result in an interruption to the operation of traffic."

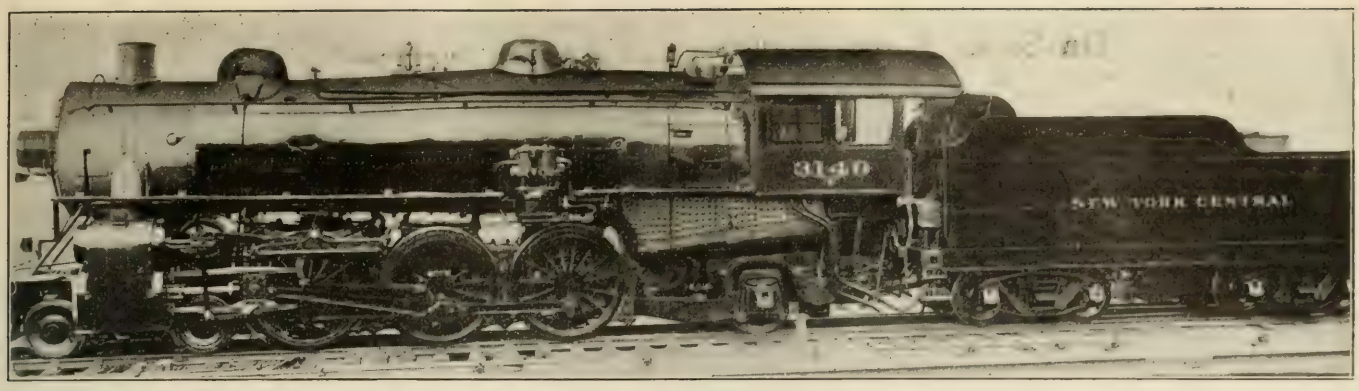
N. B. Kane, representing the American Association of Short Line Railroads, outlined the position of that organization in a short statement saying, "We think that Congress intended in the expressions used to include suburban electric railways and interurban railways because such railways are used in some sections of the country as part of system lines." Mr. Kane then urged the board to decide whether or not the lines in question were part of larger railway systems. Mr. Conners, representing the Spokane & Eastern Railway and Power Company; C. M. Cheney, representing the Interurban Railway of Iowa; P. J. Murphy, vice-president and general manager of the Lackawanna & Wyoming Valley, and S. S. Ashbaugh, representing the American Short Line Railroad Association, also presented testimony at the morning session. The latter called attention to the fact that the majority of interurban railways were wholly state organizations and that therefore the Interstate Commerce Commission is not in a position to provide the necessary revenues to be earned with which to enable the lines to pay increased wages.

At the afternoon session Mr. Kane, Frank Karr, Charles A. Henry, chairman of the Committee on National Relations of the American Electric Railway Association, and J. G. Luhrsen, president of the American Train Despatchers' Association, testified at various times, the latter opposing the elimination from consideration of any of the electric lines cited to appear before the board.

Wednesday's session was likewise devoted to the presentation of evidence in the jurisdiction dispute. P. W. J. Smith, representing the New York, Westchester & Boston, the general counsel of the same line, and Mr. Doak testifying. All of the testimony presented by the representatives of these lines was similar to that presented on behalf of the other lines, Mr. Smith, Mr. Lambert and Mr. Homer maintaining that the Labor Board had no jurisdiction over their lines according to the terms of the Transportation Act. Mr. Doak opposed the testimony presented, stating that it is his opinion that the Board has jurisdiction over any railroad operated by electricity and ordinarily called an interurban railway company that does a freight business and has joint rates and joint rules and connections and thereby becomes a part of the transportation system of the country.

B. M. Jewell opened Thursday's session with a presentation on behalf of the complainants requesting the Board to accept the testimony offered by representatives of the labor organizations at the Washington hearings. He asked in addition that any increases made by the Board be added to the rates in effect under the Railroad Administration.

The real fight in the present hearings opened on Thursday morning when Bird M. Robinson, president of the American Short Line Railroad Association, testified on behalf of the short steam lines. Mr. Robinson vigorously opposed: first, participation by the short lines in this "machine made" controversy, and, second, the granting of any further wage increases to short line employees. His opposition to participation in this controversy was based on the charge that in reality there has been no dispute between the short line railroads and their employees, but that this controversy is based on machine made or manufactured disputes. Copies of labor organization circulars were filed with the Board to bear out this charge.

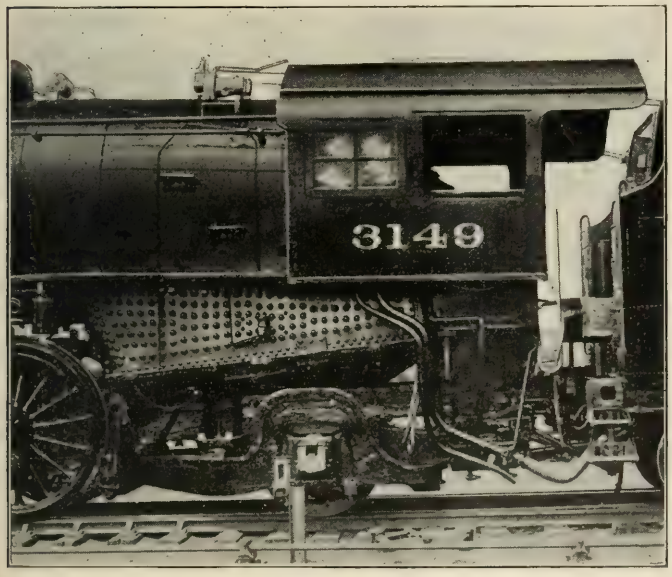


New York Central Pacific Type Equipped with Locomotive Booster

Operating Tests of a Pacific Type Booster Locomotive*

Additional Tractive Effort of Booster Increases Tonnage Rating for Division on New York Central

"IDLE WEIGHT and spare steam harnessed in a simple way to do useful work at a critical time." This, in a few words, describes the locomotive booster which causes the trailing wheels to act as driving wheels in starting the train and to get it over the hard pulls on the road. For the past ten years or more locomotive designers have been

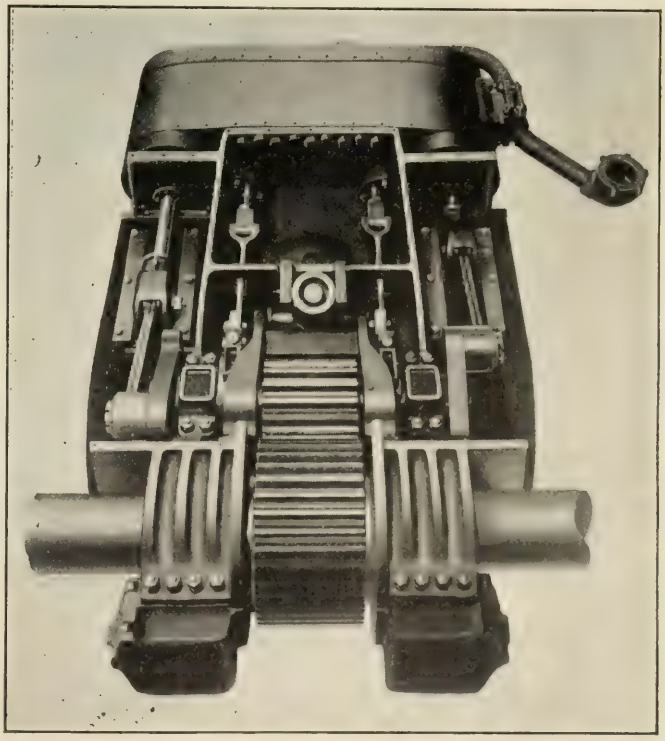


A Close View of the Trailer Truck with the Booster

striving for increased drawbar pull. Their efforts have increased the load per pair of drivers and the number of driving wheels until today the load limit that track and bridge structures will bear has been closely approached. In starting and at slow speeds every locomotive built has greater boiler capacity than it can utilize. While, of course, increased wheel loads and larger units mean greater tractive effort, the limiting factor, the ruling grade, determines the load a locomotive can haul over the division. To obtain maximum practical effectiveness from the locomotive and offset the tonnage limit imposed by the ruling grade several methods are in use. One is to station pushers at the foot of the grades to help the train over the hill; another is to make up the train, wherever possible, so as to drop several cars at some way point. Both are expensive and unsatisfactory.

Loading locomotives to the limit involves several other perplexing operating problems. A water plug located at the foot of a momentum grade necessitates cutting loose and running for water. Stopping for signal or other cause on a hill may necessitate backing down to get started again. Loss of time in starting disrupts train schedules and often results in loss of train rights with consequent overtime, as well as increased operating costs.

Locomotives as ordinarily built today are hauling around



Driving Mechanism of the Booster

a large percentage of weight that is useless except to permit of making the boiler larger. To permit train loading that would utilize a greater percentage of the available drawbar pull over the entire division and yet have sufficient power

*A description of the locomotive booster was published in the *Railway Age* of April 23, 1920, page 1251.

available for the critical points where extra power led to the invention and development of the locomotive booster.

For approximately two years Engine 3149 equipped with the booster has been in operation on the New York Central. To determine the operating advantages of the booster, a series of tests was conducted on the River division between Ravena and Weehawken. This division is 130 miles long with a ruling grade of one per cent at Bogota going west and 0.46 per cent at Haverstraw going east. The locomotive used in these tests, 3149, is of the Pacific type with a load on drivers of 184,000 lb., steam pressure 200 lb. and a tractive effort of 40,000 lb. It was exhibited at the Atlantic City convention and has been in continuous road service since that time; no special preparations were made for the test. A dynamometer car was used to obtain the necessary data.

In making these tests information was wanted on the following items:

1. Practical increase in tonnage that could be hauled over the division because of the booster.
2. Effect of the booster on train operation over the division.
3. Maximum drawbar pull with the booster in action.
4. Maximum drawbar pull without the booster.
5. Time saved over the division because of the booster.
6. Increased train acceleration by use of the booster.
7. Effect of a crew, inexperienced with the booster, operating a locomotive equipped with a booster.

Test Results Going East

The first test was made going east from Ravena to Weehawken. Without the booster, Engine 3149 is rated from Ravena with 2,600 tons and runs to Newburgh where the train line alone before the train can be started after coupling up, thus more than doubling the time lost.

In the test run the practice referred to was not followed. Engine 3149 hauled the train to the water plug intact, took water and started up the grade with the full train with the booster in operation. As shown by the dynamometer record (Fig. 2) the locomotive, with the booster in operation, accelerated to five miles per hour very quickly, the drawbar pull showing 41,067 lb. at this point and in a distance of 580 ft. the speed increased from 5 to 8½ m.p.h., or an increase of 70 per cent. When the booster was disengaged and the locomotive took the load entirely, the drawbar pull showed 33,497 lb., a difference of 7,570 lb.

RULING TONNAGE FOR WEST SHORE DIVISION

Weehawken 0 miles	Cornwall 52 miles	Distance Newburgh 57 miles	Kingston 88 miles	Ravena 129 miles
		Tonnage Going East Without Booster		
.....	.....	2,100 tons	.....	2,600 tons
		Tonnage Going East With Booster		
2,582 tons	.....	.....	.....	2,582 tons
		Tonnage Going West Without Booster		
1,800 tons	.....	2,100 tons	2,600 tons	.....
		Tonnage Going West With Booster		
2,015 tons	2.577 tons	.....	2,745 tons	.....

Reference to Fig 1 showing the road profile and Fig. 2 showing the dynamometer record clearly indicate the part the booster played in making possible the starting of the train and getting up to speed on the grade; without the booster this performance would have been impossible.

At this point an important time saving operating situation developed. Because of the time saved at Catskill, West Point was reached just three minutes before an express was due. The express was followed to Weehawken, whereas usually two or three local passenger trains are allowed to go ahead. At times this adds another 30 minutes' delay in addition to the time lost at Catskill. After leaving Catskill the booster was used for starting whenever the train was stopped for signals or other reasons, each start showing rapid acceleration.

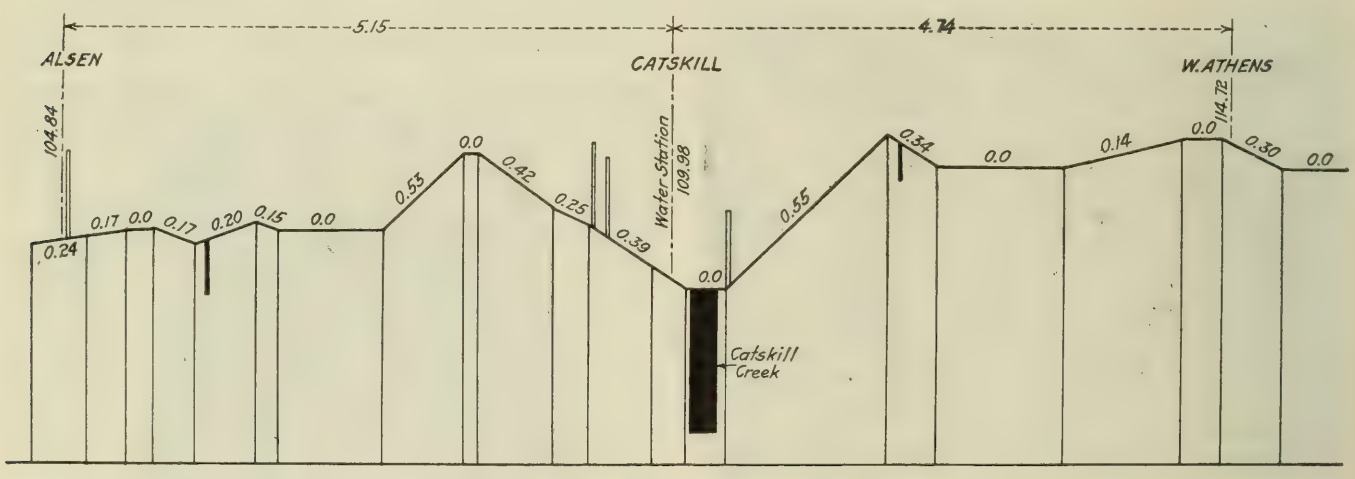


Fig. 1. Profile of West Shore Division at Catskill

tonnage is reduced to 2,100 tons, a reduction of 19.2 per cent. In making this test it was decided to endeavor to bring 2,582 tons through to Weehawken. This not only involved getting over the ruling grade at Haverstraw, but also introduced other interesting and important operating problems.

At Catskill the water plug is located at the bottom of two grades. It is the usual practice to leave the train at the top of the grade west of the water plug, run two miles for water, back up to the train and make a run down-grade to get sufficient momentum to carry over the up-grade. The profile of the road at this point (Fig. 1) shows a down-grade of 0.55 per cent and an up-grade averaging 0.375 per cent. Running for water in this way consumes 20 to 30 minutes' time in good weather. When the weather is bad with sleet and snow 30 minutes' time is usually lost in pumping up the

The ruling grade on this division is known as the Haverstraw grade (Fig. 3). It is over six miles long and the average gradient is about 0.46 per cent. This grade was approached at a speed of 33 m.p.h. with the booster idle and continuing up-grade the speed dropped as follows:

At the end of the first mile, 28½ m.p.h.
At the end of the second mile, 19 m.p.h.
At the end of the third mile, 12 m.p.h.
At the end of the fourth mile, 8 m.p.h.

At the fifth mile the speed was 7½ m.p.h. and falling rapidly. The drawbar pull was 36,441 lb. Without the assistance of the booster the train would have stalled.

At this point the booster was cut in on a 0.52 per cent grade, and in 432 ft. the speed reached eight miles per hour and the drawbar pull 42,900 lb., an increase of 6,459 lb. drawbar pull or 17.7 per cent because of the booster. In

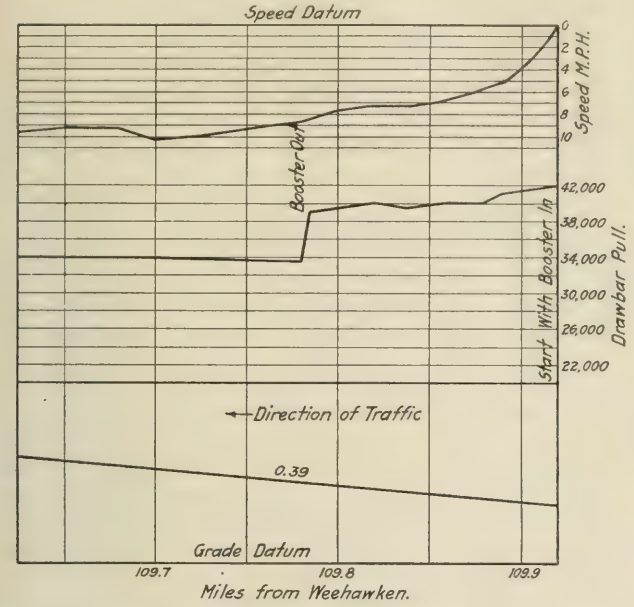


Fig. 2—Dynamometer Record of Booster Locomotive on Catskill Grade

the first ¾ mile, after the booster was working, the speed reached 10 m.p.h. This shows an acceleration, because of the booster, in three-quarters of a mile of 33⅓ per cent with a train tonnage 22.9 per cent above normal. In taking this train over the ruling grade the booster was used for about 1⅝ miles and just before being disengaged a drawbar pull of 45,080 lb. was recorded on the dynamometer car.

The train arrived at Weehawken with the same tonnage

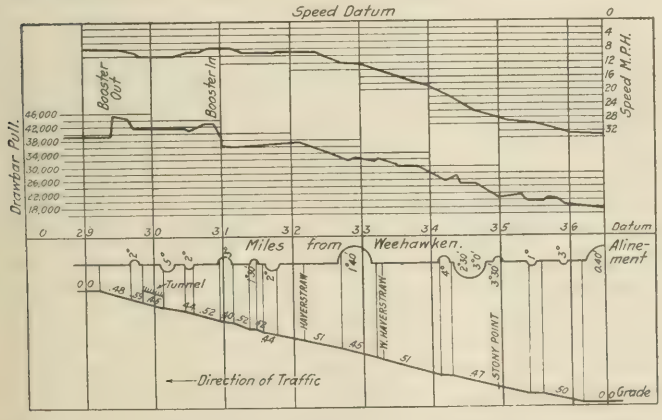


Fig. 3—Performance of Booster Locomotive with 22.6 Per-cent Excess Tonnage on Haverstraw Grade

with which it started from Ravena. This was the first time this tonnage had ever been hauled over the entire division by this type of locomotive. In addition no difficulty was experienced and the locomotive was handled by a crew not regularly assigned to the locomotive. Since this test was made the crew regularly operating this locomotive has hauled 2,618 tons over the division, an increase of 24.6 per cent over the regular tonnage.

Test Results Going West

By referring to the tabulated statement it will be noted that the tonnage rating of this locomotive without the booster is 1,800 tons to Newburgh, at which point it is increased to 2,100 tons to Kingston, where it is again increased to 2,600 tons to Ravena. Use of the booster permitted increasing the tonnage to 2,015 out of Weehawken, increasing it to 2,577 at Cornwall and again increasing it to 2,745 tons at Kingston, which tonnage was hauled to Ravena.

The ruling grade going west on this division begins 7⅓ miles from Weehawken at Bogota. It is a one per cent grade approximately 1¾ miles long. The dynamometer record was started at a point eight miles from Hohokus, where the speed was 25 m.p.h., and about two-thirds the way up the speed had dropped to 13 m.p.h. At this point the booster was cut in. As shown in Fig. 4 the drawbar pull immediately increased from 34,228 lb. to 38,793 lb., an increase of 4,565 lb.

At West Nyack a test was made to determine the combined power of the locomotive and the booster. The grade at this point is 1.04 per cent. The train was brought to a standstill and a start made by taking slack. As shown by the dynamometer car record (Fig. 5) the train proceeded .235 of a mile, where it stalled, and the maximum drawbar pull at zero speed registered 51,138 lb. The boiler pressure remained constant; the throttle was wide open and the reverse lever in the corner.

To determine the maximum drawbar pull of the locomo-

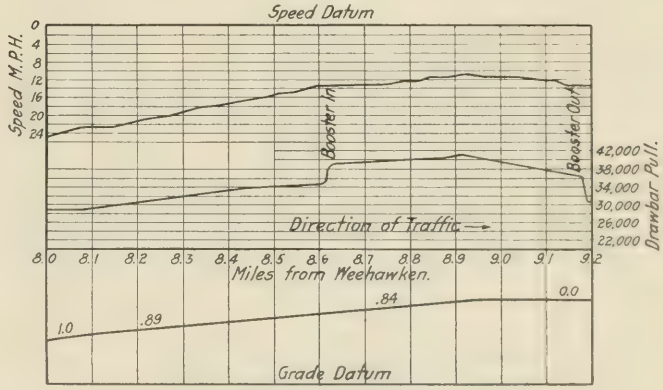


Fig. 4—Drawbar Pull and Speed Record Ascending Bogota Grade

tive without the booster a test was made on an 0.86 per cent grade into Congers, the tonnage at this point being 1,958 tons, one car having been set off on account of hot boxes. With the booster working, the train was brought entirely on the grade, the booster then cut out, and the engine proceeding until stalled. As shown by the dynamometer car record (Fig. 6) the drawbar pull registered 40,421 lb. at zero speed. To get the train moving again the booster was engaged and the maximum drawbar pull registered 49,953 lb., showing an increase of 9,532 lb., or the additional drawbar pull which the booster exerted.

At Cornwall the tonnage was increased to 2,577 tons, the usual tonnage from this point to Newburgh being 1,800 tons. At West Park, on a .52 per cent grade, it was found necessary to use the booster again as the speed had dropped to 12 m.p.h. Upon arrival at Kingston the train was increased to 2,745 tons, which is 145 tons in excess of the regular rating of 2,600 tons, and the train continued to Ravena successfully handling this tonnage.

One of the important features of the booster emphasized by these tests was the rapid acceleration, which is accomplished at practically no increase in weight, as the booster

weighs less than 4,000 lb. The following tabulation shows clearly the reason for this.

Maximum drawbar pull of locomotive	40,421 lb.
Drawbar pull of locomotive necessary to move train on given grade	36,441 lb.
Difference (force available for acceleration)	3,980 lb.
Maximum drawbar pull of locomotive with booster in operation	49,618 lb.
Less drawbar pull necessary to move train	36,441 lb.
Reserve for acceleration with booster is increased to	13,177 lb.
Deducting force available for acceleration without the booster	3,980 lb.
Increased force available for acceleration on the same locomotive with the booster operating	9,197 lb.

Hence 9,197/3,980 equals 231 per cent increase in force available for acceleration purposes.

On freight trains this is important, as it enables a quick get-away and the increase in available starting power means

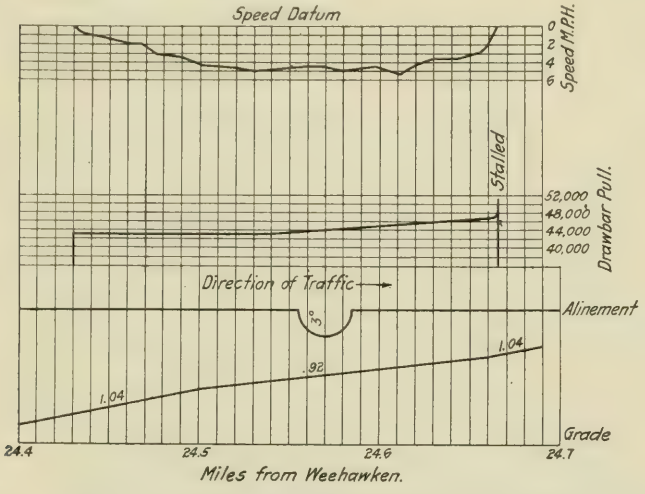


Fig. 5—Stalling Test to Determine Maximum Drawbar Pull With the Booster

a smooth even start. This often saves sufficient time to permit a freight train to continue on its run when otherwise it might necessarily have to take a siding to permit other trains

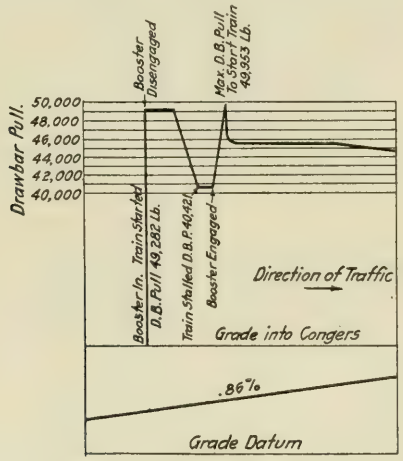


Fig. 6—Stalling Test to Determine Maximum Drawbar Pull Without the Booster

to pass. In addition, it avoids damage to rolling stock by avoiding the need of taking slack.

On passenger trains it means saving time in starting from station or other stops. A few minutes saved at each stop with a heavy train helps maintain operating schedules. The smooth easy start also adds to the comfort of the traveling public.

Conclusions

From the results of these tests the following conclusions were drawn:

1. The booster makes possible increasing the tonnage that a locomotive can haul.
2. It provides quick acceleration that helps maintain schedules more easily and reduces the time over the division. In several instances under observation the time consumed in getting freight trains out of terminals and yards was reduced 50 per cent.
3. It eliminates the need for taking slack in starting.
4. It reduces tire and rail wear as slipping of drivers is avoided.
5. Because of its smooth, steady pull at starting it reduces wear and tear on equipment and eliminates breaks-in-two.
6. It increases the average speed over grades and eliminates stalling.
7. The booster power is always instantly available at speeds below 12 m.p.h.
8. It helps relieve traffic congestion, increasing the maximum ton-miles over the division.
9. No extra coal is consumed because of the booster, and fuel economy should result because the time required over the division is reduced.
10. The booster is automatic in operation and control and adds no extra duties to the engine crew.
11. It gives the effective increase in starting drawbar pull that an additional pair of drivers would give, but avoids hauling around 50,000 lb. or more weight that a larger locomotive would involve, weight that is useless a large percentage of the time and that present track and bridge structure will not carry.
12. The booster is in motion less than 10 per cent of the time. Its maintenance is negligible.
13. It avoids stalling where sudden weather changes while enroute would render impossible the hauling of normal tonnage.
14. It provides a reserve capacity that helps to even out the difference between an experienced and inexperienced crew.

The Philosophy of Safety First*

By Marcus A. Dow

General Safety Agent, New York Central Lines

IT OUGHT TO BE a comparatively easy matter to secure the co-operation of the employer in safety work, because there is abundant proof of its value to him in dollars and cents. But figures, convincing as they are, do not in themselves alone awaken in the heart and mind that spirit that is really needed on the part of the employer and of the employee as well. If you should ever, by any chance, happen to stand on the bank of a river and you should see another human being struggling in the water, and you should hear the agonized, frightened cry of that person for help, and at once all of the spirit of bravery and chivalry and sympathy for humanity that lies in the human heart spurred you to action, and before you knew it you had your coat off and you were in the water; and after a hard struggle you brought an unconscious form to shore and you laid it on the bank and you saw it revive and breathe and live again, you would thank God that you were there and that you were given the enviable privilege of saving that life; that you had answered the call of humanity and that when the test came you had measured up to the full requirements of a real man.

The opportunity for safety service gives you the same great privilege. Real safety work is a service of the heart. Some few employers have not achieved great success, because they

*Abstract of an address before the Ninth Annual Safety Congress, Milwaukee, Wis., September 27.

were not good safety men at heart. They were not good leaders and did not make their employees feel that they were sincere. The spirit and the attitude toward safety work of any employer, or any railroad officer, will be reflected in every corner of his plant and on every mile of his road.

The employer who would render conscientious safety service must first of all make his plant as reasonably safe, well guarded, well ventilated and well lighted as engineering revision within his means will permit. Not all accidents caused by carelessness are entirely the fault of the man who was careless. The fault may have been with the man who hired him; it may have been with the man who trained him, for not having told him how to work safely and for not having pointed out the unsafe things he must not do. Or it may have been the fault of the other men who worked around him, who worked carelessly, and whose ways and habits he followed, because he was in a careless, chance-taking environment. And so a better statement and a more truthful one is that the majority of accidents are of a character which can only be eliminated when all of the employees and all of the officers co-operate in the task of creating an atmosphere of carefulness—an atmosphere of safety.

The employer, the superintendent, the foreman, must become a leader in the safety movement. Ever since the time when history first records the deeds of men, human beings have followed a leader. Good leadership has been the secret of the health, strength and prosperity of communities the world over from time immemorial. Likewise has poor leadership left in its wake untold misery, hardship, and sorrow. Assuredly as far as the supervising officer or the foreman in any industry is concerned his vigilance should extend so far as to see that the men under him are taught specifically how to do their work in the safest possible way and that they are closely supervised to see that it is done only in that way. Those in authority must not only correct the unsafe things but also by their enthusiastic support create an atmosphere of safety among the workers; not only eliminate the unnecessary hazards, but also build up a fine safety morale among the employees by their personal effort, by word of mouth, by personal contact and by that irresistible force that will come from a true service of the heart—a service performed because you believe in it, just as you believe in your religion.

"Service" Defined

If you, Mr. Safety Supervisor, tackle your problem with a determination, thoroughness and patience that will insure the elimination of every possible accident cause, you do something more than merely earn your salary. You do something worth while. If you, Mr. Foreman, by your leadership, your initiative, your enthusiasm, and your sincere, never-ceasing effort, create an atmosphere of Safety among your men, in which atmosphere the germs of carelessness cannot live, you do more than increase production in your department. You contribute to the great scheme of things which makes the world progress and become better. You give *service.*

If you, Mr. Workingman, without fear of ridicule or criticism, and spurred only by your devotion to duty, leap to the side of a chance-taking comrade who is about to perform some act that will jeopardize his own safety or the safety of a fellow employee, and with a friendly word of warning get him to correct his unsafe practice before an accident happens, you do something more than save a casualty expense for the company you work for. You, too, help to create an atmosphere of carefulness in the plant; you contribute unselfish, praiseworthy *service.*

The rarest flower ever planted, if surrounded by a bed of noxious weeds, does not attain a healthy growth and burst forth in its fullest bloom of radiant beauty. Neither can the seed of industrial safety bring forth the best of results in a shop that is surrounded by a community where public safety is forgotten and where the weeds of carelessness and indifference are permitted to flourish unchecked. The co-operation of employers is needed by the community in establishing an atmosphere of safety in public places. It is needed in the shape of influence to bring about the teaching of the fundamental principles of self-preservation to the children in our public schools. It is needed in the effort to impress upon the drivers of automobiles a sense of responsibility in safeguarding the lives of pedestrians by eliminating reckless, thoughtless driving. The opportunity for Safety Service is indeed unlimited; the field is unbounded and the insistent call for that service is not to be denied.

The Transportation Act— Its Effect on Credit*

By John J. Pulleyn

President Savings Banks Association of the State of New York

THOSE WHO FORECAST economic affairs may find in the bettered railroad situation a basis for improved business conditions during the coming years. Succesful railroad operation is fundamental to commercial prosperity, to enlarging foreign trade, to the prompt liquidation of seasonal bank credits and to the improvement of the general investment market.

Immediately prior to the time the nation's railroads went under federal control they faced a tremendous test of the sufficiency of private management under then existing laws and regulations. They could not adequately meet the expanded industrial requirements of the country alone, without respect to quick preparation necessary to mobilization for war.

The three adverse rate decisions of the Interstate Commerce Commission (the advance in rates case in 1910; the 5 per cent case in 1914, and the 15 per cent case in 1917), served to widen the breach between the government regulatory agency, the shippers and the railroad operating officials. A study of these cases is convincing of the irrelevancy of evidence introduced by representatives of the railroads to the underlying causes making impossible a satisfactory adjustment owing to the then existing conditions.

The conflict of state and federal regulation had become acutely oppressive to the railroads. The Railway Executives' Advisory Committee conducted a nation-wide campaign to place before the public the troubles of the railroads, but there it ended. The market values of rail securities had been steadily declining since 1910, when in 1916, they took a temporary rise to drop precipitately thereafter. The railroad brotherhoods with increasing strength and influence at Washington passed the Adamson act.

This combination of circumstances, together with the war emergency, required and made desirable federal control; it required a study of the solution begun with the Newlands committee in 1916-1917, and then by the more recent and protracted investigations by the Interstate Commerce Committees of the Senate and House of Representatives; it required railroad management to take inventory; the shippers and public to take account of their deficiencies in respect to sufficiently compensated transportation.

The interest of banking and investment institutions throughout this period of railroad conversion had necessarily been most direct. The studies and activities of the American Bankers' Association and its several sections added much to

*From an address before the Annual Convention, American Bankers' Association, at Washington, D. C., October 19, 1920.

the constructive thought of the period. The railroad bond holdings of all classes of banking institutions in the United States amount to over $1,700,000,000. More than one half of this is owned by the 634 mutual savings banks. These holdings, together with those of the life insurance companies, total almost $3,500,000,000. Such holdings constitute the bulk of underlying railroad securities. They represent the primary ownership of the roadbed. Our institutions have seen these securities increase in yield from 4½-5 per cent in 1916 to 5.77-7.69 per cent on September 1, 1920, or an increase of 28 per cent to 54 per cent in yield, with a corresponding decrease in market values.

Unquestionably the railroads reached their low ebb of credit and net earnings at the period of their return to private ownership last March. The first six months of railroad net earnings for 1920 are unprecedented for their poor showing. Never have the railroads shown a relatively poorer general statement. The cost of operation—the result of wage increases, higher prices of material, fuel, supplies and other large expenses of railroad operation—had reached the highest levels in railroad history. The railroads particularly during this six months period had to meet the severity of the winter, the "outlaw" strike in April, the congestion of traffic and the resulting embargoes, the car shortages and labor troubles at terminal points, all seemed to provide the darkness before the dawn of railroad credit rehabilitation.

Two elements in the Transportation Act of 1920 make the act the greatest piece of constructive railway legislation since the federal land grant acts of 1863 and 1866. They are, first, the appropriate means for the return of the carriers to private management, and, second, the definite regulatory policy of Congress by mandate to the Interstate Commerce Commission. Without these provisions it is certain that general bankruptcy and disorganization in the nation's railway system would have followed.

These elements and how they affect banking and the securities which our institutions own, I deem of chief import to this discussion. Our own status, the prosperity of our customers, the very stability of the country's economic affairs, rests upon adequate transportation facilities. Adversity in transportation spells disaster in business.

The operation of the Transportation Act marks a new era for the railroads. It is only because of the fundamental provisions of the act that the interstate Commerce Commission was enabled to increase railroad rates to the extent necessary to maintain the solvency of the roads. Hundreds of millions of dollars have been added to the value of the total railroad holdings of investing institutions, not to mention the added value which logically must accrue to other classes of securities. There are no critics now among those who think straight. The new rates, following the large wage increases, have been favorably received. Even those affected by radical propaganda are satisfied when the real facts concerning the provisions of the act are properly explained. An intelligent optimism for the future of general business is now justified. This solution of the railroad problem is at the basis of all prosperity. It will better credit generally, for it is the keystone of our domestic life.

The splendid organization at present being established by the Interstate Commerce Commission at Washington in conformity with its increased powers provided in the Transportation Act makes that body worthy of the responsibility and confidence placed in it by the last Congress. Every department is being organized to serve transportation in the public interest. Co-ordination and co-operation, rather than discord and misunderstanding between regulator and regulated, shipper and public will now result.

The effect of the new rates will prove advantageous to the medium grade railroad bonds. The high grade railroad bonds of such systems as the Pacific, Pennsylvania, Illinois Central, Burlington & Quincy; Chicago, Milwaukee & St. Paul; Northern, Atlantic Coast Line, Rock Island, Chicago & Northwestern, and the New York Central, are selling at a basis to yield less than 6 per cent, from 5.23 per cent in the case of the Illinois Central bond to 5.75 per cent in the case of the Coast Line bond. These values are as of September, 1920. Liberty bonds yield about the same rate. The return on such rail bonds marks and fully equals the prevailing rate of interest on long-term high grade securities.

The new rates should tend to give added assurance to investors that early maturities will properly be accounted for. Railroad maturities in the next five years amount to $1,352,943,588. Confidence of the investor is of immediate importance. Bankers who may be called upon for financial advice by their depositors and customers should appreciate the full meaning, from the standpoint of stabilizing railroad securities, of the new freight and passenger rates. There are now no better securities than the securities of standard American railroads. They have the freight and the passengers to carry and now with fair and equitable rates, net operating income should prove adequate. The searchlight of public opinion will now be turned on inefficiency in railroad management. Power under the act is given to the Interstate Commerce Commission to co-ordinate and to regulate railroad service, to regulate the movement of cars, and the commission can compel the railroads to purchase equipment. The commission can determine the amount of compensation necessary for the rental of cars. It has had a direct bearing upon the adequacy or, rather, the inadequacy of equipment; for when rentals were low railroads were not inclined to buy equipment, depending upon the equipment of other roads. The commission can restrict the holdings of cars. The act gives to the commission unusual powers over this industry. This power they recently used in ordering all open top cars to the coal mines to transport coal. This was considered a public necessity, although for a time it seriously affected building operations. The commission must approve any extension or abandonment of railroad line. The manner in which the commission is preparing to use these powers through efficient organization merits the confidence of the public and investor, the shipper and the railroad.



Photo by International

Firemen Attacking the Flames Which Destroyed 94 Loaded Cars and the Freight House of the Chicago Junction Recently

Car Service Division Reports Reduced Loadings

Traffic Lightens Somewhat—Box Cars Sent to Western Lines —Cars Being Returned to Home Roads

WASHINGTON, D. C.

THE VOLUME of freight traffic originated by the railroads during the week ending October 2, as indicated by the reports of revenue freight car loading compiled by the Car Service Division of the American Railway Association, was greater than that for the corresponding weeks of 1919 and 1918, but less than for the two preceding weeks of this year. The report shows that 975,946 cars of commercial freight were loaded on the Class I railroads during the week, as compared with 957,596 in 1919 and 971,895 in 1918. Increases as compared with 1919 are shown in the Allegheny, Northwestern, Central Western and Southwestern districts, but decreases were reported for the Eastern, Southern and Pocahontas districts. There were increases in the loading of coke, forest products and ore, but decreases in grain and grain products, livestock, coal, merchandise and miscellaneous.

In the report of freight car loadings as published in last week's issue, it was stated that the total for the week ending September 25 was 994,687 in 1920 and 987,041 in 1919. A correction has since been made in the 1919 figure to 995,901. The report for the week of October 2 is as follows:

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS; COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO, FOR WEEK ENDED SATURDAY, OCTOBER 2, 1920

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L.C.L.	Miscellaneous	Total Revenue Freight Loaded: This year, 1920	Corresponding year, 1919	Corresponding year, 1918	Received from Connections: This year, 1920	Corresponding year, 1919	Corresponding year, 1918
Eastern	1920	5,931	2,619	51,877	3,582	7,821	11,777	47,371	100,248	281,226	.....	.....	259,813	.....	.....
	1919	7,215	2,980	57,242	2,565	7,952	3,938	26,032	125,290	.....	233,214	227,002	.....	257,547	250,268
Allegheny	1920	2,539	3,246	63,213	6,458	3,702	15,308	38,078	73,259	205,803	.....	.....	144,771	.....	.....
	1919	3,357	3,166	62,619	8,696	4,577	9,038	41,618	69,853	.....	202,924	217,122	.....	145,556	187,747
Pocahontas	1920	147	286	24,180	676	2,047	239	2,871	7,542	37,988	.....	.....	19,515	.....	.....
	1919	175	430	24,547	553	2,149	264	135	10,273	.....	36,526	40,782	.....	19,989	25,491
Southern	1920	3,122	2,364	24,758	1,563	19,764	2,965	37,072	34,963	128,561	.....	.....	75,611	.....	.....
	1919	3,106	2,882	25,952	256	19,163	2,596	21,054	55,651	.....	130,859	127,379	.....	73,450	72,914
Northwestern	1920	16,344	9,732	12,059	1,599	16,326	45,182	28,587	38,282	167,111	.....	.....	57,876	.....	.....
	1919	13,943	9,945	13,679	906	15,922	27,334	22,996	47,107	.....	151,832	171,348	.....	90,521	84,662
Central Western	1920	11,050	12,460	25,331	419	5,989	3,109	31,261	48,251	137,770	.....	.....	64,945	.....	.....
	1919	11,268	13,581	23,315	373	5,929	2,758	23,699	55,186	.....	136,059	127,999	.....	70,520	67,949
Southwestern	1920	4,355	2,383	6,179	154	8,103	368	17,358	28,517	67,487	.....	.....	51,141	.....	.....
	1919	4,726	3,059	7,157	89	7,494	305	12,753	28,599	.....	64,182	60,263	.....	53,610	48,069
Total, all road	1920	42,488	33,090	207,597	14,441	63,652	78,948	202,598	333,132	975,946	.....	.....	673,672	.....	.....
	1919	43,789	36,043	214,511	13,438	63,186	46,233	148,287	392,109	.....	957,596	.....	.....	711,193	.....
	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	971,895	.....	.....	737,090
Increase compared	1919	.....	.....	.....	1,003	466	32,715	54,311	.....	18,350	.....	.....	.....	.....	.....
Decrease compared	1919	1,301	2,953	6,914	.....	.....	.....	.....	58,977	.....	.....	.....	37,521	.....	.....
Increase compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	4,051	.....	.....	.....	.....	.....
Decrease compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	63,418	.....	.....

*L. C. L. merchandise loading figures for 1920 and 1919 are not comparable as some roads are not able to separate their L. C. L. freight and miscellaneous of 1919. Add merchandise and miscellaneous columns to get a fair comparison.

The deferred car requisitions (car shortage) for the week ending October 1 show a further reduction to 80,141, as compared with 89,947 for the preceding week. Of the total 41,198 were box cars and 23,930 were coal cars.

The freight car accumulations for the week ending October 8 show a further reduction to 41,135 of which 17,952 were held for export and coastwise movement.

Number of Cars Held With Company Material Reduced

Charges are sometimes made against the railroads that they are themselves wasting cars by holding an undue number of cars under load with company freight. A constant check of this situation is kept by the Car Service Division and individual instances which seem to indicate excessive holding of cars for this purpose are brought at once to the attention of the officers of the road involved. The report for the week ending October 8 shows that a large reduction in the total of cars thus held has been made during the year. Only 37,017 cars were held under load with Company material as compared with 39,014 for the preceding week. On January 1, 1920, the total of cars so loaded was 54,000.

Box Cars Relocated

Under orders issued by the Car Service Division of the American Railway Association and by the Interstate Commerce Commission, 106,247 empty box cars have been forwarded from eastern and southern to western railroads from May 25 to September 15, and during the past three weeks additional orders have been placed by the Car Service Division for the movement of empty box cars to western roads at the rate of 1,185 a day for 30 days. These orders have been issued primarily for the purpose of increasing the car supply in the grain loading districts, but as they provided for the movement of cars of western roads ownership, preferably that of the lines to which they were delivered, the orders also serve the purpose of relocating the freight cars more in accordance with ownership.

In addition to the cars sent to western roads from roads in the east and south, a considerable number of cars has been relocated between roads in the western districts. The grand total of box cars forwarded empty under relocation orders from one road to another, in the interest of equitable car distribution, from May 25 to September 15, has been 185,288, of which 165,925 have been reported as received by the destination roads, and the orders now in effect provide for the total movement of 60,600 additional box cars, of which 35,550 are for western roads. Similarly, about 150,000 open-top cars for coal loading have been relocated in the interests of increased coal production. A statement issued by the Car Service Division says:

"At the termination of federal control on March 1, the

freight equipment in the United States was badly distributed when considered from the viewpoint of ownership. The trend of traffic had been such that there were too many box cars in the east and too many coal cars in the west. Following the armistice there was a considerable reduction in the demands for transportation, which made it possible to store up a reserve surplus of box cars on western railroads preparatory to handling the 1919 grain crop. At one time this reserve amounted to 68,000 cars. On account of the greatly increased transportation demands coincident with and following the grain movement in that year, in connection with transportation conditions made more difficult by bad weather and labor disturbances, the spring of 1920 found the western railroads poorly prepared as to distribution of box car supply to meet the demands anticipated in connection with an unusually heavy wheat crop, followed by a record-breaking corn crop. On June 1 of this year the western roads had on their lines 89.3 per cent of the number of box cars they owned, or 47,917 less cars than they owned, because, this section being a producing territory, the cars had been sent east under load. By September 15 this had been increased to 92.3 per cent after taking care of the current movement in the meantime, and the later orders should further increase this percentage. The number of cars actually delivered to them since that time amounts to over twice the number of cars they were short as compared with their ownership on June 1. This relocation movement has been particularly difficult because of the great demand for cars in all sections.

"Although the total car supply in the country is inadequate, an effort has been made to distribute the cars as equitably as possible, in relation to the ownership of the cars and the needs of commerce. In general the railroads have provided themselves with the types of cars best suited for the traffic of their respective territories and also car repairs can be more satisfactorily made on the "home" roads. But 21.9 per cent of all the cars were on their home lines on March 1 as compared with 44 per cent at the end of 1917.

"Therefore, relocation is important in the program of providing more service to the public by promoting a better condition of repairs generally. The relocation orders, however, represent a method of dealing with unusual conditions and now that an approach has been made to giving each district a number of cars equal approximately to its ownership, instructions have been issued for the establishment of a plan of equalization in interchange between railroads so that each road in general will receive from its connections as many cars as it delivers to them, loaded or empty. This plan should operate to enable each district to maintain a supply of cars approximating its ownership, but to meet the necessities of local situations, some relocation orders will still be necessary and to accommodate the demand for cars for the grain movement, orders now in effect require eastern roads to deliver to western lines at Chicago, Peoria and St. Louis a designated number of cars per day in excess of the number required for equalization. These cars are being distributed between the roads in the west in such manner as to give quick relief to the roads whose supply is below the average and particularly to lines that have been losing cars in the past month by reason of heavy eastbound shipments."

Cars Being Returned to Home Roads

The report for October 1 shows that progress is being made in the return of cars to the home lines. There was a clear 2 per cent gain from September 1 to October 1, the figure on the latter date standing at 30 per cent.

Progress is noted in all districts, and with all types of equipment with the single exception of refrigerator cars:

Percentage All Cars on Home Lines

District	October 1	September 1	March 1
Eastern A	28.5	25.8	....
Eastern B	23.0	21.0	....
Eastern C	16.5	15.8	....
Total Eastern	21.4	19.8	14.6
Allegheny	33.9	29.5	23.8
Pocahontas	35.3	31.0	17.7
Southern A	27.2	25.9	....
Southern B	22.2	21.4	....
Total Southern	24.4	23.4	19.6
Northwestern	44.6	42.9	29.8
Central Western	32.4	32.2	28.8
Southwestern	22.9	22.1	20.5
Total	30.0	28.0	21.9

Percentage on Home Lines by Types of Equipment

	Box	Ref'r	Gondola	Stock	Flats	All freight
October 1	18.8	43.5	36.6	37.1	35.3	30.0
September 1	17.0	46.8	33.8	35.8	34.8	28.0
March 1	11.5	....	28.6	27.2	31.9	21.9

"The results above indicated give evidence of the efforts being made individually to relocate cars according to ownership," says a circular issued by the Car Service Division. "As cars become more generally located to the home lines, increased observance of rules will become more practical and the percentage of improvement should increase in greater proportion. This result cannot come of itself but needs continued vigilance and "push" on the part of all. Instructions should be kept alive. Please reissue."

The Car Service Division has issued the following summary of general conditions as of October 14:

Box Cars.—The requirements continue heavy at practically all points. There is an increased demand for cars for grain loading. At some points grain is on the ground waiting movement. Additional orders have been placed calling for a heavy movement of box cars to western grain-carrying roads in an effort to improve the present situation. The loading of ventilated box cars with dead freight must be confined to points in direct line to home roads, in order to build up supply for heavy fall movement of perishable freight.

AUTO CARS.—There has been a decrease in the demand for automobile cars account reduced manufacturing schedules. Such cars should continue to be loaded to auto loading territory. Cars should not be moved empty except when specifically ordered.

STOCK CARS.—Demand so heavy for protection of stock loading and for building up supply on Western lines for movement of range cattle and sheep, that utmost efforts must be made to move cars to owning lines, or in accordance with specific orders issued for necessary relocation.

REFRIGERATOR CARS.—Citrus fruit from Florida and apples from northwestern territory are now moving in considerable volume, and the same can be said with respect to dairy and packing house products. Imperative that both loaded and empty refrigerators be given preferential handling, and likewise important that the loading of refrigerator cars be confined to freight requiring refrigeration. Every opportunity to hasten the release of loaded refrigerator cars should be taken advantage of.

OPEN TOP CARS.—As a result of a survey taken of the fuel stock throughout the country, it is estimated that it will be necessary that a weekly production of 12 million tons of bituminous be maintained for the balance of the coal year if the situation is to be satisfactorily relieved. Particularly, is it important that the movement of coal to upper lake ports be speeded up. Based on the assumption that navigation will remain open until December 1, a mark of 24 million tons has been set for movement up-lake this season, but it is necessary that all railroads loading lake coal keep in touch with the situation that their allotments will be currently met. In the issuance of Service Orders 20 and 21, the Interstate Commerce Commission recognizes the seriousness of the present coal situation by extending the territory covered in former orders 15 and 16 to eastern boundaries of the states of Montana, Wyoming, Colorado and New Mexico. These orders are effective October 15, to continue until further notice, and it is expected the strict compliance with these will result in a substantial increase in coal production. The use of coal carrying cars for other commodities is now being curtailed to the fullest extent possible, and permits under Service Orders 20 will only be issued in cases of absolute necessity where the public welfare demands.

FLAT CARS.—Requirement for this type of equipment continues heavy in the Southeast for lumber and log loading, and in the Southwest for loading of cane. Demand for this type of equipment continues to exceed the supply. Flats should be promptly released and expedited to the territory as directed.

The semi-monthly report of percentages of freight cars on line as compared with ownership, for October, shows that the roads in the Eastern district on that date had 101.2 per cent of cars of all kinds, the Allegheny district had 100.9 per cent, the Pocahontas district 77.4 per cent, the Southern district 88.1 per cent, the Northwestern district 99.1 per cent, the Central Western district 94.3 per cent and the Southwestern district 106.7 per cent. The percentage of box cars to ownership on the western lines as a whole had increased to 94.2, as compared with 92.3 on September 15, showing the effect of the relocation orders.

Assigned Cars for Railroad Fuel

The Car Service Division has issued Supplement No. 1 to Circular CSD-81, giving interpretations of I. C. C. Service Order No. 18 as communicated to it by a letter from Chairman Clark of the commission. In applying the provisions of Service Order No. 18 of the Interstate Commerce Commission railroads should be governed as follows:

Cars may not be placed for railroad fuel coal loading and be not counted against the mine except where the entire output of the mine has been taken by the purchasing railroad for a period of six months or longer. It follows that cars placed for railroad fuel coal loading in excess of a mine's daily distributive share must be counted against the mine if the contract or other arrangement on which the coal is taken does not, (1) cover the entire output of the mine for the purchasing railroads, and, (2) run for a period of at least six months.

Contracts made after the effective date of Service Order No. 18 and before November 1, 1920, to expire at the end of the current coal year, March 31, 1921, and which cover the entire output of the mine for such period will be considered as contracts for entire output for a period of six months or longer within the meaning of the Service Order.

Where a coal producer operates more than one mine in the same district and sells the entire output of a mine for railroad fuel coal for not less than six months, cars assigned for such daily full output loading may be rotated from mine to mine of such producer day by day, in order, in good faith to give substantially equal working time to all such producer's mines in that district.

Where railroads purchase fuel coal in quantities measured in tons, such contracts should be revised prior to November 1st to come within the provisions of the service order if it is desired or intended to assign cars to protect loading in excess of the distributive share of the mine for any day.

Where two or more railroads together, by contract or other arrangement, take the entire output of a mine for a period of not less than six months, cars may be assigned in excess of the distributive share of the mine for any day to protect such loading.

Permits for Open Top Cars

The Car Service Division has issued Circular CSD-89, giving an outline of instructions to govern the use of open-top cars when necessary to move material other than coal or coke in a direction prohibited by I. C. C. Service Order No. 20. All permits in series Nos. 1 to 633, inclusive, which expire October 11, 1920 (except for sugar beets), will be discontinued as of that date. All permits in series Nos. 1 to 633, inclusive, which have no expiration date, and all which automatically expire as of October 19, 1920 (except for sugar beets), will be canceled as of October 19, 1920. Permits issued, effective October 14 and thereafter, will receive a new series of numbers beginning with 1,001, and will be effective for 30-day periods only.

The order of procedure in brief is as follows:

1. The consignee must make application for all permits.

2. The applicant must first consult with the carrier to ascertain if suitable cars can be procured without obtaining a permit. If the carrier is unable, after proper attempt is made, to furnish cars, he will so notify the applicant in writing.

Note.—Consignee may make application for immediate shipment to the shipper, giving all necessary details. The shipper will present consignee's application to the carrier to ascertain if suitable cars can be procured without obtaining permit.

3. When the applicant is assured by the carrier that suitable cars cannot be furnished, he will then make application through the Car Service Division of the American Railway Association.

4. Upon receipt of the application, the Car Service Division will, if the application meets with the foregoing conditions, communicate with the carrier to assure itself that suitable cars cannot be furnished without a permit.

5. When it is found that all avenues for securing suitable cars are closed, the Car Service Division will then submit all the facts to the Bureau of Service. For the sake of uniformity in policy, a responsible officer of the Car Service Division should make a recommendation as to granting or denying the permit.

6. If satisfied that the application should be granted, the Bureau of Service will draft a permit for the approval of the commission.

7. Permits for so many cars per day or other period will not be cumulative.

8. No permit will be issued for roadway material unless accompanied by a statement from the Bureau of Public Roads to the effect that the work is essential in the interest and welfare of the public.

9. No permit will be issued for industrial, municipal, federal or railroad projects unless such permit is accompanied by a statement from either a representative of the Interstate Commerce Commission or the Car Service Division who has personally investigated the project and finds that it is an emergency proposition and in the interest and welfare of the public to grant it.

10. No permit will be issued unless the applicant can show that he has made proper request upon the carrier for suitable cars and has been advised by the carrier that such cars cannot be furnished. Upon receipt of this advice, the Car Service Division will then take the matter up with the carrier to satisfy itself that proper cars cannot be furnished without the issuance of a permit.

The form of permit that will be issued under the new series, states, "the railroad company is hereby permitted to furnish open-top cars." The old permits stated that "The Commission on Car Service as agent for the railroad is hereby authorized and directed to cause said railroad to furnish open-top cars."

Railroads are required to exhaust every resource to protect requests for use of coal-loading cars by supplying other types of cars that are or can be made suitable for such loading. With the near approach of cold weather the necessity for restricting coal cars to the coal service is apparent, because of the low visible supply of coal for railroad, domestic and commercial needs.

Operating statistics for the month of July made public by the Interstate Commerce Commission show that the railroads during that month handled 15.2 per cent more freight traffic than in July, 1919, a total of 40,232,000,000 net ton miles as compared with 34,916,000,000 in July, 1919. For the first seven months of 1920 the number of tons of freight hauled one mile was 248,999,000,000, which is an increase of 17.1 per cent as compared with the first seven months of 1919. It also represents a greater volume of freight than has ever before been handled by the railroads in the first seven months of the year.

The commission's statistics also indicate some of the methods by which the railroads have been able to handle this great increase in traffic. For the month of July the number of tons of freight handled in each train was 759 as compared with 761 in July, 1919, and the average number of tons of freight per car was 29.7 as against 28, while the average mileage per freight car per day was 26.2 as against 24.1 in 1919. The average number of serviceable cars on line daily was 92.8 per cent as against 91.2 per cent in July, 1919.

The report also includes figures showing the increased cost of freight train operation for certain selected accounts, which total $1.89 per freight train mile in July, 1920, as compared with $1.54 in 1919. The increase in the cost of locomotive repairs was 7 and two-tenths cents per mile; wages of enginemen increased 5½ cents per mile; fuel 15 cents per mile; engine house expenses 1-7/10 cents, and wages of trainmen, 5½ cents. The average cost of coal per net ton was $4.25 as against $3.12 in 1919. For the New England roads coal cost $9.49 as against $5.26.

Automatic Train Control Discussed at Chicago

Two Papers Presented at Joint Meeting of Western Society and Signal Division of the A. R. A.

ON THURSDAY evening, October 21, the automatic train control problem was presented at the rooms of the Western Society of Engineers, Monadnock building, Chicago, on the occasion of a joint meeting of the Western Society and the Chicago Sectional committee, Signal division, American Railway Association. The principal feature of the evening was the presentation of papers prepared by W. P. Borland, chief, Bureau of Safety, Interstate Commerce Commission, and W. B. Murray, chief engineer, Miller Train Control Corporation. Abstracts of these papers are presented below:

The Government Viewpoint

By W. P. Borland

Chief, Bureau of Safety, Interstate Commerce Commission

Fourteen years ago the Interstate Commerce Commission was directed by a resolution of Congress to investigate and report in regard to the use of, and necessity for block signal systems and appliances for the automatic control of railway trains. The first report in response to this resolution was submitted by the Commission to Congress under date of February 23, 1907. Concerning automatic train control systems, but little information was available and no conclusions or specific recommendations were made other than that further investigations, including tests, should be made.

A Block Signal and Train Control Board, appointed by the commission in 1907, conducted exhaustive investigation in regard to automatic train control devices in use, as well as those available for use, and made experimental tests of six or eight automatic train control devices, which were installed for experimental purposes. Since the abolishment of this board in 1912, the Bureau of Safety of the Interstate Commerce Commission has continued the investigation of automatic train control and other safety devices, and has conducted additional experimental tests of devices which have been developed during recent years.

As a result of these investigations and tests covering a period of 14 years, the commission is in possession of a considerable fund of reliable information relative to automatic train control devices. During this period much progress has been made in the development of train control systems and the application of these devices to railroad operating conditions and requirements. It has become apparent, however, that but little further advancement of the art of train control can be accomplished by experimental tests such as have heretofore been conducted under government supervision. Most of the tests referred to have been made with a track installation of only a few miles and usually with only one locomotive equipped with the apparatus. But the accomplishment of the functions of a number of these devices under service conditions on a limited scale and for the comparatively short periods covered by official tests has led to the conclusion that the next logical step in their development is their installation and use in actual service on a more extended scale and for more extended periods of time; in other words, further development can properly be accomplished only by placing these devices in the service for which they are intended. This is necessary for the purpose first, of developing sufficiently rugged and reliable apparatus to fulfill service requirements, and second, to secure additional information regarding the application of these devices to meet varied operating conditions and requirements.

Three of the conclusions stated by the Automatic Train Control committee of the United States Railroad Administration in its report of December 31, 1919, are pertinent:

"1. That the relative merits of the various types of automatic train control can not be determined until further tests have been made.

"2. That more extended service tests, including complete records of performance, are necessary before a decision can be reached on the availability for general practical use of any of the devices that have been brought to the attention of the committee.

"4. That on lines of heavy traffic, fully equipped with automatic block signals, the use of train control devices is desirable."

Accident Investigations by the Bureau of Safety

As to the necessity for automatic train control devices, a study of the accident-investigation reports of the Bureau of Safety is illuminating and convincing. The following tabulation contains a summary of collisions investigated which occurred in automatic block-signal territory, caused by failure of enginemen to observe or be governed by signal indications.

TRAIN ACCIDENTS INVESTIGATED BY THE INTERSTATE COMMERCE COMMISSION, 1912-1920.

Cases in Automatic Block Signal Territory Where Enginemen Ran Past Stop-Signals

Date	Road	Place	Kind of Accident	Persons Killed	Persons Injured
1911—Sept. 4	L. S. & M. S.	Dock Junc., Pa.	xc	3	36
Oct. 19	P. Marq.	Detroit, Mich	bc	1	44
Nov. 2	Erie	Smithboro, N. Y.	bs	1	0
Dec. 9	C. M. & St. P.	Corliss, Wis.	bc	1	3
1912—Feb. 17	Penn.	Larwill, Ind.	rc	4	11
Feb. 20	Bos. & M.	No. Adams	rc	4	2
July 4	D. L. & W.	Corning, N. Y.	rc	39	102
July 14	C. B. & Q.	Western Spgs.	rc	13	29
Oct. 18	D. L. & W.	Hallstead	rc	2	0
Oct. 27	Lehigh V.	Homet's Ferry	rc	1	1
1913—Mar. 14	Union Pacific	Gothenberg	rc	4	13
Mar. 14	Union P.	Herndon	rc	5	2
July 27	Lehigh V.	Slatington	rc	1	31
July 30	Penn.	Tyrone	rc	1	216
Sept. 2	N. Y. N. H. & H.	No. Haven	rc	21	42
Sept. 4	C. M. & S. P.	Penfield	bc	2	11
1914—Jan. 29	Penn.	Conemaugh	rc	3	5
1915—Jan. 1	C. B. & Q.	Liberty, Mo.	bc	0	16
May 17	S. P., L. A. & S. L.	Los Angeles	bc	0	4
Aug. 4	N. Y. N. H. & H.	Atlantic	xc	0	23
Nov. 24	Southern	Salisbury	rc	2	38
Dec. 23	D. L. & W.	Slateford J'n.	rc	2	9
1916—Feb. 5	So. Pac.	Jackson, Utah	rc	1	1
Feb. 7	C. & N W.	Dunlap, Iowa	rc	4	2
Feb. 22	N. Y. N. H. & H.	Milford	rc	10	152
Mar. 29	N. Y. C.	Amherst, O.	rc	26	62
July 18	St. L. & S. F.	S. Greenfield	bc	0	31
Oct. 5	Penn.	Lewiston J'n.	rc	2	6
Oct. 23	Union P.	Bushnell	rc	2	25
1917—Jan. 17	No. Pac.	Marshall	rc	3	0
Feb. 27	Penn.	Mount Union	rc	20	5
Mar. 25	Lehigh V.	Yale, N. Y.	rc	3	1
Mar. 24	No. Pac.	Kanaskat	rc	0	3
May 26	Ft. W. & N. I.	Logansport	bc	0	9
Aug. 14	So. Pac.	Hafed, Nev.	bc	4	2
Aug. 19	Penn.	E. Pittsburgh	xc	3	2
Sept. 16	C. B. & Q.	Earlville	rc	7	3
Nov. 11	Phil. & R.	Emaus, Pa.	rc	1	0
Nov. 11	West. Md.	Garrett Sta.	bc	1	5
Dec. 29	D. & O.	North Vernon	bc	8	53
1918—May 13	N. Y. C.	Schodack Land'g.	der	4	99
June 22	Mich. C.	Ivanhoe, Ind.	rc	60	128
Aug. 2	P. C. C. & St. L.	Walkers Mill	rc	3	0
Aug. 22	Erie	West Salem	rc	2	2
Sept. 10	Boston & M.	Dummerston	rc	3	25
Sept. 17	St. L.-S. F.	Marshfield	bc	14	41
Sept. 26	D. & H.	Essex Siding	bc	2	3
Oct. 14	D. & H.	Scholarie J'n.	rc	2	2
1919—Jan. 12	N. Y. C.	South Byron	rc	20	130
Jan. 13	Phil. & R.	Ft. Washington	rc	13	29
Jan. 18	Penn.	West Phila.	rc	1	10
Jan. 20	C. & N. W.	Irving Park	rc	2	10
Jan. 25	C. of N. J.	White House	rc	1	0
July 19	Lehigh V.	Upton, N. Y.	rc	2	2
July 31	N. Y. N. H. & H.	E. Portchester	rc	2	1
Aug. 9	St. L.-S. F.	Adamsville	bc	3	28
Aug. 24	W. J. & S.	Elwood, N. J.	rc	1	19
Sept. 19	N. Y. C.	Buffalo	rc	0	105
Nov. 17	Penn.	Lancaster	der	2	1
Dec. 18	N. & W.	Walton, Va.	rc	5	12

Date	Road	Place	Kind of Accident	Persons Killed	Persons Injured
1920—Feb. 15	Ala. Gt. S.	Trussville	bc	5	1
Feb. 26	C. St. P. M. & O.	Eau Claire	rc	0	14
Mar. 3	C. of N. J.	Elizabethport	xc	4	17
Mar. 14	So. Mich.	Leeper's, Ind.	rc	1	10
May 3	O. W. R. R. & N.	Huron	bc	1	15
June 9	N. Y. C.	Schenectady	rc	15	43
June 14	D. & H.	Gansevoort	rc	2	1
June 15	Bost. & Alb.	Worcester	rc	0	54

Explanation of abbreviations—rc, rear collision; bc, butting collision; xc, crossing or side collision; der, derailment. The statement of cause as given in the record shows, in each of sixteen or more cases, two or more contributing causes. In several instances the main fault was neglect to run with speed fully under control after passing a caution signal, which the engineman had seen and acknowledged he had seen. In two cases, February 20, 1912, and March 25, 1917, the fault may have been in the signal apparatus.

The Transportation Act

The Transportation Act, 1920, materially increases the powers of the commission with respect to automatic train control and other safety devices. Section 26 of the amended act provides in part as follows:

"That the commission may, after investigation, order any common carrier by railroad subject to this act, within a time specified in the order, to install automatic train-stop or train-control devices or other safety devices, which comply with specifications and requirements prescribed by the commission, upon the whole or any part of its railroad, such order to be issued and published at least two years before the date specified for its fulfillment. * * *"

The administration of this section of the law is now before the commission for consideration, and plans for carrying out its purposes are being formulated. It is the purpose of the commission shortly to inaugurate the work of further developing available train control devices, looking to their practical use by railroads in locations which may be decided upon by competent authority, and to this end it has invited the co-operation of the American Railroad Association. It has been suggested that a representative committee be appointed to co-operate with the Bureau of Safety for the purpose of working out the details of a practicable plan for effectuating the purpose of Section 26 of the Interstate Commerce Act.

The enactment of this legislation marks an epoch, from the government viewpoint, in the development of the art of automatic train control. The period of experimentation has passed; the necessity for automatic train control has been established and the question as to the practicability of automatic train control has been answered in the affirmative. The primary purpose of the former legislation, namely, to determine whether the automatic control of trains is feasible, has been accomplished, and opportunity has been afforded the proprietors of such devices to secure unbiased reports, to develope them along proper lines, and in some cases to conduct experiments and to demonstrate the merits of their devices. The termination of this period of experimentation ushers in a period of practical development. The present automatic train control problem is not one of invention, but rather one of engineering; the product of the inventor is to be taken over by the engineer and developed and applied for the useful service for which it is intended.

The recently enacted legislation contemplates that the locations where installations are to be made shall be designated and that specifications and requirements to which the devices to be installed in these designated locations must conform, shall be prescribed by the commission. There has been more or less criticism of the "requisites" and "desirable characteristics" for automatic train control systems which have been promulgated from time to time by different bodies, the burden of complaint being, on the one hand, that requisites covering all systems and operating conditions resulted in excessively severe requirements, and, on the other hand, that desirable functions and features were not specified in sufficient detail.

The terms of the provision of the present law, however, apparently preclude such difficulties. Specifications and requirements prescribed for a device which is to be installed in a designated location no doubt will cover the functions to be accomplished by the apparatus as well as the characteristics of the apparatus itself.

The installation and use of an automatic train control device by a railroad company offers far greater promise of successful application and operation than does the installation of a device of this character by the inventor or proprietor made for the purpose of an experimental test. The inventors or proprietors of these devices frequently are not signal men or competent engineers, and in many cases they have no proper conception of railroad operating conditions and requirements; the financial resources of many of them have been extremely limited. Notwithstanding these facts, such men have been given practically a free hand in making experimental installations, the principal and in some cases the only apparent concern of the railroad company being that the proper operation of trains should not be interfered with.

The administration of Section 26 of the Interstate Commerce Act will inevitably result in great strides in the development of the art of automatic train control, and I confidently anticipate that we shall shortly have in service adequate installations of automatic train control devices which will permit an engineman to handle his train without interference as long as he does so properly, but will intervene to stop his train if he disregards the stop indication of an automatic block signal or runs at excessive speed where speed restriction is prescribed.

The Problems of Automatic Train Control

By W. B. Murray
Chief Engineer, Miller Train Control Corporation

The question of desirability of the automatic train control has been answered in the affirmative by many witnesses and by some unmistakable facts. In view of the tests and records of years of actual service, it is inconceivable that any railroad officer responsible for the safe operation of trains would hesitate to favor the use of the automatic train control, provided, of course, that such devices meet his operating requirements and at a cost commensurate with results.

It has been demonstrated beyond a doubt that the display of signals or signs along the right of way or in the cab does not stop the train (in case of danger) should the engineman for any reason fail properly to interpret the signals and apply the brakes. Therefore, it is a well recognized fact today that the only way of reducing to a minimum the dangers of collisions and certain classes of derailments is through the employment of mechanical means to enforce absolute obedience to signal indications and track conditions.

The principal devices which have been tested on railroads and which are in use today are the trip type, such as the Kinsman system in the subway of New York; the induction type, in service on the Western Pacific in California; the intermittent electrical contact or ramp type in service on 19 miles of single track on the C. & O., 25 miles of double track on the Rock Island, and on 107 miles of double track on the Chicago & Eastern Illinois. The general results of the experiences with the above mentioned devices have been more or less successful and have warranted further trials and use, until today there are automatic train controls in actual service, handling all classes of trains and handling them satisfactorily, according to the testimony of officers and trainmen who are using them.

The ramp type has been in actual service on different roads long enough to answer the clearance question (at least on roads using it), to satisfy the officers as to the permanency and dependability of the different forms of construc-

tion and to answer fairly correctly the question as to cost of installation and maintenance.

The Problem of Refinement

Among the problems confronting the railroads in the installation of automatic train control is the one regarding the extent to which they desire to go in the first stages; that is to say, what functions may be desirable over and above the control or stopping of the train for stop signals? The development of the air brake and the visual signal certainly furnish the only logical example to be followed in the evolution or refinement of the automatic train control. It was only through long usage and steady development and improvement, a little at a time, that the air brake and the visual signal attained their high state of efficiency and became practically indispensable. The automatic train control development has been along similar lines and now claims the same consideration from all thoughtful railroad officers.

The automatic train control not only stops the train when there is danger ahead, but by the same installation and the laws governing it, indicates the clear signals, thereby warning the engineman that they are approaching a signal, that the signal is clear and that it is safe to proceed. To this extent the automatic train control facilitates traffic, as well as providing added protection against collisions and certain classes of derailments.

On one railroad a service application of the brakes is made when a caution signal indication is displayed and approaches a signal displaying a "stop" indication under control; on another railroad the officers decided that the first essential in operation was to insure a *stop* for a stop signal indication, so ramps were placed within braking distance of the signal, allowing the engineman to handle his brakes as his experience and judgment directed. In the main this has resulted in general satisfaction; the high speed passenger trains make a satisfactory and smooth signal stop; enginemen on freight trains lap the valve as soon as the desired reduction is obtained.

If it is necessary for the engineman to make a station or water plug stop between a ramp and a stop signal, he will bring his train under control, and by a wilful act let himself over the ramp. Under this form of operation the engineman has absolute control. But it should be specifically noted that he must perform a wilful, deliberate act at the time he is passing a control point or ramp. otherwise he will receive a brake application. *He does not cut out the control—he clears himself.*

What the Installation of Automatic Train Control Has Accomplished

It has been demonstrated beyond controversy that the automatic train control *enforces* the application of the brakes, eliminating all danger from the possible failure of the human element.

On different occasions articles have been written and statements made that the use of an automatic train control would have a tendency to make the engineman careless, but observation based on a careful watch and check extending over a period of several years' service operation on a railroad using an automatic train control shows that the contrary is true. The use of the automatic train control has a tendency to keep an engineman wide awake and on the job. This is a demonstrated fact and experienced men in the service bear testimony thereto.

Statements also have been made that the use of an automatic train control would retard traffic. The answer to these statements is that its use facilitates traffic under certain conditions, and it will enable the railroads to run more trains with added protection.

Some control enthusiasts have taken the stand that the automatic train control would take the place of the signal. This idea is erroneous and the facts all go to prove that the automatic train control is an adjunct to the roadside, or visual signal, and its primary function is to enforce obedience to fixed signal indications.

It has also been observed in years of experience that very frequently in a trip over the road an engineman will receive a caution signal indication and find his next signal at stop, when just about the time that he applies his brakes and the train is retarding, the signal will assume the proceed position. All will agree that it is good railroading for the engineman to release his brakes and proceed according to the visual indication.

The Clearance Problem

All who are familiar with the automatic train control know that an air gap of several inches exists between the locomotive and the roadbed at a line even with the top of the running rail. This gap must be bridged and thus we are confronted with one of the greatest problems, namely, clearance. The roadside or track member must not interfere with the rolling stock, or vice versa. But there is no good reason to say that the present position of roadside members is final, or that the distance out and up from the running rail is arbitrarily established. But standardization of clearances for the automatic train control will be established when the occasion demands it.

The Maintenance and Operating Problems

The maintenance of the simpler forms of automatic train controls is very low compared to the benefits derived and as compared with other devices that are in use on locomotives. It has been found that the regular engine inspectors can take care of the device the same as the other parts of the locomotive, and that repairs and maintenance are made by the regular maintainers in the different shops and roundhouses. In other words, it does not require a large force of specially trained or technical men to install and maintain the engine equipment.

The roadside or track members of the successfully demonstrated devices in use on steam service railroads today are stationary. That is, they are attached to the ties adjacent or between the running rail. Years of constant service have shown that there is very little, if any, appreciable wear on the ramps. The maintenance of the ramps is taken care of by regular trackmen, and the electrical connections are looked after by the regular signal maintainers.

So far as known, there has been no change in the book of rules brought about because of the operation of the automatic train control, and an engineman is not relieved of any responsibility nor is the discipline lessened.

In conclusion, it should be emphasized that the results of the operation of the automatic train control have conclusively proved that:

(1) It enforces obedience to signal indications and track conditions and automatically stops the train for a stop signal if the engineman fails to act.

(2) In fogs and storms it helps the engineman in the better handling of his train by giving him a clearance indication (if the signal is clear) at braking distance from the signal, and to this extent actually facilitating traffic.

(3) It performs its functions properly under all weather conditions which will permit running of trains.

The Price Cutting Wave.—As an element in the price readjustment, the improvement in railroad transportation, which has made possible a more adequate distribution of commodities, is of no inconsiderable importance.—*Dun's Review.*

Maintenance Allowance During the Guaranty Period

Counsel for Executives Contend It Should Be Measured by Physical Condition Rather Than by Expenditure

WASHINGTON, D. C.

ALFRED P. THOM, S. T. Bledsoe and J. P. Blair, as a committee of counsel for the Association of Railway Executives, have filed with the Interstate Commerce Commission a brief in reply to the brief of the director general of railroads on the interpretation and application of the paragraph of Section 209 of the transportation act relating to the allowance for maintenance during the guaranty period. The brief of the director general, which was abstracted in the *Railway Age* of September 3, page 401, took the position that the director general's obligation during federal control, which under the act is made the basis for the allowance to be made for maintenance during the guaranty period, should be based on the expenditure of money, while the executives contend that wherever possible it should be measured on a basis of physical reparation. The original brief of the Association of Railway Executives was also published in the *Railway Age* of September 3, page 397. An abstract of the reply brief is as follows:

Cost of Labor and Materials

In view of the fact that, in the course of the negotiations which resulted in the adoption of the standard form of contract, the government declined to accept the expression suggested by the carriers as to "the efficiency of labor," where the contract undertakes to deal with the comparison of maintenance during the period of federal control, and the fact that the carriers declined to accept the expression suggested by the government as to "the price" of labor in the two periods respectively, it becomes necessary to interpret properly the term "cost of labor" which was agreed to by both parties, and which appears in the contract.

The government contends that the contract as written calls for a mere "money test," and requires only a comparison of the aggregate amount of money expended in the two periods as shown by the books—that the contract does not contemplate a comparison of the amounts of physical reparation except that, as the government contends, the parties have agreed that, for the purpose of adjusting their accounts, the comparison of physical reparation is sufficiently reflected in the amount of money expended without reference to actual physical reparation.

In other words, the director general contends that, under the terms of the contract, all questions of the condition of the property at the time it is returned has been waived by the carriers, and that the government has no responsibility whatever for this condition beyond expending an agreed sum of money.

The director general in making a contract with the carriers was acting as the agent of the president, and it can not be successfully contended that it was within his power, or that it was his purpose to disregard the assurances of the president and the act of Congress passed to redeem those assurances.

Certainly, unless the language used in the contract is susceptible of no other construction, it can not be successfully contended that the contract must be construed to disregard the physical condition of the property during and at the end of federal control, in view of the fact that both the president and Congress adopted the physical test and gave assurance to the carriers that physical condition should not only be considered, but that the condition of the property should be as good when the property was returned as when it was taken over.

If, therefore, it is possible to read into the terms "cost of labor and material" (during federal control), which are used in the contract as the things to be compared with the cost of labor and material during the test period, a recognition of the duty of the government to have regard to the physical condition and not merely a money test, then every canon of construction would require this to be done.

We respectfully submit that it is not only possible to do this, but the very language of the contract itself requires it to be done. The concluding words of paragraph (*c*) of Section 5 require that the comparison of the cost of labor and materials shall be made "so that the result shall be, as nearly as practicable, the same relative amount, character, and durability of physical reparation." When the president was assuring the carriers that there should be, under federal control, the same relative amount, character, and durability of physical reparation as during the test period, and when Congress by its enactment was requiring that the property of each carrier be returned to it in substantially as complete equipment as at the beginning of federal control, it is impossible, it seems to us, to conclude that the contention of the director general is sound that physical condition must be disregarded and the money test alone applied.

On page 17 of the director general's brief the contention is made that the "cost" of a thing is synonymous with the "price." This manifestly is true only if the thing is the same. In this case, price has reference to hourly or daily wage; cost has reference to the labor job. The price of labor by the day or by the hour is, of course, not synonymous with the cost of labor to do a certain amount of physical reparation.

If, in order to satisfy the covenant of the government, it became necessary during federal control to put into the property 100 tons of steel rails because in the period with which comparison is required 100 tons of steel rails had been put into the property, the cost of labor to do that job would in no sense be synonymous with the price of labor by the day or by the hour; and yet if the physical reparation is required to be made in accordance with the assurance of the president, with the requirement of the act of Congress and of justice to the owners, it is entitled to have that quantity of 100 tons of steel rails not only bought but put into the property, and is entitled to have the cost of doing this piece of physical reparation paid by the government.

The cost of doing the maintenance involved in putting into the property this item of 100 tons of steel rails to correspond with 100 tons of steel rails put in during the test period, would be made up of the cost of the rails plus the cost of the labor of putting them in place. The proposal of the government is to equate the hourly wage and not to equate the number of hours. It is manifest, therefore, that the contention of the government is to equate only one element which makes up the cost of labor and to omit the other.

For the purpose of testing further the correctness of the director general's interpretation of the word "cost" let us assume that a given carrier inserted on the average during the test period 100,000 ties per annum; that one hour of labor was required for the insertion of each tie, and the price of labor was 20 cents an hour. Let us further assume that during the period of federal control the price of labor was 40 cents an hour, and it required an hour and a half to insert a tie of exactly the same kind inserted during the test period under similar conditions. Under the director

general's theory the cost of insertion of the tie during federal control would apparently be only 40 cents, whereas the actual cost is 60 cents. The director general therefore, would, in determining the amount he would be required to expend for the insertion of ties during each year of federal control, multiply the amount expended by the carrier for that purpose, to wit, $20,000, by two, the price of labor having doubled, and would secure a factor of $40,000. However, inasmuch as the actual cost to insert the ties was 60 cents, the $40,000 maintenance allowance established by his method of equating would pay the cost of installation of only 66,666 ties, and notwithstanding the carrier had, on the average during each year of the test period, inserted 100,000 ties, the director general would discharge his obligation to the carrier, so far as the insertion of ties was concerned, by inserting in each year of federal control only 66,666 ties, or two-thirds of the number inserted by the carrier in each year of federal control. If, however, the director general should have in fact inserted 100,000 ties in each year of federal control he would have, in addition to the discharge of his obligation as to the insertion of ties, a further charge of $20,000 per annum against the maintenance allowance of the carrier. Can such an interpretation of the word "cost" as it appears in paragraph (*c*) of Section 5, in view of what precedes and follows that word, be justified from the standpoint of the language of the contract, the federal control act, reason or justice? Undoubtedly to get a proper equation factor for ascertaining the cost of any unit of physical reparation it is as necessary to consider the time employed in effecting such reparation as the price of the labor employed therein.

It seems to us there can be no escape from the conclusion that the term in the contract "cost of labor" must be construed, in all matters capable of physical comparison, the entire cost of labor and not a part of it only.

Of course, there are certain matters of maintenance which are not capable of a physical comparison, but, so far as a physical test can be applied, our contention is that it must be applied, because the contract states, in conformity with the assurances of the president and the requirement of the act of Congress, that, even under the proviso of paragraph (*a*) of Section 5, the physical test of reparation must be applied "as nearly as practicable."

The Director General's Primary Obligation

The contention is made in the director general's brief that the interpretation and effect of paragraph 5-(*a*) and the proviso thereto may be briefly described as each fixing an expenditure basis as the sole test without regard to the extent or character of physical reparation.

It is argued in support of this interpretation that the properties were too large and too complex to permit the ascertainment of the relative physical condition thereof at the beginning and end of federal control, or the relative amount, character and durability of physical reparation, and that this being true only those provisions relating to expenditures should be given effect. That there should in effect be eliminated from consideration the requirement of the primary obligation that the property "be returned to the companies at the end of federal control in substantially as complete repair and in substantially as complete equipment as it was on January 1, 1918," and the requirement of the proviso "that the result shall be, as nearly as practicable, the same relative amount, character, and durability of physical reparation."

The director general refers to his primary obligation as "that part of Section 5-(*a*) preceding the proviso." The purpose of the argument is to support his interpretation of the proviso by arguing that such interpretation is persuasive because in harmony with the requirements of his primary obligation. Counsel for the carriers agree that an interpretation should be given to the proviso of Section 5-(*a*) and of 5-(*c*) that will render the requirement imposed on the director general in the optional settlement he is permitted to make under the proviso as nearly as possible harmonious with the requirements of his primary obligation. It should not be assumed that separate and independent standards are set up by the primary obligation and the proviso, but that the proper application of the proviso will, at least in all cases where there is no substantial abnormality, produce the same results required by the primary obligation. A careful consideration of the requirements of the director general's primary obligation discloses not even the slightest reference to the annual expenditures of the carrier during the test period. It requires that the director general expend *"in payments for labor and materials, or by payments into funds, such sums for the maintenance, repair, renewal, retirement, and depreciation of the property described in paragraph (a) of Section 2 hereof as may be requisite in order that such property may be returned to the company at the end of federal control in substantially as good repair and in substantially as complete equipment as it was on January 1, 1918."* (Italics ours.) The sole test under the primary obligation of the adequacy of the expenditures made by the director general is the physical condition of the property and its completeness of equipment at the beginning and at the end of federal control.

Necessarily an expenditure is involved in making physical reparation and in effecting the return of the property in substantially as good condition and in substantially as complete equipment as at the beginning of federal control. *The expenditure and payment into funds is the medium, but the physical condition of the property is the measure.* If the property was not in substantially as good repair and in substantially as complete equipment at the end as at the beginning of federal control this situation is met by a requirement of payment into funds to be delivered to the carrier of an amount necessary to enable the carrier to place such property in substantially as good repair and in substantially as complete equipment at the end as at the beginning of federal control. Therefore, any interpretation of the proviso to render it harmonious with the requirements of the primary obligation must give substantial and important effect to the physical reparation requirement.

The carriers say that the final test of the adequacy of expenditures as made by the director general under the proviso is whether or not the result was in each year of federal control "as nearly as practicable the same relative amount, character, and durability of physical reparation." This interpretation is in entire accord and harmony with the primary obligation. In the normal case, if consideration be given to the relative quantum and use of the property "the same relative amount, character, and durability of physical reparation" must result in returning the property to the carrier "in substantially as good repair and in substantially as complete equipment as it was on January 1, 1918." The "money test" is, by the terms of the contract, made subject to the requirement of physical reparation. The "money test," therefore, can be applied only where no physical reparation measure can be found. It must then be applied for the purpose and to the end of, so far as practicable, accomplishing physical reparation and not to the end and with the purpose of avoiding the making of physical reparation.

If the interpretation suggested in the director general's brief is to prevail there are two absolutely independent and inharmonious standards of settlement, of which the director general may avail himself, neither one of which has, so far as results required are concerned, any dependency upon, or any direct relation to, the other, because the unquestioned measure of the expenditures required under the primary obli-

gation is that they, together with the payment into funds, must accomplish a return to the carrier of its property in substantially as good repair and in substantially as complete equipment as when taken over. On the other hand, under the proviso as interpreted by the director general, all that is required is that a certain amount of expenditures shall be made and it is immaterial what, if any, physical reparation resulted therefrom.

Further as to Cost of Labor and Materials

One of the reasons urged by the director general as justifying his interpretation of the words "the cost of labor and materials," as the equivalent of the words, "the price of labor and materials," for which they were substituted, is that in the carriers' draft of standard clauses of March 22, 1918, there was a provision requiring that "in addition to the increase in the price of labor" allowance should be made for decrease in the efficiency of labor, and that this provision was rejected by him. It is true there was such a provision in the draft of March 22, 1918, submitted by the carriers, and that such provision was objected to by the director general. Following this objection and on April 4, 1918, the first government draft was presented to the carriers and the provision tendered in that draft in lieu of the provision objected to was as follows:

"In comparing the amount thus expended and reserved by the director general with the amount expended and reserved by the company during said period for three years, due allowance shall be made for any difference that may exist between the *price* of labor and materials and between the amount of property operated during the quarter year of federal control and the average for the said three years, *so that the comparison shall be reduced to a basis of relative physical reparation.*" (Italics ours.)

As a result of the negotiations this provision was modified and enlarged as it finally appeared as paragraph (*c*) of Section 5 of the standard clauses and is here reproduced for ready comparison:

"(*c*) In comparing the amounts expended and charged under the provisions of paragraphs (*a*) and (*b*) of this section with the amounts expended and charged during the test period, due allowance shall be made for any difference that may exist between the *cost* of labor and materials and between the amount of property taken over and the average for the test period, and, as to paragraph (*a*), for any difference in use between that of the test period and during federal control which in the opinion of the commission is substantial enough to be considered, so that the result shall be, *as nearly as practicable, the same relative amount, character, and durability of physical reparation.*"

It will be observed as a result of the negotiations and of the carriers' objections to the word "*price*" as coupled with the requirement "*so the comparison shall be reduced to a basis of relative physical reparation*" as wholly inadequate and as not properly measuring the director general's liability under the federal control act and the proclamation of the president, the word "*cost*" was substituted for the word "*price*" and the words "*so that the result shall be, as nearly as practicable, the same relative amount, character, and durability of physical reparation*" were substituted for the words "*so that the comparison shall be reduced to a basis of relative physical reparation.*" While in March, 1918, at the beginning of the negotiations the director general objected to the use of the words "efficiency of labor," before the conclusion of the negotiations he agreed to a substitution of the word "cost" for the word "price" (and not for grammatical purposes) and to the substitution of a definite requirement that the result of the adjustment to be made under paragraph (*c*) "shall be, as nearly as practicable, the same relative amount, character, and durability of physical reparation" instead of "so that the comparison shall be reduced to a basis of relative physical reparation."

The carriers respectfully insist that the substitution of the word "cost" for the word "price" and the use of the word "cost" in the connection and setting in which it is used necessarily requires that in making the adjustment provided for in paragraph (*c*) every factor enhancing cost must be included, because, among other things, the physical reparation result required cannot be accomplished unless the word "cost" is so interpreted.

Further Tests of the Director General's Interpretation

1. The director general may discharge his primary maintenance obligation by showing that the property of the carrier was returned to it in substantially as good repair and in substantially as complete equipment as when taken over. He has at all times reserved to himself this right. Suppose the director general elects to settle with the carrier under his primary obligation by returning its property in substantially as good repair and in substantially as complete equipment as when taken over. Who then bears the cost of the inefficiency of labor, and any and all other costs in excess of the amount produced by equating only the price of labor and materials? Can it be questioned that in such case every factor of cost of such return, whether resulting from inefficiency of labor or otherwise, must be borne by the director general? Can it be further said that if the director general elects to settle under the proviso that by that election he effectively shifts the responsibility to the carrier for inefficiency and other elements of labor costs not reflected in an equation based on prices only? If the director general settles under his primary obligation he undoubtedly is not only responsible for, but bears the burden of every element, including inefficiency of labor, entering into such cost. What is there to indicate that a different rule is intended where the settlement is under the proviso?

2. Suppose the director general elects to settle with one carrier under his primary obligation and with another carrier under the proviso, must the contract be so interpreted that while he is, under his primary obligation, unqualifiedly required to bear all the cost (including that of inefficiency of labor) of returning the property in substantially as good repair and in substantially as complete equipment as when taken over, that the carrier which he elects to settle with under the proviso must bear all other costs than those reflected by the bare equation of the price of labor and material? Is it reasonable to assume in the light of the language used in the agreement that it was contemplated such inequitable and discriminating results might be accomplished thereunder?

3. Let us make another test of the reasonableness of the interpretation contended for by the director general. A large majority of the additions and betterments projects are in connection with maintenance work; that is to say, the same employees while engaged at one and the same time in the construction of additions and betterments and maintenance work, the two classes of work going along concurrently. This was equally as true while the director general was in charge of the properties as prior thereto. His employees were engaged at the same time in additions and betterments and maintenance work. The carrier is required to pay to the director general the cost of additions and betterments made by him to its property, and the director general is to allow the carrier a rate of compensation on the cost of such additions and betterments. The cost to the carrier of such additions and betterments as computed by the director general and charged to the carrier includes not only the increase in the price of labor and materials, but every other element going to make for increased cost, including inefficiency of labor. Are the costs to the carrier of additions and betterments under the agreement to include the

inefficiency of labor and other costs in addition to the increase in price of labor and materials, and the director general to be reimbursed therefor, and yet similar costs incurred by the director general in the maintenance of the property with the same employees and at the same time and on the same work to be treated, so far as such costs result from inefficiency of labor or causes other than increase in price of labor, so as to in effect charge to the carrier, rather than to the director general, all of such maintenance expenses which result from such inefficiency of labor or causes other than increase in price of labor?

4. It is provided in paragraph (*b*) of Section 8 that no claim shall be made by the carrier against the director general on the ground that the actual "cost" of additions and betterments at the time of construction was greater than under other market or commercial conditions; in other words, the carrier must be charged with the actual cost of such additions and betterments, including that resulting from the inefficiency of labor, or causes other than increase in the price of labor. Is the meaning of the word "cost" as used in paragraph (*c*) of Section 5 different from its meaning where used in paragraph (*b*) of Section 8?

5. Under paragraph (*e*) of Section 5 if the property of the carrier in possession of the director general is destroyed otherwise than by fire or public enemies and not restored or replaced, he must reimburse the carrier the cost of the restoration or replacement or the value of the property is to be charged to railway operating expenses. Does the word "cost" as here used mean the same thing as the word "cost" as used in paragraph (*c*) of Section 5? If so, under the carriers' interpretation the director general would be entitled to charge the entire cost of the restoration or replacement to operating expenses, but under the director general's contention all costs and elements of cost other than those based on price increases, including inefficiency of labor, would have to be borne by the director general and not charged against the carrier.

6. Many carriers prior to federal control used a piece-work basis for compensation of shop and some of their other employees. Many other carriers had bonus systems based upon piece-work studies, and yet other carriers had other bases for securing a day's work for a day's pay. The ten hour day generally prevailed among maintenance employees, and particularly roadway and track maintenance men. The bases above referred to and other similar bases were discarded by the director general and a basic eight hour day adopted, and a flat rate per day or per hour of compensation, with overtime pay, in many cases punitive, was substituted. Maintenance of way employees prior to federal control went to and from their employment on their own time. Under article 10 of supplement No. 8 to General Order 27 dated September 1, 1918, and effective that date, section men were assembled and went to and from a designated point on the company's time. The result of the establishment of a standard eight hour day reduced the actual working hours of the section men from ten to eight hours, and their traveling from a designated point to and from their work on the company's time reduced the actual working time approximately another hour, with the result that the actual working day of the section men was reduced from 10 to 7 hours. Under item 4 of supplement No. 7 of General Order 27, effective September 1, 1919, article 11-B it is provided:

"When employees are notified or called to work outside of the established hours they will be paid a minimum allowance of three hours."

From October 20, 1919, under rule 60 of the national agreement with railroad shop employees, one hour extra allowance was made to each employee each week regardless of the number of hours worked during the week where the employee was required to check in and out on his own time. This had particular reference to shop men. These are mere illustrations of the effect on the cost to accomplish a particular unit of physical reparation resulting from the director general's orders and as demonstrating the unfairness of limiting the adjustment required by paragraph (*c*) of Section 5 to the wage or price of labor.

In addition thereto a large percentage of the skilled mechanics in the employ of the railroad companies were either called into military service by the government, which was operating through the director general the properties of the carriers, or were attracted by higher wages paid by war industries at the instance of the government, to enter manufacturing pursuits. As a result of the change of the bases of pay and other changes made by the director general and the resulting decline in morale and the loss of skilled employees, it is a public fact, so well known that judicial knowledge might well be taken thereof, that the actual number of hours of labor required to accomplish a unit of physical reparation was in practically every case greater during federal control than during the test period, and consequently the actual cost of accomplishing any given amount of physical reparation far exceeded the mere increase in the price of materials and price of labor per day or per hour paid for maintenance work. The director general was in possession and control of the properties of the carriers and determined the amount of wages to be paid, the basis on which the same should be paid, and extra allowances that might be made in the form of punitive overtime, free time and otherwise, and it is just that he should be charged with the results of his own management in the maintenance of the properties of the carriers. It is manifestly unjust, in the light of the power and authority exercised by him, to say in effect the carrier must be responsible for all costs of the director general's maintenance, other than that resulting from an application of increase in the price of labor and material, and that this was what the carrier sought to do and it is what they believe they did by incorporation of paragraph (*c*) of Section 5 in the maintenance obligation of the director general.

7. Would it not follow under the director general's interpretation, that if a carrier inserting 100,000 first class ties on an average during the test period and these ties cost $1 each, the director general could comply with his obligation as to the replacement of ties by inserting 100,000 second-grade or culled ties if such ties cost him $1 each? It is the carriers' contention that it is the director general's obligation in restoring physical units to restore units of the same relative character and durability as those installed by the carrier during the test period, and that it is his duty to bear the entire cost of the purchase and installation of such units. The adjustment required by paragraph (*c*) of Section 5 is mandatory and is applicable to all expenditures and charges mentioned or referred to in the proviso to paragraph 5-(*a*).

The Safety Association of Southeastern Railroads has an exhibit at the North Carolina State Fair at Raleigh which directs attention toward the carelessness of automobile drivers in crossing railway tracks. The main feature of the exhibit is a large painting showing a train approaching a railway crossing and a carelessly driven automobile, filled with people in a race with the train for priority at the crossing. Other smaller paintings show many ways in which crossing accidents occur and all these are taken from actual accidents which have occurred in the South in the last few months. It is estimated that more than 100,000 persons visited the exhibit and the safety departments of the railways are hoping for some tangible results in the way of decreased accidents.

General News Department

Two passenger trains of the Norfolk & Western collided on a siding at Rural Retreat, Va., on October 20, resulting in the death of three trainmen and injuries to five passengers.

Fire which destroyed the freight house of the Chicago Junction, at Forty-third street and Robey street, Chicago, on October 13, is estimated to have caused an approximate damage of $750,000. Quantities of merchandise were burned and 94 freight cars, most of them loaded, were destroyed by the fire.

The railways have ordered 440,000 tons of rails for delivery next year from the United States Steel Corporation. The production has been distributed as follows: 300,000 tons to mills in the Chicago district; 80,000 tons to the Carnegie Steel Company, and 60,000 tons to the Tennessee Coal & Iron Company.

Seven persons were killed and 20 injured when an eastbound passenger train on the New York Central sideswiped a westbound passenger train at Erie, Pa., on October 20. The statement was made at the general offices of the company that the accident was due to the failure of a signalman to throw the switches properly.

Valuations for tax assessment of railroad property in the state of Tennessee, as reported by the Railroad and Public Utilities Commission of the state, aggregate for the present year $188,607,000; and the total valuation for all railroad and public utilities' property, as reported by the Commission, is more than twice the aggregate reported two years ago; the total this year being $273,943,202 as against $132,447,120 for the preceding biennial period.

A "no-accident" campaign has been started on the Baltimore & Ohio and will end November 16. During the campaign every effort is to be exerted to prevent injury to employees and patrons of the road. The various divisions will be in competition against each other and the division which makes the greatest improvement in the number of accidents over the same period last year will be awarded a pennant, to be displayed at division headquarters.

Prizes aggregating $4,600 were awarded this week by the Pennsylvania, Eastern region, to supervisors and assistants whose sections of track were in the best condition. The awards were based upon the decision of a committee of officers who inspect the lines each month in a car equipped with devices for recording all horizontal and lateral motion. After allowance is made for speed an accurate judgment of the riding qualities of various sections of track is arrived at from these records.

The Interstate Commerce Commission has addressed a questionnaire to the railroads, Special Report Series Circular No. 29, for the purpose of procuring information, as of the beginning of the effective date of Section 20a of the interstate commerce act, authorizing it to supervise the issuance of securities, concerning securities, as that term is defined in the act, nominally or actually issued or outstanding, as well as information concerning the assumption by a carrier of obligations or liabilities as lessor, lessee, guarantor, endorser, surety or otherwise, in respect of the securities of any other person, natural or artificial.

Railway Club of Pittsburgh

The annual meeting and election of officers of the Railway Club of Pittsburgh will be held at the Americus Club House, 211 Smithfield street, Pittsburgh, Pa., on October 28, at 8:00 p. m. An entertainment has been provided to follow the meeting.

A New Commission in New Jersey

New Jersey will have a new commission of public utilities as the result of the action of Governor Edwards in dismissing all the members of that body and appointing new men to take their places. This step was taken by the governor after a hearing, the verdict of which was in part that the officials were guilty of neglect of duty and misconduct in office in that they discriminated in favor of the Public Service Corporation against smaller and less influential concerns and that they knowingly employed as rate and valuation experts men who were clearly biased toward the corporation. The discharged members announce their intention to remain in office until an appeal to the courts can be had to determine the validity of Governor Edwards' action.

The Creeping of Rails

A paper entitled "The Creeping of Railroad Rails," prepared by Dr. J. A. L. Waddell, 35 Nassau street, New York, will be published soon by the American Society of Civil Engineers. This paper will contain the information secured in reply to a questionnaire submitted to over one hundred of the leading authorities on this subject in North America. In view of the recently established practice of the society to send advance copies of papers only to those particularly interested, this paper will not receive general distribution at present. As it is desired to secure a thorough discussion of this important subject, those interested can secure copies on application to the author.

Freight Claim Prevention Congress

President R. H. Aishton of the American Railway Association has announced that there will be held at the Hotel La Salle, Chicago, on November 15 and 16 a Freight Claim Prevention Congress under the auspices of the committee on cause and prevention of Division VII—Freight Claims—of the American Railway Association.

The objects of the congress will be:

1. The promotion of claim prevention efforts on inactive lines.
2. The increase of effectiveness of active lines.
3. The co-ordination of efforts of individual lines into a general claim prevention movement.

It is desired that there be in attendance at this congress the officers of member lines having jurisdiction over established freight claim prevention organizations, as well as the representatives of lines not so organized, and the management of each member is urged to have one or more representatives of his railroad in attendance.

The docket of the congress will be as follows:

1. Promotion of claim prevention efforts on inactive lines:
   - (a) Duty to the shipping public,
   - (b) Duty of carriers to themselves and to each other,
   - (c) Economic waste in the country's products,
   - (d) Financial loss.
2. Increase of effectiveness of active lines:
   - (a) Effectiveness of existing organizations,
   - (b) Departmental co-ordination.
   - (c) Co-operation of employees.
3. Co-ordination of efforts of individual lines into a general claim prevention movement:
   - (a) Exchange of information and establishment of practices between interested lines to correct conditions creating claims.
   - (b) Co-operation of weighing and inspection bureaus and other organizations in a position to assist in prevention of claims.
   - (c) Means of utilizing committee on cause and prevention of the freight claim division for exchange of information and co-ordination of claim prevention activities.

In connection with this announcement Mr. Aishton has also advised member roads to the effect that the organization of the Committee on Cause and Prevention of Freight Claims has now been perfected and that correspondence concerning its activities should be addressed to Lewis Pilcher, secretary of the Freight Claim Division, A. R. A., 431 South Dearborn street, Chicago.

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF AUGUST, 1920

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	141	$190,291	$91,517	$305,025	$120,430	$86,853	$11,975	$164,598	$18,055	$405,688	133.%	—$100,663	$14,639	—$115,302	—$155,925
Ann Arbor	294	399,338	84,692	510,273	153,154	132,176	8,950	281,393	17,166	592,905	116.193	—82,632	17,500	100,132	208,748
Atchison, Topeka & Santa Fe	8,829	13,243,204	4,870,100	19,892,620	6,518,555	3,806,026	348,993	9,696,215	565,269	20,720,546	104.161	- 827,925	940,501	- 1,781,727	6,38[illegible]
Atlanta & West Point	93	134,451	123,040	288,878	48,298	51,088	2,222	85,871	7,756	199,339	69.004	89,540	8,928	80,612	[illegible]
Atlanta, Birmingham & Atlantic	640	332,266	126,613	493,243	178,700	239,238	29,452	385,160	28,075	860,710	174.50	—367,467	16,074	—383,642	[illegible]
Atlantic City	177	177,399	648,973	851,275	121,858	77,546	4,172	421,248	1,269	625,879	73.522	225,395	19,501	205,892	[illegible]
Atlantic Coast Line	4,890	3,784,494	1,521,417	5,772,347	2,143,094	1,606,960	83,565	2,778,799	152,630	6,790,475	117.638	—1,318,128	300,000	—1,318,670	—1,274,708
Atlantic & St. Lawrence	166	182,853	62,772	265,758	125,237	101,439	3,803	227,886	21,815	482,375	181.622	- 216,617	17,722	—234,340	—163,816
Baltimore & Ohio Chicago Terminal	91	.....	.....	160,553	—34,816	58,772	2,076	209,000	14,901	256,788	159.94	—96,234	31,169	—127,403	- 97,511
Baltimore & Ohio (estimated for August)	5,154	15,453,377	3,163,441	20,222,080	3,070,000	6,608,000	253,000	10,500,000	590,000	21,163,000	104.66	—940,920	714,793	—1,657,221	—4,234,510
Baltimore, Chesapeake & Atlantic	88	111,615	98,498	221,861	42,600	35,565	2,936	139,720	5,658	276,479	124.618	—4,618	3,700	—8,318	101,787
Bangor & Aroostook	659	300,231	96,614	424,734	116,441	143,301	4,842	203,774	26,026	501,623	118.103	—76,890	17,841	—94,731	56,789
Belt Railway of Chicago	31	.....	.....	415,063	94,772	119,607	1,533	394,297	12,750	622,959	150.09	—207,896	24,767	—232,663	—324,715
Bessemer & Lake Erie	225	1,556,850	61,175	1,652,351	161,735	496,453	19,821	695,450	39,315	1,425,151	86.25	227,201	15,800	211,398	—322,309
Bingham & Garfield	37	176,357	1,835	181,281	47,690	41,341	1,953	38,608	5,621	135,405	74.693	45,876	10,459	35,417	65,461
Birmingham Southern	31	38,138	.....	53,397	4,162	11,000	1,015	32,555	3,739	52,471	98.266	926	1,754	—828	—2,229
Boston & Maine	2,305	4,702,387	2,701,036	8,206,354	2,378,572	2,915,980	52,657	6,113,164	349,024	11,862,949	144.558	—3,656,596	254,073	—3,910,709	—5,368,341
Brooklyn Eastern District Terminal	9	105,320	.....	116,979	1,551	34,951	.....	111,463	5,794	153,760	131.443	—36,781	6,194	—42,975	- 43,481
Buffalo & Susquehanna R.R. Corp.	297	241,370	7,402	253,020	97,131	178,102	4,575	137,796	14,431	432,036	170.752	—179,016	11,200	—190,216	188,607
Buffalo, Rochester & Pittsburgh	590	1,636,064	199,762	1,917,482	462,399	546,158	28,265	1,047,105	49,404	2,133,085	111.244	—215,603	35,000	—250,604	345,411
Canadian Pacific (Lines in Maine)	234	132,203	41,481	189,632	65,104	44,790	3,356	101,281	3,695	218,226	115.080	—28,594	12,200	—40,794	—20,681
Carolina, Clinchfield & Ohio	291	530,065	60,039	601,018	106,349	165,099	22,423	215,782	19,851	529,294	88.066	71,724	35,000	36,388	121,234
Central New England (partly estimated)	361	702,691	31,275	758,536	216,529	120,369	4,705	349,479	15,630	706,689	93.164	51,846	18,225	32,269	17,626
Central of Georgia (estimated)	1,924	1,296,394	685,276	2,193,148	612,200	1,066,500	60,000	1,225,950	91,000	3,060,000	139.532	—866,852	101,332	—968,184	—1,266,151
Central R.R. of New Jersey	686	3,465,489	1,255,775	5,038,246	1,977,048	3,257,557	60,732	3,642,344	193,440	9,176,229	182.131	—4,137,984	295,337	—4,433,321	—4,995,813
Central Vermont	414	442,597	144,383	643,451	168,345	243,095	18,201	538,002	31,020	1,000,675	155.53	—357,224	17,400	—374,916	- 296,106
Charleston & West Carolina	342	255,839	73,592	345,481	149,823	92,348	7,976	233,903	5,663	489,714	141.748	—144,233	11,625	—155,858	171,796
Chesapeake & Ohio	2,520	5,816,601	1,218,767	7,615,757	1,696,917	2,572,027	79,932	4,145,117	178,758	8,720,244	114.502	—1,104,488	349,810	—1,454,365	2,497,251
Chicago & Alton	1,050	1,691,112	719,576	2,618,421	542,974	894,366	50,073	1,446,199	68,426	3,028,622	115.666	—410,200	67,500	—477,752	—537,595
Chicago & Eastern Illinois	1,130	2,006,500	534,545	2,778,704	645,635	971,465	52,073	1,279,563	72,253	3,039,810	109.396	—261,106	100,000	—361,295	—742,625
Chicago, Det. & Canada Grand Trk. Jct.	62	157,649	26,902	211,964	23,053	31,898	2,774	101,771	4,495	164,095	77.416	47,868	4,596	43,272	- 87,235
Chicago & Erie	269	1,041,799	96,446	1,243,878	197,828	224,742	20,660	723,118	49,023	1,218,107	97.928	25,771	40,909	—15,231	—219,449
Chicago & North Western (preliminary)	8,405	10,009,475	3,773,993	15,332,177	4,561,761	5,448,186	164,018	9,863,182	514,330	20,686,752	134.923	—5,354,575	725,000	—6,079,674	—7,697,650
Chicago, Burlington & Quincy	9,371	10,303,089	3,834,128	15,509,311	3,991,418	4,894,232	177,652	9,571,751	582,275	19,393,871	125.05	—3,884,559	658,825	—4,542,994	—8,843,934
Chicago, Indianapolis & Louisville	654	1,068,607	317,359	1,528,562	390,037	602,708	54,107	995,538	43,678	2,104,936	157.71	—576,374	44,907	—621,284	—852,083
Chicago Junction	12	.....	.....	324,546	70,665	74,359	135	357,917	11,665	514,740	159.527	—190,194	3,215	—193,409	- 238,246
Chicago, Milwaukee & St. Paul	10,629	9,126,064	3,109,923	13,835,365	4,514,329	5,298,129	190,848	10,255,769	719,470	21,153,524	152.894	—7,318,159	677,263	—7,996,559	—9,259,768
Chicago, Peoria & St. Louis	247	229,163	37,244	285,912	71,374	123,800	6,168	194,066	21,109	416,516	145.681	—130,603	7,100	—137,703	—77,737
Chicago, Rock Island & Gulf	461	344,863	137,993	497,999	136,475	132,295	13,149	313,410	21,007	617,780	124.052	—119,781	12,833	—132,619	—210,392
Chicago, Rock Island & Pacific	7,663	8,224,578	3,617,133	12,634,768	2,772,908	3,281,283	198,418	6,067,968	288,604	12,508,317	101.01	126,451	460,070	—333,713	—2,358,670
Chicago, S. Paul, Minn. & Omaha	1,749	1,790,148	191,255	2,809,728	1,126,674	807,993	37,975	1,824,697	114,463	3,929,490	139.853	—1,119,763	117,153	—1,238,144	—1,493,284
Chicago, Terre Haute & South Eastern	374	447,100	29,496	489,977	101,316	203,660	4,942	215,994	9,458	537,288	109.655	—47,311	19,500	—66,811	—97,324
Cincinnati, Indianapolis & Western	321	307,395	79,781	409,210	142,836	182,200	13,416	270,702	31,256	642,617	157.038	—233,006	13,539	—246,545	—271,267
Cincinnati, Lebanon & Northern	76	116,005	12,590	100,455	16,080	30,977	2,583	121,530	4,356	175,527	174.73	—75,071	6,810	—81,881	2,406
Cincinnati Northern	245	307,048	27,305	346,364	52,532	65,245	5,063	128,030	9,251	260,121	75.100	86,243	10,988	75,228	8,677
Cleveland, Cincinnati, Chic. & St. Louis.	2,408	5,193,232	2,038,373	7,927,822	1,261,869	1,973,877	115,122	3,577,229	158,557	7,160,204	90.317	767,619	328,775	438,735	—1,700,404
Copper Range	142	73,158	11,481	97,454	23,765	12,641	1,788	39,997	2,184	80,375	82.475	17,078	6,824	10,254	29,914
Colorado & Southern (preliminary)	1,099	873,117	393,315	1,366,731	513,439	472,342	16,431	650,697	73,662	1,742,000	127.458	—375,269	59,791	—435,108	—626,502
Colorado & Wyoming	43	26,055	1,042	87,041	18,609	25,864	231	49,841	4,546	99,091	113.845	—12,050	5,000	—17,050	—29,932
Delaware & Hudson	881	3,580,438	470,826	4,314,320	590,024	1,066,880	36,950	2,086,008	179,377	3,994,381	99.584	319,939	81,500	238,420	—421,850
Delaware, Lackawanna & Western	956	5,459,749	1,412,065	7,610,274	1,599,754	2,174,835	114,020	4,702,202	218,964	8,911,781	117.101	- 1,301,507	489,583	—1,791,118	—2,934,507
Denver & Rio Grande	2,585	2,531,763	889,900	3,703,738	1,057,726	1,186,090	59,289	1,764,442	115,902	4,294,812	115.958	—591,073	135,000	726,180	—1,517,396
Denver & Salt Lake	255	208,349	80,190	300,691	106,681	42,480	3,294	129,825	7,277	289,557	96.297	11,134	9,000	2,125	1,210
Detroit & Mackinac	376	134,042	46,469	192,500	46,990	51,225	2,942	108,316	10,804	220,133	114.355	—27,633	10,809	—38,541	—65,148
Detroit, Grand Haven & Milwaukee	195	364,571	75,748	492,218	115,474	107,264	11,071	315,456	17,817	568,025	115.401	—75,808	3,088	—78,897	—202,028
Detroit, Toledo & Ironton	455	356,631	19,611	399,142	312,328	145,425	9,847	327,966	25,309	820,723	205.62	—421,581	9,061	—431,040	—432,875
Duluth & Iron Range	298	1,476,686	26,672	1,626,113	166,429	144,807	1,633	348,031	25,854	687,431	42.274	938,682	82,919	855,763	272,465
Duluth, Missabe & Northern	406	2,628,653	56,676	2,925,770	263,559	180,774	3,892	526,362	24,133	1,000,688	34.202	1,925,082	149,611	1,775,471	676,917
Duluth, South Shore & Atlantic	613	383,240	155,213	585,514	180,467	105,727	6,487	338,720	18,352	659,128	112.532	—73,614	25,000	—98,629	—147,085
Duluth, Winnipeg & Pacific	178	163,168	31,160	198,927	57,042	39,181	4,173	99,119	9,604	209,119	105.123	—10,192	9,111	—19,303	—35,592
East St. Louis Connecting	3	.....	.....	140,228	20,665	47,909	442	161,286	5,537	235,840	168.183	—95,612	328	—95,940	—101,636
El Paso & South Western	1,027	897,690	151,241	1,128,710	734,364	404,560	25,134	450,423	58,479	1,683,607	149.162	—554,897	100,415	—655,321	—881,975
Elgin, Joliet & Eastern	835	1,916,261	5	2,129,101	378,616	657,785	12,436	1,253,276	53,736	2,354,605	110.591	—225,504	51,600	—277,104	—547,578
Erie	1,989	7,175,952	1,500,075	9,504,121	2,123,897	4,448,538	124,744	6,696,360	130,153	13,906,236	146.317	—4,402,115	250,503	—4,653,687	—5,902,888
Florida East Coast	764	480,006	227,320	841,158	269,637	295,865	11,121	523,360	35,323	1,444,445	136.057	- 303,287	49,196	—352,488	—432,665
Fonda, Johnstown & Gloversville	88	44,933	84,547	134,162	14,629	13,676	784	60,366	—16,204	73,252	54.60	60,910	5,075	55,835	3,387
Fort Smith & Western	253	105,750	45,968	166,184	34,750	39,750	4,538	65,072	7,943	153,390	92.301	12,794	5,000	7,794	- 8,487
Fort Worth & Denver City	454	661,790	457,122	1,180,374	253,699	356,946	11,702	663,608	54,107	1,352,777	114.61	—172,403	24,513	—196,957	—555,522
Georgia	328	327,328	187,685	550,740	181,885	136,614	23,860	357,046	21,168	720,791	130.877	—170,051	5,950	—176,002	—224,075
Georgia & Florida	405	86,906	35,805	132,574	96,962	43,845	8,719	107,832	13,242	270,600	204.113	—138,025	6,591	—144,619	—113,728

REVENUES AND EXPENSES OF RAILWAYS

EIGHT MONTHS OF CALENDAR YEAR 1920

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	141	$1,379,678	$567,956	$2,149,422	$416,318	$439,042	$49,327	$835,488	$87,493	$1,852,657	86.193	$296,765	$110,978	$185,708	$81,649
Ann Arbor	300	2,621,897	468,302	3,328,615	533,455	736,738	57,562	1,641,134	119,033	3,088,185	92.794	240,430	138,400	101,967	—199,102
Atchison, Topeka & Santa Fe	8,735	88,902,532	34,544,559	137,445,643	23,673,229	31,157,192	1,622,938	50,361,541	2,651,432	109,215,533	80.702	28,230,110	6,938,152	21,272,583	207,250
Atlanta & West Point	93	999,847	745,881	2,009,167	275,370	355,945	46,753	751,726	76,055	1,538,378	76.568	470,789	65,510	405,278	14,560
Atlanta, Birmingham & Atlantic	640	2,761,278	677,440	3,792,603	930,203	1,173,921	158,192	2,106,669	155,782	4,525,363	119.320	—732,760	130,764	—864,671	—146,301
Atlantic City	177	915,045	2,309,097	3,387,668	471,644	377,580	21,048	1,787,800	12,052	2,670,599	78.832	717,068	118,203	598,842	—262,152
Atlantic Coast Line	4,891	31,505,467	12,411,728	48,408,882	8,566,011	10,608,528	584,021	22,819,435	1,089,968	43,980,695	90.852	4,428,188	2,200,000	2,218,776	—2,466,262
Atlantic & St. Lawrence	166	1,419,670	313,461	1,873,237	567,210	523,634	23,023	1,300,098	105,656	2,528,069	134.957	—654,832	128,628	—783,515	—204,213
Baltimore & Chicago Terminal	91	.....	.....	1,316,168	296,915	459,226	10,312	1,172,716	89,538	2,069,092	157.221	—752,924	240,098	—993,028	—273,128
Baltimore & Ohio (estimated)	5,153	107,714,904	19,385,023	139,081,224	20,990,162	44,165,700	1,739,764	68,925,605	3,930,192	140,785,662	101.225	—1,704,438	4,578,791	—6,315,098	—7,671,041
Baltimore, Chesapeake & Atlanta	88	618,868	335,610	1,027,994	119,893	378,583	10,783	674,159	32,109	1,215,526	118.242	—187,533	29,600	—217,133	143,791
Bangor & Aroostook	659	3,114,065	667,916	4,074,026	964,452	1,010,192	32,768	1,642,448	152,959	3,863,285	94.827	210,741	201,455	9,284	—15,481
Beaumont, Sour Lake & Western	119	1,064,472	249,763	1,379,663	339,533	205,601	25,953	512,597	47,994	1,131,158	81.988	248,506	21,800	226,687	211,452
Bessemer & Lake Erie	225	7,606,995	329,131	8,183,636	1,005,186	2,767,955	112,855	3,015,147	238,473	7,197,607	87.951	986,029	122,600	863,401	—1,206,803
Bingham & Garfield	37	1,229,223	13,440	1,261,653	274,018	293,581	14,108	283,301	36,732	908,814	72.033	352,838	62,434	290,398	489,650
Birmingham Southern	31	285,526	.....	396,666	35,744	66,071	7,891	242,762	28,443	380,910	96.030	15,756	4,033	1,693	—74,418
Belt Railway of Chicago	31	.....	.....	2,658,060	372,672	539,125	5,821	1,797,518	68,813	2,783,949	104.74	—125,889	181,307	—307,196	—408,117
Boston & Maine	2,293	32,556,636	15,539,874	54,117,657	9,465,417	12,990,987	367,586	32,695,402	1,872,779	57,676,005	106.575	—3,558,348	1,892,434	—5,498,501	—7,913,454
Brooklyn Eastern District Terminal	9	643,430	.....	712,646	123,191	249,321	1,235	511,304	35,606	920,658	129.188	—208,012	49,787	—257,798	—7,625
Buffalo & Susquehanna R. R. Corp.	297	1,748,140	55,554	1,840,899	448,313	867,279	20,467	723,035	83,758	2,142,852	116.402	—301,953	50,100	—352,054	—161,896
Buffalo, Rochester & Pittsburgh	590	10,845,109	1,192,425	12,562,751	2,306,313	4,460,669	139,220	6,212,477	330,307	13,463,544	107.170	—900,793	260,000	—1,161,447	—395,405
Canadian Pacific (Lines in Maine)	234	1,401,243	416,513	1,917,363	443,358	483,014	24,423	1,222,085	28,425	2,201,305	114.809	—283,942	97,600	—381,542	—83,640
Carolina, Clinchfield & Ohio	291	4,176,378	333,711	4,639,462	640,575	1,117,302	118,592	1,478,738	155,092	3,508,587	75.624	1,130,876	†252,523	877,747	3,017
Central Vermont	414	3,106,000	780,461	4,358,279	775,591	1,330,670	81,189	3,123,583	163,719	5,492,050	137.49	—1,133,771	139,200	1,273,331	—594,582
Central New England (partly estimated)	301	3,875,854	201,315	4,295,600	1,376,645	1,129,615	27,600	2,743,954	131,256	5,414,682	126.051	—1,119,082	143,838	—1,264,330	—1,382,122
Central of Georgia (estimated)	1,924	10,271,723	4,436,312	16,721,920	3,248,010	4,309,671	392,704	7,918,616	617,824	16,524,580	98.819	197,340	653,821	—456,845	—1,661,252
Central R. R. of New Jersey	686	22,054,602	6,421,898	30,912,382	5,039,366	11,139,165	249,771	17,205,498	841,294	34,698,112	112.246	—3,785,729	2,154,380	—5,940,241	—8,226,078
Charleston & Western Carolina	342	1,770,713	440,959	2,342,068	571,245	522,890	42,930	1,306,161	40,859	2,484,084	106.099	—142,016	86,750	—228,887	—347,262
Chesapeake & Ohio	2,518	42,269,839	7,244,143	53,761,378	8,308,117	15,694,702	458,664	23,505,157	1,170,610	49,401,763	91.890	4,359,614	1,998,480	2,359,960	—5,866,351
Chicago, Burlington & Quincy	9,371	77,898,445	23,305,967	114,147,989	21,744,985	26,029,201	1,067,676	52,489,515	3,232,743	105,854,211	92.73	8,293,778	5,395,445	—2,881,388	—14,012,352
Chicago, Indianapolis & Louisville	654	6,675,019	2,110,215	9,888,558	1,414,852	3,189,011	228,233	4,701,114	255,510	9,913,272	100.25	—24,714	381,825	—406,879	—1,448,578
Chicago, Rock Island & Pacific	7,631	56,733,295	22,020,998	86,653,601	17,162,764	22,810,867	1,037,529	40,297,097	2,048,353	83,590,894	96.47	3,062,707	3,529,872	—472,665	—7,039,989
Chicago & Alton	1,050	12,362,961	4,409,263	18,588,141	2,975,046	5,249,129	283,798	8,894,967	502,117	18,016,235	96.923	571,906	‡533,445	37,243	—895,839
Chicago & Eastern Illinois	1,131	12,876,160	3,437,291	18,582,889	2,775,199	6,335,119	210,775	8,452,448	523,909	18,403,674	99.035	179,215	770,000	—593,543	—180,472
Chicago, Detroit & Can. Grand Trk. Jct.	62	815,397	155,705	1,152,651	144,897	219,506	12,896	633,593	29,877	1,040,869	90.302	111,782	35,724	76,037	—466,139
Chicago & Erie	269	6,464,507	586,565	7,810,403	957,361	1,427,213	119,481	4,204,957	259,489	6,994,262	89.550	816,141	326,363	494,279	—257,760
Chicago & Northwestern	8,249	66,345,717	24,294,434	102,273,012	18,812,132	25,106,995	851,722	51,557,947	2,665,525	99,936,147	97.715	2,336,865	5,475,621	—3,144,187	—12,078,189
Chicago Junction	12	.....	.....	2,105,128	435,983	501,316	1,930	2,311,409	78,327	3,328,964	158.136	—1,223,836	25,343	—1,249,179	—795,371
Chicago, Milwaukee & St. Paul	10,628	71,309,207	20,264,644	104,920,356	19,850,485	27,469,245	972,286	53,524,318	3,417,843	106,002,424	101.030	—1,082,069	5,269,313	—6,385,126	—7,612,000
Chicago, Peoria & St. L.	247	1,356,361	221,375	1,697,065	325,265	594,476	32,984	901,798	88,617	1,943,071	114.496	—246,006	54,800	—300,821	283,502
Chicago, Rock Island & Gulf	461	3,019,154	833,867	4,215,819	691,487	696,469	70,423	1,797,646	112,761	3,378,555	80.139	837,264	125,034	712,039	466,935
Chicago, St. Paul, Minn. & Omaha	1,749	12,890,145	5,394,549	20,123,898	3,531,910	4,012,973	210,483	9,760,539	626,041	18,256,071	90.718	1,867,807	1,027,991	834,575	—896,308
Chicago, Terre Haute & Southeastern	374	3,121,042	197,757	3,417,407	555,359	1,266,223	37,531	1,523,356	89,740	3,485,796	102.001	—68,390	153,000	—221,390	—37,409
Cincinnati, Lebanon & Northern	76	629,263	72,782	764,546	161,708	181,379	14,694	360,776	20,183	938,739	122.78	—174,193	49,608	—223,803	179,664
Cincinnati, Indiana & Western	321	2,122,455	462,231	2,837,963	534,487	1,054,196	68,640	1,383,368	152,321	3,202,044	112,829	—364,081	105,334	—469,421	—177,990
Cincinnati Northern	248	1,929,425	164,447	2,205,184	424,093	504,490	28,694	850,887	49,305	1,858,447	84.276	346,737	82,797	263,905	—119,486
Cleveland, Cincinnati, Chicago & St. L.	2,408	37,220,320	12,599,635	55,778,106	7,590,770	13,158,729	779,401	24,065,788	1,139,543	47,180,897	84.586	8,597,208	1,861,579	6,731,360	2,106,380
Colorado & Southern	1,099	6,607,269	1,932,518	9,357,557	1,951,478	2,490,467	93,420	3,497,323	369,503	8,480,951	90.632	876,607	460,728	413,877	—748,593
Colorado & Wyoming	43	166,189	7,508	627,867	115,400	153,620	2,272	333,403	33,347	638,041	101.621	—10,173	40,333	—50,173	—165,014
Copper Range	142	449,080	95,815	588,854	176,035	131,272	15,127	297,293	22,121	641,648	108.965	—52,794	51,345	—104,139	—43,750
Delaware & Hudson	881	22,618,246	2,299,259	26,485,248	3,193,978	7,912,234	229,855	13,628,818	1,160,228	26,330,329	99.415	154,919	644,142	—489,687	—2,211,764
Delaware, Lackawanna & Western	956	33,018,470	8,563,712	47,812,081	6,551,108	11,749,926	646,081	24,879,803	1,194,128	45,738,166	95.662	2,073,915	3,012,500	—938,789	—9,098,422
Denver & Rio Grande	2,585	17,086,137	4,895,484	23,975,497	4,054,265	6,070,011	308,411	8,978,228	651,394	20,578,601	85.832	3,396,896	1,032,000	2,349,406	592,121
Denver & Salt Lake	255	1,325,458	315,788	1,731,856	592,681	585,051	9,193	972,295	63,936	2,223,157	128.368	—491,300	78,332	—569,712	50,809
Detroit, Toledo & Ironton	455	2,745,608	120,535	3,068,362	963,921	742,812	50,530	1,702,360	172,992	3,630,449	118.32	—562,087	71,214	—634,535	—204,206
Detroit & Mackinac	376	847,549	290,535	1,254,783	243,062	355,207	21,265	643,856	61,347	1,323,839	105.501	—69,057	105,535	—174,690	—88,004
Detroit, Grand Haven & Milwaukee	195	2,160,512	369,248	2,912,855	525,080	674,895	49,102	1,949,665	105,893	3,306,625	113.518	—393,770	26,113	—420,247	—827,094
Duluth & Iron Range	298	6,236,696	187,992	6,963,791	932,946	940,492	7,969	1,733,801	147,812	3,767,924	54.107	3,195,867	361,607	2,833,712	354,020
Duluth, Missabe & Northern	406	10,735,258	406,209	12,200,692	1,597,971	1,253,115	23,154	2,592,810	171,777	5,653,318	46.336	6,547,374	633,093	5,914,247	—2,263,345
Duluth, South Shore & Atlantic	613	2,318,289	856,933	3,584,915	798,326	658,962	42,109	1,829,633	93,947	3,474,199	96.911	110,716	191,000	—80,544	139,133
Duluth, Winnipeg & Pacific	178	1,311,903	220,276	1,569,233	290,462	312,405	28,377	571,999	69,854	1,453,102	92.600	116,130	82,647	33,423	—23,966
East St. Louis Connecting	3	.....	.....	862,425	115,474	252,017	2,389	724,720	31,623	1,126,224	146.360	—263,798	18,393	—282,191	—203,845
El Paso & Southwestern	1,027	6,920,111	1,698,352	9,262,779	2,131,007	1,904,809	131,851	2,659,495	333,845	7,233,968	78.097	2,028,811	723,319	1,304,861	—827,354
Elgin, Joliet & Eastern	833	10,041,490	78	11,350,441	1,386,244	2,898,822	48,579	4,930,638	240,869	9,501,224	83.708	1,849,217	297,298	1,551,511	1,519,950
Erie	1,989	49,077,042	9,074,406	64,951,849	10,353,530	23,941,742	775,036	36,790,077	2,101,910	74,523,060	114.735	—9,571,211	1,979,905	—11,574,294	—10,848,904
Florida East Coast	764	4,923,645	2,713,769	8,921,852	1,208,137	1,542,325	71,990	3,416,265	209,658	6,581,021	73.763	2,340,831	365,696	1,972,562	1,217,833
Fonda, Johnstown & Gloversville	88	315,597	580,521	938,212	105,897	90,757	4,283	344,963	48,393	594,294	63.343	343,918	40,250	303,668	36,612
Fort Worth & Denver City	454	4,829,189	2,708,047	7,994,391	1,368,889	1,921,479	57,128	3,661,212	279,236	7,329,931	91.69	664,461	183,813	479,988	1,512,776
Fort Smith & Western	253	817,785	258,112	1,162,404	280,683	288,323	34,439	491,793	61,440	1,166,504	100.352	—4,100	40,000	—44,660	—99,401
Georgia	328	2,779,233	1,154,696	4,262,916	679,766	950,225	111,495	2,407,617	157,918	4,308,742	101.075	—45,825	47,600	—93,447	—757,738

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST, 1920—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Maintenance of		Operating expenses				Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Grand Rapids & Indiana	570	$530,148	$361,282	$980,718	$166,034	$312,495	$20,344	$728,806	$59,178	$1,305,282	133.10	—$324,565	$30,255	—$354,823	$568,018
Grand Trunk Western	351	2,132,238	282,402	2,510,355	377,422	412,822	37,266	854,580	59,010	1,757,999	70.029	752,356	51,084	701,261	336,595
Great Northern	8,175	7,303,056	2,054,260	10,519,795	4,121,056	3,921,866	142,017	6,848,052	457,275	15,686,919	149.118	—5,167,124	920,537	—6,089,478	—7,910,087
Gulf & Ship Island	307	170,364	69,439	261,085	152,427	119,554	10,776	179,138	21,478	483,828	185.314	—222,743	21,454	—244,342	—262,391
Gulf Coast Lines	...	861,018	333,842	1,252,130	367,327	241,831	39,928	403,123	49,350	1,100,011	87.85	152,119	28,417	123,683	54,613
Gulf, Colorado & Santa Fe	1,907	1,509,722	636,448	2,258,044	1,049,930	241,000	50,508	2,019,607	88,737	3,942,753	174.609	1,684,709	87,016	—1,771,861	—2,055,966
Gulf, Mobile & Northern	470	222,739	75,551	313,355	300,597	122,451	13,331	238,944	23,308	698,630	222.951	—385,275	14,175	—399,450	—428,328
Hocking Valley	350	1,368,235	133,165	1,629,920	276,012	408,685	14,511	772,106	49,700	1,520,945	93.314	108,975	59,778	49,180	—365,666
Illinois Central	4,799	8,745,370	2,672,834	12,488,634	3,994,535	3,897,588	151,053	8,049,859	402,828	16,599,366	132.915	—4,110,733	762,331	—4,873,349	—5,853,751
Illinois Terminal	870	93,285	.....	95,975	8,949	15,478	1,251	32,917	6,341	64.936	67.660	31,040	1,117	29,923	21,034
Indiana Harbor Belt	121	.....	.....	833,308	70,460	615,959	3,974	800,573	26,701	1,517,667	182.123	—684,359	10,686	—695,057	—697,591
International & Great Northern	1,159	1,141,506	358,385	1,627,655	417,427	573,557	25,170	1,059,657	56,367	2,142,204	131.613	—514,549	24,831	—539,561	—390,866
Kanawha & Michigan	176	374,712	63,123	454,132	130,518	162,707	7,118	196,619	15,821	512,782	112.915	—58,650	66,129	—124,779	—164,891
Kansas City, Mex. & Orient R.R. of Tex.	465	123,946	30,867	163,281	138,254	85,006	7,185	187,466	9,920	427,831	262.021	—264,550	5,575	—270,125	—225,426
Kansas City, Mex. & Orient Receiver	272	115,467	24,846	147,800	87,103	80,408	7,625	157,936	23,004	356,076	240.920	—208,277	7,700	—215,977	—186,599
Kansas City Southern	779	1,180,854	299,183	1,612,034	226,332	369,020	62,100	1,064,999	83,145	1,803,677	111.888	—191,643	73,300	—265,081	—506,608
Kansas City Terminal	27	.....	.....	140,417	47,555	51,478	.....	111,578	4,248	217,356	154,793	—76,940	27,350	—104,290	—129,458
Lake Erie & Western	741	927,750	91,393	1,676,966	104,136	379,974	16,786	604,122	33,159	1,137,728	67.844	—60,762	44,988	—105,750	—263,650
Lake Superior & Ishpeming	34	250,814	204	282,148	29,775	23,067	220	74,838	4,087	131,987	46.78	150,160	4,931	145,229	80,229
Lake Terminal	12	.....	222	114,828	17,792	21,967	.....	114,715	60	154,534	134.558	—39,707	5,816	—45,523	—27,603
Lehigh & Hudson River	96	292,746	5,999	278,734	47,211	71,545	2,490	236,436	10,603	368,285	132.308	—89,551	8,600	—98,151	—167,372
Lehigh & New England	229	375,056	1,954	390,011	156,237	118,912	4,132	214,767	18,358	512,360	131.371	—122,349	15,453	—137,802	—325,271
Lehigh Valley	1,435	5,724,389	881,431	7,088,753	2,141,501	2,556,935	89,993	4,112,451	155,157	9,093,434	128.280	—2,004,682	206,000	—2,213,810	—3,115,182
Long Island	398	673,835	2,042,332	3,003,592	675,701	702,804	32,324	1,820,377	83,464	3,337,160	111.105	—333,568	105,114	—439,839	—1,176,388
Los Angeles & Salt Lake	1,169	1,095,180	666,589	1,932,547	364,711	380,082	36,256	691,974	40,558	1,590,986	82.326	341,561	*108,675	232,795	—136,568
Louisiana & Arkansas	302	269,504	56,767	335,244	127,571	73,843	5,735	159,687	8,979	375,812	112.101	—40,568	18,138	— 58,712	—26,349
Louisiana Ry. & Navigation Co.	344	356,147	50,859	427,759	84,447	48,528	8,332	174,059	11,276	326,641	76.361	101,118	14,000	87,118	16,223
Louisville & Nashville	5,041	7,942,649	2,703,132	11,279,962	2,523,945	3,803,789	170,178	6,078,074	282,524	12,910,242	114.452	—1,630,280	302,611	—1,932,919	—3,698,843
Louisville, Henderson & St. Louis	199	197,340	77,590	289,463	98,751	65,112	9,316	138,793	12,355	324,327	112.045	—34,864	7,215	—42,090	—93,803
Maine Central	1,216	1,083,073	636,991	1,882,962	359,421	529,129	20,204	1,377,676	36,195	2,332,763	123.888	—449,800	101,032	—552,461	—656,597
Maryland, Delaware & Virginia	83	82,147	95,710	184,301	16,313	126,377	2,322	112,632	3,869	261,513	141.895	—77,213	2,000	—79,213	124,466
Michigan Central	1,862	4,912,137	2,487,632	8,301,363	1,353,268	2,543,871	125,271	3,529,933	162,963	7,840,638	94.450	460,725	34,865	425,762	—2,243,825
Midland Valley	389	342,058	108,361	467,423	146,924	62,115	4,510	171,658	21,760	406,967	87.066	60,456	7,183	53,224	—19,122
Minn., St. Paul & Sault Ste. Marie	4,244	3,096,996	1,013,798	4,495,690	1,288,455	1,360,287	60,251	2,551,057	162,485	5,496,055	122.25	—1,000,365	297,326	—1,298,066	—2,066,291
Minneapolis & St. Louis	1,647	980,230	248,779	1,303,998	602,539	452,197	31,123	1,101,264	60,092	2,245,777	172.222	—941,780	56,413	—998,231	—1,159,729
Minnesota & International	195	55,438	28,324	90,092	49,254	30,906	1,039	68,018	5,795	155,012	172.060	—64,920	2,326	—67,240	—68,316
Mississippi Central	164	74,160	29,350	107,598	78,925	37,979	4,594	61,055	11,423	193,976	180.279	—86,378	5,000	—91,380	—72,663
Missouri & North Arkansas	364	104,235	68,066	184,250	106,443	60,461	7,183	116,537	12,172	302,593	164.230	—118,343	—2,526	—115,817	—101,818
Missouri, Kansas & Texas	1,716	2,583,036	830,739	3,680,534	851,073	1,070,583	51,835	1,292,525	189,747	3,471,984	94.333	208,550	122,659	85,435	—757,526
Missouri, Kansas & Texas R.R. of Texas	1,737	1,362,459	836,425	2,391,625	1,122,463	549,266	50,073	1,130,057	109,650	2,984,048	124.770	—592,424	42,083	—636,053	—746,799
Missouri, Oklahoma & Gulf	329	186,506	30,167	227,672	77,852	82,552	3,296	153,750	11,568	329,271	144.625	—101,599	8,000	—109,603	—51,665
Missouri Pacific	7,300	7,213,972	2,286,044	10,300,158	5,008,786	5,389,301	225,775	6,869,549	395,091	17,967,195	174.436	—7,667,037	1,122,700	—8,790,570	—10,266,095
Mobile & Ohio	1,165	1,213,241	255,306	1,562,754	536,160	525,331	40,824	854,781	60,796	2,019,008	129.195	—456,254	59,905	—516,159	—603,425
Monongahela	107	397,116	32,533	438,821	159,476	70,294	1,828	203,705	10,412	445,715	101.571	—6,895	6,293	—13,187	—227,372
Monongahela Connecting	7	.....	.....	272,064	30,185	30,738	562	138,792	6,325	206,603	75.94	65,461	15,349	50,112	44,960
Montour	57	163,347	1,130	167,739	38,755	58,800	1,487	44,387	7,721	152,248	90.904	15,491	2,481	31,010	25,717
Mineral Range	101	59,465	355	62,168	29,336	29,392	328	48,413	1,929	109,398	175,969	— 47,230	4,300	—51,530	— 47,701
Nashville, Chattanooga & St. Louis	1,247	1,245,780	560,294	1,941,109	889,812	557,305	65,381	1,024,893	64,578	2,605,316	134.22	—664,207	55,000	—719,438	—968,930
Nevada Northern	165	144,367	11,746	162,338	43,762	34,047	995	45,093	6,261	130,205	80.206	32,133	20,832	11,301	56,382
New Jersey & New York	48	14,029	98,957	122,594	18,424	38,580	1,713	93,115	2,826	154,659	126.15	—32,064	1,927	—33,992	— 54,781
New Orleans Great Northern	284	165,382	69,525	248,693	135,429	80,426	7,150	128,769	12,390	364,834	146.700	—116,141	12,227	—128,391	—180,568
New York Central	6,069	19,118,617	10,371,412	33,884,287	5,215,174	11,220,243	413,228	17,338,827	937,661	35,676,526	105.289	—1,792,486	1,007,486	—2,800,203	—10,857,352
New York, Chicago & St. Louis	575	2,456,829	149,886	2,692,725	383,389	448,306	60,994	1,258,317	77,766	2,234,801	82.994	457,925	135,000	322,924	—56,204
New York, New Haven & Hartford	1,981	5,176,359	5,191,785	11,856,669	2,815,517	3,262,846	74,267	6,033,256	494,152	12,941,248	109.147	—1,084,579	449,500	—1,535,174	—3,393,162
New York, Ontario & Western	569	707,173	700,882	1,580,323	560,539	459,193	18,048	852,619	34,801	1,925,201	97.216	—344,878	35,500	—380,378	—949,919
New York, Philadelphia & Norfolk	122	634,455	176,128	886,759	104,357	274,662	13,206	585,903	25,619	1,021,646	115.21	—134,887	85,195	—220,149	—173,262
New York, Susquehanna & Western	136	271,901	70,921	400,277	84,107	103,507	4,066	250,572	14,650	456,902	114.146	—56,624	24,169	—80,803	—138,071
Norfolk & Western	2,200	5,332,316	1,098,783	6,795,319	1,568,022	2,897,988	80,185	3,839,288	168,141	8,557,116	125.926	—1,761,797	425,000	—2,186,808	—3,595,266
Northern Pacific	6,655	6,048,038	2,181,359	9,098,022	1,731,855	2,725,115	114,115	5,494,221	386,910	10,607,553	116.591	—1,509,531	942,746	—2,452,853	—4,583,508
Norfolk Southern	944	379,681	235,398	659,338	304,867	251,689	30,793	567,289	50,219	1,205,154	182.78	—545,815	26,876	—572,691	—659,031
Northwestern Pacific	536	473,217	314,151	880,844	163,610	109,581	8,535	405,704	21,145	711,765	80.805	169,079	30,571	138,507	—107,573

REVENUES AND EXPENSES OF RAILWAYS

EIGHT MONTHS OF CALENDAR YEAR 1920—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Georgia & Florida	405	$631,677	$208,044	$930,600	$533,213	$218,649	$44,275	$687,115	$72,231	$1,555,482	167.078	—$624,882	$50,473	—$675,605	—$428,874
Grand Rapids & Indiana	570	3,711,369	1,594,588	5,918,423	844,745	1,556,130	109,064	3,464,300	244,106	6,241,063	105.45	—322,640	261,751	—584,412	872,925
Grand Trunk Western	351	8,351,917	1,777,183	10,969,275	1,490,629	2,860,055	167,172	5,157,130	359,726	10,101,485	92.088	867,790	386,779	481,078	—1,386,535
Great Northern	8,175	51,873,583	13,106,174	75,541,016	18,692,647	16,882,218	736,770	33,831,726	1,879,611	73,131,647	96.810	2,409,369	6,317,383	—3,921,793	—11,540,475
Gulf & Ship Island	307	1,310,989	404,298	1,886,403	610,137	501,878	47,925	843,843	105,967	2,113,333	112.029	—226,931	154,695	—381,956	—328,238
Gulf Coast Lines	....	5,446,543	2,089,334	8,040,411	2,145,616	1,484,474	172,244	2,926,556	326,167	7,046,975	87.64	993,436	219,000	772,647	167,333
Gulf, Colorado & Santa Fe	1,915	10,810,122	4,124,784	16,301,883	4,789,570	3,741,013	216,563	8,156,436	459,055	17,330,856	109.379	—1,028,974	693,929	—1,724,389	—2,598,575
Gulf, Mobile & Northern	469	1,748,899	462,568	2,394,791	1,032,337	634,555	84,235	1,167,313	122,009	3,040,449	126.960	—645,658	108,052	—754,156	—680,542
Hocking Valley	350	8,116,672	853,570	9,602,500	1,303,109	3,535,934	79,386	3,976,868	281,243	9,176,382	95.562	426,118	543,981	—117,880	—991,071
Illinois Central	4,799	63,980,678	17,410,138	89,914,786	17,961,449	24,662,262	828,827	40,948,993	2,143,524	87,263,268	97.051	2,651,518	4,918,604	—2,283,137	—6,023,023
Illinois Terminal	12	624,961	.....	659,675	36,010	77,973	6,259	168,558	40,786	329,588	49,962	330,088	9,099	320,979	293,243
Indiana Harbor Belt	121	.....	.....	5,253,545	895,134	1,986,817	21,154	4,191,685	169,970	7,264,759	138.283	—2,011,214	85,614	—2,096,986	—1,822,308
International & Great Northern	1,159	8,141,686	2,255,174	11,465,331	2,536,566	3,090,232	161,813	6,296,037	398,936	12,527,465	109.263	—1,062,135	244,834	—1,311,284	—481,452
Kanawha & Michigan	176	2,620,279	421,064	3,188,586	676,959	1,276,687	26,379	1,325,183	110,489	3,415,698	107.122	—227,111	242,185	—469,300	—501,317
Kansas City, Mex. & Orient R. R. of Tex.	465	866,239	183,003	1,139,603	585,720	410,740	30,298	738,374	72,730	1,837,862	161.272	—698,259	50,844	—749,430	—257,400
Kansas City, Mex. & Orient, Receiver	272	816,034	150,741	1,038,835	392,960	387,140	30,980	652,135	87,547	1,550,761	149.279	—511,927	61,615	—573,590	—156,827
Kansas City Southern	779	8,944,375	1,964,730	11,902,048	1,839,658	2,667,489	271,929	5,102,260	506,928	10,382,138	87.156	1,519,911	543,617	974,636	148,424
Kansas City Terminal	27	.....	.....	993,693	185,889	263,344	.....	570,088	22,366	1,060,862	106.760	—67,169	225,721	—292,895	—310,411
Lake Superior & Ishpeming	34	969,445	1,894	1,093,944	163,374	147,563	1,746	251,216	22,984	586,884	53.65	507,061	38,637	468,424	320,682
Lake Erie & Western	741	6,190,110	538,056	7,175,262	1,015,015	2,581,729	126,571	3,346,307	215,275	7,282,194	101.490	—106,932	321,531	—428,990	317,576
Lake Terminal	12	.....	1,692	846,371	135,548	216,291	.....	614,187	463	966,489	114,192	—120,118	46,788	—166,906	—84,871
Lehigh & Hudson River	96	1,634,507	31,371	1,739,844	237,694	376,384	14,206	990,896	62,573	1,681,753	96.661	58,091	69,151	—11,089	—287,314
Lehigh & New England	229	2,777,170	16,416	2,910,952	487,432	659,265	40,424	1,140,862	107,669	2,433,366	83.593	477,586	111,838	365,748	117,506
Lehigh Valley	1,435	35,957,559	4,933,348	44,665,823	8,460,633	14,244,392	537,196	26,791,793	1,054,510	51,303,620	114.860	—6,637,797	1,588,000	—8,230,074	10,635,831
Long Island	398	4,215,999	10,696,989	16,671,484	2,670,031	3,537,942	137,521	9,450,047	466,727	16,386,441	98.290	285,042	823,616	—541,934	—3,398,383
Los Angeles & Salt Lake	1,169	8,040,816	3,857,160	13,141,572	1,784,067	2,503,653	217,602	4,730,525	302,274	9,968,856	75.857	3,172,716	672,535	2,499,277	501,234
Louisiana & Arkansas	304	2,153,780	406,925	2,681,491	593,511	395,075	37,168	934,025	64,619	2,024,296	75.491	657,195	138,673	518,402	663,795
Louisiana Railway & Navigation Co.	344	2,209,587	347,737	2,715,437	675,054	448,340	48,988	1,210,565	89,933	2,472,881	91,067	242,557	112,000	130,436	165,868
Louisville & Nashville	5,041	56,883,328	16,854,428	80,097,497	14,996,988	22,696,123	1,342,519	37,790,936	1,950,963	79,181,461	98.856	916,036	2,364,105	—1,451,214	—8,304,665
Louisville, Henderson & St. Louis	199	1,352,113	487,678	2,004,284	514,592	283,837	43,222	736,237	71,249	1,649,137	82.280	355,147	30,143	324,992	—22,072
Maine Central	1,216	8,269,731	3,380,883	12,792,851	2,629,180	3,296,338	107,421	7,997,965	377,076	14,434,977	112.836	—1,642,126	745,223	—2,389,142	—1,583,158
Maryland, Delaware & Virginia	83	487,201	298,339	828,161	85,574	353,090	7,110	607,322	20,786	1,073,881	129.670	—245,720	16,000	—261,775	215,053
Michigan Central	1,862	33,468,070	14,764,858	54,558,815	7,952,914	14,988,368	629,316	24,711,582	1,098,829	50,293,792	92.182	4,265,022	1,767,365	2,492,925	—8,544,033
Midland Valley	389	2,072,580	800,981	3,020,130	814,289	580,227	28,404	1,195,473	139,391	2,757,784	91.313	262,346	57,467	204,463	—248,420
Minn., St. Paul & Sault Ste. Marie	4,243	20,210,442	5,843,226	28,995,131	5,834,136	6,021,880	321,450	13,632,546	804,279	26,859,724	92.64	2,135,408	2,246,368	—113,529	—3,316,637
Minneapolis & St. Louis	1,647	7,783,577	1,791,233	10,313,812	2,263,823	2,863,285	151,394	5,824,814	314,499	11,418,706	110.712	—1,104,894	467,860	—1,573,863	—1,470,995
Minnesota & International	195	533,570	239,846	832,723	229,279	162,540	4,626	423,700	31,448	851,590	102.265	—18,867	39,725	—58,589	—24,255
Mississippi Central	164	430,237	179,165	658,077	317,202	272,961	18,968	350,126	69,482	1,028,738	156.325	—370,661	34,615	—405,439	—297,801
Missouri & North Arkansas	364	786,279	378,752	1,288,791	511,458	300,505	26,885	612,502	68,608	1,519,754	117.921	—230,962	39,420	—270,416	193,038
Missouri, Kansas & Texas	1,715	17,347,626	5,540,900	25,222,968	5,040,571	7,224,908	308,804	9,199,146	900,254	22,808,533	90.427	2,414,435	894,391	1,516,732	—898,461
Missouri, Kansas & Texas R. R. of Texas	1,753	10,191,193	5,913,612	17,894,757	5,272,234	3,812,837	255,166	10,109,397	728,978	20,367,574	113.818	—2,472,817	459,060	—2,936,222	—3,281,334
Missouri, Oklahoma & Gulf	329	1,297,374	191,899	1,571,701	396,693	444,304	19,869	849,654	75,101	1,787,202	113.711	—215,501	85,566	—301,256	294,136
Missouri Pacific	7,300	51,802,723	14,091,744	73,138,449	17,312,687	19,424,602	1,158,723	32,652,224	2,097,907	73,057,040	99.888	81,409	2,953,941	—2,889,578	6,792,042
Mobile & Ohio	1,110	9,279,919	1,553,641	11,756,705	2,644,286	3,866,238	257,498	5,842,875	397,859	13,016,414	110.714	—1,259,709	481,418	—1,741,446	—990,477
Monongahela Connecting	7	.....	.....	2,039,893	230,486	282,952	4,484	940,767	51,276	1,509,965	74.02	529,928	136,075	393,853	518,882
Monongahela	108	2,136,673	209,155	2,405,845	913,214	476,165	7,052	954,404	63,608	2,414,443	100.358	—7,598	47,758	55,356	764,744
Montour	57	829,221	10,127	869,704	231,051	388,957	9,428	293,820	58,583	998,885	114.853	—129,181	19,426	—148,607	21,039
Mineral Range	101	414,926	2,458	434,044	132,870	160,597	2,395	255,227	9,669	560,758	129.194	—126,714	30,500	—157,236	—77,247
Nashville, Chattanooga & St. Louis	1,247	10,858,527	3,549,757	15,795,340	3,301,577	4,404,403	445,357	7,239,949	444,600	15,892,816	100.62	—97,476	359,500	—458,617	—732,332
Nevada Northern	165	1,140,677	81,886	1,270,851	238,561	217,180	7,123	328,525	39,729	832,026	65.470	438,825	80,897	357,927	190,272
New Orleans Great Northern	284	1,214,052	409,345	1,703,355	452,311	384,197	35,981	721,468	81,828	1,697,475	99.655	23,881	95,111	—71,292	—131,244
New Jersey & New York	48	105,042	668,162	835,340	97,923	159,549	10,623	527,113	18,963	814,171	96.31	21,169	17,291	3,866	—15,839
New York Central	6,069	129,352,611	61,473,962	225,830,997	35,250,360	65,128,947	2,299,900	112,869,500	6,154,101	225,526,316	99.865	304,681	8,486,668	—8,204,825	—38,981,932
New York, Chicago & St. Louis	575	15,969,796	826,416	17,453,642	2,021,074	3,031,922	337,591	7,320,265	538,261	13,293,947	76.167	4,159,695	600,000	3,557,620	325,289
New York, New Haven & Hartford	1,981	34,021,407	32,782,594	78,273,498	13,657,313	19,541,989	466,511	42,787,275	2,852,263	80,844,252	103.284	—2,570,755	2,930,535	—5,512,181	—10,722,256
New York, Ontario & Western	569	4,557,177	2,345,846	8,214,450	1,689,625	2,089,510	88,128	4,112,001	216,708	8,195,972	99.775	18,478	252,983	—234,507	999,111
New York, Philadelphia & Norfolk	122	3,901,223	840,772	5,207,034	539,481	1,522,339	78,603	3,220,103	118,593	5,608,210	107.70	—401,175	246,602	—647,990	—1,325,392
New York, Susquehanna & Western	136	1,963,462	504,255	2,816,071	425,160	649,127	22,467	2,088,864	78,309	3,263,923	115.903	—447,851	170,800	—621,814	—589,022
Norfolk Southern	920	3,421,671	1,328,882	5,143,973	1,284,564	1,113,860	112,774	2,719,702	242,892	5,475,202	106.44	—331,229	152,416	484,368	398,078
Norfolk & Western	2,201	41,378,334	6,295,343	50,723,454	8,592,574	19,091,277	459,608	23,564,542	1,241,408	53,126,181	104.736	—2,402,727	3,120,000	—5,525,477	—12,446,892
Northern Pacific	6,652	46,985,632	13,838,560	68,048,442	14,364,500	14,098,404	649,533	28,411,002	1,873,900	60,458,632	88.846	7,589,811	6,161,277	1,419,154	7,972,662
Northwestern Pacific	538	2,564,860	1,871,355	5,056,236	947,374	640,818	47,789	2,164,459	127,092	3,947,998	78.077	1,108,238	214,690	893,643	223,774

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST, 1920—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Oregon Short Line	2,358	$2,857,085	$806,095	$4,031,599	$975,826	$748,432	$46,263	$1,512,618	$159,254	$3,541,073	87.833	$490,525	$441,021	$49,504	—$1,463,461
Oregon-Washington R.R. & Nav. Co.	2,223	2,002,168	749,738	2,998,038	886,897	627,841	54,250	1,439,586	166,947	3,214,633	107.224	—216,595	213,728	—430,349	—1,298,069
Panhandle & Santa Fe	857	664,880	244,692	955,548	417,522	380,153	10,649	613,652	29,285	1,445,972	151.324	—490,425	19,041	—510,701	—673,793
Pennsylvania Railroad Co.	7,260	33,693,529	13,276,034	51,571,437	12,974,296	22,654,563	483,971	37,182,365	1,875,416	76,189,686	147.73	—24,618,250	1,893,819	—26,513,210	—34,839,876
Peoria & Pekin Union	19	31,335	4,835	146,694	27,065	64,629	486	159,266	6,430	257,875	175.790	—111,181	9,500	—120,681	—87,915
Pere Marquette	2,238	2,723,415	865,536	3,930,443	724,897	1,169,501	51,687	2,179,895	151,063	4,288,399	109.107	—357,956	65,864	—423,895	—1,607,185
Perkiomen	41	98,204	14,469	116,643	18,391	5,572	13	50,486	280	74,759	64.093	41,884	3,449	38,435	—12,143
Philadelphia, Beth. & New England R. R.	10	.....	.....	108,204	15,298	13,965	476	83,952	1,823	115,514	106.756	—7,310	1,335	—8,645	—7,767
Philadelphia & Reading	1,126	5,916,019	1,204,040	7,584,098	2,139,296	3,425,750	97,135	6,476,091	256,923	12,431,402	163.914	—4,847,304	252,671	—5,100,437	—6,318,362
Pittsburgh, Cin., Chicago & St. Louis	2,383	3,837,906	2,427,528	7,299,316	2,502,279	4,765,344	166,563	7,224,764	372,488	15,157,430	207.89	—7,858,114	315,876	—8,173,990	—8,794,571
Pittsburgh, Shawmut & Northern	210	111,259	6,735	120,864	51,295	76,770	2,703	87,969	10,538	229,289	189.71	—108,425	1,885	—110,310	—82,869
Pittsburgh & Lake Erie	224	2,903,918	324,929	3,476,607	765,047	1,229,693	22,694	1,319,479	72,587	3,410,066	98.086	66,541	246,906	—180,379	—863,319
Pittsburgh & Shawmut	103	125,757	5,119	132,710	53,655	57,237	1,615	72,141	7,506	192,153	144.792	—59,443	7,248	—66,692	—73,169
Pittsburgh & West Virginia	63	231,770	11,982	265,410	131,063	66,103	1,799	117,538	11,380	344,086	129.643	—78,676	12,798	—91,474	—68,186
Port Reading	21	133,691	.....	161,697	35,771	7,883	18	125,141	367	169,180	104.628	—7,483	6,611	—14,094	—83,012
Quincy, Omaha & Kansas City	255	87,047	29,098	118,838	61,623	81,655	1,024	83,275	3,592	231,114	194.48	—112,276	3,922	—116,198	—115,854
Richmond, Fredericksburg & Potomac	117	420,993	309,328	880,854	104,320	155,288	9,086	404,000	29,926	723,462	82.132	157,393	32,150	124,932	—347,592
Rutland	415	258,794	188,529	543,661	97,020	159,110	7,306	258,151	15,227	539,261	99.191	4,392	18,018	—13,626	—59,837
St. Joseph & Grand Island	258	269,788	36,537	326,100	150,142	69,230	3,649	176,675	21,907	422,904	129.685	—96,804	13,132	—109,936	—120,579
St. Louis Merchants Bridge Terminal	9	.....	.....	397,258	85,252	99,373	1,168	443,025	16,503	645,320	162.443	—248,063	28,141	—276,223	—302,961
St. Louis-San Francisco	4,757	5,054,099	2,661,768	8,100,832	2,513,984	2,497,992	107,957	3,854,387	307,956	9,228,243	113.917	—1,127,411	373,486	—1,502,956	—3,572,749
St. Louis Southwestern	968	1,514,015	252,212	1,843,435	293,634	257,458	53,728	575,903	57,649	1,244,181	60,995	599,254	65,511	533,743	149,322
St. Louis Southwestern of Texas	807	553,960	193,495	806,246	306,781	240,769	21,140	433,839	21,438	1,023,608	126.960	—217,362	23,000	—240,384	—224,695
St. Louis Transfer	6	.....	.....	126,477	14,735	25,652	300	98,984	3,819	143,491	113.453	—17,014	613	—17,627	—34,357
San Antonio & Arkansas Pass.	736	370,511	179,789	586,666	135,087	159,257	10,805	335,318	29,337	669,259	114.078	—82,593	13,750	—96,357	8,833
San Antonio, Uvalde & Gulf	317	92,196	35,972	136,308	32,410	35,432	2,451	46,605	6,961	123,861	90.869	12,448	2,277	10,162	1,860
Seaboard Air Line	3,563	2,171,451	1,039,836	3,619,595	931,887	1,224,989	164,237	2,236,299	341,131	4,929,736	136.195	—1,310,141	135,000	—1,446,206	—1,610,601
South Buffalo Ry Co.	11	75,254	.....	136,038	5,520	18,844	345	106,804	1,806	133,319	98.002	2,720	4,000	—1,280	11,512
Southern	6,971	8,390,430	3,955,824	13,609,929	1,342,940	2,760,430	167,448	6,119,836	296,013	10,406,766	76.464	3,203,223	427,024	2,760,526	574,294
Alabama Great Southern	313	772,041	277,297	1,118,079	97,420	274,727	20,080	444,212	26,904	872,783	78.061	245,297	35,563	209,722	80,975
Cincinnati Northern of Texas Pacific.	338	1,466,732	426,825	2,007,672	170,846	481,749	28,313	733,344	41,992	1,466,710	73.055	540,962	61,123	479,800	537,378
Georgia Southern & Florida	402	291,498	127,270	473,492	49,759	115,595	7,326	249,364	13,473	437,091	92.312	36,401	19,336	17,065	—27,337
New Orleans & Northeastern	207	541,205	125,972	727,413	118,839	82,258	11,585	307,203	16,999	542,392	74.562	185,021	43,712	141,285	19,519
Northern Alabama	110	100,955	20,234	123,938	33,904	8,306	1,614	54,378	3,537	101,740	82.090	22,198	3,918	18,281	—16,450
Southern in Mississippi	278	62,024	64,293	139,384	106,692	22,567	3,006	95,166	7,069	234,499	168.240	—95,116	9,800	—104,916	—114,029
Spokane, Portland & Seattle	549	520,111	300,441	880,107	353,435	138,859	12,458	374,540	30,742	920,369	104.574	—40,263	117,546	—157,809	—424,438
Spokane International	165	101,004	23,999	128,783	30,364	9,120	2,267	39,863	5,949	87,531	67.968	41,252	5,261	35,975	4,352
Staten Island Rapid Transit	23	81,007	137,680	247,335	97,026	37,299	2,629	182,193	16,402	335,459	135.629	—88,123	15,000	—103,458	—159,171
Tennessee Central	292	170,523	71,015	254,822	46,999	51,934	5,635	144,095	11,569	260,229	102.122	—5,407	5,719	—11,132	—21,529
Terminal R. R. Association of St. Louis.	36	.....	.....	411,187	159,464	105,919	1,253	340,281	13,062	627,785	152.676	—216,598	32,180	—248,805	—293,681
Texarkana & Fort Smith	93	144,124	27,093	182,953	33,695	18,238	3,961	109,583	10,656	175,864	96.126	7,089	8,070	—980	—45,593
Texas & Pacific	1,946	2,000,102	1,112,405	3,412,380	1,010,746	864,918	54,017	2,109,854	151,778	4,243,993	124.370	—831,613	89,150	—920,914	—1,599,964
Toledo & Ohio Central	503	1,184,325	86,314	1,355,281	251,291	416,567	14,937	565,628	25,013	1,277,043	94.227	78,238	—17,719	95,957	—102,495
Toledo, Peoria & Western	247	161,108	63,902	238,608	44,297	118,508	7,017	202,535	10,135	382,491	160.301	—143,883	8,500	—152,383	—155,808
Toledo, St. Louis & Western	454	1,018,669	52,826	1,105,856	295,111	247,718	21,641	522,687	18,480	1,105,614	99.978	242	31,000	—30,758	—212,118
Trinity & Brazos Valley	368	135,380	31,808	174,113	103,740	110,171	3,758	158,895	26,165	402,730	231.304	—228,617	7,210	—235,827	—180,574
Ulster & Delaware	128	70,267	106,431	201,451	36,287	36,260	5,157	173,063	11,126	262,945	130.526	—61,494	5,000	—66,494	—82,656
Union R. R. of Pennsylvania	45	.....	.....	937,626	112,866	190,972	1,056	804,131	9,594	1,118,619	126.510	—180,993	11,105	—192,098	—217,776
Union Pacific	3,614	8,776,887	2,409,271	12,448,429	2,598,924	2,491,564	123,214	3,817,702	404,956	9,691,983	77.857	2,756,446	894,721	1,860,511	—2,425,342
Utah Railway	98	180,197	754	181,430	29,402	31,179	294	40,863	3,470	105,208	57,988	76,222	5,173	71,049	23,018
Vicksburg, Shreveport & Pacific	171	207,206	119,022	352,899	147,311	103,210	15,417	211,784	20,234	502,545	142,405	—149,646	14,036	—163,701	—224,167
Virginian	523	1,445,430	94,899	1,682,737	254,003	418,575	11,539	615,346	41,108	1,334,288	79.292	348,449	63,467	284,971	—143,711
Wabash	2,473	4,130,068	1,189,978	5,773,898	1,118,542	1,398,390	80,765	2,713,211	166,398	5,505,903	95.36	267,995	131,041	136,777	500,999
West Jersey & Seashore	361	593,357	1,532,400	2,274,745	430,296	420,821	13,570	965,501	40,847	1,881,378	82.71	393,367	41,922	351,423	—494,007
Western Maryland	797	1,456,617	156,457	1,721,947	678,381	673,745	71,049	904,061	61,611	2,414,710	140.231	—692,763	50,000	—742,763	—913,275
Western Pacific	1,011	1,284,423	313,054	1,687,013	333,256	271,598	38,775	724,988	54,447	1,458,685	86.465	228,329	66,757	161,338	—453,668
Western Railway of Alabama	133	134,009	93,192	250,237	42,236	62,540	3,094	90,878	7,031	209,536	83.735	40,701	7,175	33,526	—15,997
Wheeling & Lake Erie	511	1,486,684	93,715	1,718,986	488,441	641,201	32,441	921,994	44,468	2,133,028	124.086	—414,042	68,613	—482,793	—584,920
Wichita Falls & N. W.	329	190,655	57,634	261,211	80,095	36,788	1,220	138,868	13,437	270,409	103.52	—9,198	10,742	—19,940	—25,436
Wichita Valley	256	100,212	55,200	162,962	71,924	23,789	187	79,796	1,955	177,651	109.015	—14,689	5,066	—19,757	—65,859
Yazoo & Mississippi Valley	1,381	2,199,963	562,915	2,899,304	1,055,749	724,774	41,829	1,546,432	91,927	3,460,908	119.370	—561,604	137,546	—699,204	—1,575,463

* This includes $27,555.34 representing War Taxes (8% Federal Income Tax) for month of August, and $63,158.17 for period eight months until August 31, 1920.

REVENUES AND EXPENSES OF RAILWAYS

EIGHT MONTHS OF CALENDAR YEAR 1920—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Oregon Short Line	2,352	$20,434,051	$5,077,059	$28,269,463	$4,507,770	$4,804,067	$257,320	$9,263,377	$1,018,040	$20,472,728	72.419	$7,796,735	$2,457,104	$5,338,899	—$348,853
Oregon Wash. Railroad & Navigation Co.	2,222	14,454,893	4,932,214	21,533,529	3,999,584	3,954,523	319,794	9,206,783	1,029,076	18,793,964	87.277	2,739,564	1,490,826	1,248,342	—1,416,080
Panhandle & Santa Fe	794	4,079,585	1,272,686	5,749,234	1,520,124	1,971,816	38,303	2,636,439	144,156	6,303,876	109.647	—554,642	160,197	—716,009	—314,045
Pennsylvania Railroad Co.	7,260	219,689,209	84,221,316	337,031,353	62,151,551	115,813,440	3,108,381	185,610,195	9,373,512	382,388,684	113.46	—45,357,332	12,315,874	—57,711,154	—78,836,282
Peoria & Pekin Union	19	213,533	32,392	1,006,953	143,692	296,353	1,978	720,056	38,733	1,201,317	119.301	—194,363	76,000	—270,363	117,503
Pere Marquette	2,231	17,669,866	4,645,950	25,132,796	3,664,233	6,084,162	331,542	12,086,954	851,922	23,095,701	91,894	2,037,095	509,825	1,525,842	—3,349,117
Perkiomen	41	639,589	85,919	771,030	74,538	35,801	110	328,909	2,310	441,829	57.303	329,201	20,692	308,510	—20,716
Philadelphia, Beth. & New Eng. R. R. Co.	10	.....	.....	841,604	126,855	128,952	3,604	606,540	12,436	878,387	104.370	—36,783	8,850	—45,633	—64,089
Philadelphia & Reading	1,126	44,954,661	7,280,782	55,773,637	7,320,876	16,716,961	447,922	30,169,623	1,360,431	56,199,604	100.763	—425,967	1,413,618	—1,842,670	—5,955,559
Pittsburgh, Cin., Chicago & St. Louis	2,383	41,772,025	14,893,861	65,724,895	11,432,242	23,905,500	768,567	35,715,298	1,890,757	74,393,019	113.19	—8,668,125	2,514,001	—11,183,517	13,854,461
Pittsburgh & Lake Erie	224	15,188,879	2,042,062	18,730,682	4,206,819	8,319,830	148,942	7,862,507	486,062	21,037,785	112.317	—2,307,103	1,068,758	—3,376,336	—5,671,136
Pittsburgh, Shawmut & Northern	210	844,583	51,178	919,508	245,750	456,580	14,699	491,810	66,415	1,275,297	138.80	—355,789	15,084	—371,390	—131,172
Pittsburgh & Shawmut	103	988,626	40,965	1,039,380	235,764	279,752	11,343	417,076	51,617	995,551	95.780	43,829	8,076	35,753	197,520
Pittsburgh & West Virginia	63	1,176,634	77,509	1,400,135	480,033	426,545	12,732	574,572	75,089	1,657,225	118.362	—257,090	112,762	—371,440	147,448
Port Reading	21	856,270	.....	1,111,876	154,108	79,202	152	692,441	12,151	938,054	84,367	173,822	63,628	110,194	—424,953
Quincy, Omaha & Kansas City	225	549,199	200,993	847,651	373,231	232,966	4,152	514,538	18,253	1,142,720	134.76	—295,069	30,329	—325,444	—234,569
Richmond, Fredericksburg & Potomac	117	3,474,476	2,426,542	7,334,100	677,934	1,181,479	56,746	2,980,090	206,976	5,194,823	70.831	2,139,277	240,570	1,898,218	—1,776,186
Rutland	415	1,937,373	1,002,496	3,628,186	745,662	1,076,222	43,600	1,892,069	115,271	3,887,797	107.155	—259,612	148,177	—407,802	—432,383
St. Joseph & Grand Island	258	1,626,802	293,386	2,088,739	778,237	373,024	19,339	1,144,123	112,178	2,441,875	116.906	—353,136	95,585	—448,758	—458,460
St. Louis Merchants Bridge Terminal	9	.....	2,892	2,532,239	416,460	510,830	6,959	2,038,934	70,907	3,044,089	120.213	—511,850	102,971	—614,963	—172,809
St. Louis-San Francisco	4,757	38,358,643	16,174,773	58,028,517	10,826,412	14,006,225	553,035	25,064,180	1,853,880	52,163,737	89,893	5,864,780	1,979,998	3,876,693	—5,181,271
St. Louis Southwestern	961	11,178,819	1,485,181	13,344,934	1,867,797	2,297,500	330,229	3,679,479	384,507	8,600,319	64.445	4,744,615	473,028	4,271,446	2,688,113
St. Louis Southwestern of Texas	807	4,229,561	1,050,072	5,811,182	1,934,750	1,882,777	128,215	3,235,887	247,505	7,426,367	127.794	—1,615,185	192,468	—1,808,042	—874,553
St. Louis Transfer	6	.....	.....	875,983	74,256	141,038	1,635	477,402	20,491	714,822	81.602	161,161	2,196	158,965	17,290
San Antonio & Aransas Pass	736	2,058,630	852,038	3,230,079	899,887	842,666	58,247	1,846,379	159,179	3,804,276	117.775	—574,197	116,250	—690,750	38,248
San Antonio, Uvalde & Gulf	317	617,306	316,660	992,084	286,155	186,630	18,160	371,095	47,701	1,109,742	111.860	—117,658	17,831	—135,619	—78,673
Seaboard Air Line	3,563	20,982,013	6,870,963	31,916,922	6,429,365	8,576,596	827,533	16,935,053	1,313,864	34,423,418	107.853	—2,506,496	1,170,000	—3,682,663	—5,569,086
South Buffalo	11	430,217	.....	925,649	54,802	118,912	4,041	623,476	16,784	818,016	88.372	105,634	32,000	73,634	—3,479
Southern	6,974	64,472,884	23,771,893	98,944,410	12,874,648	18,752,655	1,305,431	44,717,041	2,566,954	81,192,788	82.058	17,751,622	3,247,894	14,476,799	7,335,567
Alabama Great Southern	313	5,202,174	1,592,558	7,364,260	752,112	1,629,947	145,698	2,760,518	186,482	5,532,391	75.124	1,831,869	257,360	1,573,492	738,501
Cincinnati, New Orleans & Tex. Pacific	338	9,553,426	2,667,111	13,231,729	1,461,273	3,339,548	209,995	4,877,384	307,520	10,284,519	77.726	2,947,211	437,232	2,508,722	1,551,677
Georgia Southern & Florida	402	2,113,947	1,005,950	3,488,449	510,174	828,162	58,606	1,778,346	97,949	3,293,309	94.406	195,139	150,673	42,815	—74,221
New Orleans & Northeastern	207	3,631,710	851,161	5,019,366	767,174	974,917	85,093	2,069,792	141,293	4,075,572	81.197	943,794	328,712	614,639	368,184
Northern Alabama	210	827,135	119,899	995,446	244,367	60,986	12,602	475,233	21,275	814,464	81,819	180,983	34,353	146,578	140,551
Southern in Miss.	278	653,544	398,583	1,173,405	500,587	204,730	23,724	717,758	48,624	1,495,422	127.443	—322,017	78,400	—400,434	—314,103
Spokane, Portland & Seattle	549	3,732,948	1,520,988	5,723,578	1,375,437	771,028	60,885	1,994,551	190,879	4,461,957	77.957	1,261,621	741,907	517,573	—448,185
Spokane International	160	820,171	149,901	1,000,445	172,457	81,352	18,674	309,690	41,467	626,636	62.636	373,808	40,892	332,591	165,391
Staten Island Rapid Transit	23	615,230	770,150	1,536,136	339,327	277,943	11,342	921,129	85,945	1,635,686	106.480	—99,549	120,000	—220,179	—359,356
Tennessee Central	292	1,331,535	409,368	1,886,450	354,258	407,832	38,100	936,125	83,507	1,819,684	96.461	66,766	44,401	21,717	290,887
Terminal Railroad Ass'n of St. Louis	36	.....	8,483	2,907,845	624,765	545,259	8,173	1,450,891	70,672	2,735,245	94.065	172,601	296,611	—124,066	—133,938
Texarkana & Fort Smith	93	1,000,888	182,331	1,301,212	183,869	135,189	19,279	473,053	49,191	862,084	66.252	439,128	88,080	350,993	243,461
Texas & Pacific	1,946	15,745,348	7,888,288	25,883,069	5,138,707	5,675,532	306,992	11,701,637	786,138	23,949,299	92.528	1,933,770	885,700	1,042,632	—1,605,220
Toledo & Ohio Central	486	6,615,284	547,845	7,605,034	1,254,711	2,447,325	81,182	3,711,161	178,814	7,699,338	101.239	—94,304	329,573	—423,907	—551,411
Toledo, Peoria & Western	247	790,281	411,722	1,320,000	224,093	366,607	22,623	784,673	56,694	1,454,629	110.199	—134,628	68,000	—202,629	—63,840
Toledo, St. Louis & Western	454	6,523,932	285,158	7,177,516	1,499,828	1,484,827	97,500	2,986,440	122,096	6,190,290	86.850	987,226	248,000	738,932	202,172
Trinity & Brazos Valley	368	924,080	178,201	1,174,148	531,520	435,044	17,812	631,322	88,893	1,704,263	145.149	—530,115	62,819	—593,042	—139,711
Ulster & Delaware	128	438,088	265,218	919,876	156,636	181,379	22,307	681,424	56,349	1,102,894	119.896	—183,018	40,000	—223,016	—68,366
Union Railroad of Pennsylvania	45	.....	.....	6,232,915	709,211	1,690,654	2,996	4,145,216	66,326	6,614,404	106.120	—381,488	71,582	—453,070	—670,219
Union Pacific	8,614	54,800,242	14,471,425	78,939,786	13,989,779	15,885,152	672,280	24,475,576	2,489,000	59,579,842	75.475	19,359,944	4,299,050	15,056,978	6,006,255
Utah	68	1,206,198	6,358	1,216,124	153,756	239,119	1,556	282,733	22,408	699,571	57.524	516,552	51,746	464,806	219,954
Vicksburg, Shreveport & Pacific	171	1,764,905	790,309	2,796,974	521,181	538,385	60,119	1,118,514	96,228	2,364,876	84.551	433,098	106,667	325,251	27,275
Virginian	523	8,004,717	546,033	10,487,353	1,331,408	2,221,193	61,864	4,090,916	237,875	7,929,358	75.608	2,557,995	469,949	2,088,026	816,768
Wabash	2,473	5,199,090	7,113,217	35,944,897	6,805,385	10,123,362	689,535	19,128,387	1,234,104	38,223,424	106.34	—2,278,527	1,029,911	—3,310,817	—4,727,485
West Jersey & Seashore	361	2,445,657	6,031,797	9,153,455	2,105,717	1,957,580	84,242	4,788,452	210,993	9,210,404	100.62	—56,949	402,719	—459,823	—1,076,008
Western Maryland	770	9,988,738	797,217	11,608,844	2,737,001	4,241,570	327,614	5,093,599	405,315	12,936,859	111.439	—1,328,015	386,400	—1,714,415	—1,583,894
Western Pacific	1,018	7,545,747	1,700,069	9,803,088	1,670,984	1,536,964	214,083	3,460,900	290,743	7,378,023	75.262	2,425,164	483,663	1,940,853	705,177
Western Railway of Alabama	133	1,014,656	613,783	1,826,005	270,942	406,860	46,782	692,952	64,417	1,511,075	82.712	315,830	53,200	262,623	—81,065
Wheeling & Lake Erie	511	8,942,998	543,648	10,440,017	1,784,155	2,738,002	114,644	4,702,052	253,421	9,620,652	92.151	819,365	526,731	291,198	—434,819
Wichita Falls & N. W.	329	1,237,167	387,062	1,747,091	504,811	259,322	8,988	934,088	93,998	1,801,092	103.06	—53,997	86,809	—141,119	—27,876
Wichita Valley	256	702,555	341,263	1,095,035	307,302	134,932	468	491,077	13,006	946,701	86.454	148,333	43,774	104,525	12,766
Yazoo & Miss. Valley	1,341	11,568,815	3,893,913	19,630,599	4,689,707	4,734,262	207,316	7,989,845	497,738	18,155,934	92.487	1,474,665	697,760	772,437	—2,279,819

‡ Includes $4.25 war taxes. † Includes $25,000 war taxes.

Traffic News

The Wabash and the New Jersey, Indiana & Illinois announce regular sleeping car service between Detroit, Mich., and South Bend, Ind., leaving Detroit at 11.15 p. m. and South Bend at 1 a. m. The New Jersey, Indiana & Illinois connects with the Wabash at Pine, Ind., and extends from that point northward 12 miles to South Bend.

The South San Francisco Belt Railway, which gives switching service to the industries at South San Francisco, Cal., has applied to the Railroad Commission of California, for authority to increase its rates to $3.50 a car. At present the company is charging $2.50 a car, with a special rate of $1.00 a car when two or more cars are handled for a shipper at the same time.

The American Association of Passenger Traffic Officers elected the following representatives for the ensuing year on October 14: President, W. A. Russell, passenger traffic manager of the Louisville & Nashville; vice-president, John F. Francis, general passenger agent of the Chicago, Burlington & Quincy, and secretary and treasurer, W. C. Hope, general passenger agent of the Jersey Central.

The transcontinental railroads will no longer transport any commodity at a rate based upon the valuation placed upon that commodity by the shipper. With the lone exception of ore, the valuation restriction on all shipments was cancelled at the recent meeting of the executives of the transcontinental lines at Chicago. Commodities formerly carried with valuation restrictions, will be classed as any other merchandise.

Intrastate Rate Proceedings

John E. Benton, solicitor of the National Association of Railway and Utilities Commissioners, has issued another supplemental bulletin regarding the status of intrastate rate proceedings. In the brief filed by the state commissions with the Interstate Commerce Commission in the New York rates and fares case is a statement in tabulated form showing the action taken by the state commissions upon carrier applications for intrastate rate advances, passenger and freight. This tabulation, as printed, covers all states from which information had been received prior to October 8. In some states the increases allowed have been under orders of a temporary character, made pending final orders which will follow further hearings. Since the brief was printed information has been received from the commissions in Kansas and Tennessee, as follows:

Kansas.—The commission has allowed a straight increase in freight rates of 30 per cent, with the following exceptions: No increased was allowed on fuel oil, rates on road building material were increased one-half cent per cwt., and rates on coal were increased according to a sliding scale from 10 to 40 cents per ton. The increase on passenger rates was denied. The Pullman surcharge was allowed and also the increase on baggage rates, and on milk and cream.

Tennessee.—The commission has allowed an increase on freight rates of 25 per cent, corresponding to the interstate increase, with the following exceptions: No increase was allowed on carload shipments of sewer pipe, sand, gravel, brick, road building material, fertilizer and fertilizer material pending further hearing. Passenger rate increases, the Pullman surcharge and increases on baggage rates and milk and cream rates were allowed corresponding to the interstate increases.

Coal Production

Recovering from a temporary depression caused largely by labor disturbances in Northern Ohio, the production of soft coal passed the 12,000,000-ton mark during the week ended October 9. The total output is estimated at 12,075,000 net tons, according to the weekly bulletin of the Geological Survey. This was an increase of 224,000 tons over the week of September 25 and of 706,000 tons, or 6.2 per cent over the week of October 2. The average production per working day, 2,012,000 net tons, was the largest tonnage in any week since last winter, except one. Telegraphic reports of loadings on Monday and Tuesday of the following week indicate a further increase. Production during the first 240 working days of the year has been 416,206,000 net tons, which is about 45¼ million tons less than for the corresponding period of 1918, but 51 2/3 million tons ahead of that for the corresponding period of 1919. Production of anthracite also continued to increase during the week and shipments were the largest of any week since July. Dumpings of soft coal at Lake Erie ports during the week ended October 9 were still short of the million mark. The total is reported as 971,262 tons. The cumulative lake movement from the opening of the season now stands at 16,720,000 tons, as against 24,177,000 in 1918, and 20,005,000 in 1919. The movement to tidewater increased during the week. Cars dumped over tidewater piers numbered 27,697, as against 26,361 in the preceding week. The shipments to New England were 202,000 tons, almost exactly the same as during the preceding week. September set a new record for bituminous coal handled over tidewater piers. The total was 5,447,000 net tons, an increase of 95,000 tons over August, hitherto the record month. New England shipments increased from 1,048,000 to 1,108,000 tons. The all-rail movement to New England recovered again during the week. For the week ending October 2 the percentage of full time output lost on account of transportation disability was 22.4.

According to a statement by the National Coal Association, this 12,000,000 ton-a-week output has been achieved "through aggressive co-operation of the railroads running to the mining fields which, within the last two weeks, have greatly increased the supply of open top cars at the mines." The average weekly output at the soft coal mines was 11,728,250 tons for the four weeks ended October 9, the statement says. Prior to that it had been running at approximately 10,500,000 tons a week. The railroad executives say that, working under the recent priority orders of the Interstate Commerce Commission, they will be fully able to supply enough cars to insure the 12,000,000 ton-a-week output as long as exigency requires it. With the achievement of the 12,000,000 ton output a week, the entire soft coal situation has appreciably eased up.

"Quick results have been obtained in relieving the household situation in Ohio, Indiana, Michigan, Eastern Tennessee, Eastern Kentucky and Western Pennsylvania, where, up to 10 days ago, much concern had been felt over immediate supply. Working under the new program, calling for 2,100 cars a day, or 105,000 tons of soft coal, the railroads are now shipping coal to fill emergency wants in those states. While the car supply at mines in Southern Ohio was short of the scheduled allotment during last week, railroad executives explain that this was due to the necessary diversion of cars to the beet sugar industry, and that they have arranged to overcome this shortage at the mines at once.

"Reports of the National Coal Association show that Chicago, St. Louis and distributing points along the Mississippi and Missouri valley are now getting sufficient soft coal shipments for immediate wants. The railroads will have no difficulty, they say, in keeping up the supply of cars for this movement.

"The movement of bituminous coal to the Great Lakes for trans-shipment to Northwestern points, due to the concerted efforts of the railroads, has now reached the point where the 4,000 car-a-day schedule, embracing the shipment of 1,200,000 tons of soft coal to the Lake docks each week, has finally been attained. Reports show that the loadings at the bituminous mines for the first half of October actually exceeded 4,000 cars a day. Fogs on the lake have prevented moving all of the coal dumped at the docks under this schedule within the last week, but it is expected that, with more favorable weather conditions, the daily lake schedule will easily be carried out from now until the close of navigation, around December 1.

"Altogether the soft coal situation is particularly encouraging. To insure against any shortage in winter supply, the 12,000,000 ton-a-week production must be kept up. It is imperative that the railroads maintain the car schedule necessary for this output."

Commission and Court News

Interstate Commerce Commission

The commission has denied Agent Fairbanks' application asking for authority to establish on less than statutory notice proposed changes in rules of the National Code of Demurrage Rules, providing for the following charges after the expiration of free time: For each of the first 4 days, $3; for each of the next 3 days, $6; for each succeeding day, $10, on cars not subject to the average agreement.

The Commission has suspended until February 12 the operation of certain tariffs of the Spokane & Eastern tariff, providing for the non-absorption of the switching charges at Coeur d'Alene, Idaho, on lumber received from the Northern Pacific originating at Coeur d'Alene and Post Falls, when destined to points on or via the Chicago, Milwaukee & St. Paul, the Great Northern, the Northern Pacific and other lines, resulting in an increase of 2½ cents per 100 lb.

The commission has ordered a proceeding of investigation and a hearing before Examiner Healy, at Raleigh, N. C., on November 12, on a petition filed by the railroads averring that because of an act of the general assembly of North Carolina the state corporation commission is without power to authorize an increase in intrastate passenger fares in excess of 3 cents, and that while 150 pounds is the maximum amount of baggage that can be carried free for each passenger in interstate travel, the general assembly requires carriers to transport not to exceed 200 pounds of baggage per passenger without additional charge, within the state. A hearing has also been announced to be held before Commissioner Woolley at Tampa, Fla., on November 3, on Florida rates.

The commission has also ordered a proceeding of investigation and a hearing before Examiner W. A. Disque at St. Louis, Mo., on November 8 regarding the action of the Missouri Public Service Commission in permitting increases in intrastate freight rates to such an extent only as when coupled with the increases authorized by the Railroad Administration in 1918 would not result in a total increase of more than 70 per cent.

Personnel of Commissions

Seely Dunn, formerly for many years an officer in the operating department of the Louisville & Nashville, has been appointed assistant director of the Bureau of Statistics of the Interstate Commerce Commission at Washington.

Court News

Hours of Service Act Held Applicable To Yard Movements

In an action for an alleged violation of the Hours of Service Act by permitting an employee to work more than 16 hours in the 24 the railroads' only contention was that the act applies only to movements of trains over main line tracks, and not to mere yard movements, as were made in this case. The employee in question was a brakeman in the Pennsylvania's Altoona yards, engaged in connection with an engine moving cars about the yard to make up trains for the purpose of getting cars to points in the yards where they could be iced or repaired. At no time did the engine make any movement along main line tracks. Sometimes 4 cars or less were attached to the engine. Sometimes as many as 15. The Circuit Court of Appeals, Third Circuit, holds that the brakeman was connected with the movement of a train and the company was subject to the penalty. The court holds that although a distinction has been drawn under the federal Safety Appliance Acts between a train consisting of an engine and cars assembled and coupled for a run, and movements in yards to assemble and break up outgoing and incoming trains, these decisions are not applicable to cases arising under the Hours of Service Act.—Pennsylvania v. United States, 265 Fed. 609.

Foreign Railway News

LONDON.

J. H. Thomas, M.P., secretary of the National Federation of Railwaymen, paid a short visit to Prague, where he was the guest of M. Masaryk, president of the Czecho-Slovak Republic.

Russia Buying Engines From Germany

The Soviet government has ordered 6,000 steam locomotives and a large number of turbines from Germany, according to reports from Berlin.

Consortium to Aid Chinese Railways

With the signing of the International Chinese Consortium agreement on October 15, the extension and improvement of that country's railways can be definitely planned. It is thought that the first application for credit under the new agreement will come from those interested in extending the Hukuang Railway. This line is in good physical condition, but is said to be much too short for the territory it is expected to serve.

Bids for Electrification of Chilean Railway

The Chilean Government is asking for bids for the electrification of the first zone of the state railway lines, according to a report from Ambassador Joseph H. Shea at Santiago. This zone includes the line from Valparaiso to Santiago. The bids, which will be received up to March 31, 1921, are of two classes, viz.: those proposing to furnish the electric power, and those proposing to furnish the equipment and rolling stock of the line to be electrified.

To Build India-Afghanistan Railway

Extension of the government railway from Jamrud, where it now terminates, up the Khyber Pass to the Afghan frontier is a project which has been approved by the government of India. The line is of 5 ft. 6 in. gage. It is hoped that the Afghan government will build a line from Kabul, the capital, to connect with this line at the frontier, thereby furthering not only commerce and trade, but the cause of civilization as well, since the projected line would transverse a country inhabited by warlike tribesmen.

Standardization of England's Electrified Railways

LONDON.

A report has just been issued by the Electrification of Railways Advisory Committee appointed by the Minister of Transport in England, which favors standardization both of methods and appliances. The direct current system is favored for general adoption, but it is not proposed to alter the present system of operation on the London, Brighton & South Coast. The committee is to meet again and consider the question of equipment.

England's Ministry of Transport

LONDON.

There has been considerable discussion as to the future of England's Ministry of Transport. It has been reported that the government had seriously considered abolishing it, but Sir Eric Geddes, Minister of Transport, states there is no foundation for such a statement.

State control of the English railways terminates in August, 1921, and automatically the Ministry of Transport will be relieved of some of its present function. During the next session of the British Parliament, the Minister of Transport is to submit a bill dealing with the grouping of the railways of Great Britain in seven sections, each being under a board of management con-

sisting of 21 members, and this bill will form the basis for discussion of the final settlement. It is, of course, expected that there will be a large amount of criticism and opposition on the part of the railway interests in the House of Commons to such a bill. While the cabinet has undoubtedly discussed the matter from time to time, in view of its importance, nothing has occurred and no decisions have been taken likely to disturb the even tenor of Sir Eric Geddes's way or which indicate the early doom of the Transport Ministry.

Demonstration of the Regan Train Control System in England

LONDON.

A demonstration of the train control system of the Regan Safety Device Company, an American company formerly known as the Casale Safety Device Company, was made on the lines of the Great Eastern Railway, England, at Fairlop on the afternoon of September 30, at which a large number of distinguished guests were present, including the Duke of Manchester, J. H. Thomas, M. P., secretary of the National Union of Railwaymen, T. P. O'Connor, M. P., Sir Percival Perry, representative of the Ministry of Transport, and a large delegation of railwaymen.

A special train consisting of a locomotive and eight coaches was operated past "stop" and "caution" signals and a number of conditions were arranged for the purpose of indicating on the engine apparatus one of three condition, as un-



At the Trials of the Regan Train Control in England

limited speed, limited speed, and stop. In every case the tests were satisfactory and the device received commendable endorsement. J. H. Thomas in particular was enthusiastic in his remarks after having ridden on the engine during two or three of the tests.

The Regan system of train control was briefly described in the *Railway Age* of March 19, 1920 (page 948), at the time a similar demonstration run was made on the Chicago, Rock Island & Pacific. In the present case the special train which was used for demonstration purposes consisted of a suburban type locomotive and a train of five bogie and three saloon cars, having a weight of 221 tons. In no case after the "stop" application was applied did the train run more than 500 ft. beyond the "stop" signal, in each case the train being brought under full control before arriving at the stop indication. The trains of the Great Eastern are equipped with the Westinghouse air brakes, which is contrary to the general practice in Great Britain, vacuum brakes being generally used.

The Regan Safety Device Company has opened offices in London at 21 St. James street, S. W. 1. Joseph Beaumont, who was born in England, is chief engineer of the British company and will have entire charge of engineering matters.

Equipment and Supplies

Locomotives

THE SOUTHERN RAILWAY is asking for prices on 50 locomotives.

THE CENTRAL OF GEORGIA is inquiring for 6, 2-6-6-2 type locomotives.

THE CHICAGO, INDIANAPOLIS & LOUISVILLE is inquiring for 5 Mikado type locomotives.

THE AMERICAN LOCOMOTIVE COMPANY is building one 0-6-0 type locomotive for use in its shops.

THE PUBLIC BELT RAILWAY OF NEW ORLEANS has ordered 3, 0-6-0 type locomotives from the Baldwin Locomotive Works.

Freight Cars

THE UNION PACIFIC is asking for prices on 50 refrigerator cars.

THE WESTERN MARYLAND is inquiring for 100 55-ton hopper car bodies.

THE LEHIGH & NEW ENGLAND is inquiring for 100, 50-ton gondola cars.

THE DIERKS LUMBER COMPANY, Kansas City, Mo., is inquiring for 25 flat cars.

WOODWARD, WIGHT & CO., New Orleans, La., are inquiring for 5 or 6, 30-ton box cars.

THE MASSACHUSETTS OIL & REFINING COMPANY, Boston, Mass., is asking for prices on 200 cars.

THE NORTHERN PACIFIC has ordered 93 caboose cars from the Pacific Car & Foundry Company.

THE PITTSBURGH COAL COMPANY, Pittsburgh, Pa., is inquiring for from 50 to 150 all-steel gondola car bodies.

THE HAZEL ATLAS GLASS COMPANY, Wheeling, W. Va., is inquiring for 30 hopper cars and 30 gondola cars.

ARNHOLD BROTHERS, 21 State street, New York, are inquiring for 1,000, 40-ton gondola cars for export to China.

THE RICHMOND, FREDERICKSBURG & POTOMAC has ordered 50 55-ton hopper car bodies from the Pressed Steel Car Company.

THE U. S. NAVY is inquiring for one steel flat car of 40 tons capacity and 2 low side composite gondola cars of 40 tons capacity.

CLEMENTS & SON, 120 Broadway, New York, have ordered 10 tank cars of 10,000 gal. capacity from the Chicago Steel Car Company.

THE WESTERN PACIFIC, reported in the *Railway Age* of September 17 as inquiring for 600 gondola cars, has ordered 700 50-ton composite general service cars from the Pressed Steel Car Company.

THE WHEELING & LAKE ERIE, reported in the *Railway Age* of September 3, as inquiring for 3,000 freight cars, has ordered from the Standard Steel Car Company, 1,500 50-ton steel gondola cars; from the Pressed Steel Car Company, 500 50-ton steel gondola cars and 500 40-ton box cars; and from the American Car & Foundry Company, 500 40-ton box cars.

Passenger Cars

THE CHESAPEAKE & OHIO is asking prices on 30 passenger train cars.

THE RICHMOND, FREDERICKSBURG & POTOMAC is asking prices on passenger train cars.

Supply Trade News

James Clarence Harbourt, chief of publicity, at Wilmerding, Pa., of the **Westinghouse Air Brake Company,** Pittsburgh, Pa., died at his home in Pittsburgh, on October 9.

The Keith Railway Equipment Company, Chicago, is completing a new steel freight car shop at Hammond, Ind., which involves an expenditure of $300,000. The extension will give to the company complete facilities for building and repairing both steel and wooden freight cars, and tank cars.

M. A. Kretchmar, chief lubricating engineer of the Sinclair Refining Company, Chicago, has become associated with the **Horrocks Company,** Herkimer, N. Y., as supervising engineer in charge of equipment and sales promotion work. The Horrocks Company manufactures the Danight lubricator.

A. L. Whipple has been appointed representative of the **Locomotive Stoker Company,** Pittsburgh, Pa., with offices at 50 Church street, New York. In 1888 Mr. Whipple entered the service of the Fitchburg Railroad, of which he was later assistant to the purchasing agent. He subsequently served as assistant superintendent of the Hoosac Tunnel & Wilmington Railroad, from which position he entered the railway supply field as representative of the Boston Woven Hose & Rubber Company, and then went to the Curtain Supply Company, Chicago, as general sales agent. In 1907, he was sales manager for Forsyth Brothers Company, Chicago, and in 1913, vice-president of the Standard Heating & Ventilating Company. Mr. Whipple served as entertainment committee chairman of the Master Mechanics' and Master Car Builders' conventions in 1904 and 1905, and vice-president of the Railway Supply Manufacturers' Association in 1908. Before becoming connected with the Locomotive Stoker Company he was vice-president and acting general manager of the Railway Improvement Company, New York City.



A. L. Whipple

The Ackurate Rubber Company, Inc., 253 Broadway, New York, has been incorporated in New Jersey to manufacture insulating tapes, compounds and kindred specialties. **Willard C. Candee,** president, and **Charles V. Ackerman,** secretary and treasurer of the company, have been identified with this branch of the electrical industry for over 20 years. The company is handling its New York City trade direct and will establish agencies in the principal cities throughout the United States.

The St. Louis Pump & Equipment Company, engineers and manufacturers, has been organized, with headquarters at St. Louis, Mo., to manufacture and install liquid handling equipment, specializing in units for gasoline and oil, measuring devices, etc., especially adapted to railroad and industrial use. The company has opened executive offices in the International Life building and temporary factory space has been secured in the western industrial section of St. Louis. **C. C. Fredericks,** of Ft. Wayne, Ind., has been elected general manager, and **John C. Roberts, Jr.,** is president. Others affiliated with the company are: **Willard D. Smith, Sherwood Hines** and **J. S. Farrell.**

American Car & Foundry Company

W. H. Sanford, for many years district manager of the Buffalo, N. Y., plants of the American Car & Foundry Company, New York, has been appointed assistant vice-president in charge of sales in the Buffalo district. This is in connection with the company's plan of extension in that district.

Prior to the formation of the American Car & Foundry Company, Mr. Sanford was employed by the Union Car Company, and when that company was absorbed he was appointed paymaster and cashier at the Depew plant. In 1902 he was appointed local auditor of the Buffalo district, followed by promotion to the position of resident representative. In 1912 he was made district manager in charge of the Depew and Buffalo plants.

Mr. Sanford has been succeeded as district manager by Andrew H. Gairns, who was district manager of the company in Chicago. He will direct the operation of the new plant in Buffalo, also the foundries located there and the plant at Depew. Mr. Gairns has had an extended experience in steel car work and locomotive building and is well qualified to take up the duties demanded by the Buffalo district.

The company's new plant now under construction in Buffalo will be used for building all-steel cars, with a capacity for turning out 20 to 30 cars a day. It will be equipped with the most modern machinery and labor-saving devices known, and there will be a number of features introduced which are entirely new and novel to the car building industry. In addition to the new car-building plant, a modern up-to-date office building will be erected on property recently acquired across Babcock street. The grey iron foundry at the Buffalo plant has been completely re-equipped and is now engaged in quantity production. The Niagara wheel department has also been brought up to a high state of efficiency.

At Depew, during the recent war, the company was the largest producer of 155 mm. shells. Immediately following the armistice, the entire Depew plant was reconstructed and is now capable of building 20 cars a day. E. G. Englehart is assistant district manager at Depew in charge of operations at that place, reporting to Mr. Gairns.

The car company's plans, as outlined above, involve a total expenditure of $3,500,000. With the developments that have taken place, the car company becomes one of the largest manufacturing operations in Buffalo and vicinity.

Trade Publications

STEEL LOCKERS AND SHELVING.—The Van Dorn Iron Works Company, Cleveland, Ohio, has issued a pamphlet illustrating and describing the Van Dorn steel lockers and Van Dorn Simplex shelving.

HOT PROCESS SOFTENER.—"Reap as the Harvester" is the title of a 16-page booklet issued by the Graver Corporation, East Chicago, Ind., which contains an account of the installation and results secured by the Wisconsin Steel Company at South Chicago, Ill., with an installation of the Graver hot process water softener for the treatment of water taken from the Calumet river. The booklet is attractively prepared in three colors with numerous illustrations.

BELT LACING.—Under the title "Short Cuts to Power Transmission," the Flexible Steel Lacing Company, Chicago, has published a practical manual of belting practices. After discussing the factors to be considered in buying belts and describing the more important types in general use, the booklet covers the care of belts and the application of lacing. Valuable information concerning belt speeds, power transmitted, and the cause of belt troubles is given.

WATER SOFTENERS.—"Reap as the Harvester" is the title of a booklet published by the Graver Corporation, East Chicago, Ind., which describes the installation of Graver water softeners at the plant of the Wisconsin Steel Company and the savings effected by their use. In the second part of the book, the construction and operation of the Graver hot-process water softener is described. An interesting feature of the book is the series of artistic drawings of ore docks, blast furnaces and other equipment used in the manufacture of iron and steel.

Railway Construction

Baltimore & Ohio.—This company, together with the Chesapeake & Ohio and the American Car & Foundry Company, are considering the proposal of the city officials of Huntington, W. Va., that a viaduct be built over their tracks at Third avenue, Huntington. The proposed structure would have 47 spans from 25 ft. to 32 ft. in length, all of concrete girder and slab floor construction. The plans call for two approaches, one 205 ft. and the other 235 ft. in length, a 36-ft. roadway and two 6-ft. walks. The structure would carry two trolley tracks. The city officials estimate the cost of the improvement at approximately $252,000.

Chicago & Alton.—This company is completing the construction of its freight and office building at Harrison street and the Chicago river, Chicago. This building was begun in 1917, but construction was temporarily stopped during the war.

Chicago, Burlington & Quincy.—This company has ordered plate girder spans for use in the super-structure of the Rock river bridge at Rock Falls, Ill., to replace some Howe truss spans destroyed by fire some time ago. These spans will be erected by company forces.

Chicago, Milwaukee & St. Paul.—This company is constructing three stations to be used by the Northwestern Elevated Railroad, Chicago. The stations are being built at Howard avenue, Rogers Park and Loyola, under the concrete bridges forming a part of the elevated road at these crossings. The stations will be of brick construction, costing $20,000 each, and will be completed about December 1.

Chicago, Rock Island & Pacific.—This company contemplates the construction of a frame passenger and freight station at Maryland Heights, Mo. The company is also considering the erection of a car repair shed at Invergrove, Iowa, to cost approximately $25,000.

Chicago Union Station.—This company has entered into an agreement with the Post Office department for the construction of a post office terminal in Chicago for handling parcel post and transient mail, which is to be utilized in conjunction with the Union Station project. The building will be constructed by the Union Station company and will be leased to the government for a term of 20 years at an annual rental of $500,000 for the first five years, and $310,000 annually for the last 15 years. The new terminal, which will cost approximately $6,000,000, will be located between Harrison and Van Buren streets, just west of the Chicago river. The structure will be 800 ft. in length, 80 ft. wide, 6 stories high, and each floor will have 60,000 sq. ft. of floor space. Railroad tracks connecting the terminal with railways using the Union Station will be constructed beneath the main floor, and will provide space sufficient for 40 cars to be loaded at one time. The five upper floors of the building will be used for working and distributing the mail, and will provide additional space for storage of mail during rush times. It is understood that one of the main purposes of the new building will be to provide facilities for handling the bulkier classes of mail.

Elgin, Joliet & Eastern.—This company is enlarging its power house at Gary, Ind., and is installing two additional boilers of 225 h.p. each to serve the terminal of the road at Kirk Yard, Ind. The company is also replacing its turn-table at Gary with a new 100-ft., 350-ton turn-table operated by motor.

Great Northern.—This company has awarded a contract to Peppard & Fulton for rebuilding the outer portion of iron ore dock No. 3 at Allouez Bay, Superior, Wis., and for the construction of an approach to dock No. 1, at an approximate cost of $1,500,000.

Missouri, Kansas & Texas.—This company has entered into a contract with the Texas & Pacific for the joint use of the line between Whitesboro, Tex., and Ft. Worth. Under the terms of the agreement the line is being relaid with new 85-lb. rail, and all-wood trestles, and steel spans are being repaired and strengthened. The work is expected to be completed before the first of the year.

This company has awarded the contract for the erection of a $300,000 hospital building at Denison, Texas, has been awarded by the Hospital Association of this road, to Munn & Co., Dallas, Tex. The building, which will be of brick and reinforced concrete, with slate roof, will provide a capacity of 100 beds. The architects are Roberts & Gresenbeck of Dallas, Tex.

Missouri Pacific.—This company is rebuilding a section of its line extending from Poplar Bluff, Mo., east to Kinzar, a distance of about 2½ miles. This project involves raising the single track line between these two points on an average of 6 ft., and calls for the construction of 150 ft. of new pile trestle and the raising of 1,430 ft. of existing pile trestle to an average height of 6 ft. The work is made necessary in order to place the track of the Missouri Pacific above the levee now being constructed by the Inter-River district of Butler County, Mo. This company is also rebuilding its line from Fisk, Mo., west, to Ives, a distance of about 2¼ miles. The work calls for the construction of about 3,000 ft. of new pile trestle, and for raising the grade of the line on an average of 10 ft. for the entire distance. To facilitate construction and to avoid interference with traffic on the existing line, the company is constructing a new line about 30 ft. south of the existing track. The project also involves the reconstruction of the company's station facilities at Fisk, and the construction of a water station at Ives. The existing draw span across the St. Francis river is being replaced by two 50-ft. deck plate girders and one 91-ft. 6-in. through plate girder, having a 28-ft. pile trestle approach on each end, requiring 1,100 cu. yd. of concrete and 320,000 lb. of structural steel. The List & Weatherly Construction Company, Kansas City, Mo., is building the new bridge, and company forces are handling the rest of the work. The total cost of the entire project will be $403,000.

New Industries Company.—This company, fostered by the Chamber of Commerce of Youngstown, Ohio, contemplates the reconstruction of a branch line of the Erie, between Youngstown and Austintown, Ohio. An arrangement has been made by which the company will undertake the actual construction of line and will be repaid by the Erie.

New York Central.—At the Port Morris power station of this company in New York City, a 20,000-k.w. turbine and a 35,000-sq. ft. surface condenser will be installed. The General Electric Company has the contract for the installation of the turbine and the Worthington Works, New York City, will supply and install the surface condenser. The estimated cost of this work is approximately $1,000,000. This company has awarded a contract to the General Electric Company for the installation of a 2,000-k.w. rotary converter and three 750-k.w. transformers at its Irvington, N. Y., sub-station. The improvement will cost approximately $100,000.

Pacific Fruit Exchange Company.—This company has begun construction of an ice house and storage warehouse at Ogden, Utah, to form part of the $1,000,000 improvement project contemplated by this company and the Union Depot company of Ogden, which was noted in the *Railway Age* of September 24 (page 549).

Southern.—This company is contemplating the erection of a passenger and freight station at Russellville, Ala. A passenger station at Jasper, Ala., to cost approximately $75,000 is also being considered. The proposed improvements are both on the line of the Northern Alabama.

St. Louis & San Francisco.—This company is accepting bids for the construction of a freight house at Ada, Okla., to cost approximately $50,000.

St. Louis-San Francisco.—This company is constructing second track from Olathe, Kan., to Spring Hill, a distance of 7 miles. The company is also building a line from Eureka, Mo., to Pacific, 7 miles in length; a line from Lebanon, Mo., to Sleeper, 7 miles in length; and a section of road from Globe, Mo., to Monett, a distance of 4 miles. The Walsh Construction Company, Davenport, Ia., the List & Gifford Construction Company, Kansas City, Mo., and the Scott & White Company, St. Louis, Mo., are the respective contractors for these projects, which involve a total expenditure of $1,000,000.

Railway Financial News

BALTIMORE & OHIO.—This company has applied to the Interstate Commerce Commission for authority to participate in the National Railway Service Corporation's first equipment trust by the acquisition of equipment at a cost of approximately $14,000,000 thereunder. The company asks authority to issue conditional sale purchase notes to the amount of $13,000,000 and to endorse or guarantee the notes of the corporation to be given by it to the government for the amount of a loan by the government to the railroad of $5,200,000, for which the company has applied. The railroad also asks authority to pledge as additional security for the government loan $3,250,000 of its refunding and general mortgage bonds. It will pay $1,000,000 cash on account of the equipment, which is to include 1,000 box cars at $2,629 each, 1,200 hopper cars at $1,919, 500 refrigerator cars at $4,095 and 1,000 hopper cars at $2,800; also 50 Mikado locomotives at $84,000.

CENTRAL NEW ENGLAND.—The Interstate Commerce Commission on October 19 approved a loan of $300,000 to this company for the purpose of aiding the company to provide itself with additions and betterments to way and structures at an estimated total cost of $500,000. The company itself is required to finance $200,000 to meet the loan of the government.

CHICAGO & EASTERN ILLINOIS.—The sale of this road has been postponed to December 7 and the annual meeting of the company to November 24.

CHICAGO, BURLINGTON & QUINCY. W. W. Baldwin, vice-president, has been elected a director to succeed Samuel C. Scotten, deceased. President F. H. Rawson, of the Union Trust Company, a director, has been elected a member of the executive committee.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—The Interstate Commerce Commission on October 19 approved the making of a loan of $200,000 to this company to enable the carrier to construct a modern steel car repair shop at LaFayette, Ind.

ELGIN, JOLIET & EASTERN. This company has applied to the Interstate Commerce Commission for authority to issue $1,800,000 of equipment trust bonds dated April 1 and payable in 15 annual instalments with 6 per cent interest, to reimburse the director general of railroads for equipment allotted to the company during federal control. The bonds have been negotiated with the United States Trust Company of New York.

KANSAS CITY, MEXICO & ORIENT.—The Interstate Commerce Commission has authorized the receiver to issue a receiver's certificate to the amount of $2,500,000 for one year at 6 per cent to be pledged with the Secretary of the Treasury as security for a loan of $2,500,000 from the United States.

MOUNT TAMALPAIS & MUIR WOODS.—This company has applied to the Railroad Commission of California for authority to declare a stock dividend of 1,590 shares. The company proposes to distribute this dividend to its stockholders at the rate of one share to each two shares now held.

NATIONAL RAILWAY SERVICE CORPORATION. This corporation on October 19 announced an issue of $60,000,000 of its trust certificates for the purchase of equipment to be supplied to the railroads. This corporation was recently organized by the National Association of Owners of Railroad Securities. Its plan of operation was described in the *Railway Age* of August 6, page 241.

The certificates now to be issued are in two series, not to exceed $30,000,000 each, maturing in 15 years. Seven railroads or systems are thus far included in the two series, which provide two distinct methods under which the roads secure equipment. This announcement was accompanied by a statement by S. Davies Warfield, president of the corporation, reading in part as follows:

"The certificates of the service corporation of each series are divided into prior lien and deferred lien certificates. The prior lien certificates are prior in lien, bear interest at the rate of 7 per cent and will be taken by life insurance companies and investment institutions to the extent of 60 per cent of the present issue of each series. Deferred lien certificates to the extent of 40 per cent, bearing interest at 6 per cent, will be issued to secure the government loans to the Service Corporation as the terms to each carrier are approved by the Interstate Commerce Commission. The deferred lien certificates are deferred both as to principal and interest to the prior lien certificates in the hands of investors. A contingent fund and a sinking fund are provided under the trust agreements, which, with the carrier contracts are to be administered by the Service Corporation and the corporate trustees. As additional security to the Service Corporation's certificates, each carrier deposits with the corporate trustee its notes for the purchase or rental of the equipment."

Mr. Warfield stated that carriers other than those provided for in the series are in negotiation with the corporation for equipment. Twenty railroads, he said, have applied for equipment, at an aggregate cost, if supplied, of $125,000,000. The carriers expected to be included in one or the other of the present series are: Baltimore & Ohio; Chicago, Rock Island & Pacific; Bangor & Aroostook; Minneapolis & St. Louis; Wheeling & Lake Erie; Gulf Coast Lines (Tentative); Cincinnati, Indianapolis & Western (Tentative). Their equipment comprises locomotives and freight cars of various classes, the cost approximating $40,000,000.

SANTA FE NORTHWESTERN.—This company was incorporated under the laws of New Mexico on August 16, with an authorized capital stock of $1,000,000. The incorporators are Sidney M. Weil, Ivan Grunsfeld, Guy L. Rogers, J. E. Cox, and Lloyd Sturges, all of Albuquerque, N. M.

TABOR & NORTHERN RAILWAY.—This company, which proposes to take over the property of the Tabor & Northern Railroad, has applied to the Interstate Commerce Commission for authority to issue $45,000 of stock for the purchase of the road and repairing its track; also for the purchase of a locomotive and a passenger coach.

UNION TERMINAL COMPANY OF DALLAS, TEX. The Interstate Commerce Commission has granted authority to this company for the execution of contracts extending the maturity dates of $550,000 of 5 per cent unsecured notes from October 10, 1920, to October 10, 1921, with interest at 6 per cent.

VIRGINIA BLUE RIDGE. This company has applied to the Interstate Commerce Commission for authority to issue a number of short term notes aggregating $97,500, part of which are to renew existing notes about to fall due and some of which had already been issued without authority, through a misunderstanding of the requirements of the law.

WISCONSIN & NORTHERN.—This company has applied to the Interstate Commerce Commission for authority to issue and sell $49,400 of its first mortgage, 6 per cent gold bonds maturing January 16, 1924, which remain unsold of an issue of $1,600,000, dated January 16, 1919. The company desires to sell the bonds at a price not less than 75 per cent of par.

WELDING SOCIETY DECIDES TO FORM NEW YORK SECTION.—The American Welding Society called a special meeting of its New York members on October 14, at the Engineering Societies building, for the purpose of forming a Metropolitan section of the society. About forty members were present at the meeting, which was presided over by Comfort A. Adams, past president of the society. Temporary officers were chosen and a nominating committee was appointed for the purpose of choosing permanent officers for the local section at its first regular meeting, to be held on October 25, at four P. M., in the same building. Sections of the society have already been formed in Philadelphia, Chicago, Cleveland and Pittsburgh. The New York section will begin its career with 125 members who have been transferred from the parent association to the local section.

Railway Officers

Executive

L. C. Gilman, president of the Spokane, Portland & Seattle, with headquarters at Portland, Ore., has been elected vice-president of the Great Northern, with headquarters at Seattle, Wash., effective November 1.

Financial, Legal and Accounting

Alfred Evens, whose appointment as general attorney of the Chicago, Indianapolis & Louisville, with headquarters at Chicago, was announced in the *Railway Age* of October 1 (page 593), was born at Greencastle, Ind., on January 28, 1881. He graduated from De Pauw University in 1902, took post-graduate courses at the University of Chicago in 1904 and 1905, and received a degree from the Indiana University Law School in 1907. At the time of his recent appointment, Mr. Evens was local attorney for the Monon at Lafayette, Ind., a position he had held since 1915. In addition to this duty, he was legal representative of a number of Indiana bank corporations, and was engaged in private law practice.

Operating

John F. Collins has been appointed superintendent of marine department of the Erie, with headquarters at New York City, effective October 1.

W. R. Young has been appointed superintendent of telegraph and signals, of the Grand Trunk, with headquarters at Chicago, succeeding N. E. Baker, who has resigned, effective October 11.

G. H. Jacobus, superintendent on the Northern Pacific at Glendive, Mont., has been appointed superintendent of the Montana division, with headquarters at Livingston, Mont., succeeding T. H. Lantry, transferred, effective October 15.

William J. English, superintendent on the Erie at Jersey City, has been appointed superintendent of the Delaware and Jefferson divisions, with headquarters at Susquehanna, Pa., succeeding Arthur B. Shafer, resigned, on account of ill health, effective October 1.

James Shannon, trainmaster on the Northern Pacific at Spokane, Wash., has been appointed superintendent of the Pasco division at Pasco, Wash., succeeding W. C. Sloan, transferred. **T. H. Lantry** has been appointed superintendent of the Seattle division, with headquarters at Seattle, Wash. These changes are effective October 15.

G. W. Wilde, chief despatcher on the Philadelphia & Reading, at Philadelphia, has been appointed passenger trainmaster, with headquarters at Philadelphia. **B. H. Baker,** assistant chief despatcher at Philadelphia, succeeds Mr. Wilde as chief despatcher and **H. B. Wilt** succeeds Mr. Baker as assistant chief despatcher. These changes are effective October 20.

R. E. Simpson, general superintendent of the Southern at Greensboro, N. C., has been appointed general manager, Lines East, with headquarters at Charlotte, N. C., succeeding W. N. Foreacre, deceased. **A. D. Shelton,** superintendent at Greensboro, has been appointed general superintendent, Northern district, at Danville, Va. **R. L. Avery,** superintendent at Norfolk, Va., has been made superintendent of the Danville division, with headquarters at Greensboro, N. C. **D. B. Nolan,** trainmaster at Greensboro, has been appointed superintendent of the Norfolk division, with headquarters at Norfolk, Va. All these changes were made effective October 16.

Traffic

C. E. Stone, passenger traffic manager of the Great Northern, with headquarters at St. Paul, Minn., will retire from service as soon as his successor is appointed.

L. W. Bade, city passenger agent of the Wabash, with headquarters at St. Louis, Mo., has been transferred to Chicago, with jurisdiction over the Lines East of the Mississippi River. **F. D. Hammer** has been appointed assistant general passenger agent, with jurisdiction over the Lines West of the Mississippi River, with headquarters at St. Louis, Mo., succeeding John Maloney, effective October 15.

Engineering, Maintenance of Way and Signaling

H. Wilson, engineer maintenance of way of the eastern division of the Chicago Great Western, with headquarters at Chicago, has resigned, to become trainmaster on the Denver & Rio Grande, with headquarters at Denver, Colo., effective October 15.

E. W. Engelbright, engineer for the Union Pacific in New York City, with offices at 120 Broadway, and his entire staff, will be transferred, October 22, to Omaha, Neb., where this office will be consolidated with that of E. E. Adams, assistant to the president.

George G. Thomas, junior office engineer of the Atlantic Coast Line, has been appointed engineer of bridges, with headquarters at Wilmington, N. C., succeeding M. E. Nelson, resigned. **D. B. Packard** has been appointed office engineer, with headquarters at Wilmington, N. C., succeeding George G. Thomas, effective October 16.

Purchasing and Stores

E. V. Reinhold, assistant to the manager of purchases and stores of the New York Central Lines, with headquarters at Buffalo, N. Y., has been appointed assistant purchasing agent, in charge of fuel, of the New York Central Railroad, with headquarters at New York, effective October 15.

U. K. Hall, general storekeeper of the Union Pacific, with headquarters at Omaha, Neb., has been appointed general supervisor of stores of the Union Pacific System, with the same headquarters, effective September 28. This is a newly created position having to do with the development of policies, the organization and plans to be followed, in a general way, by the stores organization of the Union Pacific System. The actual details of the plans to be followed out will be executed by the general storekeepers of the units comprising the system so that the general supervisor of stores will act only in an executive and directing capacity, reporting directly to the assistant to the president. Mr. Hall's entire career has been with the lines comprising the Union Pacific System, with the exception of eighteen months spent in Washington as associate manager of the Stores Section of the Railroad Administration. Mr. Hall was born in 1878 at Portland, Oregon, and entered the employ of the Union Pacific System in 1897 as an office boy in the office of the purchasing agent. In 1899 he was transferred to the stores on construction work and in 1900 to the accounting department, occupying various positions on roadway, engineering and stores accounts. In 1904 he returned to the stores department and in 1912 was promoted to the position of general storekeeper of the Oregon-Washington Railroad and Navigation Company at Portland. In 1916 he was transferred to Omaha as general storekeeper of the Union Pacific. He will be succeeded in this position by O. Nelson, traveling storekeeper, with headquarters at Omaha, whose appointment took effect October 1.

Obituary

Richard Lamb, at one time chief engineer of the Wilmington & Newburn, now a part of the Atlantic Coast Line, died at his home in Brooklyn, N. Y., on October 18. Mr. Lamb was a well known consulting engineer. Born in Norfolk, Va., he graduated from Brown University and commenced his engineering career with the surveying of the Albemarle and Chesapeake canal. He planned the drainage of the Dismal Swamp and had charge of building the largest coal dock in the world. A process for refining copper ore by electricity was one of his inventions. Mr. Lamb was a member of the American Society of Civil Engineers, the American Institute of Electrical Engineers and the New York Electrical Society.

EDITORIAL
Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Supervision That Supervises

One of the greatest gains accruing from the motor car is the facility it affords the maintenance of way supervisor to visit the foremen under his jurisdiction. It is only a short time since practically all detailed inspections by the roadmaster were made from the deck of a hand-car, and the extreme slowness of this form of transportation coupled with its high cost in man power served to discourage its extended use. But now that the motor car is available, it is a question whether its full use to this end is not prevented in many cases because the supervisor's territory is so large that it is only through the use of the non-stop passenger trains that he is enabled to cover his territory at sufficiently frequent intervals. Supervision from the back of a train is admittedly inadequate. Letters, circulars and "butterflies" do not take the place of that personal touch with is obtained only through verbal intercourse. Any roadmaster will prefer a five-minute conversation to an entire week of correspondence if it were only possible for him to hold such conversations with his foremen as often as would be necessary. There never was a time when personal contact between officers and subordinates was more necessary than at present, and surely there are cases where the supervisor's territory should be adjusted to make this more intimate supervision possible.

Help the Shipper Unload Cars

A number of the granger lines have been active in settling up large areas in the Western states through the activities of their colonization departments. These roads and others in the Southern states have been equally active in aiding the farmers in the development of their agricultural resources. These measures have been fostered by the desire of the roads to develop traffic. At the present time one of the most urgent needs of the roads is for facilities to handle the present traffic and they are confronted with the necessity for the prompt handling and the heavy loading of cars in order that those available may be made to render the maximum service. A manufacturer in an Eastern city found recently that by installing mechanical facilities for the unloading of his coal he was able to reduce the cost of this work from $1 per ton to $0.15 while at the same time releasing cars more quickly. This incident suggests the possibility of the railways creating a special department to present to their patrons the opportunities of this character. It is true that local operating and traffic officers are now circulating among their patrons for this purpose, but they are not able to study the individual needs of a shipper in such detail as to enable them to bring to him those helpful suggestions that a specialist could make. Neither do they have the broad viewpoint of a man traveling over a system, but their information is limited primarily to those developments on their respective divisions. Much improvement can be effected in the use of cars by bringing to a shipper concrete suggestions as to means of handling his freight more economically to himself as well as releasing cars more quickly. The conservation of equipment is of more than usual concern at the present time but the lessons now being learned should be remembered after the present crisis has passed and the work of such a department can be made of permanent value.

Little Capital Needed, Large Return Assured

"Motive power represents about eight per cent of the capital investment in a railroad. Small as this percentage is, the remaining ninety-two per cent of the investment is obviously wholly dependent upon its earning capacity." Thus F. D. Underwood, president of the Erie, concisely sums up the importance of motive power in railroad operation. At the present time, when the railroads are striving for increased efficiency, it is not enough that railroad officers should recognize this fundamental truth; they must also apply it. The three items of wages of train and engine crews, fuel and repairs to locomotives constitute more than one-third of the operating expenses. The type and condition of motive power affects expenditures falling in these classifications directly and many other items indirectly. New locomotives designed with particular regard for the service in which they are used would of course be most effective in reducing costs. The replacement of all existing motive power is out of the question but old locomotives can be brought up to the same standard of efficiency as the most modern engines, and in most cases by adding a negligible amount to the investment in motive power. Several of the methods succesfully used for increasing capacity and reducing fuel consumption and maintenance costs have been described in previous editorials. Will your road profit by the experience of others in this matter or will it fail to take advantage of the savings that can be secured by concentrating attention on improving the vital eight per cent of its property—the motive power?

The Last Word on Fuel Economy

The *Railway Age* has outlined the important steps towards fuel economy that should be taken by every railroad. The ten fuel commandments have dealt with the functions of an organization devoted to fuel conservation, with the duties of the mechanical department with respect to locomotive maintenance, with the obligation of the transportation department to co-operate in every fuel saving action, with the responsibility of the purchasing agent to differentiate between good and bad coal and of the management to adopt a consistent policy towards its purchase. Each one of these measures can be directed toward fuel saving whatever the facilities at hand. Meagre shops, crowded engine terminals and antiquated locomotives may be disheartening but they do not constitute a good excuse for failure to observe any of the ten fuel commandments. While it is obvious that the railroads should make the most of the means at hand to promote fuel economy, it is apparent that these facilities must be bettered. What is the outstanding purpose of recent legislation if not to enable the railways to rehabilitate their equipment and bring their operating mechanism to a state of maximum efficiency? The meagre shops must be made adequate, the crowded engine

terminals must be enlarged and, above all, the antiquated locomotives must be modernized and new ones built. The new law does not say that the railroads must save coal but how long will the public acquiesce in the payment of advancing freight and passenger rates if it becomes apparent that an undue portion of this revenue is for fuel bills that are excessive because the railroads have failed to replace small locomotives with large locomotives or to utilize brick arches, syphons, superheaters, feed-water heaters and many other devices with a demonstrated capacity for saving coal? Will the railroads be permitted to say that they cannot afford these improvements?

Fighting a Ten-Million-Dollar Fire

The Railway Fire Protection Association, now seven years old, is a vigorous organization. These men are constantly aiming to make railroad employees (and officers) 100 per cent efficient in the prevention of fires; and they keep at it so persistently and with such precise adaptation of means to ends that they may be called idealists—practical idealists. The spirit of the Baltimore convention, reported in this and the preceding issues, is epitomized in the speeches at the beginning and at the end of the sessions. Mr. Berry, in opening, emphasized the necessity of cultivating the intelligence and conscientiousness of all employees, if real progress is to be made in reducing the railroads' ten-million-dollar annual fire loss; and Mr. Elmore, at the close, reminded his fellow members that their success would be far from satisfactory until they should get the responsible managing officers waked up. The fire-specialist's problem, like that of the train despatcher who is responsible for making meeting points safely on a single-track railroad, is always a strenuous proposition; the dropping of a single stitch may mean utter disaster. He is entitled, therefore, to call to his aid every instrumentality that he can get hold of. A single fire officer on a big railroad has to spread himself out exceedingly thin; and he must be able to use the right arm of the general manager or else waste much of his energy.

The Railways of Bolivia

In this issue will be found the sixth of the articles written by John P. Risque, who was recently sent to South America by the *Railway Age* to study the transportation systems of that continent. The article in question deals with the railways of Bolivia and is the first of two dealing with that country. The present article relates to the connections between Bolivia and the Pacific coast. Bolivia has no seacoast of its own, it having lost its "window on the sea" some years ago as a result of differences between Peru and Bolivia on the one hand and Chile on the other. Its capital, La Paz, is, however, reached by three lines of railway—one, the Southern Railway of Peru, previously described in this paper, two, the Arica La Paz, an unusual railway line said to have the longest stretch of rack railway in the world, and three, the Antofagasta & Bolivia. The first and third are British-owned. The second is owned by the government of Chile. The Antofagasta & Bolivia is one of the richest railways in South America. It reaches the Pacific at Antofagasta in Chile and is noteworthy, among many other reasons, because it supplies a most excellent passenger service on a meter gage line. The second article, which will be published shortly, will continue the description of this interesting property. It will also consider the projects that are being put forward to give Bolivia an outlet to the Atlantic. The principal point to be borne in mind in reading the two articles is that Bolivia is an exceedingly rich country, especially from the standpoint of its minerals. Our interest in transportation there lies to no small extent on the importance of the railways as a means of making available to the rest of the world the great mineral resources within its borders.

Normalized Steel Castings

It might almost be said that the modern locomotive would be an impossibility without steel castings. Certainly these castings have increased in size and intricacy to a remarkable extent within the past few years, the total tonnage used annually on American railroads being extremely large. In order to secure the maximum service and reduce the number of failures, steel castings should be normalized before use. Steel, as it comes from the manufacturer, may be in any one of several different states as regards its microstructure, but if it is heated to approximately 1,832 deg. F. and cooled very slowly, it is said to be normalized. This has a decided effect upon the physical properties. In a steel casting of .30 per cent carbon content the tensile strength will be increased from 54,000 to 73,000 lb. per sq. in., the yield point from 20,000 to 50,000 lb. per sq. in., the elongation in 2 in. from 13 to 28 per cent, and the contraction of area from 20 to 35 per cent. This is a gain of approximately 150 per cent in the working strength of the steel, a gain not to be overlooked. Steel castings for both locomotives and cars should be normalized by heat treatment. To accomplish this and make certain that proper heat treatment is accorded, suitable furnaces and pyrometer equipment should be installed in railroad shops. Accurate knowledge of temperatures is essential and can be obtained only by the use of pyrometers. The total cost of normalizing castings including fuel, labor, maintenance of equipment and overhead costs, is about $3.26 per ton, a relatively small price to pay for more than doubling the strength of steel castings.

Railway Office Equipment

A number of years ago it would hardly have been believed that a railway office could be made a subject for the use of machinery. Today, however, it is realized that modern mechanical devices have as much use in the office as in the roundhouse or shop. In fact, so great has been the progress in the development of adding, calculating, tabulating machines, etc., for railway and other office use that they are now recognized on the progressive railroad as absolute necessities. The mechanical devices have so proved their worth as compared with the old ways of figuring with pad and pencil that now it is no longer a question of the advisability of installing these mechanical aids. It has became a question of deciding upon the most suitable machines for the particular purpose in view and of working out the best methods of using the equipment. It will, of course, have to be admitted that there are many railroad officers who have not yet realized how eloquently the roads that have adopted modern equipment for their accounting and other offices bear testimony to the efficiency obtainable through its use. Possibly one reason may be that the machines are looked upon merely as labor-saving devices. The labor-saving element, however, is only one part of the argument, though a most important one. Many roads which have installed mechanical equipment have found that they are securing a greater degree of accuracy than was possible to attain under the old methods. They are also finding that they are getting the work out more expeditiously although using less labor and less office space. In fact, some offices which before mechanical aids were installed had great difficulty in getting the work out at all, now discover they are the envy of less fortunate neighbors.

Enormous Increase in Loss and Damage of Freight

Few items of railway operating expenses have increased so much in proportion within recent years as payments for loss and damage of freight. It is, therefore, both timely and gratifying that the railways should have begun a concerted movement through the American Railway Association to reduce this item of expense. We publish elsewhere in this issue an article regarding the organization for the reduction of loss and damage which is being formed as a part of the American Railway Association, and also a notice of the "Freight Claim Prevention Congress" which has been called by President R. H. Aishton to be held at the Hotel LaSalle, Chicago, on November 15 and 16.

Some statistics regarding developments within the last six years will indicate why railway managers are becoming greatly disturbed upon this subject. In the year 1914 the railways transported the equivalent of 288,000,000,000 tons of freight one mile, and had freight earnings of $2,115,000,000. The loss and damage payments in that year were $32,376,000. Three years later, in 1917, their ton mileage was 394,500,000,000; their freight earnings $2,820,000,000, and their payments for loss and damage of freight $35,080,000. The increase in freight movement was 37 per cent, the increase in freight earnings 33 per cent, and the increase in payments for loss and damage only 8.35 per cent.

In 1918 the total freight moved by the railways under government control was only 1.8 per cent greater than the amount handled by the same railways in 1917. The freight earnings of the Class I railways, chiefly because of advances in rates, showed a large increase, being $3,458,000,000, and the payments for loss and damage to freight jumped up to $55,634,150, an increase over 1917 of 58 per cent, and over 1914 of 71 per cent. But this was nothing compared with what occurred in 1919. In that year the freight movement was almost 10 per cent less than in 1918 and substantially less than in 1917, although, because the advanced rates were in effect throughout the year, the freight earnings increased to but $3,557,000,000. Meantime, loss and damage payments increased to $104,244,000. With less freight handled than in 1917 the increase in loss and damage payments over that year was approximately $70,000,000, or 197 per cent. With an increase in freight business handled over 1914 of about 40 per cent, there was an increase in loss and damage payments of 222 per cent.

The statistics show that whatever the other effects of government operation may have been, it certainly did not have the effect of reducing loss and damage to freight. The average increase in the prices of commodities between 1914 and 1919 was approximately 100 per cent. This doubtless accounts for almost one-half of the increase in the total amount of the claims paid. Another large part of it was due to the fact that the amount of freight handled in 1919 was about 40 per cent more than in 1914. There remains a large balance of about one-third of the total increase of loss and damage payments which must have been due to absolute increase in the amount of freight lost and destroyed.

The total increase in railway expenses since 1914, and especially since 1917, has been very large and the increase in loss and damage payments has been by no means a small part of it. It is conservative to estimate that by securing more efficient operation and the co-operation of shippers in the way of better packing, marking and routing of freight, the managements should be able speedily to reduce loss and damage payments by at least $50,000,000 a year. If this large saving were to be added to net return, it would pay interest, even at the high rate of 7 per cent, on over $700,000,000 a year of new capital invested in the properties.

The Freight Claim Prevention Congress which has been called should be attended by representatives of all the railways in the country in order that the work of the new committee on the Cause and Prevention of Claims may be started with the needed enthusiasm and backing. Recent developments have shown that it is not only necessary that the railways should handle all the traffic they can with existing facilities, but also that if they are to earn adequate returns on existing rates they must be operated with the utmost practicable economy. No part of the present operating expenses needs vigorous attack more than the item of loss and damage of freight.

A Difference of Arithmetic

The Court of Industrial Relations of Kansas thinks it has discovered "a serious error of such magnitude as to challenge attention" in the calculations on which the Interstate Commerce Commission based the rate increase which it allowed to the western railroads. In its opinion in the Kansas intrastate rate case allowing an increase of only 30 per cent in freight rates, with some exceptions, it set forth a calculation of its own, attempting to show that the federal commission allowed the western roads $192,853,686 in excess of the amount necessary to give those roads a return of 6 per cent on the valuation of $8,100,000 which the commission placed on the western roads.

This statement, when published in the newspapers, naturally attracted attention but an examination of the opinion reveals at once that the federal arithmetic, at least, is superior to the Kansas brand, regardless of differences of opinion that may exist as to the relative value of their judgment as to reasonable freight rates. The Kansas court figured that a 6 per cent return for the western roads as a whole would be $486,000,000, that the roads were already earning a net railway operating income of $170,000,000 and that they would receive from the increased passenger rates, etc., about $115,000,000, while the wage increase would amount to about $237,000,000. Therefore they would need a freight rate increase of $438,500,000 to make up the 6 per cent return. This, the court says, would be an increase of only 24.3 per cent when applied to the estimated freight revenue of the western roads, whereas 35 per cent of the estimated freight revenues would be $631,000,000 or $193,000,000 too much.

The answer, of course, is that the Interstate Commerce Commission did not give the western roads as a whole an increase of 35 per cent, but allowed only 25 per cent in the Mountain-Pacific group. A preliminary estimate made by the Bureau of Railway Economics immediately after the rate decision was made placed the increase in freight revenues for the Mountain-Pacific group at about $138,000,000 and for the rest of the western district at about $330,000,000, or a total of $468,000,000. This is about $28,000,000 more than the amount the Kansas court figured the western roads were entitled to, and while the Bureau made no claim for exactness in its estimate, its figures at least reflect the fact that the increase in freight revenues of the western roads will be less than 35 per cent by the amount of 10 per cent of the freight earnings of the Mountain-Pacific group. Even on the basis of this estimate the commission gave the western roads slightly more than the Kansas court considers they were entitled to, but it gave the eastern roads a higher percentage of increase than they asked for and the southern roads less than they asked for. The requests of the railroads were based mainly on the results of the constructive year ended October 31, 1919, with adjustments to reflect conditions at the end of and subsequent to that period. The commission, however, also had before it when it rendered its decision the reports of operations for the first four months of 1920, which showed even worse results for the eastern and

western roads than the constructive year, while it showed better for the southern roads than the results of the constructive year.

I. C. C. Notes Increase in Railroad Efficiency

THE MARKED IMPROVEMENT in the efficiency of railroad operation during July and the first seven months of this year for which the freight operating statistics are now available, as compared with the corresponding periods of 1919, and in many respects as compared with any previous records, is pointed out in a statement compiled by the Bureau of Statistics of the Interstate Commerce Commission made public by the commission on October 22, which is printed elsewhere in this issue. The statement not only shows the improvement made during the year and as compared with 1919, when the railroads were being operated by the government, but also that in July the roads performed probably more freight service than ever before in a single month, and that the traffic of the first seven months of 1920 indicates that the year's figures will exceed all past records. The car loading figures compiled by the Car Service Division of the American Railway Association indicate a still further increase in traffic from August 1 to October 9, a total of 9,637,941 as compared with 9,351,416 in 1919 and 9,590,090 in 1918. It is also shown that the average freight trainload of 769 tons for July is greater than the average for any month during federal operation.

The principal facts shown in the commission's statement have already been reported in this paper, but the statement makes a detailed analysis of the freight operating statistics with some explanation of the conditions. It has been received with particular interest, however, because of the form in which it was given out, as the commission usually gives out its statistics in tabular form and without comment or much in the way of interpretation.

The commission has never gone out of its way to express very plainly its opinion of the results of the experiment in government operation of the railroads which was conducted for 26 months by the Railroad Administration, and the statement prepared by the Bureau of Statistics does not specifically refer to the fact that it is comparing the results of private operation under commission regulation or supervision with the results of what has been described as unregulated government operation. It does show in several places, however, that the comparison is with Railroad Administration statistics and in addition to showing the improvement in operating efficiency as compared with 1919, when some of the factors were affected by the low volume of business offered to the railroads during the first part of the year, it also shows that in some respects the railroads have done better this year than they ever did before, even in the years when they were operating under the pressure of war necessity.

Under the transportation act the Interstate Commerce Commission has been given a greater degree of responsibility for the success of railroad operations than it had before, as well as a greater authority over the actual operation. As it has been co-operating very closely with the railroads in exercising its emergency powers over car distribution since it was requested to do so by the railroad executives in May, after the switchmen's strike, it may be that the commission's statement should be considered as an example of pointing with pride rather than as an invidious comparison.

In referring to the increases in the cost of operation this year the statement says "the explanation is not available" for the increase in the cost of enginemen and trainmen per freight train mile in July, 1920, as compared with July, 1919. The cost of enginemen increased from 22.6 cents to 28.1 cents and the cost of trainmen increased from 26.1 cents to 31.6 cents, but the increase from January to July is only 1 cent in the case of enginemen and seven-tenths of a cent in the case of trainmen, so most of the increase occurred between July, 1919, and January, 1920. The fact that the Railroad Administration gave the enginemen and trainmen time and one-half for overtime last December would seem to afford a satisfactory explanation for at least part of the increase.

Relative Advantages of Modern Steam and Electric Locomotives

ELSEWHERE in this issue will be found a report of the joint meeting on November 22 of the New York sections of the American Society of Mechanical Engineers and the American Institute of Electrical Engineers and the Railroad Section of the A. S. M. E. The subject considered was "The Relative Advantages of Modern Steam and Electric Locomotives." The meeting was addressed by advocates of both steam and electric traction and its importance lies in the fact that the two sides appeared in what was practically a joint debate on the subject of steam railroad electrification. We fear that most of the large audience in attendance went away with the same opinions with which they came. The difficulty was that there was such a great bulk of material presented that it was impossible to assimilate it.

The majority of the papers were presented by ardent advocates of steam or electric traction who gave little or no consideration to the point of view of the other side. It is most unfortunate that a meeting so well launched did not result in the crystallizing of some of the vast amount of high grade data available. Here was an occasion in which the advocates of electrification found themselves on the same side of the fence and yet so much did they adhere to generalities and lay themselves open to criticism that they failed entirely to gain their point. They were fortunate, however, in that the advocates of steam operation did not take advantage of this fact or themselves take care to avoid the same faults. It is to be regretted that the discussion of electrification should be carried on in this way.

A perusal of the papers will bear out this conclusion. The electrification advocates were again guilty of making unfair comparisons. Thus one of the speakers did not hesitate to compare the operation of modern electrical equipment on the Chicago, Milwaukee & St. Paul with the results that were obtained many years ago on that road with Prairie type locomotives. He did admit, however, that this was not an absolutely fair comparison and said that operation with modern Mikado locomotives might show different results. On the other hand, one of the advocates of steam operation was unkind enough to compare the train loading on the Virginian Railway with that on the electrically operated divisions of the St. Paul. He did not draw attention to the fact that the Virginian carries bituminous coal almost exclusively whereas the St. Paul's traffic is of a very miscellaneous character not conducive to heavy train loading. These are only two examples of many such that might be mentioned.

Apparently the advocates of electrification do not yet realize how greatly the efficiency of the modern steam locomotive has been improved in recent years. Some may refer to the railroads' conservatism. The burden of proof is on those who make that statement, for the rapidity of the replacement of wooden by steel cars, the enlargement in the capacity of all kinds of cars and locomotives, the introduc-

tion of automatic block signaling, etc., are certainly not signs of conservatism.

The electrification advocates apparently do not realize the nature of the sales problem before them. They have long since sold electrical engineers in all lines of industry. At present they are trying to sell the general public. It would seem, however, that the real buyers in this sales campaign are the railroads. The present task of the advocates of steam railroad electrification may properly be said therefore to be the selling of their idea to the hard-headed railroad executives and operating men. These men were brought up and educated under steam operation. They are, however, open-minded to the value of electrification and ready to spend large sums of money, if it is available, and if it can be shown that such expenditure will result in sufficiently lower operating costs to make such expenditures advisable. The advocates of electrification, in their presentation, made little, if any, progress in this direction; indeed neither side showed a real appreciation of the necessity of basing its argument on simple, sound economics.

Railway Employees as Capitalists

We frequently read reports of workingmen engaging, through their labor unions and otherwise, in co-operative movements to set themselves up in business. A short time ago the newspapers published an interesting article about workmen in the building trades in one section of the country paying assessments from their wage into a fund to be loaned at a substantial rate of interest to persons desiring to erect buildings on whose construction the workmen raising the fund would be employed. Certain classes of railway employees have been among the leaders in these co-operative movements. The maintenance of way employees' union some time ago acquired one or more factories in which it intended to make overalls and other clothing for sale to its members and other workingmen. Some of the railway brotherhoods are furnishing the capital for the establishment of a bank at Cleveland in which it is understood labor organizations in particular, and the public in general, are invited to deposit their funds.

These movements by workingmen to accumulate capital by saving their wages, and to invest it in business concerns to be managed by their own representatives, are a healthy sign and deserve commendation and encouragement. But why do railway employees continue to carry on propaganda in favor of the government acquiring the railways and turning them over to the employees to operate when, at the same time, they are co-operatively engaging in other businesses? Why, if they desire to manage the railways and also to engage in business, do they not increase their savings, pool them, and invest them in the railroad business? They want to manage the railroad business because they are employed in it. They can become the managers by becoming the owners. Why, therefore, do they not take steps to become the owners?

The feasibility of the employees acquiring control of the ownership of the railways repeatedly has been demonstrated in the *Railway Age*. As we pointed out recently, they could, merely by saving their recent advance in wages of $625,000,000 a year and investing it in railway stocks, become owners of a majority of the stock of all lines within five years, even if they had to pay par for all the stock they bought; and, as was pointed out at that time, the present market prices are much below par.

Developments which recently have occurred have made it easier for railway employees to save large parts of their wages. Between July, 1914, and July 1, 1920, the average increase in the cost of living in the United States, according to the National Industrial Conference Board, was 104.50 per cent. The advance in wages granted to railway employees from July 1, 1914, to the end of July, 1920, averaged, according to different estimates, from 115 to 130 per cent. The exact percentage of increase will not be known until complete figures showing their exact earnings on the present basis of wages are available; but such figures as are now available indicate that the average increase in railway wages since 1914 will be shown to have been not less than 120 per cent.

Ever since the last advance in railway wages was made the cost of living has been declining. The National Industrial Conference board reports that on October 1 it was only 97.50 per cent more than it was in 1914. Therefore, it would appear that at the present time it is costing the average railway employee to live as well as he did six years ago only 97.50 per cent more than it did then, while, although he is working shorter hours than he was then, he is receiving wages at least 120 per cent greater. Even in 1914 many railway employees were saving money and investing it in homes, depositing it in banks, and so on. If they could save some money then, they could save in the aggregate a vastly larger amount now.

Whatever may have been true in the past, there can be no question that at present the approximately 2,000,000 employees, with their approximately $3,600,000,000 a year of annual wages, could in the aggregate save a vast amount of money. They are greater capitalists, potentially at least, than the stockholders of the railways, for their annual wages are nine times as great as the largest amount of dividends ever paid to the stockholders in any year.

It may be said, and in fact is said, that the stocks of the railways are watered and therefore would not make a sound investment for railway employees. But the very criticisms which the spokesmen of the Plumb Plan League use against the Transportation Act are the best answer to this contention. They say that the Transportation Act and the recent rate advance decision of the Interstate Commerce Commission under it have "validated" all outstanding securities and assure to the stockholders large returns. If this is true, the Transportation Act and the decision of the Commission have made railway stocks the best investment possible for railway employees, for it is hardly conceivable that if the employees became the owners of large amounts of stock Congress or the Interstate Commerce Commission would reduce the valuation that the Commission has placed upon the railroads, or the percentage of return the railways are to be allowed to earn upon that valuation.

Developments within recent years have made it more than ever essential to the welfare of the country that wage earners, and other men of small incomes, shall save their money and invest it in business. The present excess profits and income tax laws take from owners of large amounts of industrial and railroad securities a large part of their incomes from these securities. This reduces the ability of concerns and persons with large incomes to increase the amount of capital invested by them in business concerns. In addition, it makes their incomes from industrial and railroad securities so relatively small as compared with the incomes they can derive from tax free government bonds that they are largely avoiding investment in industrial and railroad securities and putting as much of their money as they can in government securities. The consequence is that the amount of capital being accumulated by the rich and invested in business enterprises is relatively declining. But constant increase in the amount of capital invested in business is absolutely essential to the welfare of labor. It may be said with approximate truth that the amount of capital invested in the industry, transportation and commerce of a country determines the

amount of labor that can be employed and the amount of wages that can be paid in it.

Unless people with large incomes are to be enabled to increase more rapidly the amount of capital invested by them in business, workingmen and other people of small incomes must provide the needed additional capital from their savings or we shall meet with a national disaster in which the wage earners will be the chief sufferers.

Some newspapers, in commenting on our proposal that railway employees, instead of advocating the Plumb plan, should save their own money and acquire control of the railways, have intimated that we speak in an ironical vein. On the contrary, we are entirely serious. We sincerely believe that the best solution of the labor problem would be the establishment of true "industrial democracy." Our conception of true industrial democracy, however, is not government purchase of industries and their irresponsible management by their employees, but purchase of the industries by the employees with their own money and responsible participation by the employees in the management in proportion to the interest in the properties which they acquire.

It is as astounding as it is inconsistent that railway employees should be paying people to go about the country and carry on propaganda to get the public to tax itself to buy the railroads and turn them over to the employees to manage, when the employees, by the use of a very reasonable amount of thrift and brains, could themselves in a short time become the owners of control of the railways with an indisputable right to manage them.

New Books

Proceedings of the American Railway Engineering Association; 6 in. by 9 in., bound in cloth or paper, 1,477 pages, illustrated and including also a separate packet of drawings. Published by the American Railway Engineering Association, Manhattan Bulding, Chicago.

The character of information and the typography of this volume of the proceedings of the American Railway Engineering Association follow the standards of the previous volumes except that this is the only case in which drawings have been issued in a separate package instead of being bound in as folded inserts. These comprise some 60 track plans and some illustrations of concrete track construction. One other difference in this volume is that the monographs have geen generally inserted with the reports of committees covering related subjects rather than grouping them as a separate section of the volume. The book is somewhat larger than those published in the last two years and contains a large fund of information that will be found of value to railway engineering and operating officers. An unusually large proportion of new specifications are incorporated in this work, covering matters of no less importance than iron and steel structures, masonry, rails and track scales, the latter being the specifications drawn by a joint committee of various interests involved. Another important feature of this volume is the progress report by the Committee on Stresses in Railroad Track covering 170 pages and containing a large amount of original information not available in any other form. As matters of record a report on the electrification of the Chicago, Milwaukee & St. Paul and an account of the unification of terminals during the period of government control are of value. The report of the Committee on Rail, 179 pages, contains the usual rail failure report and considerable new information in the form of scientific studies of defects in rails. The proceedings of the last convention of the association in the form of discussions of the various committee reports submitted cover 134 pages.

Letters to the Editor

Safe Watch Dials

PHILADELPHIA, PA.

TO THE EDITOR:

The article on "Safety and Time Service" by Webb C. Ball, general time inspector of the Bureau of Railroad Time Service, in the *Railway Age* of October 8, in treating of the "railroad standard watch" says: "Another very important factor of safety is the dial, that part of the watch which quickly and surely reveals the correct time to the engineer, the conductor and other trainmen. As this information is often required at night when lights are dim and obscure, it is needless to emphasize the importance of dials that give the hour and minute without any confusion of fantastic figures or freakish designs."

That well describes the essential requirements of a railroad watch dial. The specifications read: "The figures should be 12 plain upright Arabic figures to indicate the hour points," etc. Each of the three dials of the standard watches, shown in the illustration, has 11 sets of Arabic figures indicating the hours; there is no figure at the hour of six. As it takes three minutes for the minute hand to traverse each set of the Arabic figures, the minute hand is more or less merged into figures underneath it for 33 minutes while traversing the 60 minutes around the dial.

Compare this with a white dial having Roman numerals—the XII at the stem of the watch—plain black hands, proportioned to the size of dial; compact Roman numerals and a clear white background, causing the black hands and numerals to stand out clearly and distinctly. Notice how beautifully the minute hand lines with each numeral, crossing it in about a minute—in less than half the time required to traverse the sprawling Arabic figures.

A varied experience in railroad train service taught me the advantages of a clear white dial with black hands and compact hour indicators; advantages which seem best attained by using Roman numerals. Further experience and thought on this subject has led me to think that all station clocks, and in fact all public clocks, should bear the Roman numerals. That type of dial seems to best conform to Mr. Ball's excellent specifications for "dials that give the hour and minute without any confusion of fantastic figures or freakish designs."

All clocks that I can recall seeing in jewelers' windows, to show the correct time, bear the Roman numerals. Practically everyone can read the dial of a time piece, and the figures or numerals on them are more for indication than information. In fact, few people know that on watches with Roman numerals the fourth hour is shown by four strokes instead of IV.

The aim is to provide a watch dial that can be read accurately at a glance; to accomplish that the hands should be properly proportioned and the markings compact but distinct; more than that seems like a defacement which tends to defeat the purpose.

WILLIAM H. SIMMS.

IVY L. LEE, formerly assistant in the executive department of the Pennsylvania, has recently been appointed by the board of directors of that company to act in an advisory capacity in matters of publicity and public relations. In the conduct of this work, Mr. Lee will report to the president and the vice-presidents and co-operate with the road's publicity department.



Types of Power of the Antofagasta & Bolivia in the Yards at Oruro

Meter Gage Railways the Standard in Bolivia

This Is Sixth of a Series of Articles by Railway Age's South American Correspondent

By John P. Risque

WHEN THE TRAVELER or shipper with his eyes on Bolivia looks at that country's relative location on the map of South America, he will note with interest that it has no port of its own. Bolivia is entirely surrounded by its neighbors, Peru and Chile on the west, Argentina on the south and Brazil on the east and north. The only outlet



Station and Siding on the Arica-La Paz

to the Pacific coast and the outside world is through Peruvian and Chilean territory. Furthermore, the gigantic Andes, which all along the Pacific coast form a barrier between the interior and the sea, making construction and operation particularly difficult and expensive, exclude Bolivia even more from intercourse with the rest of the world. Bolivia had a small stretch of sea coast at one time, but three-sided hostilities with Peru and Chile have resulted in Chile's acquisition of all the ports that Bolivia had and some of Peru's vast expanse of coast.

Bolivian railways center in La Paz, the capital. Access to "the world's highland capital," as this city is known in the archives of the Pan-American Union, is had by three lines of railway: viz., the Southern Railway of Peru, the Arica-La Paz and the Antofagasta & Bolivia. A large part of the mileage of these three systems lies in Peru and Chile, but, since the terminus of all of them is La Paz, they may rightly be considered as Bolivian transportation facilities.

The Southern of Peru

The first of these lines—the Southern Railway of Peru—has been described in a previous article. It is a standard gage line beginning at Mollendo, a port in southern Peru, and leading up to Lake Titicaca, on the boundary between Peru and Bolivia. Here passengers and freight are transferred to steamers and carried across the lake, where a transfer to a rail line is again made—this time to one of meter gage—on which the trip to La Paz is completed. The meter gage can be said to be the standard for Bolivia, and



Indian Women Cleaning Ash Pan of Engine at Viacha, Bolivia, Southern Railway of Peru

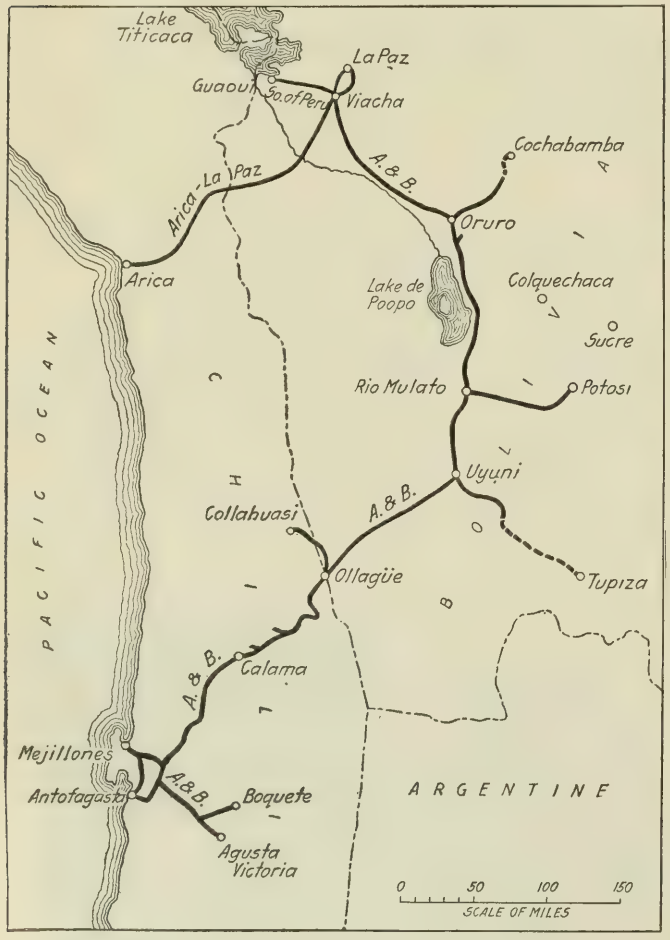
the railway representatives in the government are determined to maintain it.

The Arica-La Paz

The second line connecting La Paz with the Pacific is the Arica-La Paz Railway. It is owned and operated by the Chilean government, but the fact that it is in active com-

petition for the carrying business of La Paz makes it of interest in a discussion of Bolivian railways. This dismal stretch of meter gage track is about 248 miles in length, a trifle over half of which lies in that part of Chile known to the Peruvians, for obvious reasons, as the Alsace-Lorraine of South America. It leads over arid desert and through stretches of solid rock. It has over twenty-eight miles of rack rail, said to be the longest single line of rack rail in the world. The origin of the railway dates back to the treaty whereby Bolivia lost its outlet to the sea. Under the terms of the treaty, Bolivia ceded her claims for coast territory to Chile for $4,000,000 (Chilean pesos) on condition that Chile should build a railway from La Paz to the coast. It was further provided that the part of the railway lying in Bolivia should in 1926 revert to the Bolivian government.

Government administration has not put this line in a position to do for La Paz what its ambitious promoters had dreamed. The Southern of Peru is still hauling freight and passengers from a port inferior to that at Arica and over a line of 280 miles longer than the Arica-La Paz, with two transfers—from train to boat and back to train. The shorter



Map Showing the Railways of Bolivia

Arica-La Paz line had, upon its completion, all the promise of being the logical controller of the Pacific coast-La Paz traffic, but lack of equipment, due partly to the war and partly to the varying fortunes of Chile's bread-winner, nitrate, has held the line back. A recent addition of six American locomotives has improved the situation, but it is generally conceded that until some means are found to electrify the line, or at least the expensive rack-rail section, the Arica-La Paz will have to continue to divide the traffic with its more enterprising rival. Shippers of La Paz, in answer to questions as to the relative advantages of the services of the competing lines, reply that, owing to recent improvement of service on the Arica-La Paz, they are impartial. They complain greatly, however, of losses by thievery at the ports of both lines. The little rolling stock the Arica-La Paz has consists of a hodge podge of equipment from all nations. Most of the locomotives are of German manufacture for use



The City of La Paz with the Volcano Illimani in the Background

on rack rail lines, while the cars, both freight and passenger, follow, on a diminutive scale, our own designs.

Soroche

A more serious disadvantage of the Arica-La Paz line and one which will probably never be lived down is the almost invariable "soroche," a nausea brought on by the too sudden climb from sea level to high altitudes which passengers coming from Arica experience. For this reason, the more gradual ascent of the Southern of Peru is preferred by most travelers. Thus has a well conceived line to contend in its search for passenger traffic with a condition unfortunately beyond its control. The descent to the sea is not so bad, but, unless the traveler has calls to make in Arica, he will probably patronize the English owned and operated line to the port of Antofagasta further south in Chile—the Antofagasta & Bolivia.

The Antofagasta & Bolivia

This last is the third railway from La Paz to the Pacific. From La Paz it makes a crescent shaped detour inland on its

720-mile stretch to Antofagasta, the chief port of northern Chile. More than two-thirds of its length lies within the boundaries of Bolivia. This road is said to be the most consistent little narrow-gage dividend earner in the world, and its physical appearance does not belie its alleged record. It is said to have paid 24 per cent. in 1917, with a ten-year average of 19.2 per cent. The chief source of income is the transportation of nitrate from some 24 "oficinas," as the nitrate plants are called, located in a 30-mile belt about 70 miles inland from Antofagasta. This commodity is all taken to Antofagasta or Mejillones, a few miles north, where it is loaded into ships bound for foreign ports. In 1915 over 800,000 tons of this product and 50,000 tons of copper were carried by this railway to these two ports.

As the train climbs slowly out of the 1,500-foot hole which holds historic La Paz, the traveler gets a good view of the supposedly extinct volcano, Illimani, the cone of which, covered with perpetual snow, towers up to an altitude of 21,182 feet. Oruro, a town of 8,000, and repair headquarters for rolling stock in that section, is the first stop. Here a short branch runs northeast to Cochabamba, the center of extensive mines of tin and silver. Between Oruro and the next station south there lies on the right a large fresh water lake which is said to receive 212,000 cu. ft. of water a minute, only 2,000 cu. ft. of which is known to flow out. Interest in the trip is heightened by the tourist's speculation concerning what becomes of the remainder. At Rio Mulato there is another branch to Potosi, 108 miles distant, at an elevation of 15,814 ft. This branch contributes great quantities of ore to the main line.

The only drawback to the passenger's heretofore uninterrupted and exceedingly comfortable ride is the necessity of arising early in the morning at Uyuni, leaving the meter gage sleeping car and boarding the yet smaller 30-in. gage sleeper standing alongside. The remainder of the trip is completed in this car. Plans are already under way for widening the Uyuni-Antofagasta section to meter gage. Meter gage rails are already laid running from the latter point to Calama, a distance of 149 miles. Uyuni is a point of some importance and has moderately complete repair layouts for locomotives and cars. The present importance, however, of this unattractive spot on the desert is said to be insignificant in comparison to what it will be when the Atocha-Tupiza-La Quiaca gap, referred to later on, running southeast of Uyuni in the direction of Argentina, is finally completed.

[The remainder of Mr. Risque's comments on the railways of Bolivia will appear in an early issue.]



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Railway Station at Louvain, Rebuilt by the Industrious Belgians to Show No Traces of War

Transportation and the Citizen's Responsibility*

By Alba B. Johnson
President, Railway Business Association

IF YOU ASK ME what is the most striking difference between the United States of 1920 and the United States of 1910 in the sphere of public opinion regarding railways I think I shall answer that in 1910 the majority of business men, certainly a majority of those who made themselves heard and felt, were inclined to emphasize managerial shortcomings, service annoyances and alleged impropriety in rates; and that in 1920 a majority of business men, including those who are most vocal and active participants in railway discussion, place primary emphasis upon making and keeping governmental and other public conditions such that competent men will be attracted and held in our transportation system as stockholders, as directors, as managers and as employees, to the end that the maximum of efficiency may be attained under private operation.

Nobody need tell me that there are still among us many manufacturers and merchants who have yet to perceive and acknowledge their responsibility for helping to work this problem out; but I believe what I have said is correct—that the preponderance of business sentiment is now a sentiment of responsibility and readiness to co-operate.

Let me indicate, first, the reasons why our national welfare requires that the railway situation shall be stabilized; second, the reasons why those interested in exports have a special stake in making our railway experiment a success; third, the reasons why the Transportation Act of 1920 is not yet to be regarded as having finally assured stability, or, in other words, what there is for you and me to do to accomplish that end.

Reasons for Stabilization

First, then, as to why our national welfare requires the railway situation stabilized. There are two excellent reasons. One is that if we don't get to a basis of satisfactory service Congress is going to take the roads again, and when that happens they won't go back. It will mean the end of private ownership and operation of railroads. We have seen something of government operation. We saw how disastrously it affected labor. We saw how unfavorably it affected maintenance and provision of facilities essential to keep pace with increasing demands for transportation. We are familiar with the unsatisfactory standards set by the post office. As users of transportation and consumers of things carried we may well regard such an outcome as a national calamity. But it means a great deal more. It means that when the government has its grip on the railroads it will reach out for other forms of business, beginning with public utilities and next embracing the great fundamental sources of production such as steel, copper and coal. The end of such a policy cannot be foreseen.

When that time comes, whatever kind of a country it leads us to, it will not be the America of which we have boasted as the land of individual opportunity.

The national welfare requires us to stabilize the railway situation because we are in a conflict to preserve the principle of individual ownership of property and of individual opportunity. The railways are the first trench.

Exporters' Special Stakes

Second—the reasons why those interested in exports have a special stake in making our railway experiment a success. It ought not to take many words to elucidate that. You who

* Abstract of an address before the American Manufacturers' Export Association in New York on October 14.

look abroad for a part of your market are engaging in the most relentless competition the world has ever seen. Assuming that you can match your rival in quality, you must beat him in price. Where does he fabricate? In every case in some little country scarcely bigger than one of our large states. Within that tiny area, Britain, France, Germany, Italy, anywhere you choose, the processes of manufacture are specialized each in a locality and the goods passed along one stage of production after another from this special locality to that. Distance is short, transportation cheap and certain. This means more than low freights. It means saving of time; it means frequency of capital turn-over and rapidity of delivery.

The cost problem in competitive export freight is an important part in the problem of developing our transportation system.

We must attain to a degree of speed and regularity that will offset at least in part the desperate splendor of our distances. Between centers, from the point of assembly to the seaboard—all our carrier mechanism, land, water, terminal, transfer, must be more than modernized; it must be carried to an excellence of which none of us have dared to imagine in our most extravagant dreams.

Wanted—A Program

Third—what is there for you and me to do about it?

In this room is there a business man who conducts his institution without a program for future development? What would your board of directors say if they asked you what enlargements of plant were scheduled for next year, and you replied that you had no schedule? I don't know what they would say, but I can imagine what they would do. They would get a new manager.

Is there a man in the room who knows what enlargements of plant are scheduled by the railways of the United States for next year or next month? Do you employ anybody whose business it is to know the answer? Are you affiliated with any agency that pretends to know? Can you name any document in which a committee of Congress or the Interstate Commerce Commission or any other agency of the law has set forth any such program? You and I are perfectly sure that nothing of the kind exists. Nothing of the kind can exist under present conditions.

Congress in the Transportation Act of 1920 took a long step in advance. It was a revolution, because it involved a change in conception. This new conception is that this Interstate Commerce Commission shall have responsibility for authorizing rates high enough to assure efficiency and a railway income sufficient to attract adequate capital. It is only a beginning. If you need evidence of this remind yourself that under that Act the Constitution is limited to sanction all rates which will yield 6 per cent, whereas no railroad at the present time can get money at less than 7 or 8 and some of the most powerful governments of the world are paying an equivalent of 9 per cent or more.

For a Business Basis

The detail of the constructive program is for specialists. The grasping of the conception and the conversion of our political servants to it is for you and me—and that conception is that you can no more meet in transportation the demands which will be made upon you in future without a program drawn up in advance and its foundation laid in right conditions than you manufacturers can deliver production in 1922 without the requisite preparation in 1920 and 1921.

The sermon can be summed up in a golden text:

Transportation is a business. It is the business of business men to put the transportation business on a business basis. Let us get to business with a business program for transportation.

A. R. A. Organizes Joint Committee on Automatic Train Control

A JOINT COMMITTEE on Automatic Train Control was recently appointed by President R. H. Aishton, of the American Railway Association. This committee held a meeting in New York on October 20, at which C. E. Denney, vice-president and general manager of the New York, Chicago & St. Louis, was elected chairman. The several divisions of the committee elected the following vice-chairmen; T. H. Beacom, vice-president and general manager, Chicago, Rock Island & Pacific; A. M. Burt, assistant to the operating vice-president, Northern Pacific; W. J. Eck, signal and electrical superintendent, Southern; and J. T. Wallis, chief of motive power, Pennsylvania System.

The chairman of the joint committee, together with the vice-chairman of each division, will constitute a conference committee for conferences with the Interstate Commerce Commission. The duties of the joint committee are as follows:

(a) Prescribe rules and requirements for tests of automatic train control devices.

(b) Review the work already done by previous committees in the testing of appliances and bring the work up to date.

(c) Confer with representatives of the Interstate Commerce Commission in the consideration of this subject.

(d) Arrange with the carriers for practical tests as may seem advisable, and arrange for the terms and conditions of such tests.

(e) Arrange for necessary record of performances and cost of installation and maintenance and comparisons.

(f) Co-ordinate their work at all times with that of the representatives of the Interstate Commerce Commission and work in co-operation with such representatives.

A meeting of the joint committee will be held in Washington on November 5. The personnel of the joint committee is as follows:

OPERATING DIVISION

M. S. Connors, general manager, Hocking Valley, representing Eastern territory.
A. Price, general manager, Canadian Pacific, representing Canadian territory.
R. R. Pollock, vice-president and general manager, Boston & Maine, representing New England territory.
C. E. Denney, vice-president and general manager, New York, Chicago & St. Louis, representing Eastern territory.
T. H. Beacom, vice-president and general manager, Chicago, Rock Island & Pacific, representing Western territory.

ENGINEERING DIVISION

H. R. Safford, assistant to the president, Chicago, Burlington & Quincy, representing Western territory.
E. B. Katte, chief engineer, electric traction, New York Central, representing Eastern territory.
W. P. Wiltsee, assistant engineer, Norfolk & Western, representing Southern territory.
F. Ringer, chief engineer, Missouri, Kansas & Texas, representing Southwestern territory.
A. M. Burt, assistant to the operating vice-president, Northern Pacific, representing Western territory.

SIGNAL SECTION

C. H. Morrison, signal engineer, New York, New Haven & Hartford, representing New England territory.
J. A. Peabody, signal engineer, Chicago & North Western, representing Western territory.
W. J. Eck, signal and electrical superintendent, Southern, representing Southern territory.
T. S. Stevens, signal engineer system, Atchison, Topeka & Santa Fe, representing Western territory.
F. P. Patenall, signal engineer, Baltimore & Ohio, representing Eastern territory.

MECHANICAL DIVISION

J. T. Wallis, chief of motive power, Pennsylvania System, representing Eastern territory.
R. W. Bell, general superintendent motive power, Illinois Central, representing Western territory.
G. McCormick, general superintendent motive power, Southern Pacific, representing Western territory.
C. F. Giles, superintendent of machinery, Louisville & Nashville, representing Southern territory.
W. H. Sample, general superintendent motive power, and car department, Grand Trunk, representing Canadian territory.

Advantages of Steam and Electric Locomotives

Advocates of Two Kinds of Motive Power Each Endeavor to Prove Superiority

THE merits of steam and electric locomotives were propounded by their exponents at a joint meeting of the New York Section of the American Institute of Electrical Engineers, the Metropolitan Section of the American Society of Mechanical Engineers and the Railroad Section of the American Society of Mechanical Engineers held on October 22 in the Engineering Societies Building, New York. E. B. Katte, chief engineer, electric traction, New York Central, presided, and the meeting was opened by F. J. Sprague, Sprague Safety Control and Signal Corporation. One paper on steam locomotives and two papers on electric locomotives were presented and the papers were discussed by several railroad and railroad supply men.

Mr. Sprague outlined the history of the development of electric traction from the advent of the New York Elevated and the original Richmond street railway up to the present time as it is applied to trunk line electrification. He compared the inherent characteristics of the two types of locomotives, stating that while the one was a moving power plant, the other was but a transformer of energy and was, therefore, capable of much greater capacity.

The following are abstracts of the three principal papers and the discussion:

Advantages of Electric Locomotives Have Been Greatly Overstated

By John E. Muhlfeld
Railway and Industrial Engineers, Inc.

Today, in consideration of the existing rates and regulations as established by the Interstate Commerce Commission, the minimum fixed charge and the maximum operating and maintenance economy will be required on every railroad, if the stock owners are to receive even a reasonable return on their investments.

In the protection and control of railroad net earnings, one of the most important factors is the kind of motive power to be used. Unfortunately, in making comparisons of the relative values of steam and electric railway power, some of the electrical engineers have frequently given out such attractive loose figures that railway managers and their engineers have often been misled into making recommendations that have later resulted in embarrassment. For example, comparisons have been made between the operations of new up-to-date electric and of obsolete steam installations. Also assumptions have been made of extraordinary steam locomotive stand-by fuel losses, and of like erroneous factors.

While there is much existing steam road trackage that can and should receive first consideration as regards electrification for the purpose of eliminating gases from underground terminals and to give relief to terminal or line traffic congestion in the vicinity of large commercial and industrial centers, it would be financial suicide to electrify immediately adjacent connecting and intermediate mileage, particularly in view of the improvements that can be made in both existing and new steam locomotives in increasing general efficiency and economy in operation and maintenance.

Before the electric locomotive can be made permissible for general application the electrical engineer must reduce first costs; promote interchangeability; provide a motor which will efficiently, economically and flexibly cover a wide range of speeds and not break down or deteriorate from overloading and heating; reduce complication, wear and corrosion in transmission and contact line apparatus; and substantially reduce the current losses between the point of power production and the locomotive drawbar. Likewise, the steam railway mechanical engineers, locomotive builders and specialty manufacturers, if they are to guard the steam locomotive and continue it in its present field of usefulness, must become more active in modernization and bring about improvements that will substantially increase its capacity and thermal efficiency by the use of higher steam pressures and superheat; compounding; more efficient methods of combustion; utilization of waste exhaust steam and products of combustion heat; better distribution and use of live steam; reduction of dynamic weights; greater percentage of adhesive to total weight and a lower factor of adhesion; and by a substantial reduction in standby losses.

In order to determine the relative advantages of modern steam and electric locomotives the following may be stated as important items for consideration.

Financing. Few if any existing steam roads can justify or stand the additional capital investment required per mile of road for electrification, except for short distances under very special conditions such as prevailed on the Norfolk & Western, where the ventilation and 1.5 per cent. grade of a ⅝-mile single-track tunnel restricted the train movements to six miles per hour on a congested traffic section of the main line, and even then only providing the fixed charges and operating expenses are not too excessive.

The immediate requirements of new money for the more urgent steam equipment and facilities needed to provide adequate, safe and expeditious rather than luxurious service in the regeneration of the railroads, is the obvious reason for the continued utilization of the over-all more economical steam operation, and only after the possibilities in this direction have been realized can any serious financial consideration be given to the proposed radical change to super-electrification.

Adaptability to Existing Trackage and Facilities. First and foremost in the advantages of a continuation of the existing improved steam locomotive for all purposes for which it is permissible, is its flexibility and adaptability to existing railroad trackage and terminal and operating facilities, and the relatively low first cost at which it can be purchased per unit of power developed for the movement of traffic.

Effectiveness in Increasing Track Capacity. Without a doubt, electrification increases the capacity of a terminal. As already set forth, special line conditions may make electrification advisable for short distances, but results do not justify the frequent reference by electrical engineers to the weakness of steam locomotive haulage during the unprecedented cold weather in the winter of 1917-18, in that electrification would not have obviated the difficulty. If so, why did the New Haven not operate at 100 per cent. of its capacity, over its electrified zone at that time? If short of locomotives or motor cars the New York Central had plenty of surplus that was not in use and which could not be utilized outside of its electric zone, where it was badly needed. The probable answer is lack of interchangeability, which is still one of the most discouraging operating factors involved in any electrification scheme.

Furthermore, in the handling of heavy tonnage trains by the unlimited combining of electric locomotive units, the factors of peak load, transmission lines, and power plant capacity must all be considered, with the probability that permissible modern steam locomotive train units can be

more economically handled over dense traffic lines than the electric multiple unit super-trains. Although under the multiple unit system locomotive and train operation it is theoretically possible to provide unlimited sustained hauling capacity, at the head of the train, the tonnage to be handled without rear end or intermediate helpers is limited by the ability of the draft rigging on the cars to withstand the pull and shock, and this limitation can be readily met and exceeded in steam locomotive design and operation.

Train Speeds. The average freight car is in main line movement only about 10 per cent. of its life, or 2 hr. and 24 min. out of each 24 hr. Therefore, increasing train speeds beyond established economic limits at the sacrifice of tonnage, and with an increase in fuel, track and equipment upkeep and danger of operation is not the solution of the freight traffic problem. Capital expenditures applied to the reduction of those delays which now involve over 21½ hr. per day, or about 90 per cent. of the life of the car, would give much more effective and economical results.

Fuel Consumption. Great economy in fuel consumption and cost is the principal claim for electrification and recently electrical engineers have advanced the theory that it would be possible to save at least two-thirds of the coal consumed by the existing steam locomotives and that the useful carrying capacity of existing trackage could be increased about 10 per cent. by the elimination of company coal movement, if electric locomotives were substituted.

The basis for arriving at these comparative figures is so obviously ridiculous that they warrant comment only for the reason of the general publicity given. For example, for the steam operation a coal rate of 12.75 lb. per kilowatt-hour of useful work done, as measured at the driving wheel treads, or 7 lb. per kilowatt-hour (including transmission and conversion losses inherent to electrical operation) as measured at a central power station, were based on tests made in 1910 on the C. M. & St. P. of some probably long since antiquated types of saturated steam locomotives. For the electrical operation a modernized central power station coal rate of 2½ lb. per kilowatt-hour in combination with a 40-watt-hour rate at the point of delivery of the power to the railroad system for moving a gross ton-mile of passenger and freight train, was used, which would produce a movement of 1,000 average gross ton-miles for 100 lb. of coal of about 12,000 b.t.u. value per pound as fired. In arriving at these data apparently factors were overlooked or disregarded, such as gradient and curvature, drifting train mileage, human element, the past ten years' improvement in steam locomotive boilers and machinery, that central power stations cannot be regulated to a basis of 50 per cent. average load factor; and many others.

However, accepting the assertion that the proposed electrification will produce 1,000 gross ton-miles for an average of 40 kilowatt-hours, or 100 lb. of 12,000 b.t.u. coal, as stated and generally approved by electrical engineers, what can the modern steam locomotive do to justify its existence? The following results of dynamometer car tests made during 1918 may be of interest. The steam locomotives tested were of the ordinary superheated Mikado freight type. One locomotive was fitted for hand firing and burning coal on grates, while another was equipped with the "Lopulco" system for burning powdered coal in suspension. The tests were made in tonnage freight service, handling from 2,400 to 2,600 tons east-bound and from 1,850 to 2,250 tons west-bound on the Santa Fe main line between Fort Madison, Iowa, and Marceline, Mo. (the profile consisting of .8 per cent. ruling grades) a distance of 112.7 miles, during March and April, 1918.

	Item	Powdered coal locomotive	Hand fired locomotive
1	Total trips run (112.7 miles each)	14	10
2	Total miles run	1,578	1,127
3	Average running time—hours	5.06	5.25
4	Average dead time—hours	1.25	1.01
5	Average total time—hours	6.31	6.26
6	Average speed, m.p.h.	22.3	21.6
7	Average trailing tonnage per train	2,278	2,283
8	Average gross 1,000 ton miles	256.5	255.4
9	Average coal per gross 1,000 ton miles	82.4	114.8
10	Average superheat—degrees Fahrenheit	223	173
11	Average coal per boiler and superheater, hp. hour.	3.74	4.99
12	Average B.t.u. per pound of coal as fired	12,025	11,160

It can be assumed from the foregoing that the average yearly performance will approximate 100 lb. of 12,000 B.t.u. coal per 1,000 gross ton-miles, or equivalent to what we are promised for the expenditure of billions of dollars of new capital, and the loss of billions of dollars' worth of investment in existing plant and equipment to inaugurate the comforts of electrification.

As there are now about 65,000 steam locomotives in the United States, of which probably 62,000 have simple and only 5,000 have compound cylinders, and of which total only about 25,000 are as yet equipped with superheaters, the foregoing indicates what steam locomotives fuel savings are still possible merely through the application of cross compounding or superheating, or these combined factors.

Efficiency of Locomotive Operation. The off-setting fuel and energy losses, due to stand-by losses in the steam operation, and decrease in efficiency on account of fluctuating loads in the electric operation must not be lost sight of. Neither should those incident to the transforming, transmission and conversion of electric current and like factors be neglected.

It is unquestionably true that when operating under ideal fixed load conditions, the central power station, either hydro-electric or steam, can produce a horsepower with less initial energy input than is possible on a steam locomotive. It is also true that the stand-by losses on existing steam locomotives are, in ordinary practice, a serious proportion of the total fuel consumption, but it is likewise a fact that the majority of these can be substantially reduced if not entirely overcome, by modernizing the present equipment and improving maintenance and operation which would then rob the electrical engineers of their main argument in favor of a blanket electrification.

While the electrical engineers and manufacturers in this country deserve great credit for the progress made in the development of the electric locomotive, they have as yet been unable to design one which can operate at maximum efficiency throughout its range of load. The point of maximum efficiency being well established and fixed, and the current curve on an electric motor not being flat, any over- or under-load from the predetermined maximum efficiency load increased the current consumption. Furthermore, when, on account of transportation conditions, a motor is required to carry an overload for periods of five or six hours, it either breaks down, due to heating, or otherwise requires special power-consuming auxiliaries or long rest periods for the dissipation of the heat stored within itself due to the resistance of the current through the wiring, to permit of continuous operation.

Furthermore, to produce, at various hydro-electric or steam power plants, electric current at say 6,600 volts ac., step the current up to 100,000 volts ac., connect and transmit it from 100 to 300 miles through transmission lines to switching sub-stations located approximately 50 miles apart, step down to 2,300 volts ac., and then convert into direct current at say 3,000 volts for locomotive use, involves expensive lines, plants and equipment, as well as tremendous losses from the generator at the central power station to the bus bar on the direct current side of the transformer, where the current is usually metered for billing. Also the secondary system, as well as the losses through the motors and the machine friction of the electric locomotive itself, are responsible for further losses in current, all of which, after allowing for, say 10 per cent. regeneration, not only limit the capacity of the electric zone but also materially increase the arbitrary electric costs usually considered, so that it is safe

to say that the actual dead loss in power from the central power station to the electric locomotive drawbar will be not less than 50 per cent.

The number of factors entering into an analysis of the net thermal efficiency of the electric locomotive, in terms of drawbar pull, are so many as to make it impossible with the lack of dynamometer car and laboratory test data, to arrive at a figure which is not based on a number of assumptions; but as a matter of interest, assuming, that *all of the factors are affected equally* in the electric locomotive, the net thermal efficiency at the drawbar, when taking into consideration the boiler, engine, generator, step-up transformer, ac. transmission, step-down transformer, ac-dc converter, dc transmission, motors and machine efficiencies may, as representative of average existing practice, be taken as shown in Table I.

TABLE I—COMPARATIVE EFFICIENCIES OF ELECTRIC AND STEAM LOCOMOTIVES

ELECTRIC EQUIPMENT

Equipment	Efficiency factors and net thermal efficiency, per cent	Load rating, per cent 100	75	50
Boiler	Factor	.....	.....	.....
	Efficiency	76.7	76	72
Engine	Factor	18.25	18.29	19.17
	Efficiency	14	13.9	13.8
Generator	Factor	90	89.5	86
	Efficiency	12.6	12.44	11.88
Transformer, step-up	Factor	98	96	90
	Efficiency	12.34	11.93	10.67
Transmission, AC	Factor	90	95	97
	Efficiency	11.10	11.32	10.34
Transformer, step-down	Factor	98	96	90
	Efficiency	10.87	10.85	9.30
Converter, AC to DC	Factor	80	75	63
	Efficiency	8.69	8.13	3.85
Distribution, DC	Factor	90	95	97
	Efficiency	7.82	7.71	5.66
Motors, DC	Factor	91.5	90.8	89.5
	Efficiency	7.15	7.00	5.05
Machine efficiency	Factor	81	85	90
	Efficiency	5.79	5.95	4.54

STEAM LOCOMOTIVE

Equipment	Superheated or saturated	Efficiency factors and net thermal efficiency, per cent	Load rating, per cent 100	75	50
Boiler	Superheated	Factor	.....	.....	.....
		Efficiency	42.7	54.9	65.9
	Saturated	Factor	.....	.....	.....
		Efficiency	45.0	57.4	70.0
Cylinders	Superheated	Factor	11.9	11.0	10.5
		Efficiency	5.08	6.04	6.92
	Saturated	Factor	7.8	8.4	7.8
		Efficiency	3.51	4.82	5.46
Machine	Superheated	Factor	75	80	85
		Efficiency	3.85	4.83	5.88
	Saturated	Factor	77	80	82
		Efficiency	2.70	3.86	4.47

Comparing the electric and steam locomotive figures as illustrated, the relative percentage of power delivered at the track rails to 100 per cent. B.t.u. in the coal would be:

Kind of locomotive	Net thermal efficiency at load ratings of 100 per cent	75 per cent	50 per cent
Electric	5.79	5.95	4.54
Steam, superheated	3.85	4.83	5.88
Steam, saturated	2.70	3.86	4.47

As 100 per cent. load rating conditions would, in practice, occur only momentarily, and as the majority of the drawbar load represents from 30 to 60 per cent. of the locomotive maximum drawbar capacity, comparison should properly be made only of the net thermal efficiencies at 50 per cent. load ratings.

Various dynamometer car and laboratory test performances of representative types of steam passenger and freight locomotives confirm the foregoing figures relating to steam operation.

At speeds of from 15 to 75 miles per hour, the existing superheated steam locomotive thermal efficiency actually ranges from 5.3 to 8.1 per cent. as compared with the calculated figures of from 4.83 to 5.88 per cent. for 75 and 50 per cent. load ratings, respectively. Adding to this an increase of from 15 to 50 per cent in net thermal efficiency that may be produced from developments now under way, the steam locomotive of the future will be quite a respectable assembly of engineering efficiency.

Cost of Maintenance. In determining the maintenance cost of the electric locomotive the popular error is to take into account the locomotive proper, whereas a true comparison can only be made by including all corresponding elements as found in the self-contained steam locomotive which goes back to the upkeep of all facilities having to do with the utilization of the fuel or water power, including the central power station buildings, boilers, engines, conversion, transmission, distributing and contact line systems, substations, track rail bonding and insulation, electric disturbance cut-outs or neutralizers, extra expense in upkeep of the electric zone trackage, and like auxiliaries, and finally the electric locomotive itself.

Peak Load Conditions in Relation to Traffic Requirements. With the steam locomotive the traffic requirements are met by the distribution and utilization of the necessary number of self-contained motive power units as required, regardless as to the capacity of one or more central power stations or of any limitation in quantity, or in price, of the total available power output. The operation of one or of 500 steam locomotives at their maximum capacity at any given, or for any duration of time on a single division, is of no concern.

However, in order to meet the ideal conditions for electrification, the traffic should be uniformly spread or scattered over the 24 hr. period, whereas in the majority of cases train movement is based on traveling and shipping conditions and cannot be advanced or delayed in order to eliminate peak load conditions.

Rate of Acceleration. In order that the desired running speeds can be reached in the minimum of time after the starting of trains, the ability of a locomotive to accelerate its load rapidly is of considerable importance, and in this respect the electric power has had the advantage. The steam locomotive engineer has, however, not lost sight of this fact, and improvements already made in boiler and cylinder horsepower ratios, as well as developments now undergoing for the utilization of existing non-productive adhesive weight and to increase the coefficient of friction between the propelling wheels and the track rails will enable the steam locomotive to duplicate the performance of its electric competitor in this regard.

While the regenerative system of braking can no doubt be developed to the point where it can be safely used in view of the recent serious accident on the St. Paul, due to the failure of the regenerative brake control, just what economy will result is problematical. When the power so generated cannot be directly used by another pulling locomotive on the line, it must be otherwise absorbed, and it remains for the electrical engineers to prove just how much of it is lost in conversion or by absorption, and the resulting net gain as compared with the investment, fixed charge and upkeep and operating cost for the equipment involved.

Effect of Weather Conditions. Even though the full steaming capacity, horsepower and drawbar pull of a modern steam locomotive can be developed during cold weather conditions, there are the factors of radiation and freezing to be reckoned with, which gives the electric locomotive the advantage in winter, particularly, as its effectiveness is greater on account of the lesser tendency for the motors to overheat. This winter advantage, however, is largely overbalanced during the summer, when the main motors heat, especially under overloads, and require cooling at terminals or otherwise overheat, and result in insulation break-downs or burn-outs, or other troubles.

Road Delays and Tie-Ups. While the electric locomotive has the advantage of not being required to take on fuel and water, except for the operation of steam heating equipment for passenger trains, with the increased capacity of the modern steam locomotive tenders, and the lower water and

fuel rates per drawbar horsepower developed, the delays due to taking on these supplies have been greatly reduced and need not be serious.

Barring collisions, wrecks and like accidents not due to the system of motive power in use, steam operation is not susceptible to complete tie-ups, as is the case with electrification, where short circuits or failures occur, due to rains, floods, storms and like causes, and as the result of motor, wiring and insulation heating, deterioration and break-downs, as the individual mobility of each piece of motive power without regard to any outside source of power enables quick relief.

Terminal Delays. The examination of reports of a dense heavy freight traffic railroad in the Eastern District shows the time of its steam locomotive for a recent two months' period, distributed as follows:

1—In road service	50 per cent of total time
2—At terminals waiting trains and otherwise in hands of transportation department	26.4 per cent of total time
3—At terminals in hands of mechanical department	23.6 per cent of total time

There is no doubt that the electric has an advantage over the steam locomotive as regards time required for periodical boiler work, fire cleaning and rebuilding, fueling and watering, except where fuel oil is used, but where terminal delays occur due to waiting for trains, such as the foregoing statement set forth, the time required for such work does not become an expensive determining factor in the daily average miles to be obtained per locomotive. Also the fact that the electric locomotive, cannot, without terminal rest periods or without the consumption of power to operate auxiliaries, operate at its maximum capacity must not be overlooked. Furthermore, many improvements in the fuel and ash-handling and combustion equipment of the steam locomotive using coal are now in process and terminal delays due to these causes are annually being reduced by improved means and methods.

Hazards. With the establishing of more scientific and careful methods of designing, testing and inspection, and the more extended use of safety appliances, the failures of steam locomotive boilers and machinery, particularly those resulting in personal injury, are relatively low as compared with the work performed. It is, therefore, doubtful if there is any greater proportion of risk from the steam locomotive in that regard than from electrocution and other attendant dangers from high-voltage electrification.

Fourteen Points for Electrification

By A. H. Armstrong

Chairman Electrification Committee, General Electric Company

Accepting the Mikado and Mallet as the highest developments of steam road and helper engines for freight service, the following general comparison is drawn with an electric locomotive that it is entirely practicable to build without in any respect going beyond the experience embodied in locomotives now operating successfully.

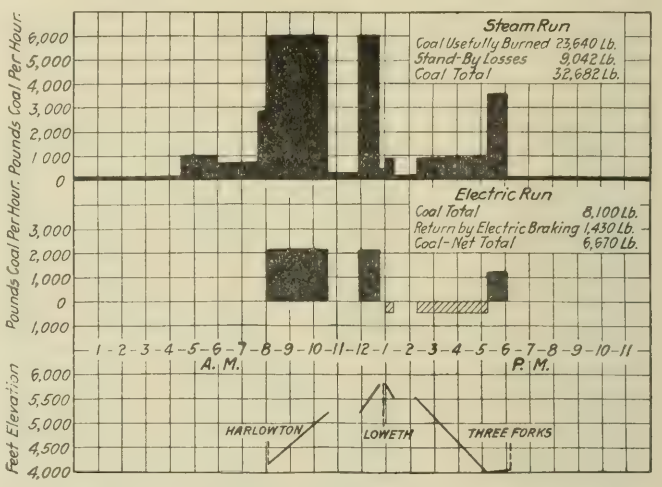
Comparison Steam and Electric Locomotives

Type	Mikado 2-8-2	Mallet 2-8-8-2	Electric 6-8-8-6
Weight per driving axle	60,000 lb.	60,000 lb.	60,000 lb.
Number driving axles	4	8	12
Total weight on drivers	240,000 lb.	480,000 lb.	720,000 lb.
Total weight, loco. and tender.	480,000 lb.	800,000 lb.	780,000 lb.
Trac. eff. at 18 per cent coef.	43,200 lb.	86,400 lb.	129,600 lb.
Gross tons 2 per cent grade	940	1,880	2,820
Trailing tons, 2 per cent grade.	693	1,495	2,430
Speed on 2 per cent grade	14 m.p.h	9 m. p.h	16 m.p.h
H.P. at driver rims	1,620	2,080	5,570
I.H.P. at 80 per cent eff.	2,030	2,600	.....
Trailing ton-miles per hour on 2 per cent gradient	9,700	13,500	38,800

The above analysis brings out the fact that to equal the hourly ton-mile performance of one electric locomotive it would require three and four engine crews, respectively, for the Mallet and Mikado types. In view of the facts, it is a modest claim to make, therefore, that the daily tonnage capacity of single-track mountain grade divisions will be increased fully 50 per cent over possible steam engine performance by the adoption of the electric locomotive.

Regenerative Braking

The hazard of mountain operation is greatest on down grades, although the perfection of automatic air brakes has done much to modify its dangers. It is left to electricity, however, to add the completing touch to the safe control of descending trains by supplying regenerative electric braking. Not only are air brakes entirely relieved and held in reserve by this device, but the potential energy in the descending train is actually converted into electricity, which is transmitted through the trolley to the aid of the nearest train demanding power.



Coal Record on a Basis of 1000 Gross Tons Moved for Steam and Electric Runs from Harlowton to Three Forks, Mont.

The heat now wasted in raising brake shoes and wheel rims often to a red heat is returned to the trolley system and becomes an asset instead of a likely cause of derailment.

Cost of Maintenance

Probably in no one respect does the electric locomotive show greater advantage over the steam engine than in cost of maintenance.

Including all engine service charges, the facts available give foundation for the claim that electric locomotives of the largest type can be maintained for 25 to 30 per cent of the upkeep cost of steam engines operating in similar service.

Fuel Saving

Much has been written on the subject of fuel saving effected by steam railway electrification. The estimates of electric engineers have been called extravagant by steam engine advocates, who in turn have been charged with an incomplete knowledge of all the facts available. Fuel economy figured prominently among the several reasons leading up to the replacement of the steam engine on the Chicago, Milwaukee and St. Paul Railway as brought out by a careful analysis of the performance of the steam engines then in service. The results of the many tests are doubly interesting when compared with the daily performance of the present electric locomotives now running over the same tracks and operated in some instances by the same engine crews. Although the steam engines tested may now perhaps be considered obsolete and not within the scope of this discussion of the modern engine, nevertheless it is not without value to compare the results of steam and electric locomotives operating over such long distances under identical conditions.

The following data is, therefore, submitted as applying to a particular equipment only. No claim is made that it is representative of the best modern steam engine performance, although many thousands of steam engines still in operation will show no greater economies than those given in the following table. The general data applying to the steam and electric locomotives tested are as follows:

C. M. & St. P. Tests—Locomotive Data

	Steam	Electric
Type	2-6-2	4-4-4-4-4-4
Weight of engine	206,000 lb.	568,000 lb.
Weight of tender	154,000 lb.	.....
Weight, total engine and tender	360,000 lb.	568,000 lb.
Weight on drivers	152,000 lb.	450,000 lb.
Ratio driver weight to total	42.2 per cent	79.3 per cent
Rigid wheel base	13 ft.	10 ft. 6 in.
Diameter, drivers	63 in.	52 in.
Cylinders	21"x28"	.....
Heating surface	200 lb.	.....
Heating hurface	2.346 s. ft.	.....
Grate area	45 sq. ft.	.....
Water capacity	8,000 gal.	.....
Coal capacity	14 tons	.....

The run of 111.1 miles from Harlowton, elevation 4,162 ft., to Three Forks, elevation 4,066 ft., over the Belt Mountain Divide at Loweth, elevation 5,789 ft., was made by steam with 871 tons trailing in 26 cars, and by electric locomotive hauling 64 cars weighing 2,762 tons. In order to picture a direct comparison of the results of the steam and electric runs, all test data is reduced to a common basis of 1,000 gross tons moved, this unit of measurement including the locomotive and tender weight. The running speed of the electric train was but slightly higher than the steam, and the additional correction in the power demand rate of the former is made proportional to the lower speed. Both runs are, therefore, shown as made in identical time on the basis of 1,000 total gross tons moved in each instance. The fuel furnishing power to the steam train was coal, having the following analysis:

Coal Analysis

Fixed carbon	Volatile Carbon	Ash	Moisture	B. T. U's.
47.99	38.98	8.35	4.68	11,793

Electric power was furnished by water, and hence no direct coal equivalent is provided by the test result. To afford a common basis of comparison, however, a single assumption seems permissible and a rate or 2½ lb. of coal per kilowatt hour is taken as representative of fair electric power station practice. Coal burned under the steam engine boiler was determined by weighing at the end of the run and by detailed record of scoops en route. Power input to the electric locomotive was obtained by carefully calibrated recording watt meters as well as curve drawing volt and ampere meters. These values of locomotive input were raised to the value of three-phase power purchased in the ratio of 68 per cent given by R. Beeuwkes in his A. I. E. F. paper of July 21, 1920, and the kilowatt hours so obtained reduced to coal equivalent in the ratio of 2½ lb. coal per kw. hr.

To assist in arriving at a truer comparison of modern steam and electric locomotive operation, a further analysis of the above test is enlightening. The commonly used unit measurement of pounds of coal per 1,000 ten-miles is at best a very rough and unstable comparison of steam engine runs over different profiles, variable quality of fuel and operating conditions. For illustration, the following data may apply.

Pounds Coal Per 1,000 Ton-Miles

	2 Per cent grade	Level track
H.P. hours at driver rims	123	18.8
Indicated H.P. hours at 80 per cent eff	154	23.5
Lb. water per I.H.P. hour	20	16.
Lb. water per lb .of coal	5	8.
Lb. coal per I.H.P. hour	3.33	2.0
Lb. coal per 1,000 ton-miles	513	47.
Lb. coal per 1,000 T.M. trailing	650	50.5

Pounds coal per gross 1,000 ton-miles may thus vary from 650 to 50.5, according to gradient and with no standby losses whatever included. The boiler must be kept hot at all times, however, and fully 33 per cent can safely be added to the above figures to include the inevitable standby losses inherent to steam engine operation. Except over very long runs with terminals at the same elevation it seems hardly possible, therefore, to accurately compare engine performance over different profiles by such a variable unit as pounds coal per 1,000 ton-miles.

A truer understanding of what takes place under the engine boiler may be shown by continuous records of coal burned, tons moved, profile, delays, etc., all reduced to pounds of coal burned per useful h.p.h. work done at the driver rims with segregation of the many standby losses.

Analysis Steam and Electric Runs, Harlowton-Three Forks

For 1,000 tons moved

	Steam	Electric
Kw. hrs. at driver rims	2,038	2,038
H.p. hrs. at driver rims	2,625	2,625
Coal per h.p. hr. driver rims	9.02 lb.	*3.09 lb.
Credit regenerative braking	.....	.55 lb.
Standby loss, 27½ per cent	2.47 lb.	.....
Total coal per rim h.p. hr	11.49 lb.	2.54 lb.

*Measured at power house and includes locomotive losses and 32 per cent transmission and conversion loss.

Under the same conditions a modern engine would undoubtedly have consumed much less than 9.02 lb. coal (11,793 B.t.u.'s), while doing work measured at the driver rim. The addition of superheaters gives greater output and economy, while mechanical stokers add output only, and it is claimed, at some expense in economy over good hand firing. However efficient the power plant on wheels may reasonably be developed without too seriously interfering with the sole purpose of the steam engine, the hauling of trains, it can never approach the fuel economies of modern turbine generating stations. Whatever transmission and conversion losses are interposed between power house and electric locomotive are more than compensated for by the improvement in the load factor resulting from averaging the very fluctuating demands of many individual locomotives.

Theoretical Comparison, Modern Steam and Electric Locomotives, Harlowton-Three Forks

	Mikado,	Electric,
Type	2-8-2	4-4-4-4-4-4
Weight on drivers	240,000 lb.	450,000 lb.
Weight engine and tender	480,000 lb.	568,000 lb.
Trac. eff., 18 per cent coeffi.	43,200 lb.	81,000 lb.
Trailing ton, 1 per cent grade	1,420	2,836
H.p. hrs. at driver rims	4,360	8,200
Coal per Ind. h.p. hr	3	.....
Coal per driver, h.p. hr	3.75	.....
Standby loss—test result	9,042 lb.	.....
Standby loss per h.p. hr	2.15 lb.	.....
Total coal per driver, h.p. hr	5.90 lb.	.....
Coal at power house, kw. hr	.....	2.5 lb.
Coal at power house, h.p. hr	.....	1.86 lb.
Coal at locomotive driver, h.p. hr	.....	3.09 lb.
Coal credit due regeneration	.....	.55 lb.
Net coal at driver, h.p. hr	5.90 lb	2.54 lb.
Total net coal	24,800 lb.	20,900 lb.
1,000 trailing ton-miles	157,500	314,000
Coal per 1,000 ton-miles	158 lb.	66.7 lb.
Ratio coal burned	2.37	1

The above table is based upon actual electric locomotive performance, Harlowton-Three Forks, coal taken at 2½ lb. per k.w.h. at assumed steam power station. Steam engine values are based upon the known working efficiency of a Mikado, equipped with superheaters but penalized with the same standby losses actually determined with simple engine tested Harlowton-Three Forks. A test run from Harlowton to Three Forks with a modern Mikado engine, hauling 1,420 tons, may possibly show a lower average fuel rate than 3 lb. per I.h.p.h. at drivers, less standby waste than 9,042 lb. coal, but the average annual performance of many such engines would be most excellent if it reached the net figure arrived at of 5.9 lb. coal per actual h.p.h. work performed at drivers. The electric run, however, is being duplicated daily, as to relation between kw.hs. and ton-miles, and it is just this reliability of electric operation that may at times give rise to misunderstanding in the comparison of steam and electric data.

Summary

Some of the principal advantages claimed for the electric as compared to the steam locomotive may be briefly stated as follows:

1. No structural limits restricting tractive effort and speed of electric locomotive than can be handled by one operator.
2. Practical elimination of ruling grades by reason of the enormously powerful electric locomotives available.
3. Reduction of down-grade dangers by using regenerative electric braking.
4. Very large reduction in cost of locomotive maintenance.
5. Very large saving of fuel, estimated as two-thirds the total now burned on steam engines in operation.
6. Conservation of our natural resources by utilizing water power where available.
7. Material reduction in engine and train crew expense by reason of higher speeds and greater hauling capacity.
8. Increased valuation of terminal real estate following electrification.
9. Increased reliability of operation.
10. Material reduction in operating expense due to elimination of steam engine tenders and most of the company coal movement, the two together expressed in ton-miles approximating nearly 20 per cent of present gross revenue ton mileage.
11. Large reduction in effect of climatic conditions upon train operation.
12. Postponement of immediate necessity for constructing additional tracks on congested divisions.
13. Attractive return on cost of electrification by reason of direct and indirect operating savings effected.
14. Far-reaching improvements in operation that may revolutionize present methods of steam railroading.

Electric Motive Power for Traffic Demands for Tomorrow

By F. H. Shepard

Director of Heavy Traction, Westinghouse Electric & Manufacturing Co.

The electric locomotive has generally, thus far, been a mere substtiute for the steam locomotive, although, in some cases, due to the greater power of the electric locomotives, there has been a modification of the handling of traffic.

Two conspicuous cases of this have been the Norfolk & Western and the Chicago, Milwaukee & St. Paul. In the case of the Norfolk & Western, two electrics handle the same train as was formerly handled by three Mallet engines, but at twice the speed. In this operation, owing to the great increase in hours of road service as well, one electric locomotive is the practical equivalent of four of the Mallet engines replaced.

On the Chicago, Milwaukee & St. Paul, the notable change has been the elimination of intermediate terminals on the electrified section between Harlowtown, Montana, and Avery, Idaho, 440 miles long. There is at present a single intermediate engine terminal, but the latest passenger locomotives are detached from trains at this terminal for inspection and work only, which takes place about once in each eight or ten trips. On regular schedule, these engines make a run of 440 miles each day, being taken off for inspection at Deer Lodge, after mileage varying from three to five thousand miles. On occasion, when, due to a schedule derangement, engines have been maintained in continuous road service for periods of thirty hours or more, for a full day of twenty-four hours, mileage records of up to 766 miles in this mountain service have been established. These records are truly indicative of what may be expected with electric power.

With the retirement of the lighter and weaker car equipment, a material increase in the weight of trains will be realized. Without the limitation in train speed commonly accepted as a handicap to operation of tonnage trains, who can say what the limit to train load will be with electric power? In fact, the character of railroad operation which may be secured with electric power has not yet been visualized. Every other industry that has been electrified has experienced a revolution in methods and service due to electrification. This should be equally true in the case of the movement of our railroad traffic.

Our present methods have been built up entirely under the necessities and limitations of the steam locomotive. This is evidenced by the existence of intermediate terminals at the ends of all the so-called engine districts, where all traffic halts. Again, the steam locomotive requires attention en route, needs supplies of water and coal, and, because of its slow movement when hauling our present tonnage trains, it is frequently sidetracked for superior trains, and thus there are more and still more halts to traffic.

Car inspection now takes place at the terminus of each engine district. If, under condition of electric operation, the engine district can be increased to 200, 400, or even 500 miles, is there any good reason why car inspection should not be eliminated at the present intermediate terminals? In fact, is not the general standard of maintenance of equipment of doubtful value on the present basis of inspection at each 100-mile interval? Cars in subway service, which is certainly full of potential hazard, are economically and reliably maintained through inspection at intervals of one to three thousand miles. The elimination of these intermediate terminals, with the resultant necessity of keeping the train moving on the main line, would secure an enormous increase in miles per car, with a corresponding saving in equipment.

Furthermore, with the dispatch obtained in handling trains, movement could be so marshalled and scheduled that the necessity of storing goods at terminals to protect exports and local consumption would be largely eliminated, and terminals would then become in fact, as in fiction, gateways open instead of closed.

Coming now to the comparative performance of steam and electric locomotives, it is important to bear in mind their fundamental difference, the one, a generator of power, and the other a transformer of power. The generation of power in central stations is surrounded with many refinements, and in the consumption of coal there is every opportunity for skillful handling and supervision, so that the thermal efficiency of a modern central station is relatively high and is also continuously maintained. With the steam locomotive, on the other hand, the thermal efficiency is dependent not alone upon the design of the locomotive, but the manner in which it is worked, its condition, which differs widely from the best, and finally by the skill in firing. The electric locomotive, on the other hand, consumes power only when in service, and works at any load at its designed efficiency. The average performance, in the case of the electric, approximates the maximum in efficiency, while the steam, on average performance, will differ widely therefrom.

We can, therefore, hardly expect that with the best steam locomotives the average coal consumption will be equal to twice the coal rate for the same work performed by electric locomotives with steam generated power. Obviously, with hydro-electric generation, the saving in fuel is complete. There is further economy due to the lesser work performed, because the electric locomotive does not have to trail supplies of fuel and water, nor is there need for the hauling of coal to points of local supply, which will always be greater than hauling to electric central stations.

There are a considerable number of different designs of electric locomotives all in successful operation, and each

possessing certain advantageous features. Further experience will, undoubtedly, result in the survival of common types for the different classes of service. The great latitude with which electric locomotives can be designed, while fundamentally most desirable, is in itself, at the present time, somewhat of a handicap. This is now the subject of intensive analysis, and this study is undoubtedly developing as well, a better knowledge of the running characteristics of the steam locomotive.

To state the case briefly, we are all interested in the transportation problem. Electrification is bound to be the most potent factor for its relief. We should, therefore, invite and embrace closest co-operation with the engineering and mechanical skill which has been so productive in the steam locomotive field.

Discussion

The discussion of the principal papers took the form of reading prepared discussions only, and due to the lateness of the hour some of these were not presented or were given in brief. No one offered to start an open discussion when it was suggested by the chairman.

Sounder Bases for Comparison Needed

H. B. Oatley, chief engineer, Locomotive Superheater Company, stated that while both electric and steam locomotives were undoubtedly able to stand on their own merits, that it was futile to discuss these merits without some idea of what the return on the capital investment will be. This was brought out in view of the difficulties encountered by the railroads in obtaining capital. Modern electric locomotives, he said, must be compared with modern steam locomotives, the stand-by fuel losses of steam locomotives should be compared with similar losses in the power plant, and losses inherent to the transmission and transformation of electric power and costs of steam engines, roundhouses, coaling and water facilities, etc., compared with costs of electric locomotives with the necessary powerhouses, transmission lines, sub-stations and distribution systems.

Adoption of Electric Traction Has Been Slow

The high points of the discussion presented by F. J. Cole, chief consulting engineer, American Locomotive Company, are summed up in the following: In the 27 years since the building of the first electric locomotive for operation of the tunnel into Baltimore, only about one per cent. of the steam locomotives in this country have been superseded by electrics. Advocates of electric traction fail to produce complete financial statements of installations made. Many ill-considered electric suburban lines have been abandoned. Electrically operated roads must have a large excess of power-station capacity. A steam locomotive is a more flexible unit than an electric locomotive, and a steam-operated road is not subject to tie-ups due to burned-out cables, blow-outs, etc. Much of the fuel economy claims made for electric operation are based on unwarranted assumptions.

Railroad Facilities Must Keep Pace With Development of Nation

The thought was brought out by C. H. Quinn, chief electrical engineer (N. & W.), that if we are to maintain our standing in the commercial world, our railroad facilities must go forward and keep pace with the commercial development of the nation, and that for this reason effort should be concentrated on the development of freight locomotives which can meet coming requirements. Freight car capacities, he showed, have increased 100 per cent. during the past ten years, while steam locomotive capacities have increased only 10 per cent. By comparing fuel consumption of the electrified division of the Norfolk & Western with tests made on modernized Mallet engines under similar operating conditions, Mr. Quinn showed a fuel saving of 29.3 per cent. in favor of electric operation. In answer to a query on regenerative braking, it was pointed out that during the past five years twenty thousand 3,250-ton trains have been taken down a 2.3 per cent. grade, using only regenerative braking, without a single failure.

Fuel Economy on the New Haven

A. L. Ralston, mechanical superintendent (N. Y., N. H. & H.), compared the thermal efficiency of the 3,000-volt direct current system with the efficiency of the electric locomotive as given in Mr. Mühlfeld's paper. It is stated that on the New Haven, the efficiency at full load was 8 per cent; at 75 per cent load, 7.8 per cent; and at 50 per cent, 7.4 per cent. To prove greater reliability of electric service, he cited the fact that there was only one failure for every 21,000 miles run by electric locomotives, and a failure for every 4,000 miles run by steam locomotives. He stated that the records of the New Haven showed that in slow freight service, approximately 25 kw. hours were consumed per 1,000 gross ton miles in freight service. The coal per kw. hour averaged 2.92 lb., and the line loss was 7.1 per cent. The fuel consumption in passenger service was 9.3 lb. per car mile on the electric division, while the average for steam operation on the New Haven was 19.3 lb. per car mile. With coal costing $5 a ton, the net saving through electrification was $393,000 a year.

In freight service, electric locomotives consumed 84 lb. of coal per 1,000 gross ton-miles, while steam locomotives averaged 199 lb., the saving in this service being $268,000. In switching service the consumption of electric locomotives was 38.3 lb. per mile, and for steam operation, 106.8 lb. per mile, a saving of $94,000. The electrification was, therefore, responsible for a gross saving in the cost of fuel amounting to $755,000 annually.

Electrical Exponents' Figures Do Not Agree with Facts

The discussion presented by F. H. Hardin, chief engineer of motive power (N. Y. C.), took the form of a criticism of the papers presented by Mr. Armstrong and Mr. Shepard. In determining the desirability of electrifying, he said, the matter of present costs and the situation 15 or 20 years hence are of utmost importance. Wheel and rail wear, he pointed out, must be considered as well as weight per axle and electric as well as steam locomotives must have backshop facilities. Figures shown on the maintenance costs of New York Central Mallet locomotives, including shop and enginehouse repairs, were from 24 to 37 cents per mile, as against the estimate of 60 cents offered by Mr. Armstrong, and Mikado locomotives on the N. Y. C. show a fuel consumption of 125 to 130 lb. of coal per 1,000 gross ton-miles as against the estimate made by Mr. Armstrong of 158. On speaking of Mr. Shepard's statement that electrification might quadruple the present railroad capacity, Mr. Hardin said that the electrification is only one factor, and perhaps not the greatest, of what Mr. Shepard sees in the future.

Do Not Appreciate St. Paul Conditions

R. Beeuwkes, electrical engineer (C. M. & St. P.), submitted a discussion criticising the paper presented by Mr. Mühlfeld. The nature of the more pointed criticisms were about as follows: The paper captioned "Conclusions" contains statements of so general a character as not to permit of profitable argument. The "Virginian Steam Articulated" locomotive can not justifiably be compared with the St. Paul electric locomotives, as each is designed for an entirely different service and operates under entirely different conditions. Fuel economy, while important, is hardly the most important claim for electrification, and its importance will vary in different cases. Decreased cost of engine repairs,

enginehouse expense, train and enginemen's wages and increased ton-mile capacity of locomotives are of more importance. Motors can carry overloads—exert abnormal traction efforts—for considerable periods of time without injury, whereas the steam locomotive has a well defined maximum tractive capacity depending upon the steam pressure at which it is supplied. Ease of starting trains is a feature of electrical operation which is so noticeable that even those not particularly interested in the matter note and remark about it. Starting each car successively, as spoken of in Mr. Mühlfeld's paper, does not apply in the case of a train on a mountain grade. The runway accident on the St. Paul was in no way an electrical failure.

Electric Operation Does Not Save Coal

The opinion was expressed by W. F. Kiesel, Jr., mechanical engineer of the Pennsylvania, that electric operation does not save coal, and he produced figures obtained from locomotive tests to substantiate his opinion. Referring to Mr. Armstrong's paper, he spoke as follows: "Two statements in the fuel comparison deserve some analysis. The stand-by losses for steam locomotives are given as 9,042 lb. of coal. The regenerative braking on the electric locomotive is credited with a saving of 1,430 lb. of coal. About half, or 4,595 lb. of coal, of the standby losses are for making fire and drifting, which is high. The coal used for making fire is not all loss.

He also said that, for either steam or electric operation, the length of divisions and locations of terminals are governed by other than locomotive limitations.

Ask the Man Who Owns One

W. L. Bean, assistant general mechanical superintendent, while speaking for the steam men, presented an unbiased discussion based largely on his own experience. The following is an abstract of his remarks:

It must be conceded broadly that electrical operation requires less coal per unit of traffic handled than steam operation. How much less depends on the specific conditions.

Likewise, the mileage per unit of electric equipment is ordinarily greater per unit of time. On one largely electrified road, express locomotives average 27 per cent more miles per day per locomotive owned than steam power in similar service. However, the first cost of the electric engines per unit of capacity was 84 per cent greater than in the case of steam. Therefore, the fixed charges are greater for the electric engine per unit of service.

A few words respecting comparative flexibility, especially in service of a character which demands it, may be of interest. A certain modern passenger electric locomotive will handle a heavy train of Pullmans at high speed on a through run with a few stops such as would require a modern Pacific type steam engine of about 43,000 lb. tractive effort. However, to operate the electric engine in heavy local service over the same distance is impossible because of the heating caused by frequent starting. In such service, the maximum train which can be handled by the electric locomotive can only approximate what can be handled by a steam engine of about 30,000 pounds tractive effort.

Regarding the design of the machinery of a steam locomotive being utterly circumscribed by the necessity for tying it up to a steam boiler, the statement can be made that some modern high powered electric locomotives are so compact with apparatus, both inside the cabs and beneath, as well as on top, that additions to or enlargements of details, even of a minor nature, are well nigh impossible. Furthermore, this is not peculiar to AC-DC machines.

When one comes to attempting the solution of the problems attendant on the heating of passenger trains, electrically drawn; to find room for the boiler, water and fuel oil storage, auxiliaries, etc., and keep within weight limitations, the difficulties are very real and certainly lead one to the conclusion that on electric passenger power the boiler is circumscribed by electrical apparatus.

In surveying electrification broadly, one finds there is a vast field of opinion among electrical engineers as to types of installations. Is it possible that by so many widely divergent electrical means the final net results are always to the discredit of steam operation? Can any type of electrical layout beat steam? Even if so, it is hardly probable that each electrical arrangement can be as good as every other one.

It appears that when a railroad goes in for electrification, it must settle on some type of layout the main characteristics of which are fixed. Extension must either be along the original plan as to power characteristics, distribution or collector apparatus, or else vast sums must be spent to re-vamp the existing plant if the new lay-out is not to be largely separate and independent with all of the inherent disadvantages of non-interchangeability and lack of flexibility.

The design and operating characteristics of steam power have developed far more along lines of possible common usage and practice. It is to be hoped that the lines of development of electrical facilities will tend to converge rather than diverge too widely.

Some reasons for such desirability are:

(a) Railroad managements will not be so fearful of becoming tied up with a heavy and inflexible type of investment, which may quickly become obsolete through not lending itself reasonably well to extension or modernization.

(b) The need for a broader field of design and manufacture of equipment and the furnishing of repair parts for the same.

Possibilities of Electrification Should Be Investigated Thoroughly

George Gibbs, chief engineer electric traction, Long Island, stated that, as regards simplicity, the self-contained steam locomotive has an inherent advantage over the combination of elements required for electric propulsion, and the latter must show some peculiar advantages in an operating, rather than a structural sense, if it is to supersede steam traction. Due to the large investment in steam locomotive equipment, he said that in any event steam motive power can be displaced only by slow degrees and railway men can discuss the new rival with calmness. After presenting a general picture of the situation, Mr. Gibbs concluded by saying that the available facts indicate the importance of carefully investigating each proposed application to insure that it is properly conceived and carried out.

Carefully Correlated Data Is Needed

The discussion prepared and submitted by E. B. Katte, chief engineer electric traction, (N. Y. C.), expressed the opinion that too much has been claimed for the steam locomotive as well as for the locomotive operated by electricity. Without doubt, he said, there are advantages peculiar to each, but it will always rest with the railroad engineer to determine and decide which type of locomotive will be best suited to the peculiar conditions surrounding the railroad which he serves. He produced a table which showed that fuel consumption data is apt to be misleading insofar as comparisons are concerned, due to widely different conditions on the various roads in question. He concluded his remarks as follows: "Finally, too much reliance should not be placed on results obtained from test runs, even if they fairly well simulate actual conditions. To be of comparative value, service records should extend over several years, and the data should be carefully collected, correlated and averaged to give results that may be expected in everyday operation."

Short Lines Contest Employees' Wage Demand

Representatives of Class II and III Carriers Testify Before the Railroad Labor Board at Chicago

THE OPENING SESSIONS of the United States Railroad Labor Board's public hearings upon the demand of employees of short line railroads for the extension of the wage scales created by the Board's award of July 20 were described in the *Railway Age* of October 22, (page 698). As stated in the closing paragraphs of that article, the real fight before the Board began on October 21 following the completion of hearings as to the jurisdiction of the Board over various electrically-operated interurban roads. It was agreed early in the hearings that testimony concerning the jurisdiction awarded the Board by the terms of the Transportation Act would first be taken, following which the dispute between the short lines and their employees would be considered.

Insofar as the testimony of the representatives of the various short lines is concerned, there has been little variation. Each representative has outlined the physical characteristics, financial position, traffic movements, and operation of his line either in the form of a statement or in answer to questions. All have opposed the granting of increased wages from the standpoint of practically every condition upon which the Transportation Act states that the Board should base its awards. The outstanding features of the hearings so far have been the general statements which have been made by representatives of the American Short Line Railroad Association.

On Thursday morning B. M. Jewell, representing the associated standard recognized railroad labor organizations, presented the employees' side of this controversy by suggesting to the Board that the testimony presented by representatives of the employees in the hearings which terminated with the award of July 20 be accepted as their testimony in this case. He added that the increases requested of the short lines should be based on the rates paid under General Order 27 and supplements thereto, whether or not the individual lines have already applied these wage scales.

Bird M. Robinson, president of the American Short Line Railroad Association, and representing many of the short lines, in presenting their side of the controversy, not only vigorously opposed the granting of increased wages to the employees, but denounced the manner in which this dispute was brought before the Board. Mr. Robinson said in part:

The first question we shall present for consideration of the Board is whether or not there is such a dispute as the law contemplates and must be decided by the Board. In order that there may be no possible misunderstanding as to the attitude of the short line railroads we declare that in every case which we represent where a genuine dispute between a short line railroad and its employees is brought before this Board in the manner provided by law, such railroad is willing that such dispute shall be decided by this Board; but we emphatically condemn and protest against machine made or manufactured disputes.

The Transportation Act of 1920 creates this Board and confers such jurisdiction and power as it may exercise. That Act provides an orderly and peaceful method for the settlement of labor disputes. It was intended that the tribunal therein provided should hear and decide disputes between carriers and their employees, but it was never intended that they should be placed in the attitude of mere moot courts to decide questions which did not originate with the employees, but which, in fact, originated with and are the creations of persons who have no direct interest in the questions thus presented.

We expect to be able to show this Board that in most, if not in every case where complaint has thus far been filed against a short line railroad, there is no genuine dispute between such road and its employees. We take the position that a demand which did not originate with the employees, but is made under orders or instructions from officers of grand or general organizations where their general membership is not directly connected with the particular road, is not the demand of employees, but is in truth and fact a demand of the general officers of organized labor. This does not mean that such general officers may not act for and represent the employees before this Board; but it does mean that a case brought before this Board by grand officers who originated demands and had the employees present them through control over them as members of organized labor and who prohibited employees from modifying such demand in any particular, is not a dispute, but is the ultimatum of an organization which has no interest direct in the demand it makes and is clearly in violation of the letter and spirit of the law which brought this Board into being and provides the way in which it may acquire jurisdiction.

We take the position that this Board cannot and will not act upon the appeal of any party where it appears that such party has not attempted in good faith to proceed in accordance with the spirit as well as the letter of the law. We expect to show the Board that in these cases now before it for consideration the parties who are here as complainants have utterly disregarded the procedure prescribed in the law.

In support of these contentions, Mr. Robinson presented copies of circulars and letters issued and written by labor leaders and alleged to be letters of instruction to local brotherhood leaders for bringing wage disputes properly before the Board.

Mr. Robinson continued:

It seems to us that this is the time for plain speaking. We declare to the Board that we will appear whenever cited to appear, but in any and every case where there is not at least a prima facie showing of compliance with the procedure required by the law, or in other words, where there is not a genuine dispute as to which there has been an honest effort to follow the law, we cannot and will not willingly continue a party to such proceeding

It was never contemplated that outsiders should meddle with the internal affairs of the carriers and their employees. It was never contemplated that this Board should be made the instrument for carrying out the ambitious schemes of the general officers of organized labor. It was never contemplated that this agency of government should be used except as dernier resort after the other means provided by law have failed—that is to say—after the parties directly interested have met each other face to face and engaged in an earnest and honest effort to adjust their own differences.

Candor, as well as a due regard for the properties we represent and the greater interest of the public dependent upon these properties for transportation, compels us to say that insofar as the American Short Line Railroad Association is concerned, it cannot and will not consent to engage in machine made proceedings. Any other course would make us participants in a controversy which in truth and fact is fictitious and where the individual carrier would be justified at the bar of public opinion in repudiating our acts and disregarding the findings of this honorable Board.

Another defense which we expect to present for the consideration of the Board is that there is an established differential in the wage scale of short line railroads which must be preserved in any decision this Board may make as to the individual carriers. The law itself recognizes the fact that the qualifications of employees, the character of labor performed, and the working and living conditions, vary on individual railroads; and it is common knowledge that the labor employed by short line railroads is not of as high a standard as that employed by the larger lines; hence their wage scale should not be as high. A demand that the same wage scale be applied to roads operating a few miles and using men that cannot qualify for service on larger lines is manifestly unjust.

It may be contended that the proposition to preserve proper differentials had reference only to employees engaged in different occupations, but it is difficult to understand why the same principle would not apply to railroads of different character.

Most if not substantially all the short line railroads cannot pay higher wages than they are now paying. They are largely undeveloped properties, constructed and operated in thinly settled territory. There is a limit beyond which they cannot go in increasing rates, even though the different commissions might authorize such increases. What doth it profit the small road if it makes the highest rate structure in the world but loseth the little traffic that it hath?

Due consideration must be given to the earning power of each

road and the individual carrier must be permitted to fix its wage scale with proper regard to its ability to earn revenue sufficient to pay its operating expenses, a fair return on the value of the property used for transportation, and thus continue to furnish service to the public.

The only reasonable basis for demands for increased wages which have been made upon the defendants in this proceeding is the increased or high cost of living brought about by the war.

When the demands which resulted in Decision No. 2 of this Board were first presented and when the decision was made, the cost of living was then at its peak. Drastic reductions in staple commodities have occurred in the last ninety days and prices are still declining.

We respectfully submit that there are 820 short line railroads in the United States, of a total mileage of 35,000 miles of track, and with property investment of more than two billion dollars. We cannot foresee how many of these roads may be cited to appear before this Board upon complaint for increased wages. Whether all, or only a part, it must be borne in mind that any addition in wages will be just that much additional burden which will ultimately be laid upon the already heavily burdened shoulders of a long-suffering and patient public, either in the form of increased rates, or the loss which must occur from the discontinuance of railroads now giving service.

In view of all the facts which we present for your consideration, we respectfully submit that the demands which have been made upon the short line railroads for standard wages ought to be denied.

Following the presentation of this statement Mr. Robinson requested certified copies of each complaint against each short line inasmuch as many of these roads maintain that no disputes or complaints have been brought to their attention. In addition, Ben B. Cain, representing the American Short Line Railroad Association, argued against the taking of the employees' previous testimony as evidence in this case, pointing out that the representatives of the short lines have had no opportunity to study this testimony or to formulate appropriate replies. S. S. Ashbaugh, also representing the American Short Line Railroad Association, requested the Board to swear in the witnesses which appeared before it.

Requests of Short Line Representatives Denied

These requests were answered at the opening of the afternoon session by Chairman Barton, who announced, first, that the Board will receive the employees' previous testimony as evidence in this case; second, that the proceedings will continue as usual without the swearing in of witnesses unless it is specifically demanded by the short line representatives, and third, that the Board will not furnish the short line representatives certified copies of the complaints, inasmuch as these are now part of the public record of and can be consulted in the Board's files. Mr. Robinson again protested the acceptance of the employees' previous testimony, However, no further action was taken in this matter.

W. L. Seddon, representing the Macon, Dublin & Savannah, the Raleigh & Charleston, the Charlotte, Monroe & Columbia, the Tampa Northern, the Tampa & Gulf Coast, the East & West Coast and the Florida Central & Gulf, was then called to present the testimony on behalf of these carriers. Mr. Seddon's position was that the lines in question had already applied to Decision 2, the July 20 award, and that therefore they were not properly before the Board in this case. In presenting his testimony, Mr. Seddon took each one of the roads separately, explaining its physical condition, its revenues and expenses, etc., and pointed out the conditions on the lines coinciding with the seven conditions upon which the Transportation Act has directed the Board to base its awards, i.e., wages, hazards of employment, amount of training and skill required, character of regularity of employment, etc.

On Friday Mr. Seddon concluded his testimony for the seven lines which he represented. H. W. Woolf, vice-president of the Atlanta & St. Andrews Bay, and C. J. Phillips, vice-president and general manager of the Brooklyn Eastern District Terminal Company, also testified at the Friday session, being questioned by Mr. Ashbaugh after being duly sworn.

Chairman Barton, at the opening of the Monday morning session, suggested that to save time the representatives of the various short lines prepare and file with the Board statements regarding the physical characteristics of their properties, their revenues and expenses, etc. Mr. Cain agreed to this suggestion. Testimony of this character, however, was presented at this session, the suggestion of the chairman applying to only those representatives who will have time to prepare such material.

W. B. Veazey, manager of the Gainsville Midland; C. J. Rogan, superintendent of the Houston & Brazos Valley; W. W. Tirrell, general auditor, and F. N. Beal, general manager of the Sandy River & Rangely Lakes, testified for their respective lines at this session.

The Monday afternoon session was devoted to hearing the testimony of F. E. Murphy, secretary and general manager of the Virginia & Truckee; A. B. Paine, representing the Tennessee, Alabama & Georgia, and E. S. McPherson, representing the Spokane International. All of these witnesses were interrogated by Mr. Ashbaugh regarding their respective lines.

Following Wednesday's session the Board adjourned until Tuesday afternoon. At this session F. Robertson, counsel of the Louisiana & Pacific; J. F. Sugrue, general superintendent of the Louisiana & Pacific, and also superintendent of the Lake Charles & Northern, and W. H. Hough, general auditor of the Susquehanna & New York, testified on behalf of their respective lines. In reply to a question brought up by Mr. Robinson, Chairman Barton stated that in all probability the decision in the case under consideration will deal only with wages, the question of working conditions being for further hearings.

The report of the Board's hearings in the *Railway Age* of October 22 contained the statement that "N. B. Kane, representing the American Association of Short Line Railroads, outlined the position of that organization in a short statement saying, 'We think that Congress intended in the expressions used to include suburban electric railways and interurban railways because such railways are used in some sections of the country as part of system lines.'" Attention has been called to the fact that the statement is that of Ben B. Cain, assistant to the president, and although the quotation is correct, it does not state the position of the Short Line Association. The sentence quoted was made by Mr. Cain, but being lifted from its context can be misinterpreted. The position of the Short Line Association is that these lines do not come under the jurisdiction of the Board, except in certain cases where they are obviously part of a general system.



Photo by Kadel & Herbert News Service

An Accident Near Paris, France, in Which a Suburban Train Sideswiped a Freight, Resulting in Forty Deaths

Comparative Cost of Government Operation*

Return of Railroads to Owners on March 1 Saved Nation's Taxpayers a Large Amount

By Samuel M. Felton
President, Chicago Great Western Railroad

DURING THE TIME when the railways were struggling with the switchmen's strike, and business was somewhat demoralized by it, the defenders of government control and advocates of the Plumb plan began to criticise private operation upon the ground that it was proving incapable of handling the country's traffic as well as it had been handled under government operation. Now that under private operation, in spite of all the difficulties that have had to be overcome, the railways are moving more freight than ever was moved under government operation, and have reduced congestions until the accumulations of loaded cars amount to only 41,000, the defenders of government operation and critics of private management have begun to use ammunition of a different kind. As you know, the government guaranteed to the railway companies during the first six months of private control the same return that it guaranteed to them under government operation. Recently widespread publicity has been given to the effect that since the railways were returned to their owners they have been incurring a large deficit which the taxpayers will have to pay. It is estimated the total deficit for the six months period will exceed $600,000,000. The inference is that the loss to the public during these six months was much more than it would have been if government operation had been continued. Propaganda to this effect is being spread all over the country by advocates of government ownership and the Plumb plan.

It is, unfortunately, true that during the first six months of private operation the companies did incur a large deficit which the taxpayers of the United States must meet. Probably the estimate that it will amount to $600,000,000 is not far from correct. Nevertheless, I am prepared to maintain, on the basis of the showing made by the Railroad Administration in the closing months of government control, that the government saved the taxpayers of the country a large amount of money by returning the railways to private operation when it did—in other words, that if government operation had been continued the deficit in these six months would have been much larger than it actually was under private operation.

Most people know that under government control the operating expenses of the railways greatly increased and that a large deficit was incurred. Most people apparently do not know that the increases in the expenses and in the deficit continued month by month right up to the termination of government control. As a matter of fact, both the operating expenses and the deficit incurred in the very last months of government control were the largest that ever were incurred under government control. Reviewing the last six months of government control we find that in August, 1919, the operating expenses were $359,000,000, while in February, 1920, they were $415,000,000, an increase of $56,000,000. In August, 1919, the net operating income earned was $92,000,000. In September it declined to $78,000,000; in October, it was $76,000,000; in November, $22,000,000; and in December, $13,000,000. In January the net operating income reported was $64,000,000, but this included $50,000,000 of back mail pay which the Interstate Commerce Commission held that the Postoffice Department owed the railways because of under payments over a period of years. The true net operating income earned in that month was only $14,000,000. In February, the last month of government operation, the operating expenses and taxes of the roads exceeded their total earnings by over $12,000,000—in other words, they earned that much less than no net operating income at all.

Since within six months the net operating income of the railways had dwindled under government operation from $92,000,000 to $12,000,000 a month less than nothing, it is reasonable to assume that if government operation had been continued the loss incurred would have kept on growing relatively greater. Let us, however, give government operation the benefit of the doubt and assume that if it had been continued for six months more the results obtained would have been relatively no worse than they were in the first two months of the year—January and February. This is very fair to government operation, for in those two months the total business handled and the total earnings made were the largest ever recorded in January and February. The government's guarantees to the railway companies in January and February, based on the net operating income actually earned by the companies in the three test years, were $104,551,000. The net operating income actually earned in those two months under government operation was only $1,930,500, or but 1.84 per cent of the guarantees. The government's guarantees to the companies for the six months from March to September 1 would have been, if government operation had been continued and they had been based on the amounts actually earned by the railways in the three test years, $457,676,000. If in those six months the government had earned only 1.84 per cent of the guarantees, as it did in January and February, the net operating income earned by it would have been only $8,421,000, leaving it with a deficit of $449,255,000.

But there are other most important factors to be considered. One of the principal reasons why under private operation the railways have incurred a large deficit is that advances in wages amounting to $52,000,000 a month, and effective during four of these six months—from May 1 to September 1—and therefore amounting for the four months to $208,000,000, were granted by the Railroad Labor Board in July. It is fair to assume that corresponding advances in wages would have been made if government control had been continued, and if this had been the case the deficit incurred by the government during these six months would have been increased to $657,255,000. In addition to all this, the railways have been subjected to increases in the prices of coal which caused their total fuel bill in July, 1920, to be $14,000,000 more than it was in July, 1919. It is a fair assumption that this increase in the cost of coal also would have occurred under government operation and would have further increased the government's deficit during the six months by $50,000,000 to $75,000,000. It is, therefore, a fair conclusion from all the facts that if government operation had been continued the deficit incurred by the government during these six months would have been not less than

*Extracts from an address delivered before the Traffic Club of Minneapolis, at Minneapolis, Minn., October 21, 1920.

$700,000,000, a figure much larger than the estimated deficit actually incurred under private operation.

Increased Expenses Under Private Control

It is undeniable that there have been large increases in expenses since the railways were returned to private operation. But these increases have been due to causes beyond the control of the managements. One of the reasons has been the large increase in wages granted by the Railroad Labor Board I have already mentioned. Another has been the large increase which has occurred in the price of coal. Another has been that, as I have said, the government returned the railways to their owners in a greatly deteriorated condition, and it has been necessary to spend larger amounts for maintenance than were spent under government control. For example, there was a large increase under government control in the number of freight cars in bad order, and, in addition to repairing all the cars they could in their own shops, the companies have had to turn over many thousands to be repaired by outside car-building and car repair companies. In the five months from March to July, inclusive, the companies spent $103,000,000 more for maintenance of way and structures and $132,000,000 more for maintenance of equipment, a total of $235,000,000 more for maintenance of both kinds, than was spent during the same months of 1919 under government control. Another factor of great importance which must not be forgotten is that the railways had to go through a series of "outlaw" strikes which were a result of the failure of the government to settle the wage controversy which was pending when the railways were returned to their owners. These strikes reduced the earnings and increased the expenses of the companies to an extent which made the deficit incurred probably $200,000,000 more than it otherwise would have been.

Improvements in Operating Efficiency

On the whole, the results gained indicate that in spite of the great increases in maintenance expenditures which have been made necessary by the deterioration of the properties under government control, the railways have been much more economically operated under private control than they would have been under government control. How has this relatively greater economy of operation been secured? It has been secured by increasing efficiency, in spite of strikes and other difficulties, in almost every way in which it could be increased. The latest complete statistics regarding operation which we have are those for July, when the effects of the "outlaw" strikes were still seriously felt. Even in that month, as compared both with February, when the railways were returned to their owners, and with July of last year, very great increases in efficiency had been secured. The average number of miles each car was moved daily in July, 1919, was 24.1 miles, while in July, 1920, it was 26.1 miles. This had the same effect as increasing the available supply of cars by 200,000. The average number of tons hauled per car in July, 1919, was 27.8 and in July, 1920, it was 29.6. This had the same effect as increasing the number of available cars by 135,000. The number of cars unfit for service in July, 1919, was 8.7 per cent, while in July, 1920, it had been reduced to 7.2 per cent. This had the same effect as increasing the number of cars by over 35,000. The average tons hauled per train was increased from 761 to 769. All these improvements helped to secure the great increase in the amount of traffic moved which has been obtained within recent months; and the increases in the average miles moved by each car daily and in the average number of tons handled in each car and each train tended strongly to keep down operating expenses. Considering all the difficulties under which they have labored, the record of increased efficiency the railways have made is one of which they are justly proud.

A. R. A. Starts Freight Claim Prevention Campaign

Because of the enormous increase in payments for loss and damage of freight within recent years, the Freight Claim Division of the American Railway Association has started a drive to reduce this item of operating expenses. As was noted in an item in last week's issue of the *Railway Age,* page 715, the association has established a permanent freight claim prevention organization within the Freight Claim Division. This new organization, the purpose of which is "the active prosecution of freight claim prevention efforts," will be known as the Committee on Cause and Prevention of the freight claim division of the association and will be directed by Lewis Pilcher, secretary of that division.

Furthermore, R. H. Aishton, president of the American Railway Association, has called a "Frieght Claim Prevention Congress" to be held at the Hotel La Salle, Chicago, on November 15 and 16. This congress, which is to be conducted by the new committee of the freight claim division, has for its purposes, as set forth in President Aishton's announcement, the following:

1. The promotion of claim prevention efforts on inactive lines.
2. The increase of effectiveness of active lines.
3. The co-ordination of efforts of individual lines into a general claim prevention movement.

The docket of subjects to be considered was given in last week's issue, page 715, in the item above referred to.

The subject of the cause and prevention of freight claims has been under consideration by the association for some time; nevertheless, it is interesting to call attention at this time to some of the measures that are being taken to obtain data regarding this important phase of railway operation and expense. A special committee composed of C. H. Deitrich, chairman, C. E. Bingham, C. C. Glessner, Leo Jessen and E. Arnold, appointed to prepare a new form for the reporting of claim statistics, completed that task last July with the result that on September 1 the carriers which are members of the association began reporting their claim statistics uniformly. This form in general is similar to that formerly used by the Interstate Commerce Commission and classifies claim payments as to both the principal causes and commodities. Thirty-four commodity divisions are shown, as compared with 24 on the old form, and space is provided for reporting the losses incurred in both c.l. and l.c.l. shipments of each commodity. The headings under which returns are made for the individual commodities are, unlocated loss, unlocated damage, rough handling of cars, improper handling, loading, unloading or stowing, defective or unfit equipment, improper refrigeration or ventilation, freezing or heater failure, delay, robbery, concealed loss or damage, wreck, fire or marine loss or damage, and error of employee.

At the bottom of this form spaces have been provided for the reporting of loss and damage claims (received from claimants) handled during the month. This statement will show the number of claims unsettled at the close of the previous month, received from claimants during the current month, reopened during the current month, paid during the current month, declined during the current month, unsettled during the current month, and the number of claims paid or declined and withdrawn within 30 days and over 30 days and not over 90 days.

It is believed that with reports being made on this form more complete information will be available by means of which loss and damage claim prevention work can be effectively directed.

It should be recalled in connection with this claim prevention work that under federal control, Director General

Walker D. Hines clearly recognized the importance of reducing loss and damage payments, and in March, 1919, started a movement to, first, prevent loss and damage to freight; second, assess correct charges, and third, dispose promptly of claims for loss and damage and for overcharges. A committee under the chairmanship of the director of the Division of Public Service of the Railroad Administration was appointed and the various regional directors were asked to take an active part in the campaign. As a result the total number of loss and damage claims on hand unsettled was reduced from 888,197 on March 1, 1919, to 465,722 on November 1, 1919, a reduction of about 48 per cent.

The way in which loss and damage freight claim payments have grown during the past six years is shown by the fact that these payments have increased from $32,375,618 in the year ending December 31, 1914, to $104,243,782 in the year ending December 31, 1919. There are several other ways in which this cost can be compared to show its relative increase as compared with increases in the traffic handled. The following table shows the relative increases in the cost of loss and damage claim payments between 1914 and 1919:

	Per cent 1914	Per cent 1919
Ratio of amount paid to total operating revenues	1.117*	2.52†
Ratio of amount paid to total operating expenses	1.551*	2.97†
Ratio of amount padi to total freight revenues	1.625*	3.67†
Ratio of amount paid to net earnings	3.08*	17.2†
Ratio of amount paid to net freight earnings	....	23.3†

* I. C. C. Statistics.
† Computed.

The object of the movement started by President Aishton is to reduce these ratios by means of co-ordinating claim prevention work and extending it to all lines.

Railway Fire Protection Association Meets at Baltimore

THE FIRST day's proceedings of this association at its Seventh annual meeting, in Baltimore, Md., on October 19, 20 and 21, was the subject of a report printed in the *Railway Age* last week, page 695. The next chapter of the doings of the meeting begins with a report on the care of gasolene and electric trucks in freight and passenger stations, by a committee, of which E. J. Reilly (Erie) is chairman. Mr. Reilly read the report. The committee finds that the use of these trucks is not very extensive. This class of machine finds favor, as a rule, only where the haul is long. Gasolene fuel is looked upon with some favor, notwithstanding the hazards of storing and handling it; and some roads are considering the adoption of stringent safety rules so as to permit the use of this class of power. With electric trucks the principal fire hazard is in connection with the insulation and ventilation of charging apparatus.

In the paucity of information the committee made no attempt at an exhaustive report; but presented a tentative code of rules, 25 paragraphs, for the care of these tractors. These rules were briefly discussed.

The use of gasolene tractors has been considered in various quarters, and it is understood that the Fire Department of New York City is ready to permit their use in buildings, but only on the ground floor. The committee had not inspected the Ford gasolene truck. A considerable number of members were in favor of forbidding the use of gasolene motors within buildings without exception; but attention was called to the fact that in freight sheds, on piers and elsewhere, the trucks of shippers are allowed to come in; and it would be unwise to adopt too strict a rule. W. H. Klinsick (C. B. & Q.) said that his road was considering seriously the use of gasolene motors in freight houses.

Several members suggested changes in some of the paragraphs of the proposed rules and the committee was instructed to keep up its study of the subject for another year.

Protection of Shop Plants

The most of the time of the association on Wednesday forenoon was taken up with a discussion of a report, on fire prevention and protection of shop plants, by a committee of which J. R. Peters (Penn.) is chairman. This report filled 21 large typewritten pages and included a statement of the risks, precautions and remedies in connection with locomotive plants, engine houses, coaling plants, oil houses, store houses, power plants, air brake shops, foundries, yards and other features. Mr. Peters read the report, one chapter at a time, each chapter being followed by some desultory discussion. W. S. Wollner (N. W. P.) reported experimental use of electric flood lights in round houses, between stalls. For doing work under engines, extension lights, on cords, are used. On the Chesapeake & Ohio, conduits for electric lights in engine houses are run beneath the floor so as to avoid the destructive effect of gases in the upper part of the house. Mr. Steffens (N. Y. C.) recommends for workmen in dark places carbide lamps, to be worn on the hat; with such a lamp the workman has both of his hands free for his work. Mr. Steffens' remarks brought out a discussion of the hazards connected with the use of carbide.

On the Big Four the records of 25 years show that half of the fire losses connected with round houses were due to fire started by backfire sending flame out through staybolts and setting fire to wooden cabs.

Considering blacksmith-shop risks, care of fires at night was taken up. The approved practice appears to be to put out all fires, with water, when the workmen leave. The helper should light the fires in the morning a half-hour before work is to begin.

The time available expired before the whole of the report had been read, and it was recommitted, Mr. Peters requesting members to send him their criticisms in writing. The president reminded all members to read carefully the report, when it comes out in the proceedings, containing, as it does, matter of great value to all.

Franklin H. Wentworth, secretary of the National Fire Protection Association, Boston, invited to address the meeting, gave a brief but stirring narrative of his work in arousing municipal officers, fire departments and citizens generally, all over the country, on the importance of fire prevention, as distinguished from fire extinguishment. The most accurate measure of the success of fire prevention is a decrease in the number of fire alarms, and this encouraging decrease has been accomplished in some cities. This country still has far to travel before attaining to the rational position of France, where, if you have a fire and it is conveyed to your neighbor's building, you are likely to have to pay damages to him. In New York City, the fire department may recover from a property owner, who has a fire due to carelessness, the cost of putting it out. This provision of the city charter has been enforced in a few instances.

Hazards Incident to the Location of Industries on Railroad Rights-of-Way

W. F. Hickey (N. Y., N. H. & H.), vice-president of the association, presented a paper on this subject, calling attention to the enormous developments in industrial activities during recent years, accompanied by the largely increased use of petroleum and other highly inflammable materials by manufacturing concerns. Circular No. 190 of the Bureau of Explosives gives useful recommendations concerning the best practice in handling petroleum products with a flash point below 30 deg. F. In establishing new unloading tracks for gasolene, naphtha, etc., special care should be taken in selecting the location and in making connections. Mr. Hickey quotes the regulations in force on one New England road. Privileges should be granted to industries only after approval of the insurance department. The use of oil as fuel by industries is a matter needing constantly to be

watched. A concrete pit is very desirable where such fuel is unloaded; or, if the ground is allowed to be saturated with oil, fresh earth should be brought in frequently. Storage tanks should not be allowed on railroad property near the main track. The delivery of petroleum products in team track yards is very objectionable, and the delivery there of products which have a flash point below 30 deg. should be forbidden.

In every application for a side track the question of the probable use of chemicals and acids should be carefully considered. On electrified railroads the danger from gasolene fumes in a moisture laden atmosphere must be looked after, as such fumes coming in contact with an accidental arc may start a fire. Industries handling rags and waste, as well as reclamation plants, must be carefully watched. Freight agents should know the exact nature of all commodities loaded by shippers on private sidetracks.

It is for the interest of every railroad, of course, to accommodate shippers to the utmost; and in view of the possibility that the spirit of accommodation may be carried too far, it is very desirable that the carriers should have uniform regulations, particularly all carriers in the same region. The paper quotes the fire clause which is in use in the sidetrack contract form of a prominent road.

In the discussion on this paper, the importance of a strong side-track contract was emphasized, even if in many cases it is not of specific benefit to the railroad company. In case of fire, the burden of proof is on the railroad company and so the experience of most members was that collection of damages was not very frequent; but some roads mentioned successful suits. Industrial concerns have made a plea before the Interstate Commerce Commission asking for the establishment of a form of contract between railroads and industries which shall be more favorable to the latter.

Following the discussion, Mr. Hickey was thanked for preparing the paper.

A Symposium

The informal discussion of practical problems of field engineers, scheduled for Thursday, was taken up on Wednesday afternoon. P. A. Bissell, who, last year, was an inspector for the United States Railroad Administration, told of some of the lessons which he learned when traveling for the government. The cleaning and whitewashing of the interior of the roofs of blacksmith shops was found to be an important matter. Such cleanliness not only lessens fire risks, but increases the efficiency of the workmen. On the Oregon Short Line, the interiors of blacksmith shops are washed once a month by means of hose. The Bangor & Aroostook uses compressed air for this purposes. Mr. Bissell found considerable careless work in connection with the collection of shavings. All woodwork refuse should be collected in a brick chamber. Fires started in shavings by backfire from the furnace sometimes make trouble; this should be prevented by a check valve in the ducts used to convey the shavings. Inspection of ventilating ducts in large plants is a work which has been much neglected. One member reported that in a casing of considerable size the workmen used the space in which to eat their luncheons and to smoke.

E. W. Osborne (N. P.) giving his notes on hazards in terminal operation said that careless construction of freight houses and neglect to gather refuse from freight cars in yards were fields needing attention. Local freight houses, except the shortest, should have one or more transverse fire walls. Even a wooden wall is better than nothing. A. D. Brooks (N. Y. C.) declared that only a metal car should be used to gather refuse in freight yards; and, except when empty, should not be left standing near the freight house. Overhanging eaves should be abandoned on freight houses, except on the side toward the street. Anson Murphy (M. R. & B. T.) questioned the need of a rubbish car; why not burn up all rubbish every day?

Experiences with oxyacetylene were given by a number of members. On the St. Louis-San Francisco, pipes in this apparatus are painted; red on the oxygen pipes and green on the acetylene pipes. The use of a cloth funnel in pouring carbide was favored; and also was criticized, on the ground that the cloth, being an insulator, might favor the accumulation of a static electric charge.

E. Williamson (Sou. Ry.) appointed to discuss "individual responsibility," introduced two other members who had collaborated with him, W. Sharp (C. R. I. & P.) and I. Hunter (S. A. L.). To fix individual responsibility for fire losses the field engineer must use all his resources. He must be sure of himself and his ability for his own job; and be certain of the completeness of his information; he must convince the men on the jobs that the engineer's counsel is sound. It was recommended that each railroad appoint a propaganda committee. Fire prevention committees should be established on each division, with monthly meetings, such as the safety-first people have. A set of resolutions was presented embodying these recommendations. Every fire should be investigated and suitable discipline enforced; at the same time it is important to foster friendly intercourse between the management and the employees. Bulletins should be issued for the information of employees; and employees' magazines should be used to disseminate the desired information.

On motion of F. H. Elmore it was voted that the executive committee should send these recommendations to all railroads.

L. F. Shedd (C. R. I. & P.) called attention to the futility of depending fully on circulars to inculcate right ideas and establish good practice. Mr. Shedd is in charge, on his road, of both fire prevention and the usual safety organizations; and he cited various points from his experience in the latter as useful to the fire prevention men. He emphasized the importance of being careful to convince all employees of your friendly interest; with many of them "discipline" is a bugbear, and that feeling must be dispelled. This discussion was closed by Mr. Elmore who endorsed all the good things said about improving the rank and file, but ended by saying that the particular problem was to reach the man at the top.

Plans for the Coming Year

Before proceeding to new business the meeting voted, revising its action of Tuesday, to approve the use of fire extinguishers in more specific terms. The meeting evidently agreed with Mr. Murphy, who expressed his intention of saying, in each case, just what he meant: for electric appliances use the tetrachloride extinguisher; for oil fires use foamite and sand; for shavings, etc., the 2½-gallon type. The resolution as finally recorded approves, for oil fires, any form of extinguisher which has been approved, for that use, by the Underwriters' Laboratory.

The president announced that a publicity committee was to be established and that the proceedings of the association would be sent to all railroads.

The association, after making a change in two clauses of the constitution, elected officers for the ensuing year as follows: President, W. F. Hickey (N. Y. N. H. & H.); Vice-President, George L. Ball (St. L.-S. F.); Secretary and Treasurer, R. R. Hackett (B. & O.), Baltimore, Md. Vacancies on the executive committee were filled by the election of E. B. Berry, Robert Scott and G. R. Hurd.

On Wednesday afternoon, James Lalor gave a brief lecture, illustrated by stereopticon views, on the best methods of constructing and managing fuel oil appliances, and on Thursday afternoon the members and guests were entertained at luncheon by the Baltimore & Ohio Railroad on a municipal steamer, which took the party around the harbor, to inspect the railroad docks and terminals.

The Pyrene Mfg. Co., New York City, had at the hotel an exhibit of fire extinguishers and its automatic alarm.

Commission Points to Records Made by Railroads

Statement Compiled by Its Bureau of Statistics Shows Improvement in Efficiency as Compared with Last Year

THE INTERSTATE COMMERCE COMMISSION, on October 22, made public the following statement by its Bureau of Statistics on the freight operating statistics for July and the first seven months of this year as compared with the corresponding months of last year:

The monthly summary of operating statistics shows a marked improvement in the factors measuring efficiency in the movement of freight traffic, train loading and car performance as compared with last year. Barring April, which was somewhat distorted by switchmen's strikes, there has been a gradual increase in all factors since the first of the year, with the exception of the per cent loaded of total freight car miles which shows a downward tendency, due principally to the necessity of moving large numbers of empty box cars from the East and South to grain originating lines in the West; also to the necessary restrictions placed on the use of open top cars, forcing, as it did, the prompt return of empty cars to the mines. With the car surplusages of last year the necessity for these measures did not exist in 1919. Reports indicate that during July, 1920, 40,232,000,000 of net ton miles were produced in exclusive freight service by Class I roads, which, according to statistics compiled by the United States Railroad Administration, tops all records for any one month's operation since April, 1916, and probably in the history of railroads. The next highest record was made in October, 1919, when 40,166,632,000 net ton-miles were accomplished.

July, 1920, compared with July, 1919, net ton-miles increased 15.2 per cent; train miles increased 14.0 per cent, and loaded car-miles increased 8.7 per cent. There was an increase in train load of 1.1 per cent; car load increased 6.1 per cent, and car miles per car day 8.7 per cent. While the per cent of loaded to total car miles decreased 0.4 per cent, the decrease was more than offset by the increases shown in the car load and the car miles per car-day. As a result the net ton-miles per car-day, which is the ultimate measure of freight car utilization, shows the substantial increase of 14.8 per cent. This item is the resultant of car-load, percent of loads and car-miles per car-day.

For the seven months' period ended with July, 1920, compared with the same period of 1919, there was an increase of 17.1 per cent in net ton-miles. Train-miles increased 15.5 per cent and loaded car-miles increased 16.3 per cent.

Train load increased 1.4 per cent and the car load increased 0.7 per cent. The per cent loaded of total car-miles increased 4.6 per cent and car-miles per car-day increased 8.5 per cent. The changes in car load, the per cent of loads and car-miles per car-day resulted in an increase of 14.8 per cent in net ton-miles per car-day.

TABLE I

COMPARISON OF THE PRINCIPAL ITEMS, JULY, 1920, WITH JULY, 1919

Item	July, 1920	July, 1919	Increase or decrease: Amount	Increase or decrease: Per Cent
Total net ton miles (millions)	40,232	34,916	5,316	15.2
Freight train miles (thousands)	52,315	45,910	6,405	14.0
Freight car miles (thousands):				
Loaded	1,354,139	1,246,228	107,911	8.7
Empty	645,335	587,327	58,008	9.9
Total	1,999,474	1,833,555	165,919	9.0
Cars on line daily	2,304,655	2,257,845	46,810	2.1
Averages				
Net ton-miles per mile of road —per day	5,657	4,940	717	14.5
Net ton-miles per train-mile	769	761	8	1.1
Net ton-miles per loaded car mile	29.7	28.0	1.7	6.1
Per cent loaded of total car miles	67.7	68.0	d 0.3	d 0.4
Car-miles per car day	26.2	24.1	2.1	8.7
Net ton-miles per car day	526	458	68	14.8
Cost per freight train-mile (selected accounts)	$1.897	$1.540	$.357	23.2

The cost per freight train miles (selected accounts) shows an increase of 23.2 per cent as compared with last year. A definite explanation is not available but is probably due to heavy repairs to locomotives, increased cost of material and in some cases the inclusion of back pay adjustments.

TABLE II

COMPARISON OF THE PRINCIPAL ITEMS OF PERFORMANCE FOR THE SEVEN MONTHS' PERIOD ENDED WITH JULY AND THE SAME PERIOD, 1919

Item	Seven months: 1920	Seven months: 1919	Increase or decrease: Amount	Increase or decrease: Per Cent
Total net ton miles (millions)	248,999	212,706	36,293	17.1
Freight train miles (thousands)	345,909	299,521	46,388	15.5
Freight car miles (thousands):				
Loaded	8,678,977	7,463,001	1,215,976	16.3
Empty	3,674,772	3,649,984	24,788	.7
Total	12,353,749	11,112,985	1,240,764	11.2
Cars on line daily	2,359,402	2,311,283	48,119	2.1
Averages				
Net ton miles per mile of road per day	5,114	4,410	704	16.0
Net ton-miles per train mile	720	710	10	1.4
Net ton-miles per loaded car mile	28.7	28.5	.2	.7
Per cent loaded of total car miles	70.3	67.2	3.1	4.6
Car-miles per car day	23.1	21.3	1.8	8.5
Net ton-miles per car day	465	407	58	14.3
Cost per freight train-mile (selected accounts)	$1.854	$1.635	$.219	13.4

During the seven months ended with July, 1920, there were 248,999,000,000 net ton miles produced.

Monthly statistics compiled by the U. S. Railroad Administration for the four years ended with 1919, indicate that the total net ton miles for the months January to July, inclusive of these four years, produced 56.46 per cent of the total. Assuming that this percentage will be maintained in 1920 the year's figures will far exceed all past records.

TABLE III

COMPARISON OF SIGNIFICANT AVERAGES FOR JULY, 1920, AND THE SIX MONTHS PRECEDING IS AS FOLLOWS:

Item	July	June	May	April	March	Feb'y	Jan'y
Traffic density (net ton miles per mile of road per day)	5,657	5,531	5,292	4,120	5,432	4,901	4,866
Train load (net ton-miles per train mile)	769	758	746	666	725	693	672
Car load (net ton-miles per loaded car mile)	29.7	29.1	28.3	28.6	28.3	28.3	28.3
Per cent loaded of total car miles	67.7	69.5	71.2	68.4	72.3	71.9	70.8
Car miles per car day	26.2	25.0	24.3	19.5	23.8	22.3	22.8
Net ton-miles per car day	526	505	489	379	495	453	457
Cost per freight train mile (selected accounts)	$1.897	$1.879	$1.780	$1.874	$1.793	$1.912	$1.859

It will be noticed that substantial improvement is reflected in all items except the percentage loaded of total car miles. The decrease shown in this unit is largely brought about by relocation orders made necessary by unbalanced traffic.

Analysis by Factors and Regions

Following is an analysis of each significant item by regions:

TABLE IV

TRAFFIC DENSITY (NET TON MILES PER MILE OF ROAD PER DAY)
July, 1920, Compared with July, 1919

Regions	July, 1920	July, 1919	Increase or decrease: Amount	Increase or decrease: Per cent
New England	4,314	3,848	466	12.1
Great Lakes	11,153	8,799	2,354	26.8
Ohio-Indiana-Allegheny	11,982	10,910	1,072	9.8
Pocahontas	15,155	13,565	1,590	11.7
Southern	4,022	3,429	593	17.3
Northwestern	3,585	3,452	133	3.9
Central Western	4,056	3,545	511	14.4
Southwestern	2,997	2,407	590	24.5
All regions	5,657	4,940	717	14.5

Reports from each region show an increase; Great Lakes leads with 26.8 per cent; the lowest is 3.9 per cent recorded in the Northwestern region.

TABLE V

TRAFFIC DENSITY (NET TON-MILES PER MILE OF ROAD PER DAY)
January, 1920, to July, 1920, Both Inclusive

Regions	July	June	May	April	March	Feb'y	Jan'y
New England	4,314	4,190	4,229	3,623	3,529	2,248	3,569
Great Lakes	11,153	10,380	9,133	6,436	9,967	8,309	8,307
Ohio-Indiana-Allegheny	11,982	11,333	10,889	7,708	11,594	9,349	9,340
Pocahontas	15,155	14,585	13,304	12,540	13,848	12,316	12,829
Southern	4,022	4,231	4,214	3,757	4,167	3,983	4,007
Northwestern	3,585	3,518	3,535	2,906	3,487	3,407	3,114
Central Western	4,056	4,152	4,019	2,967	4,058	4,117	4,049
Southwestern	2,997	2,879	2,882	2,377	2,803	2,807	2,653
All regions	5,657	5,531	5,292	4,120	5,432	4,901	4,866

It will be noted that there has been a general upward tendency in all regions since January, 1920.

TABLE VI

TRAIN LOAD (NET TON-MILES PER FREIGHT TRAIN MILE)
July, 1920, Compared with July, 1919

Regions	July, 1920	July, 1919	Increase or decrease: Amount	Increase or decrease: Per cent
New England	502	501	1	0.2
Great Lakes	973	906	67	7.4
Ohio-Indiana-Allegheny	936	952	d 16	d 2.0
Pocahontas	1,280	1,272	8	0.6
Southern	566	583	d 17	d 2.9
Northwestern	735	733	2	0.3
Central Western	672	663	9	1.4
Southwestern	587	544	43	7.9
All regions	769	761	8	1.1

The small decreases appearing in the Ohio-Indiana-Allegheny and the Southern regions are more than offset by other regions. The regions as a whole report an increase of 1.1 per cent.

TABLE VII

TRAIN LOAD (NET TON-MILES PER FREIGHT TRAIN MILE)
January, 1920, to July, 1920, Both Inclusive

Regions	July	June	May	April	March	Feb'y	Jan'y
New England	502	486	498	453	455	369	425
Great Lakes	973	953	907	781	858	777	744
Ohio-Indiana-Allegheny	936	933	918	792	870	800	779
Pocahontas	1,280	1,249	1,214	1,248	1,238	1,154	1,175
Southern	566	574	574	555	583	580	577
Northwestern	735	739	742	639	682	660	614
Central Western	672	676	676	612	666	676	648
Southwestern	587	555	561	507	550	564	553
All regions	769	758	746	666	725	693	672

The average of 769 net tons per freight train not only exceeds the train load in any month since the Government relinquished control, but according to statistics compiled by the U. S. Railroad Administration, it is greater than any month during Federal operation.

TABLE VIII

CAR LOAD (NET TON MILES PER LOADED CAR MILE)
July, 1920, Compared with July, 1919

Regions	July, 1920	July, 1919	Increase or decrease: Amount	Increase or decrease: Per cent
New England	25.3	23.2	2.1	09.1
Great Lakes	30.2	27.2	3.0	11.0
Ohio-Indiana-Allegheny	35.2	34.2	1.0	2.9
Pocahontas	42.4	40.7	1.7	4.2
Southern	25.9	24.5	1.4	5.7
Northwestern	28.2	26.7	1.5	5.6
Central Western	26.0	24.8	1.2	4.8
Southwestern	26.6	24.4	2.2	9.0
All regions	29.7	28.0	1.7	6.1

Every region reports an increase in car load; the regions as a whole show an increase over July last year of 6.1 per cent.

TABLE IX

CAR LOAD (NET TON MILES PER LOADED CAR MILE)
January, 1920, to July, 1920, both inclusive

Regions	July	June	May	April	March	Feb'y	Jan'y
New England	25.3	24.0	24.1	24.2	23.5	23.9	23.4
Great Lakes	30.2	28.9	28.0	29.0	27.9	28.3	27.6
Ohio-Indiana-Allegheny	35.2	35.1	33.9	34.6	33.1	33.0	33.3
Pocahontas	42.4	40.8	40.1	44.4	42.4	40.2	41.9
Southern	25.9	25.9	25.3	25.8	25.9	26.1	26.3
Northwestern	28.2	27.8	27.2	26.1	26.6	26.1	25.8
Central Western	26.0	26.0	25.6	25.9	25.9	26.3	26.5
Southwestern	26.6	25.4	24.7	24.9	24.9	25.6	26.0
All Regions	29.7	29.1	28.3	28.6	28.3	28.3	28.3

It is interesting to note the improvement month by month in almost every region. The car load, 29.7 tons, reported in July, is particularly interesting when it is recalled that the executives recently set 30 tons per car as the ideal which the roads should strive to attain.

TABLE X

PER CENT LOADED OF TOTAL FREIGHT CAR MILES
July, 1920, compared with July, 1919

Regions	July 1920	July 1919	Increase or Decrease: Amount	Increase or Decrease: Per Cent
New England	70.3	70.6	d 0.3	d 0.4
Great Lakes	68.9	69.0	d 0.1	d 0.1
Ohio-Indiana-Allegheny	67.3	66.7	0.6	0.9
Pocahontas	60.9	61.9	d 1.0	d 1.6
Southern	67.8	71.8	d 4.0	d 5.6
Northwestern	67.2	66.2	1.0	1.5
Central Western	67.9	67.8	0.1	0.1
Southwestern	69.8	69.9	d 0.1	d 0.1
All Regions	67.7	68.0	d 0.3	d 0.4

Very little change is reported in the per cent of loaded of total freight car miles. Small decreases appear in New England, Great Lakes, Pocahontas, Southern and Southwestern regions. Other regions report small increases. The regions as a whole show a decrease of 0.4 per cent.

TABLE XI

PER CENT LOADED OF TOTAL FREIGHT CAR MILES
January, 1920, to July, 1920, both inclusive

Regions	July	June	May	April	March	Feb'y	Jan'y
New England	70.3	71.4	72.6	71.3	77.5	76.6	73.6
Great Lakes	68.9	71.3	72.5	67.0	74.6	73.9	71.8
Ohio-Indiana-Allegheny	67.3	68.4	69.8	65.8	69.6	69.3	67.5
Pocahontas	60.9	62.6	64.2	59.6	61.4	62.8	62.1
Southern	67.8	69.7	71.0	69.5	72.7	72.9	72.5
Northwestern	67.2	71.1	73.2	72.1	75.8	74.7	73.8
Central Western	67.9	69.5	71.6	70.3	72.9	71.9	71.0
Southwestern	69.8	68.7	71.0	68.2	70.8	71.8	72.1
All Regions	67.7	69.5	71.2	68.4	72.3	71.9	70.8

There is a bad showing in the percentage loaded of total freight car miles compared with other months, January to July. It is not restricted to any particular region. A downward tendency is shown in every region.

TABLE XII

CAR-MILES PER CAR DAY
(Serviceable and unserviceable cars included.)
July, 1920, compared with July, 1919

Regions	July 1920	July 1919	Increase or Decrease: Amount	Increase or Decrease: Per Cent
New England	18.0	17.9	0.1	0.6
Great Lakes	24.3	23.8	0.5	2.1
Ohio-Indiana-Allegheny	21.1	22.0	d 0.9	d 4.1
Pocahontas	38.9	29.1	9.8	33.7
Southern	31.0	25.8	5.2	20.2
Northwestern	26.7	26.2	0.5	1.9
Central Western	33.6	27.8	5.8	20.9
Southwestern	25.5	19.3	6.2	32.1
All Regions	26.2	24.1	2.1	8.7

With the exception of the Ohio-Indiana-Allegheny region, every region shows an increase in car-miles per car-day in July, 1920, as compared with the same month last year. These increases should be expected when we note that in July, 1919, the amount of traffic offered for movement was small and that nearly 70,000 cars were stored, while in July, 1920, traffic was probably the heaviest in history, taxing freight carrying equipment to the limit.

The decrease shown in the Ohio-Indiana-Allegheny compared with July last year, was probably due to an abnormal volume of traffic resulting in congestion.

TABLE XIII

CAR-MILES PER CAR DAY
(Serviceable and unserviceable cars included.)
January, 1920, to July, 1920, both inclusive

Regions	July	June	May	April	March	Feb'y	Jan'y
New England	18.0	17.4	15.8	13.3	12.5	8.2	14.5
Great Lakes	24.3	23.1	21.0	15.3	21.4	18.9	20.7
Ohio-Indiana-Allegheny	21.1	19.8	20.5	15.6	21.9	19.4	20.1
Pocahontas	38.9	38.9	36.5	34.4	38.5	33.7	30.7
Southern	31.0	30.2	28.5	24.7	27.2	26.0	26.1
Northwestern	26.7	24.5	24.4	20.6	22.1	22.5	21.2
Central Western	33.6	32.4	31.8	23.6	31.5	30.4	30.3
Southwestern	25.5	24.4	23.9	19.8	21.4	21.6	20.8
All Regions	26.2	25.0	24.3	19.5	23.8	22.3	22.8

The preceding table XII shows, for July, 1920, compared with July, 1919, increases which should be expected in view of the increase in tonnage. The above table shows that in spite of the abnormal amount of traffic handled, this factor of efficiency is showing an improvement month by month.

TABLE XIV

NET TON MILES PER CAR DAY

July, 1920, compared with July, 1919

Regions	July 1920	July 1919	Increase or Decrease Amount	Per cent
New England	319	292	27	9.2
Great Lakes	506	446	60	13.5
Ohio-Indiana-Allegheny	499	500	d 1	d 0.2
Pocahontas	1,004	734	270	36.8
Southern	544	452	92	20.4
Northwestern	503	462	41	8.9
Central Western	592	466	126	27.0
Southwestern	473	328	145	44.2
All Regions	526	458	68	14.8

The net ton-miles per car-day, which is the resultant of the car-load, per cent of load, and car-miles per day, shows for all regions the substantial increase of 14.8 per cent. A small decrease appears in the Ohio-Indiana-Allegheny but very large increases are reported by the Pocahontas, Southern, Central Western and Southwestern regions. These abnormal increases were probably due to a greater number of cars being on line in 1919 and at the same time the net ton-miles were very materially less than in July, 1920.

TABLE XV

NET TON-MILES PER CAR DAY

January, 1920, to July, 1920, both inclusive

Regions	July	June	May	April	March	Feb'y	Jan'y
New England	319	299	276	228	227	150	248
Great Lakes	506	475	427	297	445	394	411
Ohio-Indiana-Allegheny	499	477	484	355	544	444	452
Pocahontas	1,004	995	938	910	1,003	852	798
Southern	544	545	512	442	512	495	498
Northwestern	503	483	484	385	444	437	403
Central Western	592	583	583	429	593	525	570
Southwestern	473	426	419	335	377	397	390
All Regions	526	505	489	379	495	453	457

Net ton miles per car day, which is the final unit in measuring freight car utilization, shows an increase since the first of the year.

TABLE XVI

CONDITION OF FREIGHT CAR EQUIPMENT

PER CENT OF FREIGHT CARS UNSERVICEABLE

July, 1920, compared with July, 1919

Regions	July, 1920	July, 1919
New England	8.1	9.0
Great Lakes	7.8	8.5
Ohio-Indiana-Allegheny	6.5	11.2
Pocahontas	8.1	8.4
Southern	7.1	9.5
Northwestern	7.7	7.6
Central Western	6.9	7.8
Southwestern	6.3	5.4
All Regions	7.2	8.8

The per cent of freight cars unserviceable in July, 1920, compared with July, 1919, shows considerable improvement in every region, with the exception of the Northwestern and Southwestern regions, where small increases are shown.

All regions, however, show a decrease from 8.8 to 7.2 per cent.

TABLE XVII

PER CENT OF FREIGHT CARS UNSERVICEABLE

January, 1920, to July, 1920, both inclusive

Regions	July	June	May	April	March	Feb'y	Jan'y
New England	8.1	7.4	6.3	6.8	7.2	6.8	7.3
Great Lakes	7.8	7.5	6.8	6.7	7.3	7.2	7.5
Ohio-Indiana-Allegheny	6.5	6.3	6.1	6.3	7.7	8.1	7.7
Pocahontas	8.1	9.9	7.9	8.1	8.7	8.1	7.3
Southern	7.1	7.5	7.6	6.8	6.7	5.5	5.7
Northwestern	7.7	7.7	7.0	7.4	7.4	6.3	6.2
Central Western	6.9	6.5	6.1	6.0	6.1	5.5	5.7
Southwestern	6.3	6.3	5.7	4.9	5.1	4.5	4.3
All Regions	7.2	7.0	6.6	6.5	7.0	6.5	6.6

July, 1920, reports show a larger percentage of bad-order cars than any month since the first of the year, but as indicated by table XVI an improvement is shown compared with July, 1919.

TABLE XVIII

COST PER FREIGHT TRAIN MILE

LOCOMOTIVE REPAIRS

July, 1920, compared with July, 1919

Regions	July 1920	July 1919	Increase or decrease Amount	Per cent
New England	$0.422	$0.357	$0.065	18.2
Great Lakes	.496	.405	.091	22.5
Ohio-Indiana-Allegheny	.623	.554	.069	12.5
Pocahontas	.549	.460	.089	19.3
Southern	.391	.325	.066	20.3
Northwestern	.343	.294	.049	16.7
Central Western	.489	.412	.077	18.7
Southwestern	.457	.380	.077	20.3
All Regions	.477	.405	.072	17.8

Abnormal increases in cost of freight locomotive repairs per freight train mile are recorded in the Great Lakes, Southern, Southwestern and Pocahontas regions. These increases are probably explained by heavy locomotive repairs and increased cost of material.

TABLE XIX

COST PER FREIGHT TRAIN MILE

LOCOMOTIVE REPAIRS

January, 1920, to July, 1920, both inclusive

Regions	July	June	May	April	March	Feb'y	Jan'y
New England	$0.422	$0.401	$0.365	$0.429	$0.497	.....	.....
Great Lakes	.496	.532	.456	.593	.442	.....	.....
Ohio-Indiana-Allegheny	.623	.695	.655	.682	.567	.....	.....
Pocahontas	.549	.569	.586	.638	.576	.....	.....
Southern	.391	.395	.339	.371	.354	.....	.....
Northwestern	.343	.353	.350	.387	.379	.....	.....
Central Western	.489	.434	.440	.527	.451	.....	.....
Southwestern	.457	.431	.482	.450	.424	.....	.....
All Regions	.477	.483	.459	.505	.449	.....	.....

The figures for January and February are not available, as the U. S. Railroad Administration combined locomotive repairs and enginehouse expense in computing average cost per freight train-mile.

TABLE XX

COST PER FREIGHT TRAIN MILE

FUEL

July, 1920, compared with July, 1919

Regions	July 1920	July 1919	Increase or decrease Amount	Per cent
New England	$1.040	$0.584	$0.456	78.1
Great Lakes	.661	.430	.231	53.7
Ohio-Indiana-Allegheny	.594	.366	.228	62.3
Pocahontas	.779	.461	.318	69.0
Southern	.468	.348	.120	34.5
Northwestern	.523	.474	.049	10.3
Central Western	.556	.473	.083	17.5
Southwestern	.506	.435	.071	16.3
All Regions	.584	.428	.156	36.4

The cost of fuel per freight train mile shows an unfavorable comparison with July last year. New England reports over 78 per cent increase. Pocahontas, a heavy coal producing region, not only shows 69 per cent increase over same month last year, with practically the same train load, but it is the highest of all regions with the exception of New England.

TABLE XXI

COST PER FREIGHT TRAIN MILE

FUEL

January, 1920, to July, 1920, both inclusive

Regions	July	June	May	April	March	Feb'y	Jan'y
New England	$1.040	$0.901	$0.819	$0.899	$0.824	$0.956	$0.798
Great Lakes	.661	.662	.647	.634	.630	.718	.684
Ohio-Indiana-Allegheny	.594	.605	.569	.585	.534	.576	.568
Pocahontas	.779	.869	.638	.609	.587	.602	.606
Southern	.468	.449	.451	.455	.430	.480	.451
Northwestern	.523	.545	.527	.550	.560	.634	.636
Central Western	.556	.555	.539	.561	.551	.554	.618
Southwestern	.506	.518	.614	.527	.526	.527	.583
All Regions	.584	.583	.563	.569	.551	.593	.598

TABLE XXII

COST PER FREIGHT TRAIN MILE

ENGINEMEN

July, 1920, compared with July, 1919

Regions	July 1920	July 1919	Increase or decrease Amount	Per cent
New England	$0.345	$0.256	$0.089	34.8
Great Lakes	.343	.239	.104	43.5
Ohio-Indiana-Allegheny	.352	.276	.076	27.5
Pocahontas	.295	.258	.037	14.3
Southern	.226	.183	.043	23.5
Northwestern	.240	.211	.029	13.7
Central Western	.243	.205	.038	18.5
Southwestern	.234	.207	.027	13.0
All Regions	.281	.226	.055	24.3

Every region shows an increase in enginemen pay roll expense per freight train mile compared with July, 1919. Very large increases appear in New England, Great Lakes and Ohio-Indiana-Allegheny and Southern regions. The explanation is not available.

TABLE XXIII

COST PER FREIGHT TRAIN MILE

ENGINEMEN

January, 1920, to July, 1920, both inclusive

Regions	July	June	May	April	March	Feb'y	Jan'y
New England	$0.345	$0.320	$0.308	$0.312	$0.354	$0.388	$0.326
Great Lakes	.343	.292	.284	.298	.312	.336	.306
Ohio-Indiana-Allegheny	.352	.347	.319	.333	.350	.353	.355
Pocahontas	.295	.284	.273	.280	.282	.303	.329
Southern	.226	.223	.203	.211	.217	.218	.218
Northwestern	.240	.243	.240	.250	.255	.249	.245
Central Western	.243	.215	.212	.220	.218	.223	.222
Southwestern	.234	.223	.249	.224	.238	.239	.239
All Regions	.281	.263	.254	.260	.271	.276	.271

TABLE XXIV

COST PER FREIGHT TRAIN MILE

TRAINMEN

July, 1920, compared with July, 1919

Regions	July 1920	July 1919	Increase or decrease: Amount	Increase or decrease: Per cent
New England	$0.390	$0.292	$0.098	33.6
Great Lakes	.345	.278	.067	24.1
Ohio-Indiana-Allegheny	.388	.305	.083	27.2
Pocahontas	.283	.255	.028	11.0
Southern	.284	.233	.051	21.9
Northwestern	.279	.249	.030	12.0
Central Western	.273	.225	.048	21.3
Southwestern	.300	.268	.032	11.9
All Regions	.316	.261	.055	21.1

As in the case of enginemen, it will be noted that trainmen pay roll expense per freight train mile is unfavorable as compared with July, 1919. This explanation is also not available.

TABLE XXV

COST PER FREIGHT TRAIN MILE

TRAINMEN

January, 1920, to July, 1920, both inclusive

Regions	July	June	May	April	March	Feb'y	Jan'y
New England	$0.390	$0.341	$0.340	$0.345	$0.386	$0.430	$0.353
Great Lakes	.345	.314	.317	.345	.351	.370	.345
Ohio-Indiana-Allegheny	.388	.381	.344	.375	.387	.382	.392
Pocahontas	.283	.274	.266	.286	.276	.290	.310
Southern	.284	.280	.250	.274	.276	.274	.272
Northwestern	.279	.283	.279	.291	.300	.283	.279
Central Western	.273	.243	.235	.248	.245	.247	.248
Southwestern	.300	.282	.322	.206	.306	.313	.304
All Regions	.316	.300	.289	.304	.313	.313	.309

Railway Earnings in 1919

THE BUREAU OF RAILWAY ECONOMICS has issued a bulletin presenting preliminary statistics of the earnings of railways of Class I during the calendar year 1919, which was the second year of the period of government control and operation of the American railway system.

Operating revenues for 1919 amounted to $5,184,230,000, an increase over 1918 of $257,636,000, or 5.2 per cent. Freight revenue increased 2.8 per cent, and passenger revenue 14.1 per cent. Operating expenses aggregated $4,419,989,000, which was an increase over 1918 of $402,779,000, or 10.0 per cent. Maintenance of way expenditures increased 18.5 per cent, maintenance of equipment 11.0 per cent, and transportation 6.7 per cent. The operating ratio was 85.26 per cent, as compared with 81.54 per cent in 1918. Net operating revenue amounted to $764,241,000, a decrease of $145,143,000, or 16.0 per cent. Taxes were $199,194,000, an increase of $12,228,000, or 6.5 per cent.

As compared with the annual average of the test period, operating revenues in 1919 increased 52.7 per cent and operating expenses 92.4 per cent, while net operating revenue declined 30.4 per cent. The operating ratio rose from 67.66 per cent to 85.26 per cent. Taxes increased 30.7 per cent. Net operating income decreased from $905,160,000 to $515,793,000, or 43.0 per cent.

The rate of return on property investment in 1919 was 2.66 per cent, as compared with 5.28 per cent during the test period and 3.81 per cent in 1918. These rates are approximate, owing to the difficulty of ascertaining the amount of investment in 1918 and 1919; the investment utilized for 1919 is as of October 31, and includes the cost of allocated equipment.

Comparing the net operating income earned during the two years 1918 and 1919 with the government guarantee based on test period results, a total deficit of $601,416,000 is developed, as follows:

CLASS I RAILWAYS

Standard return (government guarantee)	$905,160,000	
Net operating income, 1918	693,111,000	
Deficit for 1918		$212,049,000
Standard return (government guarantee)	$905,160,000	
Net operating income, 1919	515,793,000	
Deficit for 1919		$389,367,000
Deficit for 1918 and 1919		$601,416,000

This is the deficit for Class I railways only, and takes no account either of smaller railways or of other transportation agencies, such as the Pullman Company, the express companies, steamship and water lines, etc. Neither does it make allowance for any increase in the guarantee for 1919, due to a return on capital expenditures since January 1, 1918. On the other hand, it does cover 18 railways of Class I that were not under federal control in 1919. Speaking generally, the inclusion of these roads does not seriously affect the results, so that they may be considered as a minimum statement of the government deficit from the operation of the larger railways for the first two years of federal operation.

It should be noted in connection with the operating expenses of 1918 and 1919 that the aggregates shown in the tables do not include the cost of maintaining the corporate organizations of the railways. This cost amounted in 1918 to approximately $10,000,000 and in 1919 to a substantial sum, the exact amount of which is not yet available. It was probably over $20,000,000.

A table included in the bulletin gives the latest available statistics of standard return as certified by the Interstate Commerce Commission or as fixed by the standard contract in the case of railways with which contracts have been executed. Parallel columns show the net operating income earned in 1919, and the amount by which it was above or below the standard return.

To the standard return shown in this table there should be added the return on new investment made in the railway properties during the years 1918 and 1919. This investment was in the neighborhood of $1,200,000,000, but it is difficult to apportion the return on the amount to the various railways, or to divide it between the two years of the period.

Revenues, Expenses and Net Operating Income, 1919 Compared with 1918 and Average of Test Period

Item	1919 (000 omitted)	1918 (000 omitted)	Test period average 1915-17 (000 omitted)	Per cent increase or decrease, 1919 compared with: 1918	Test period
Operating Revenues	$5,184,230	$4,926,594	$3,395,231	5.2	52.7
Freight	3,556,734	3,458,191	2,380,943	2.8	49.4
Passenger	1,178,120	1,032,671	689,410	14.1	70.9
Mail	57,441	53,563	83,236	7.2	d 31.0
Express	127,664	126,232	59,891	1.1	113.2
All other	264,271	255,937	181,751	3.3	45.4
Operating expenses	4,419,989	4,017,210	2,297,162	10.0	92.4
Maintenance of way and structure	778,105	656,601	407,111	18.5	91.1
Maint. of equipment	1,232,702	1,110,280	567,665	11.0	117.2
Traffic	47,538	48,741	61,741	d 2.5	d 23.0
Transportation	2,193,264	2,056,479	1,158,763	6.7	89.3
General	125,437	112,319	82,538	11.7	52.0
All other	42,943	32,790	19,344	31.0	122.0
Net operating revenue	764,241	909,384	1,098,069	d 16.0	d 30.4
Taxes	199,194	186,966	152,427	6.5	30.7
Uncollectible	917	614	721	49.3	27.2
Operating income	564,130	721,804	944,921	d 21.8	d 40.3
Net rentals	Dr 48,337	Dr 28,693	Dr 39,761	d 68.5	d 21.6
Net operating income	515,793	693,111	905,160	d 25.6	d 43.0
Operating Ratio	85.26	81.54	67.66	....	....

d—Dercease.

Note—For the purpose of proper comparison with the test period, the operating expenses and taxes of 1918 and 1919 should be increased by the cost of the Railroad Administration, corporate expenses, and war taxes paid by the railway corporations.

New Freight Loading Reaches New Mark for Year

1920 Likely to Break All Previous Records, While Car Shortage Continues to Decrease

WASHINGTON, D. C.

A NEW RECORD for this year for the number of cars loaded with commercial freight on the railroads of the United States was set during the week ending October 9, according to reports compiled by the Car Service Division of the American Railway Association. The total was 1,009,787 cars, as compared with 982,171 for the corresponding week of 1919 and 959,722 during the corresponding week of 1918. This was the first week this year in which the freight car loading passed the million mark and represents an increase of nearly 34,000 over the week of October 2. The total of 1,009,787 for a week has been exceeded only once, according to the records of the Car Service Division. In one week of 1919 the total carloading was reported as 1,011,422. Increases as compared with the corresponding week of 1919 are shown in the Allegheny, Eastern, Northwestern, Central Western and Southwestern districts, while there were decreases in the Southern and Pocahontas districts. Increases are shown in the loading of coal, coke, ore and forest products, while there were decreases in grain and grain products and livestock and a slight reduction in merchandise and miscellaneous freight, as compared with the corresponding week of the previous year. The report for the week of October 9 follows:

*REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS: COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO, FOR WEEK ENDING SATURDAY, OCTOBER 9, 1920

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year, 1920	Corresponding year, 1919	Corresponding year, 1918	Received from connections: This year, 1920	Corresponding year, 1919	Corresponding year, 1918
Eastern	1920	5,576	2,946	56,821	3,912	8,475	10,901	46,730	102,781	238,242			265,566		
	1919	6,599	3,337	60,171	2,689	7,831	4,883	26,131	125,704		237,345	220,495		259,488	251,945
Allegheny	1920	2,395	3,959	75,259	6,639	4,167	16,121	40,068	75,567	224,275			146,362		
	1919	3,359	3,535	67,422	3,907	4,458	9,952	41,941	72,611		207,185	214,881		150,183	179,074
Pocahontas	1920	118	358	24,674	748	1,927	262	2,778	892	38,257			19,499		
	1919	168	504	24,617	600	2,009	267	128	10,246		38,539	39,784		20,261	25,281
Southern	1920	2,913	2,422	27,406	1,435	19,230	3,618	38,460	36,982	132,366			75,409		
	1919	3,180	2,803	28,090	320	19,395	2,485	20,733	58,254		135,260	122,980		74,140	70,611
Northwestern	1920	14,472	9,054	11,793	1,992	14,985	44,927	29,167	39,564	165,964			61,922		
	1919	14,160	10,876	14,745	756	15,202	34,355	23,382	47,376		160,952	172,696		65,574	85,200
Central Western	1920	10,344	12,089	27,180	521	5,735	3,049	30,834	50,816	140,568			73,015		
	1919	10,725	15,260	22,522	281	6,104	2,660	24,096	56,663		138,311	131,554		78,857	65,428
Southwestern	1920	4,384	2,593	6,843	184	7,608	336	17,832	30,335	70,115			53,112		
	1919	4,607	3,392	7,050	102	6,759	248	12,826	29,595		64,579	57,332		52,010	47,158
Total all roads	1920	40,302	33,431	229,976	15,431	62,127	79,214	205,869	343,437	1,009,787			694,885		
	1919	42,798	39,707	224,617	8,655	61,758	54,950	149,237	400,449		982,171			700,513	
	1918											959,722			724,697
Increase compared	1919			5,359	6,776	369	24,264	56,632		27,616					
Decrease compared		2,496	6,276						57,012				5,628		
Increase compared	1918									50,065					
Decrease compared	1918												29,812		

*L. C. L. merchandise loading figures for 1920 and 1919 are not comparable, as some roads are not able to separate their L. C. L. freight and miscellaneous of 1919. Add merchandise and miscellaneous columns to get a fair comparison.

The year 1920 promises to break all previous records for the volume of freight transported by the railroads, in spite of the unfavorable conditions caused by the strike which affected the performance of the early part of the year. The Interstate Commerce Commission has issued statistics showing that the number of net ton miles of freight handled during the first seven months of the year was greater than for the corresponding period in previous years. In a recent statement it also said that during the past four years the net ton-miles for the first seven months were 56.46 of the total for the full year and that, assuming that this percentage will be maintained in 1920, the year's figures for the volume of freight will far exceed all past records. While the net ton mile figures are available only for the first seven months of this year, an index to the amount of freight traffic is available in the revenue car loading figures compiled each week by the Car Service Division. It so happens that a new week began on August 1 this year and the car loading figures now available show that from August 1 to October 9 there were loaded 9,637,941 cars of commercial freight, as compared with 9,351,416 in the corresponding weeks of 1919 and 9,590,090 in 1918. While these figures are not so exact as the ton-mile figures, since they do not take into consideration either the length of haul or the average car load, it is known that both the average haul and the car load have been increasing, and it is, therefore, believed that when taken into consideration with the earlier figures of the Interstate Commerce Commission, they show that the freight traffic this year so far has been greater than ever before. The year 1918 has been the record year heretofore, in point of net ton-miles, although it was only 2 per cent greater than 1917, but the actual tonnage handled was greater in 1917, the average haul having increased in 1918. While there has been a falling off in industrial activities which has reduced the volume of miscellaneous freight somewhat, there is still a large tonnage of coal, grain, cotton and other materials to be moved.

In spite of the fact that the volume of freight traffic continues to increase, according to the latest reports, the car shortage is being steadily reduced. For the week ending October 8, although more new freight was accepted by the railroads than in any preceding week this year, the average daily deferred car requisitions showed a further reduction to 75,336, as compared with 80,141 the week before. Of the total 36,261 were box cars and 25,914 were coal cars. The car shortage had increased from about 80,000 at the beginning of the year to 146,070 in the week ending September 1, but each week since has shown a reduction, as the congestion has been cleared up and the railroads were enabled to increase the efficiency of car movement.

Car Shortage Reduced

The freight car accumulations for the week ending October 15 showed a slight increase as compared with the preceding

week to a total of 43,010 cars, of which 17,390 were held for export and coastwise movement. These figures apply to commercial cars. The number of cars held under load with company material shows a further reduction to 37,688.

The Use of Priority Under Service Order No. 21

In supplement No. 2 to Circular CSD-88, the Car Service Division says that many receivers of coal, public utilities and others, who may, in an emergency, become beneficiaries of Service Order No. 21, also some railroads, apparently are under the impression that priority service may be invoked under Order No. 21 in the first instance. This is not the case; it is earnestly desired, in protecting these requirements, to avoid altogether the use of assigned cars, if possible.

The plan is:

1. The Car Service Division will undertake to provide maximum supply of open top cars to coal loading railroads.

2. Maximum car supply having been provided to mines it is expected that contractors of coal to users of a public service character, as enumerated in Service Order No. 21, will fill all such shipping orders from distributive share of current car supply. In instances where the aggregate public service commitments of such supplies make this impossible, the National Coal Association, member of the committee named in Supplement 1, will undertake to procure for the public utility the coal essential to its operation, but not for storage.

3. In certain instances, but after all other means for procuring requisite coal have failed, a super-assignment of cars in behalf of the public utility in distress, as contemplated in Service Order No. 21, may be recommended by the committee to the Interstate Commerce Commission for the issuance of a priority order in the individual case.

As stated in Supplement 1 to CSD-88, gas and electric service utilities including street railways who, after exhausting all resources to obtain by voluntary shipment sufficient coal to meet their daily requirements will apply to the National Committee on Gas and Electric Service, Washington, D. C., for assistance.

Originating railroads themselves, in circumstances requiring it, will, on their own initiative, act in behalf of other consignees who are within the classes named in Service Order No. 21 and will approach the supplier in an effort to obtain shipments of the requisite tonnage without recourse to assigned cars. Failing to so obtain shipment of the coal the railroad will handle direct with the Car Service Division such instances as may require attention by the Washington Committee, or ultimately by the Interstate Commerce Commission under Service Order No. 21, and in so proceeding should develop information solicited by the accompanying questionnaire which is an adaptation of the questionnaire form distributed by the National Committee on Gas and Electric Service to gas and electric service utilities, including electric street railways.

Coal Production

For the third consecutive week this year the railroads have furnished transportation enough for the production of over 12,000,000 net tons of bituminous coal, according to the reports of the Geological Survey for the weeks ending October 9 and 16 and estimates made by the railroads for the week of October 23. The total output of soft coal during the week of October 16 is estimated by the Geological Survey as 12,135,000 net tons, an increase of 44,000 tons over the previous week and with two exceptions the greatest ever recorded. For last week the production is estimated at a still greater figure. The soft coal produced and transported during the first 246 working days of this year has been 428,339,000 net tons, which is nearly 52 million tons ahead of 1919 although about 44½ million tons behind 1918 when the production exceeded consumption and provided for a net addition to consumers' stocks of approximately 30 million tons. A production of 12,143,000 tons was attained in early December, 1917, and in the last week before the strike of 1919 the output was 13,140,000 tons.

Continued recovery in the movement to the lakes brought the dumpings for the week ended October 16 up to 1,104,384 tons. With the exception of the last week of August this was the best performance of the year. The cumulative lake movement from the beginning of the season now stands at 17,824,000 net tons, as against 25,309,000 in 1918 and 20,743,000 in 1919. On October 19, there were 11,004 cars of soft coal at the lake ports awaiting dumping, a figure greater than normal.

Commissioner Aitchison of the Interstate Commerce Commission on October 22, in a letter to H. M. Griggs, manager of the coal and ore exchange at Cleveland, gave authority to omit allotments under Service Order No. 10, the northwest priority order, against mines in the following districts, until further advice from the commission:

1. Mines upon the Louisville & Nashville.
2. Mines in the Irwin gas coal district or basin.
3. Mines in the northern Ohio districts, the middle districts of Ohio, lying between No. 8 group and the Great Lakes, including Coshocton, Berkholtz and Massillon, and Goshen, Salineville and Tuscarora; and also the Butler-Mercer districts in Pennsylvania.

In addition, allotments may be omitted against wagon mines and mines producing stripper coal until further advice from the commission. In another letter on October 25 Commissioner Aitchison authorized the omission of allotments of cars against the Toledo & Ohio Central and Kanawha & Michigan railroads until further advice.

Service Order No. 10 Suspended

Because of the general improvement in the coal situation and also because of the accumulation of coal at the lake ports, which has reached a total of over 12,000 cars, while there have been complaints of shortage in Ohio, Indiana and Michigan for domestic purposes, the Interstate Commerce Commission on October 27 suspended, until further order, its Service Order No. 10, entered July 20, 1920. That order was designed to give a preference in the use of coal cars to Lake Erie ports with the primary object of conserving equipment and movement needed to get an adequate supply of bituminous coal to the Northwest, by requiring a full utilization of the rail and lake routes during the season of open navigation. Simultaneously and continuously, a vigorous effort has been made to increase the supply of cars available for the loading of coal, which has been so successful that while during June the ratio of cars supplied to cars ordered was 62.2 per cent, it was in July 74.7 per cent, August 80 per cent and September 85.6 per cent. The following statement shows the daily average numbers of cars at the ports, and of cars dumped:

	Average at Port	Average Dumped
July	5,617	2,198
August	9,212	3,457
September	7,670	3,288
October 1 to 26	9,412	2,868

"The demand for coal at the Lake Erie ports for transshipment by water to the head of the lakes is now less than at any time since Service Order 10 was promulgated," the commission said in a statement. "As a result there are extensive accumulations of coal at these ports and a large volume en route. Up to October 26 there had been actually dumped into vessels at the lower lake ports 18,572,518 tons, with 580,000 tons in cars at the ports awaiting dumping and approximately the same amount en route. We are assured that the customary lake suppliers will continue to ship their commitments to the lower lake ports for transshipment without preference order from the commission. This year an unusually large amount of coal has already been moved to the Northwest by the all-rail lines. . . ."

Bridge and Building Men Meet in Atlanta

Convention Characterized by Large Attendance, Practical Reports and Active Discussion

THE THIRTIETH annual convention of the American Railway Bridge and Building Association met at the Piedmont hotel, Atlanta, Ga., on Tuesday, Wednesday and Thursday of this week. The convention was one of the most successful in the history of the association. Over 250 members were in attendance, those from Chicago and points north and west coming on a special train of eight sleepers via the Big Four and Southern railways.

The officers of this association during the past year were: President, Fred E. Weise, C. M. & St. P. R., Chicago; First Vice-President, W. F. Strouse, Baltimore; Second Vice-President, C. R. Knowles, I. C., Chicago; Third Vice-President, A. Ridgway, D. & R. G., Denver; Fourth Vice-President, J. S. Robinson, C. & N. W., Chicago; Secretary-Treasurer, Cal. A. Lichty, 319 No. Waller Ave., Chicago. Executive members: J. I. Wood, P. M.; A. B. McVay, L. & N.; J. H. Johnston, G. T.; E. T. Howson (*Railway Age*); C. W. Wright, L. I.; G. A. Manthey, "Soo."

The convention was called to order by the president at 10 o'clock Tuesday morning, and was opened with prayer by C. A. Lichty, secretary. The members were welcomed to Atlanta by James L. Key, mayor of the city, and Eugene Black, president of the Chamber of Commerce. E. T. Howson (*Railway Age*), replied to the welcome on behalf of the Association.

In his opening address, President Weise referred to the problems now confronting the members of the Association in rehabilitating the roads and in resstablishing the proper morale among their employees. He also emphasized the necessity for more permanent construction to reduce maintenance costs. In closing, he referred to the death of three past-presidents since the last convention, J. H. Cummin (L. I.), B. F. Pickering (B. & M.) and A. S. Markley (C. & E. I.).

The report of the secretary-treasurer showed $1,300 on hand, and a healthy increase in membership during the year.

Report on the Abuse of Treated Material

The purpose of treating timber is to prevent decay and extend the life of the timber. This result is usually accomplished by impregnating the timber with a preservative of some kind, creosote oil being generally used for bridge timbers and timber used in similar structures. The efficiency of the treatment is depended upon and is usually measured by the depth of penetration and the extent to which the untreated portion of the timber is sealed against decay by the treatment. It is obvious that anything done to the treated timber which tends to lessen the thickness of the treated area is abuse and destroys the effect of the treatment to the extent that the treated area is reduced. If the timber is cut or sawed until the untreated timber is exposed, decay will be practically as rapid and will do as much damage as if the timber was used without treatment. While it is a recognized fact that it is often necessary to cut or frame treated timber after treatment, much of the framing can and should be done before the timber is treated and whenever it is actually necessary to frame treated timber care should be exercised to see that the work is done in an intelligent manner and with as little damage to the treatment as possible and that hot creosote oil is applied to the cut portion.

A few examples of the proper treatment of treated material follow:

1. When treated piles are cut off after driving, the tops of piles should be thoroughly coated with hot creosote oil. It is not enough to paint the tops but oil should be applied as long as the timber will take it.

2. When boring holes in treated material, holes should be made slightly smaller than the bolts so that a driving fit will be obtained. It is still better to pour hot creosote oil in the holes before driving the bolts.

3. Where piling is not in proper line after driving, a treated pile should never be adzed to make the bracing fit up, but if the piles are greatly out of line blocks should be applied to the piling to bring the bracing in line. In extreme cases it may be necessary to place lap bracing instead of bracing extending clear across the bent.

4. The end penetration on a well-treated timber is usually from 3 to 6 inches in depth. Therefore, an inch or so sawed from the end of a well-treated timber will not materially affect the life, but any framing of treated timber that penetrates the area of treatment certainly tends to destroy the effect of the treatment.

The following instructions should be observed in handling creosoted timber:

1. In unloading creosoted timber care should be taken to see that it does not drop from too great a height to the ground, as it has been found in a great many instances that heavy timbers are broken or cracked, which is no doubt due to the manner in which it was unloaded. Treated timber is more susceptible to damage from this cause than untreated timber on account of the lessened strength of the timber through treatment.

2. Creosoted material should not be mistreated with bars, picks, cant or lug hooks in such a way as to make holes extending through the treatment.

3. In cutting off the piles the tops should be thoroughly covered with hot creosote oil. Better penetration can be obtained by boring holes in the heart of the piling and filling with hot creosote oil. All exposed cut surfaces should be thoroughly covered with hot oil.

4. In placing sway bracing on bents it is often the practice to cut away piles so that the brace will give more satisfactory bearing. The treated piles should not be cut away to make the bracing fit up, if possible to avoid it, but if piles are greatly out of line blocks should be applied to bring the bracing in line. Where necessary to cut the piling the exposed surfaces should be covered with hot creosote.

5. Frequently holes are bored in treated timber and left unfilled. These holes should always be plugged with plugs of treated timber.

6. In general all portions of treated timber which have been cut or bored below the penetration of the creosote should be covered thoroughly with hot creosote oil.

A. J. James (A. T. & S. F.), chairman; S. L. McClanahan, J. S. Huntoon (M. C.), F. A. Taylor (B. & O.), F. L. Thompson (I. C.), H. von Schrenk, committee.

Discussion

The discussion of this report centered largely about the use of galvanized iron sheets over caps and stringers to protect them against decay. H. McDonald (N. C. & St. L.) described the excellent results secured on that road extending over a period of twenty years. Others described adverse experiences with this form of construction because of the lodgment offered for sparks. G. W. Andrews (B. & O.)

urged anticipation of requirements for treated timber in order that it can be cut to desired sizes before treatment, and the application of hot creosote to these surfaces which it is necessary to cut in the field. The discussion was concluded with the presentation of moving pictures showing the treatment of timber.

The Use of Electricity for Pumping Water

By C. R. Knowles
Superintendent Water Service, Illinois Central

While electricity has been employed to some extent as power for pumping at railway water stations for many years its use has not been general. It has long been apparent that electricity had its advantages for this class of service, but up to the past few years current has not been available at many outlying stations and where current was available the rates were often so high that there were but few places where electric power would show a saving in operation over steam or gasoline. Within recent years the production of electricity for commercial purposes has increased greatly and the extension of power lines has made it available at many points on our railroads at rates sufficiently attractive to warrant serious consideration, with the result that there has developed a considerable use of electric motor drive for pumping plants at water stations.

A motor-driven pumping plant with automatic pressure regulator or float switch control is specially suited to locomotive water tank service at many points because the tank may be kept full, regardless of variations in the demand for water, without any attention other than a periodical inspection of motor control and pump. It is also practical in some installations to have the station agent or local employee start and stop the pump by a remote control switch or push button. The standard control equipment now on the market is reliable and can be depended upon for pumping station service.

The cost of electric power for pumping is usually lower than the cost of fuel that would be required by a steam plant, as the coal consumed at the average railway water station is from 4 to 6 times that necessary to generate the electricity required to pump the same amount of water. This is accounted for by the fact that with a steam plant there is a loss of fuel in getting up steam, banking fires, etc. Also as a general thing the pump in the average railway water station is not as efficient a machine as the large steam turbines commonly used in central power stations. Electric motor driven pumps have an added advantage over steam in lower first cost, and lower maintenance, while they are more compact, cleaner and easier controlled. An important factor in the comparative cost of a steam and electric plant is the housing. An electric pumping plant will require a building approximately one-third the size of that required for a steam plant of the same capacity. On the other hand, the difference in the cost of pumping by steam and by electricity is offset to some extent by reason of the current having to be carried over a transmission line with resultant line losses, together with the cost of construction and maintenance of power lines. Electric power also has a disadvantage where pipes and pumps are exposed to freezing temperatures since it is necessary to provide some method of heating the plant and where extremely low temperatures prevail constant attendance is often required to keep it from freezing during the winter months. Another point to be considered is the question of electric service interruptions due to storms or other causes. While the motor itself is reliable and can be further protected against failure by installing duplicate units it is not a prime mover and unless more than one source of power is provided it is liable to failure through interruption of power supply. This is particularly true where the source of power supply is from a small or heavily loaded plant where trouble may be expected from variable voltage or frequency. Electric drive is adapted to all types of power pumps, especially the centrifugal type, as the motor can be connected direct to a centrifugal pump without belts or reduction gears.

The convenience and simplicity of a direct-connected motor and centrifugal pump make it one of the most desirable installations for tank service under conditions within the limits of centrifugal pump operation. Recent installations have consisted largely of this type of pumping unit, but failure to realize the limits of a centrifugal pump has unfortunately resulted in some unsatisfactory installations.

Discussion

The discussion consisted of questions regarding unit costs of electric power and also concerning limits of operation of centrifugal pumps. The chairman replied that each installation must be designed on the basis of local conditions.

Report on the Repair and Maintenance of Tank Hoops

Few roads seem to have uniform or standard instructions for the inspection of tank hoops, especially flat ones, and the hoops are seldom removed unless they show some indication of weakness on the outside surface when the tanks are painted. It is almost the general practice for the supervisor of bridges and buildings or the water service foreman to make a superficial annual inspection of tanks.

Only two lines were found to have specific instructions for the removal of flat hoops for inspection. These instructions require the removal of all hoops every year in one case and every two years in the other case, at which time all hoops are scraped and painted and all necessary repairs or replacements taken care of.

A great variation in the intervals at which tanks and tank hoops are painted is found on various lines, ranging from every two years to every eight years, while many roads report that tanks and tank hoops are painted when needed. This emphasizes the necessity and value of careful and intelligent inspection.

Of the 45 lines reporting on this subject, 25 have practically adopted the use of round or half round hoops and report that they are far superior, the advantage being that a more satisfactory and thorough inspection or examination can be made of the hoops. Much less surface is exposed to the weather and other injurious elements; they can be drawn up more readily; they are provided with more convenient and substantial connections, and from experience have been found to last longer. In fact, it is stated that they will last as long as the tank under any conditions.

The use of chafing irons between the hoops and tank staves at the connections has been found of great benefit. They are usually made of the same dimension material as the hoops and from 28 in. to 40 in. in length.

The repair of tank hoops is taken care of effectively, generally, by the replacing of hoops or parts of hoops with new or good second hand ones. When the entire set of hoops on a tank has deteriorated to a point where they still have a fair margin of safe life left, the element of chance may be eliminated by placing additional hoops, which is often done. When hoops or parts of hoops are replaced, the hoops removed can be taken to the shop and in many cases repaired if they are not too badly deteriorated, thus providing repair parts.

F. A. Benz (B. R. & P.), E. C. Zinsmeister (B. & O.), C. W. Wright (L. I.), G. W. Welker (Sou.), J. H. Grover (A. T. & S. F.), A. W. Smith (C. N.), J. L. Winter (S. A. L.), committee.

Discussion

The discussion centered mainly on the relative merits of round and flat hoops, it being maintained that round hoops

crushed the timber and promoted decay. C. R. Knowles, Illinois Central, and others favored the round hoop because of the decreased breakage and said that they found no evidence of injury to timber.

Report on Spray Painting

Painting by spraying, with air pressure, has been in use for a long time, but it has not come into general practice principally for the reason that considerable equipment and skilled operators are necessary for successful work and even then it is used comparatively little except in the case of walls having large areas, box cars and other cars, etc. With special apparatus and skilled help some workmen become quite proficient in this method of applying paint and it is claimed by many that it is more economical to use the spray than to paint by hand. In most instances there is some waste of paint, by spraying ranging from zero up to 10 per cent or perhaps even more, while most users claim a saving of 50 to 75 per cent in labor by aid of the apparatus. In both instances the results will depend on the skill of the operator. Most of those who have had charge of the spray method of applying paint and have given it a thorough test with the more modern apparatus speak in its favor and claim that very satisfactory results may be attained; again, there are some who have used the method for years who state that the results are more often unsatisfactory.

There is no doubt but that the most satisfactory and economical results are attained where a good quality of paint of the proper consistency is used in connection with the best apparatus in the hands of a skilled operator, but this is true of anything. One man with the same materials and same kit of tools will produce far better results than another man; and more especially is this true where slightly complicated apparatus is used.

Discussion

In the discussion a number of members stated that spray painting is economical with experienced operators, the waste in paint being more than overcome by the reduction in labor.

On Tuesday evening Mars Johnson, assistant engineer, Illinois Central, presented a paper describing the erection of the St. Charles Air Line bridge, Chicago, illustrated by motion pictures. Hunter McDonald, chief engineer, Nashville, Chattanooga & St. Louis, presented a paper on housing and the feeding of maintenance employees which will be abstracted in a later issue. J. K. Melton, official photographer, Illinois Central, presented motion pictures of various bridge work.

H. C. Boyden, of the Portland Cement Association, presented on Wednesday morning a paper on the proper proportioning of concrete mixtures, in which he described the results of recent experiments to determine the effects of fineness and quality of sand, character of stone and manner of mixing to secure the strongest concrete.

Report on the Maintenance of Timber Docks

The maintenance of timber docks is a pertinent subject at this time, owing primarily to the recently greatly enhanced value of timber, the difficulty of securing it and the very high cost and inefficiency of the labor used in applying it. Frequent inspections should be made in order to obtain the longest service from the timber without permitting the structures to become unsafe for use. The men who make the inspections should be of wide experience and sound judgment, for upon their decision rests the responsibility for the expenditure of large sums of money. Quite often the difference between safely-deferred repairs or immediate repairs, will be the difference between a reasonable return on the capital represented by the value of the structure and no return at all. On the other hand it may be a matter of economy to overhaul the dock at regular intervals and put it in condition at such times to last the period before the next regular time for repairs. It would seem to be the part of good practice, on docks which are in constant operation, to endeavor to obtain all the life possible from all parts of the dock by close inspection and the employment of small crews continuously. In docks of seasonal use like the great ore and coal docks of the upper lakes, repairs are ordinarily made during the winter to carry them through the next shipping season, and consideration cannot always be given to securing all the life of the timber which would become worn out before the next regular time of repairing. On docks of this sort large repairs can usually be deferred until winter with great advantage.

The maintenance of docks which are in continuous operation is ordinarily more difficult and more expensive than of docks which are in seasonal operation only. In the first case, the dock must be kept in such condition as to not unduly interrupt the regularity of its operation, resulting in delays in the work of repairing it and often requiring the shifting of repair crews, while in the latter case, docks which are of seasonal use can be abandoned entirely to repair crews and the work handled without interruption. This is particularly true of the ore docks located on the upper lakes where the traffic is so great during the season of navigation that only emergency repairs can be made when the docks are in operation. It is the custom there to thoroughly overhaul them during the winter and put them in shape for an entire season's business. There can, however, be no set time as each class of dock is a problem by itself and the time for repairing it calls for the exercise of rare good judgment by the maintenance officials in charge, taking account of the labor and material situation, as well as traffic and other matters affected by it. It can be stated though that, other conditions being equal, summer work will be found to be less expensive than winter work, especially in the more northerly latitudes of this country.

Consideration should always be given to the use of timber for repairs which grows contiguous to the railroad; even though the timber may not have the lasting qualities of that used in the original construction; provided it will last the remaining life of the dock. This is good business for the railroad, aside from the matter of maintenance. It should be the aim, so far as possible, in making repairs, to maintain all parts of the structure so that they will approach the state of obsolescence together. This can often be accomplished by taking material replaced at points subjected to very hard wear and using it in other places where the service is not so severe. Long piling in deep water which has become broken or decayed at the top, but which is sound under water, can often be pulled, cut into shorter lengths and re-driven in more shallow water. Decking in driveways, which has become worn and unsafe for heavy loads, can, when replaced by new material, be used in other places less exposed to wear. Timbers which have become decayed at the ends can be shortened into sound lengths and reused. It is well to maintain sizable stocks of timber taken from dismantled structures for use in repair work of like structures.

On docks of any considerable size, some equipment is necessary to make emergency repairs. Although large general repairs are frequently let out to a contractor who furnishes his own crews and equipment, there are many accidents on a busy dock that cannot await the delay of securing a contractor to do the work. Depending upon the character and extent of the dock, this equipment may consist of cranes, derricks, pile drivers, etc., mounted on trucks or skids for land work and on scows for work around the water fronts of the dock. Floating drivers and derricks should be equipped

with pumps, hose and jet for use in driving and pulling piles. A very good arrangement is to use a long scow, with pile driving leads on one end and a stiff-leg derrick on the other end, both operating from a hoisting engine placed at the center of the scow on a reversible platform or circular track, so that the engine can be faced in either direction to operate either the pile driver or the derrick as the case may be. A swinging engine may be placed upon the derrick end of the scow to be used in swinging the derrick boom.

Owing to the members of the committee being so widely separated, and the impossibility of getting them together for a general study of the subject, special types of docks were assigned to each individual for a special investigation and report. Special reports were presented on the (1) maintenance of timber ore docks at the Great Lakes, by R. C. Young, chief engineer, L. S. & I., and by L. J. Anderson, supervisor of bridges and buildings, C. & N. W. (2) The maintenance of timber coal docks on the Great Lakes, by F. N. Graham, assistant engineer, D. M. & N. (3) The maintenance of timber docks on the Pacific Coast, by H. A. Gerst, assistant bridge engineer, G. N., and by T. W. Bratten, supervisor of bridges and buildings, S. P. (4) The maintenance of salt water docks on the Atlantic Coast, by B. W. Guppy, engineer of structures, B. & M. (5) The maintenance of timber merchandise docks on the Great Lakes, by W. J. O'Brien, district carpenter, C. M. & St. P. (6) The maintenance of timber docks on the Gulf Coast, by A. J. Catchot, supervisor of bridges and buildings, L. & N.

The committee consists of the above members with F. C. Baluss, engineer of bridges, D. M. & N., chairman.

Report on the Maintenance of Bridges During Filling

When construction work on a new line of railroad is begun every possible effort is made to expedite the laying of the track in order to permit the operation of work trains for the handling of men and materials and thereby hasten other construction work, and also to permit the operation of revenue trains. In order to accomplish this more quickly waterways, ravines and various depressions are crossed by means of timber trestles, which are then used as long as they can be maintained economically. The timber trestle has the advantage that it can be built quickly and time is available during its life to enable a study of the situation to be made in order to determine the type of permanent structure that should be built for the necessary waterway or other opening. Wherever possible, timber trestles are replaced by earth embankments because this forms the most efficient roadbed. Thus it is that almost all railroads have programs of bridge building each year.

It is sometimes possible to begin the filling within a year or two after the pile or timber trestle is first built by putting in from 18 to 24 in. of earth in ravines each year, thereby gradually filling the opening and also serving the further purpose of preserving the piling, which rots at the ground line, by carrying this line a few feet higher up on the pile each year before decay has had time to injure it. When this method can be followed the structure will not be disturbed during the process and no extra precautions need to be taken.

In cases where the filling must be done more rapidly, it is necessary to take precautions to see that the bridge structure is at all times safe for the operation of trains. Before the filling is begun the structure should be gone over carefully and, if necessary, strengthened, and as many of the longitudinal members as can be spared should be removed as the work progresses, as they are in the way of filling material. As the filling material is placed, it should be spread uniformly around and under all parts of the structure and compacted as thoroughly and evenly as may be between the trestle bents to avoid crowding them out of line. It has been recommended that, as this material is spread, the outer edges should be kept higher than the center to prevent the washing of the slopes, and also to aid in the settlement of the filling, but whether this need be done or not will depend largely upon the nature of the filling material. The material used for filling may have much to do with the progress of the work; in some cases it may be best to fill the trestle partly and allow several months to elapse for the settlement of this portion before proceeding with the balance.

There are various methods of filling bridges and the one to be used will depend upon local conditions, such as the topography at the bridge site and the accessibility of suitable filling material. The best kind of filling material is that which will pack solidly, is not liable to slip or slide, and will not wash away easily during heavy rains. The distance from the bridge to the location of suitable filling material will largely determine the method to be employed. If suitable material can be obtained from borrow pits adjacent to the bridge and the topography of the ground permits it, the best method of filling is by team, because in this way the accumulation of earth around the trestle bents is comparatively slow, it can be properly distributed to avoid disturbing the bridge structure and the men and horses employed in handling the earth do much to compact it in passing over it.

Usually suitable material must be hauled from a distance. If this distance is not too great, the material can be handled by dump cars operated on a temporary track, built parallel to the operated track, and the cars may be loaded by steam shovel or drag line and hauled to the bridge by horses or small engines. If the distance is too great for this, the material is usually loaded into railway cars by a steam shovel, hauled to the bridge by train and dumped through the bridge structure. There may be situations in which the lower part of the filling can be placed by teams and the upper portion by train but, as stated before, this will be determined by local conditions. In other cases also bridges may be filled by wasting the material secured from ditching operations or the waste from mines or other industries; at other times a gradual filling of trestles is brought about by the accumulation of city refuse, cinders, slag, etc. In mountain districts it is sometimes possible to fill trestles by the hydraulic or sluicing method, and when this can be done it is very satisfactory and economical.

F. Gable (P. & R.), chairman; J. F. Pinson (C. M. & St. P.), W. B. Harris (M. & O.), W. E. Burns (S. P.), G. A. Manthey (D. S. S. & A.), R. J. Bruce (M. P.), C. E. Smith, A. S. Clopton (M. K. & T.), committee.

Report on the Maintenance and Repair of Freight House Floors

One of the prime needs in a modern freight house, especially where much trucking is done, is a smooth floor, and one of the perplexing problems of a building supervisor is to keep this floor smooth at all times.

Floors may be classified according to the materials of which they are constructed into the following types: A—Wood floors of plank or flooring in which the grain of the wood is parallel to the floor surface. B—Wood floors covered with metal plates. C—Wood blocks or paving in which the grain of the blocks is at right angles to the floor surface. D—Brick, such as are used for sidewalks and street paving. E—Asphalt or mastic. F—Concrete. Concrete is frequently, if not usually, used as a sub-base or foundation for some of the other kinds of floors.

A yellow pine floor is more widely used than any other type, and considered from the point of first cost only, is the cheapest floor that can be constructed, particularly in a timber country. It can be used to advantage where trucking is not heavy, and in new buildings where deep filling is required in-

side the foundation where settlement is likely to occur. Long leaf yellow pine is preferable to short leaf and has a probable life of 8 to 12 years, depending upon the character of traffic. Repairs can be made readily to yellow pine floors and when planks are broken or damaged, they can be removed and replaced easily, but after the floor is worn considerably, this results in an uneven floor. It is possible after such a floor is considerably worn to take up the planks and relay them with the bottom side up, using shims to secure an even bearing on the joists.

Hardwood floors of maple, beech and birch have been used extensively for years as a top finish wearing surface upon a sub-floor of yellow pine or other similar wood. This is particularly true of maple, which makes a very serviceable and durable floor. Sometimes this type of floor is built on a concrete foundation, in which case the underfloor is nailed to nailing strips embedded in the concrete. It is recommended that the flooring strips or screeds be of creosoted material because experience has shown cases in which they have rotted and could not be easily replaced.

The Soo Line, the Illinois Central, the Pennsylvania, the Missouri Pacific and the Grand Trunk have maple floors in service, with an average life of about 20 years, and the Missouri Pacific has quoted a maximum life of 30 years. There is no record of any railroad having used a hardwood finish without a sub-floor, but it is suggested that this might be used in places where water is on the floor frequently. Decay develops quickly in double floors subject to such dampness and it is thought that a heavy single hardwood floor will outlast a double floor on account of the elimination of such decay. In order to overcome dry rot in double floors on sleepers or concrete foundation it is necessary that no accumulations of dust or rubbish be allowed and the floor should be so constructed as to allow for the circulation of air. A floor of matched lumber is not as easily repaired as the other type because the strips of flooring cannot be taken up without damaging the tongue and groove.

The Illinois Central has used maple flooring for freight houses for many years. This flooring is end matched only, the sides being left square and is about 3 in. wide. If laid on a concrete base, 2 in. by 4 in. screeds are imbedded in the concrete, on top of which is placed a deck of 2-in. lumber, varying from 2 in. by 6 in. to 2 in. by 10 in., preferably creosoted and thoroughly nailed to the screeds. The maple flooring is then laid at right angles to the 2-in. plank, and thoroughly face nailed, spacing the nails near the edge of the flooring. This, together with the end matching, forms nearly as smooth a floor as though it were matched and without question is longer lasting. It also saves one-half inch on every piece that is taken up by the matching. No warping has been observed and no more trouble from bulging on account of the absorption of moisture than with the edge matched floor.

Investigation discloses comparatively little use of floors covered with metal plates in railway freight houses. Where used they are largely runways where the trucking is unusually heavy and good service is reported. If plates are used they should be roughened or corrugated to afford a foothold for the men.

A wood block floor is one in which the wearing surface consists of small blocks so laid that the grain of the wood is at right angles to the floor surface. In order to insure a satisfactory wood block floor, a good concrete or other solid and substantial foundation is necessary. This type of floor is resilient, smooth, easy for trucking, readily repaired, dustless, has long life and entails a low maintenance cost. It will not, however, stand exposure to weather, and, as a general rule, repairs leave an uneven surface. Wood block floors are divided into two classes: untreated and creosoted.

Untreated wood block floors can be used to advantage where delicate merchandise is handled. The blocks should be placed on a ¾ in. or 1 in. sand cushion and the joints filled with 1 to 1 cement mortar or laid on a pitch base and the joints filled with asphalt. The sand or pitch acts as a cushion for the blocks and insures an easy working floor. Care should be taken that this floor is not exposed to the weather, as water may cause it to buckle.

Floors of this type are easily repaired by removing worn or damaged blocks and replacing them with new material. However, when such repairs are made it produces a very uneven wearing surface which, at times, might have a tendency to damage fragile merchandise or packages in trucking.

Creosoted wood block floors are laid similarly to the untreated wood block floors and have practically the same characteristics. They have been installed for 10 years or more, and are giving exceptional service. The main objection to creosoted wood blocks in freight stations is that the creosote taints certain kinds of merchandise, such as flour, butter, etc. At points where these commodities are not handled, it is considered an ideal floor. Blocks should be especially treated for interior use inasmuch as paving blocks for street use have proven unsatisfactory. Trouble has been caused from time to time by shrinkage and expansion, and it is recommended that in dry locations blocks should be well seasoned, while green or semi-air dried blocks are preferable for damp or moist conditions. Repairs are easily made the same as for untreated wood block floors.

Brick floors do not seem to be desirable for freight houses. The general opinion among railroads as to this type of floor seems to bear out the following facts, viz.: it is a strong, durable floor with a low maintenance cost, easily cleaned and sanitary, but it is not adapted to easy trucking, is a hardship on the truckers' legs and feet, and is very noisy. It is brittle, so that it chips and breaks easily, and is unyielding so that falling packages of delicate or fragile character are often damaged. Brick floors are recommended for storage warehouses or freight houses which are subject to damp conditions and for the storage of oils, paints, greases and other volatile and inflammable materials on account of the fire-resisting qualities of the brick. Brick floors should have a good concrete foundation with a sand cushion.

Opinions on asphalt mastic floors show a great deal of divergence. Theoretically it should make an ideal floor, but this is not always borne out in actual experience. The manufacturers of this flooring material contend that it is an ideal floor when properly laid for shops and freight houses, floors of this material being in service after 25 years of use and abuse. They further claim this material will outwear other floors several times, is easy to walk and truck over, becomes denser under heavier traffic, will not wear uneven, crack or disintegrate, is noiseless, dustless and easily cleaned, is sanitary, waterproof and fire-resisting, and above all, is easily repaired. Workmen comment that the mastic floors are non-slippery in dry weather but are not in great favor due to excessive wear on shoes, which is about 100 per cent more than on wooden floors.

Floors of asphalt or mastic are probably more easily repaired than any other kind. If a hollow place or hole develops it is repaired by removing enough of the top layer until all of the surrounding surface is on a level plane. New asphalt or mastic is then applied and finished as in the original floor. There seems to be no difficulty in securing a good bond in this case because the material is applied in a fluid or semi-fluid state, usually hot. Should mastic flooring be damaged by accident or by loading on points, a perfect and invisible patch can be made over the spot so injured, repairs being made over night and not being detectable after a short time. As soon as mastic floors become worn in certain parts more material can be added and the floor brought up to its original thickness.

Asphalt block has only recently come into use for freight

house floors and very little data are available regarding them. The manufacturers claim for them a life of 30 years. The blocks are laid like wood blocks, or brick, in a mortar bed on a concrete base. No expansion joints are needed and the floors will stay smooth without heaving. The wear is slow and, it is claimed, no chipping or spawling will occur. It forms a floor which is noiseless, dustless, waterproof, odorless and sanitary. Repairs are easily made by removing such blocks as may be defective or damaged and replacing with new blocks. It is assumed, however, that when this type of floor is patched or repaired in small areas, the floor will present an uneven surface which is not desirable.

Concrete floors are cheap and fairly permanent, are sanitary, easy to clean and require no special foundation. It is becoming a general practice of late to reinforce concrete floors, but this does not add materially to their life except on filled or new-made ground where it might afford some advantages. A concrete floor, as a rule, is dusty, noisy, hard on truckers' legs and feet, is easily damaged by falling packages and merchandise, becomes soft and worn in spots, which eventually develop into large holes and uneven surfaces, is subject to surface cracks due to temperature changes, and breaks up under the impact of truck wheels. For these reasons the maintenance cost is high and this type of floor does not compare favorably with other floors. Great care should be exercised in laying concrete floors so as to overcome the above disadvantages and difficulties as much as possible.

The reinforcement of the top of a concrete floor with triangular mesh will tend to harden the top surface and prevent hair and seasoning cracks, and thus prolong the life of the wearing surface. Extension cracks cannot be avoided altogether, but when they first occur, as they will in cold weather, they should be filled with a heavy composition similar to what is now being used on concrete highways.

Methods to remedy the tendency of concrete floors to crack, dust and disintegrate have been the subject of much study, and a large number of patented methods and devices such as surface hardeners, etc., have been marketed with varying success. It has been found by years of experience, not only in railroad shops, freight terminals, etc., but also in industrial plants of all classifications, that the wearing qualities of a concrete floor depend principally on the coarse aggregate used and on the method of working and mixing the materials. In other words, workmanship counts more than anything else when a good concrete floor is desired, based on specifications adapted to the particular installation with a great exercise of care in the selection of materials during construction. It seems to be generally accepted that an excess of water in mixing, which allows the clay in the cement to rise to the surface, is the principal cause of dusting. Excessive troweling on the finished process is also inadvisable.

When a concrete floor develops holes, repairs may be made in one of two ways. It may be patched by first cutting away and removing all of the loose or poor concrete until the edges and bottom of the hole are of good sound concrete and this hole filled with new concrete. This method, however, usually turns out to be only temporary because it seems almost impossible to get a good bond between the new and the old concrete and another hole will soon develop. The old concrete seems to have absorbed sufficient foreign matter or dirt of a more or less greasy nature to prevent a good bond. The better way is to take out the entire square or slab of concrete and replace with new material.

It is suggested that in the design of large freight houses it might be desirable and practicable definitely to lay out aisles or trucking spaces on which the better and more expensive flooring should be laid, allowing the use of cheaper materials in spaces used for storage and on which very little or no trucking is likely to be done.

J. P. Gallagher (N. Y. C.), D. Rounseville (C. & N. W.), A. T. Hawk (C. R. I. & P.), C. P. Rawson (C. M. & St. P.), T. D McMahon (G. N.), C. J. Scribner (C. B. & Q.), D. L. McKee (P. & L. E.), S. C. Tanner (B. & O.), F. H. Soothill (I. C.), committee.

[The remainder of the proceedings of the convention will appear in next week's issue.]

C. & E. I. Asks Court of Claims to Fix Compensation

WASHINGTON, D. C.

THE Chicago & Eastern Illinois, it has just been learned, some time ago filed in the United States Court of Claims a petition for the purpose of determining the amount of its just compensation for the use of its property by the government during the period of federal control, which the company claims should be $18,801,397 for the entire period of 26 months, or at the rate of $8,677,560 for each year, of which $4,194,000 has been received from the director general at different dates, on account. The claimants therefore claim $14,607,397 subject to the assumption and performance by the United States and the claimants of Sections 5 and 9 of the standard contract in respect to upkeep and return and of accounting.

The petition, which is the first of this character to be filed with the court, was filed by Will H. Lyford as attorney for the company and William J. Jackson as receiver. The petition recites that the Interstate Commerce Commission, pursuant to the federal control act, certified to the President that the average annual railway operating income for the receiver for the three years ended on June 30, 1917, that is, the standard return, was $2,946,000.88. This amount was regarded as inequitable because of the exceptional conditions pertaining to the road, but conferences between the representatives of the road and of the director general failed to accomplish an agreement as to the amount of just compensation. The staff conferences of the director general decided to allow compensation on the basis of the average annual railway operating income during the three years ended June 30, 1913, 1916 and 1917, making $3,360,160. On an appeal by the receiver to the director general this allowance was reduced to $3,271,000.88 and on a rehearing the allowance was finally fixed by the director general as $3,280,000.88. After a hearing Judge Carpenter, in charge of the receivership proceedings, issued a decree declaring this amount inadequate and instructing the receiver to decline it and to proceed to secure the determination of the amount by a board of referees to be appointed by the Interstate Commerce Commission in accordance with the act.

The board of referees on March 18 rendered a report finding that $4,450,000 for each year would be just compensation. Counsel for the director general have notified counsel for the receiver that the director general would not pay the amount awarded by the referees and was unwilling to offer more compensation to the claimants than the amount of his original offer of October 1, 1919, of $3,280,000.88.

The amount of annual compensation which is claimed, $8,677,568, is made up of the following items: $4,408,030, the amount of the net railway operating income for the calendar year 1917; $2,844,730, as the value per year of freight rate increases which were in force, authorized, or in sight on December 31, 1917, and which were not included or reflected in the railway operating income of the receiver for that year; $688,928 as additional hire of equipment not included or reflected in the railway operating income for the calendar year 1917; $594,000 as the cost of reconstructing and repairing during 1917, 1,188 bad order cars which had accumulated during previous years and $141,880, increase in mail pay for 1917.

The Reconstruction of Railway Transportation*

An Analysis of the Reasons for the Transportation Act and Its Promises for the Future

By Alfred P. Thom
General Counsel, Association of Railway Executives

GOVERNMENT by democracy has its tragedies as well as its triumphs. Its triumphs are for the most part in the realm of human liberty. Its tragedies are generally in the field of business and economics.

In popular government the popular will, right or wrong, calm or passionate, must, within the limits of the Constitution, be supreme. It is easy for it to be temporarily mistaken in matters relating to business or property. It is difficult to establish and preserve a just balance of judgment and of political action in dealing with matters of property.

This is especially difficult in respect to the facilities of transportation, which in order to be useful, must, in a sense, be powerful, and must touch the individual in all his social and business activities. Naturally an individual forms his estimate of the motives and of the efficiency of a railroad corporation by what he sees, and what he sees is, for the most part, confined to his own point of contact or to his own business transactions with the company, and cannot, in the nature of things, embrace the entire transportation problem or field of duty and responsibility which the management of the company must consider. He sees the impoliteness and inattention of an individual local employee, or he does not receive prompt payment of a claim which he believes to be just, or he is not furnished a car with the promptness required by the exigencies of his business and believed by him to be possible, or a fire is set by a passing engine, or there is delay in installing an industrial sidetrack.

Under the smart of such occurrences he cannot realize the number of men the management must obtain and train into a proper conception of the rights of the public; the limitation imposed by inadequate financial capacity to create an ideal situation; the demands upon the carrier in other directions, and the consequent necessity on it to balance the demands for the means and facilities at its disposal, so as to produce the best general result, and, where all things cannot be perfect, to promote in the highest possible degree, the general interest and welfare.

In the multitude of a carriers' transactions, there will of necessity be created many critics, and these critics are easily aroused and organized into a hostile attitude to it by any designing political agitator who may see in such dissatisfaction an easy road to the promotion of his own political fortunes and ambitions.

The condition so far referred to is a condition without fault on the side of the honest individual patron or on the side of the carrier which is making an honest effort to do its best. Unfortunately, however, this does not state the whole case.

In the creation and development of these great agencies of transportation, human nature and financial ambition have in the past, as was inevitable, played a large part. At the beginning, the public were dazzled by the advantage promised and the increased opportunities offered by the steam engine and the railroad. In every community there was a demand for railroads. It was only a question of getting them, and there was no thought of limitations or conditions, or of regulation or restriction—only of inducement and encouragement. Investors entered the railroad field and came to look upon the properties which their means and enterprise had created as private property, subject to no limitation or qualification that did not apply to other private property. Some of them accordingly began to use their property to favor those who favored them, to discriminate, whenever they thought it to their advantage, between those needing transportation, to select persons, communities and places which they would build up, to exploit their properties in the financial markets for their private emolument, and to put their interests as speculators and money makers ahead of any social duty.

But when the existence of the facilities was in the public mind assured, the tremendous power over the destinies of men and of localities possessed by those who controlled transportation, became apparent, and the demand became insistent for the eradication of the entire system of favors and discrimination.

This demand, seeking a legal basis, found it in the conception that property devoted to a use in which the entire public has a vital interest and so related to every social and business activity as practically to direct and control them, must not be accorded an unqualified freedom of use, but must be subject to reasonable governmental regulation.

As may be easily imagined, this qualification on the right of private property was fiercely resented by those who had been encouraged to invest. * * * The struggle was long continued and full of bitterness, but ended, as was right, in the acceptance of the view insisted on by those who contended for a power of reasonable regulation by public authority of property devoted to this public use, and so intimately and influentially related to the public welfare.

A Restrictive Policy of Regulation

Unfortunately, however, this victory, won in bitterness and anger, left in the public mind a spirit of resentment and distrust towards the antagonists they had vanquished, and the system of regulation which was adopted reflected this resentment in providing only for restraint, and in omitting entirely the provisions which would have been wise and appropriate for protecting and developing this essential agency of commerce and intercourse. It was assumed that these agencies of transportation were sufficiently powerful to protect themselves and that the public had no interests and no duty except to eradicate evil practices and to restrain evil conduct.

The public was right in its purposes, but, in the hour of its victory and for more than a generation thereafter, it failed to realize the wise limitations it must voluntarily put upon its own power. There was no appreciation of the fact that, under harsh and unsympathetic regulation, conceived and administered only with the purpose of restraint and punishment, the time would ultimately come when men would hesitate to put their means into a business which had been made a pariah by law and public opinion, and thus that the supply of transportation facilities might become endangered and inadequate for the public needs.

On looking back we can plainly see, what a calm forecast would also have revealed, that, if the development of the country and of commerce were to continue, the facilities of transportation must not only keep pace with, but must anti-

*Address before the annual meeting of the Massachusetts Chamber of Commerce, Boston, Mass., October 13, 1920.

cipate this growth, and that the investment of new capital must continually be made; that this investment, under a system of private ownership, must be attracted and could not be coerced, and would not be attracted unless it was protected. But this calm forecast was not made, and, indeed, was not possible, in the then existing state of the public mind.

Deterrents Faced by Investors

For more than a generation the logical resultant of the forces at work has been revealed and the investor has come to realize, when considering investments in railroads, that, if he should invest, he would be embarking his means in a business in which:

1. He could not control his income, for that is regulated for him by public authority;
2. He could not control his expenses, for these were affected by the requirements of many regulating bodies and by the exactions of labor, which, in the case of the railroads, was especially powerful;
3. That the regulation to which he must subject his investment was political in its origin, and thus in danger of being controlled by political rather than by business considerations;
4. That there was not a single co-ordinated and harmonious system or policy of regulation applicable throughout the whole extent of his property, but many regulating authorities—one Federal and many state—with diverse economic and political views and policies;
5. That the policies of regulation were not stable, but largely dependent upon the capacity for agitation of individuals who, at the time and in certain localities, were dominant in public affairs; and
6. That the rewards of success in other industrial enterprises were greater than in this, that the security was no greater here than in other avenues of investment, and that in this industry all hope of speculative reward must be abandoned.

The great transportation giant carried was bound and laid upon the operating table. The diagnosis was that the patient was possessed of a demon which must be exorcised. Those called to perform the operation were not trained experts charged with the duty and responsibility of restoring the patient to health and strength. Instead of a calm and scientific search for the truth, every ambitious experimenter, totally irrespective of his knowledge or his ignorance of economic laws and conditions, of his interested or disinterested attitude to the subject and of his lack of responsibility for the success of transportation, was invited and permitted to participate in the capital operation.

The Transportation of a Nation Threatened

The result was inevitable. Under such an immoderate and ill-considered exercise of public power, new investment in railroads became hesitant, the building of new lines practically ceased, and the efficiency of those already in existence was weakened.

Heretofore railroads have been the pioneers of progress and of the expansion of civilization. Before production must come the facilities of distribution, the means of making useful the fruit of the producer's toil. Until 1913, the transportation capacity of the railroads was in advance of, or had reasonably kept pace with, the increase of production, but since that time the situation has been substantially different.

The country's annual production of steel has increased from 31 million tons to 45 million, and the farms under cultivation from 258 million to 288 million acres. Since 1916 the annual production of bituminous coal has increased from 443 million tons to 580 million; but, turning to the railroads we see that, during the last three years, the number of miles abandoned has been greater than the number of miles constructed. Locomotives and freight cars added during the two years and two months of federal control were barely sufficient to replace the number ordinarily retired in a single year, and complaint was made that there were 150 million bushels of wheat still on the farms or in the country elevators; that live stock had fattened, become over-matured and had declined in value because there was no way to market; that the distribution of coal was inadequate to the extent of threatening national suffering and disaster; that lumber was not moving to market; that mills and other industries were halting in production and were shutting down for want of transportation, and that highway road building had virtually stopped.

This condition of transportation constitutes one of the economic tragedies of history.

The hope of democracy is the fact that the people cannot be mistaken or deceived all the time, and that in heart and purpose they are fundamentally sound. When they realize that they have been acting on false premises and have been misled, they throw aside their false leaders and demand that the mistakes which have been made shall be corrected.

A Change in Public Attitude

No more notable instance can be found of this than the recent change which has taken place in the attitude of the public towards the instrumentalities of transportation.

This change is reflected in the Transportation Act, which became a law on the 28th day of February, 1920.

Only a little while ago, the public regarded every application made by the carriers, for protection and for constructive changes in the system of regulation, as a matter involving only the private fortunes of the owners. The belief had been sedulously cultivated in the public mind that the transportation companies were in fact most prosperous. The warning of the carriers that the adequacy of the instrumentalities of transportation were at stake, was regarded as the insidious effort of private greed, and went unheeded.

The awakening of the country to the truth had to come in the travail and hardship of adversity. The strain of the war came, and productive industry found itself slowed up and hampered by the limited capacity of transportation instrumentalities. The public then began to realize that the maximum productive capacity of a people is measured by the carrying capacity of its instrumentalities of transportation and distribution and that if the comforts of life and the means of living are to be brought within the reach of the masses of the people at reasonable prices and on reasonable terms, there must be strong, efficient and adequate agencies of transportation. This conception of the relationship of transportation to the welfare of the people having been once accepted, and the real fact as to the financial condition of the carriers having come to be understood, many truths heretofore obscured became manifest. The public transferred its interest and anxiety from the question of the cost to the question of the existence of adequate transportation capacity.

It came to appreciate that the producer must face the loss of his product to the extent he could not get it moved to market, and that the banks which had loaned upon it must lose or must carry the loan while the marketing of the product was retarded.

The Transportation Act

As a result of these considerations, the recent legislation by Congress has been enacted into law. In the interest of promptness and certainty it provides a plan for the adjustment with the carriers of matters growing out of federal control; as a means of stabilizing conditions, continues in effect, until thereafter changed by competent authority, the rates, state and interstate, in force at the end of federal control, and, as a measure of support during the period of transition provides a guarantee of a return for six months equal to half the annual compensation paid them respectively by the government for the use of their properties during federal control, and for loans, to a limited amount and at

a reasonable rate of interest, to assist in meeting maturing obligations, which otherwise could not be met, and in adding to the facilities of transportation which otherwise could not be made.

The permanent legislation provides a means of peaceful adjustments of labor controversies; and makes needed amendments of the existing system of regulation; undertakes to provide a system of lawful and supervised consolidation of carrier properties, so that facilities may be improved and competitive conditions measurably equalized to the end that the system of regulatory law may deal more equitably and helpfully with them all; to create a single and exclusive system of supervision and regulation of the issue by carriers engaged in interstate commerce of securities, so that the public interest in the financial condition of these carriers may be properly considered and safeguarded and that the financial proposals of the carriers may be promptly passed on and treated according to a single, harmonious policy, and thus protected from the delays and the diversified policies of many regulating authorities; to vest authority in the Interstate Commerce Commission, in the interest of all the people and of the states themselves, to supervise state rates and practices applicable to interstate carriers, for the purpose of preventing discrimination against interstate commerce and the indirect imposition, through the unwise or niggardly action of a single state, of undue and unequal burdens on interstate commerce and on the people of other states; to establish a system under which the revenues derived from the service of transportation shall be sufficient, under honest, efficient and economical management, and reasonable expenditures for maintenance of way, structures and equipment, to provide a fair return upon the aggregate value, in such groups as the commission may establish, of the railway properties of the carriers held for, and used in, the service of transportation, thus giving assurance to the people of the United States of adequate transportation and means of distribution of the products of their toil; and basically, from the standpoint of credit, to introduce the elements of financial stability and security as a means of making up for the lack of large and speculative rewards.

Inspired by these motives and embodying these constructive principles, the altered system of national regulation has been adopted and put into effect.

It recognizes that transportation is a business in which the public is vitally interested; that the system of private ownership and operation, invigorated and vitalized by individual initiative and enterprise, is in the public interest to be preferred to government ownership and operation, and that it is more equitable to distribute the cost of supporting it among the persons who use it in proportion to their use, than to impose it on all the people by leaving it as a universal tax and paying it out of the public treasury; that the government cannot, in conscience or with due regard for the public welfare, exercise the power of regulation, which involves the restriction of business opportunities, without at the same time accepting the responsibility of seeing that justice is done, proper encouragement and support afforded, and that the charges for transportation, while limited so as to prevent injustice to and extortion on its users, are reasonably sufficient to attract the capital needed to make and keep the facilities of transportation adequate to the public needs. * * *

A New Era

The abandonment of the old and mistaken view that the responsibility of government is fully performed when it punishes misdeeds furnishes new assurance to those who believe in the good sense and the spirit of wisdom and statesmanship which reside in the masses of the people. Men may still debate as to the adequacy of the legislation which has been adopted, but there can be no reasonable difference of opinion as to the soundness or value to the nation of the new conception that has been accepted of the responsibility of government to the subjects which it undertakes to regulate and of the recognition of the fact that the credit of these carriers, on which their ability to perform their essential public service depends, is a matter of public concern.

It remains now to give the new system a fair trial.

The carriers themselves must be keenly alive to their own responsibilities. Trusted to furnish transportation to the people, they must rise to the level of their enlarged opportunities and view their obligations from the standpoint of the public right and public welfare to which they bear so important a relationship. They must see to it that the best quality and the largest quantity of service in their power to give is furnished to the public, and that no narrow or individual view be permitted to control their policies.

The public, on its part, must be patient while this effort is being made. It must realize the difficulties and embarrassments which confront the carriers in resuming the possession of their properties and the performance of their transportation duties. For more than two years they have been out of the possession and control of their properties. During this period the identity of individual properties had been merged into others; the rolling stock—engines as well as cars—had been taken from the system to which it belonged and scattered elsewhere and everywhere as an immediate need appeared to justify until not more than 21 per cent of the cars remained on home lines; repairs on this vagrant and homeless equipment had been inadequate and without uniformity; the working forces had become imbued with the idea that they were working for the government and consequently under a different and reduced system of discipline and responsibility; the management itself had been deprived of the intimate touch with, and knowledge of, their property and its conditions essential to effective and successful administration; and the current revenues from their properties had been taken by the government and no final adjustment or accounting made, leaving their financial situation uncertain.

They came back into their duties and responsibilities of management in the aftermath of the greatest war in history. The earth on which we stand is still trembling from the convulsions which for four years shook it to its foundations and left in devastation and ruin the continent furthest advanced in the arts and in the achievements of civilization. As one of the results of this upheaval there has come throughout the world, including our own land, an increase of class consciousness, class rivalries and class aspirations and demands. Large bodies and groups of men are surging with impatience and resentment against the restraints of society and of law and are fiercely demanding a new and radically altered order in the economy of life.

"The equilibrium between the city and the country in the world's economics has been profoundly disturbed," the number of farm-workers, according to an eminent authority, having in two years decreased 28 per cent. The country boy, whose horizon was formerly limited by the farm on which he worked and the cross-roads store where he spent his rare hours of leisure and recreation, has now seen the wonders, enchantments and opportunities of our great American cities and of London and Paris, and is slow to return to the farm, with all that his failure to return implies in the way of inadequate farm labor, reduced production of agricultural products and higher wages and costs.

In closing, Mr. Thom declared that the carriers, conscientious and energetic, are facing their present and future responsibilities with courage and confidence. They have already made marked progress and they have the co-operation of an able and sympathetic commission inspired by a lofty purpose. If the rates under the new law shall adequately establish the carriers' credit, the plan established by Congress will be a success. But the Interstate Commerce Commission, the state commissions, the labor unions and the carriers must realize, one and all, that they are now on trial.

General News Department

The Interstate Commerce Commission has issued the text of its thirty-second annual report on the Statistics of Railways for the year ended December 31, 1918.

Members of the Chicago Yardmen's Association, who were expelled from the Brotherhood of Railroad Trainmen, following the "outlaw" strikes of last April, filed a suit for $5,000,000 damages against the Brotherhood at Cleveland, Ohio, on October 21. The amount also represents an attempt to recover insurance premiums paid to the B. R. T. by the members of the Yardmen's Association.

The Alabama state fuel administration on October 19 issued an order requiring that all domestic coal mined in Alabama between October 20 and November 6 be shipped to points within Alabama. Retail coal dealers were instructed in the same order not to deliver any coal to any consumer who has a supply of thirty days on hand. The railroads agreed not to confiscate domestic coal, thereby relieving a vexatious problem which has caused serious concern.

The right of a railway to name its own station has been challenged by the Public Service Commission of Missouri. The Chicago, Burlington & Quincy a short time ago had the name of its station at Greencastle, Mo., changed to "Castel." The citizens of the town protested to the Public Service Commission and the result was an order to the company to restore the original name on its time cards not later than November 12.

A train robbery occurred in the city of Buffalo on the morning of October 21, and a trainman was shot. Westbound express train No. 15, of the New York Central, while standing in the Clinton street yard, where additional cars were to be attached to the train, was entered by five robbers; and money and jewelry were taken from passengers in a sleeping car. The time was about two o'clock and nearly all the passengers were asleep. Three suspects have been arrested.

The proceedings of the annual meeting of the Mechanical Section of the American Railroad Association held in Atlantic City, N. J., June 9 to 16, 1920, are now ready for distribution and may be obtained from the secretary, V. R. Hawthorne, Chicago. The Rules of Interchange and Tank Car Specifications, as revised at the annual meeting, have been approved by the executive committee and will be ready for distribution in a short time. The new rules and specifications will become effective November 1, 1920.

Marked improvement has been made in the car situation in the northwest, according to J. T. Danaher, secretary of the Portland committee on car service of the American Railroad Association. A shrinkage in the volume of lumber shipments, coupled with increased efficiency on the part of the railroads, has practically overcome the car shortage. An example of the increased efficiency is shown in the operation of the Portland terminal, in which the average number of cars handled daily for some time past has been 812, whereas recently as many as 3,622 cars were handled in a day.

The announcement by D. B. Hanna, president of the Canadian National, that employees of that system would not be allowed to run for political offices, the penalty being dismissal from the road, aroused a storm of protest at the meeting of Division No. 4, Department of Railway Employees, American Federation of Labor, in convention at Winnipeg, Man., on October 14. The matter was taken up with the Minister of Labor, who informed the employees that it was a ruling made by Mr. Hanna, as president of the Canadian National, and could in no way be interpreted as a ruling of the government. It is the intention of the railroad employees to fight for cancellation of this order.

The Bureau of Explosives, 30 Vesey street, New York City, has issued circular B. C. L. No. 197, addressed to all railroads members of the Bureau, setting forth precautions to be observed in the unloading of tank cars through bottom discharge valves. The Bureau has also issued circular B. C. L. No. 198, containing precautions to be observed in the loading of alfalfa-molasses feeds, and other wet feeds, to prevent heating. The recommendations of this circular embody the result of a conference with feed manufacturers held at Chicago September 15. Such feeds should be loaded so as to permit air circulation between the bags, and there should be 36 inches of space in the upper part of the car. An order has been issued by the Interstate Commerce Commission allowing cars thus loaded to be treated as loaded to their full visible capacity. The Bureau desires to have reports of all fires occurring in the transportation and storage of any articles which may have been set afire by spontaneous chemical changes.

The Empire State Express, of the New York Central, has now been running 29 years; last Tuesday, October 26, having been the anniversary of the first trip. A sketch of the history of the train is given in the New York Central Magazine for October. For many years the train ran through, westbound, New York to Buffalo, 439 miles, in eight hours, with four stops. As patronage increased, necessitating the lengthening of the train to the capacity of the locomotives, the speed was lowered, and the schedule time is now nine hours. In connection with this notice the Magazine denies the rumor, recently printed in various papers, that engine No. 999, which hauled this train on the Mohawk division for a number of years, had been sent to the scrap heap. This engine, William Buchanan's masterpiece, is now numbered 1086, and is still in service, hauling a local passenger train on the Pennsylvania division. It was built in 1893 and cost $13,000. In the last 13 years it has made 13 visits to the shop for general repairs, which repairs cost $14,253.

New York Sectional Committee of the Signal Division

At a meeting held October 21 at the Hotel McAlpin, New York, J. W. Hackett, of the Okonite Company, presented a paper on signal wire. This was accompanied by a motion picture illustrating the complete process of manufacturing signal wire, from the procuring and gathering of the rubber in the regions of the Amazon to the shipping of the finished product. The discussion of this paper developed that to a large extent the faults found in modern insulated wire were due more to the methods used in installing it than to any actual defects in the wire itself. The meeting was well attended, having a total registration of 303 members, representative of most of the eastern roads and wire manufacturers. The next meeting will be held on January 20, 1921, at which L. F. Vieillard, assistant signal engineer of the Long Island, will present a paper on a.c. track circuits.

The Power of Collective Bargaining

The national campaign committee of the sixteen railroad labor organizations has addressed a letter to the members of the organizations, outlining instructions as to how to assist in the defeat for re-election of those members of Congress who voted for the transportation act, which contains the following characterization of the law:

"Adroitly phrased by railroad attorneys to achieve that purpose, the Cummins-Esch law destroys collective bargaining by railroad employees through their various crafts, and renders almost valueless protective agencies built up through years of struggle by employees' organizations. This is accomplished in part by the labor sections of the bill and in part by its guaranty provisions.

"The real power behind collective bargaining is the ability and right, when justice warrants, to cause the employer financial loss. Collective bargaining does not function against a guaranteed employer. No employer need fear financial loss occasioned by strikes or vacations of employees if the government or the people are required by law to make up the loss."

Middle Tennessee Suspends—Car Shortage the Cause

To forfeit its charter and quit the business was the only course left open to the Middle Tennessee. This line, which is 42 miles in length, runs from Mt. Pleasant, Tenn., to Franklin, where it connects with the Nashville Interurban. The failure of the road was laid to its inability to get rolling stock. When the line ceased operation there was freight sufficient to fill some 600 cars waiting at the various stations to be moved. Shippers exerted every effort to have the road continue in operation until this freight was cleared away and the public utilities commission issued an order to this effect. The railroad, however, upon advice from the company's attorney, refused to comply with this order.

Executives to Meet Friday

Such important railroad questions as labor, efficiency programs and coal movement and production probably will receive the attention of member roads in the Association of Railway Executives when they meet in the New Haven boardroom in the Grand Central Terminal Friday afternoon, October 29. The Standing Committee of the association will meet Friday morning and the general conference will occupy the afternoon. While it is not generally expected that the executives will decide at this meeting just what action should be taken regarding the demands of organized railroad labor for national boards of adjustment and other centralized organization, it is expected that those executives who are flatly against nationalization in any form may express their views. At present, however, it appears that this faction is in the minority and the matter will be submitted to further discussion.

Freight Car Economy on Southern Pacific

The Southern Pacific has just issued a report showing the effective manner in which shippers are co-operating in the campaign to increase loading and thus safeguard the car supply. The report says that for the month of August of this year, as compared with August, 1919, over 2,400 more cars were made available by improved efficiency on the part of the public. The report calls attention to the Good Railway Service Association, which is made up of shippers and public-spirited citizens in almost every community in California, to whom much of the credit for the campaign's success is given. The report shows that shippers of the following commodities saved cars as indicated:

Barley	149	Salt	61
Brick	34	Stock	24
Cement	131	Stone and sand	64
Corn and oats	15	Sugar	147
Cotton	1	Corrugated pipe and tile	58
Cotton seed	1	Wheat	68
Lumber	815	Wine	10
Mill stuffs	59	Wood	76
Oil in tank cars	144	Miscellaneous	492
Perishable	53		
		Total	2,402

Conference on Employment

Present indications point to a large attendance of employment managers, representatives of employment bureaus and educators at the conference on employment and vocational education which will be held at the Congress Hotel, Chicago, on Friday, November 12. This conference, which is sponsored by the American Association of Engineers, will consider the problems of employment which are confronted by non-commercial employment bureaus, and will discuss the relation between employment service and education. A. B. Crawford, director of the bureau of appointments of Yale University, will discuss the placing of the graduate in his first position. Frank D. Chase, president of the Frank D. Chase, Inc., Chicago, will speak on the attitude of the employer toward the man placed in his employ by the employment bureau. Employment office administration will be discussed by George P. Hambrecht, chairman of the Industrial Commission of Wisconsin. The relation between education and industry will be presented by John B. Densmore, director-general of the United States Employment Service.

New York Section of the A. S. C. E.

A start was made at the October 20 meeting of the New York Section of the American Society of Civil Engineers towards a series of discussions which it is hoped will lead to some plan to point the way toward a better development of the metropolitan district of New York. The subject as introduced by Charles D. Hine was concerned with the local distribution of freight and food products. This was supplemented and added to by talks by such engineers as F. A. Molitor, B. F. Fitch, J. S. Eaton, Fred Lavis and others. The subject was handled in a broad general way and while various suggestions and plans were offered they were more general than specific, being presented primarily as a basis upon which future plans could be built.

Bankers' Views on Railroads

The following resolution relating to transportation was adopted by the American Bankers' Association at its convention in Washington on October 22:

"Legislation now on the statute books has been enacted with the object not only of replacing the transportation facilities of the country in the hands of their owners on an equitable basis, but also of establishing the credit of the carriers so that they may be enabled to render the fullest possible public service. In effect, national guaranties have been given in this matter. By intelligent and broad-visioned administration of the Esch-Cummins law, with all practicable co-operation on the part of the carriers themselves in working out a new era of transportation usefulness, the interests of the country as a whole should be materially advanced. In this it is essential both that recognized investments be conserved and that the way be kept open so that necessary funds may be available for equipment and extension of railway facilities. We urgently request the Interstate Commerce Commission and the railroad officials of the country to continue to render the utmost assistance toward providing efficient and regular transportation of products to market. It is our firm opinion that the present law should be altered so that bankers and business men, regardless of their dealings with railroads, can serve on railroad directorates, being charged with full responsibility in connection with their duties in that capacity.

National Association of Railroad Commissioners

The National Association of Railway and Utilities Commissioners will hold its 32nd annual convention at Washington, D. C., for four days, beginning on Tuesday, November 9, as announced in the *Railway Age* of September 10, page 459. At the first session, on Tuesday morning, at 10 o'clock, Chairman E. E. Clark, of the Interstate Commerce Commission, will deliver an address of welcome; and he will be followed by Walter A. Shaw, of Illinois, president of the association. On Tuesday afternoon there will be an address by Hon. George W. Anderson, former member of the Interstate Commerce Commission and now United States judge in Massachusetts. On Wednesday morning Hon. Clyde B. Aitchison, Interstate Commerce Commissioner, will speak on "The Car Situation." There will be a report on bases of valuation, followed by the election of officers of the association for the ensuing year. On Wednesday afternoon and Thursday afternoon there will be informal discussions on (a) problems of street and interurban transportation; (b) the gas problem; (c) enforcement of service standards, and (d) public relations.

The time not required for what is outlined in the foregoing paragraph will be devoted to the presentation and discussion of committee reports. There are 17 standing committees, but no copies of reports have as yet been given out. The committees, with the names of their chairmen, are as follows: Executive, D. N. Lewis, Iowa; Public Ownership and Operation, P. J. Lucey, Illinois; Safety of Railroad Operation, C. C. McChord, I. C. C.; Safety of Operation of Public Utility Companies, J. W. McCardle, Indiana; Railroad Service, Accommodations and Claims, B. M. Clen Dening, Ohio; Service of Public Utility Companies, C. F. Dupuis, North Dakota; Railroad Rates, J. F. Shaughnessy, Nevada; Public Utility Rates, John S. Allen, Wisconsin; Car Service and Demurrage, E. V. Kuykendall, Washington; Express Carriers, George P. Pell, North Carolina; Statistics and Accounts of Railroads, W. D. B. Ainey, Pennsylvania; Statistics and Accounts of Public Utility Companies, O. O. Calderhead, Washington; Grade Crossings and Trespassing

on Railroads, William M. Smith, Michigan; Valuation, H. G. Taylor, Nebraska; Capitalization and Intercorporate Relations, E. O. Edgerton, California; State and Federal Legislation, C. D. Jackson, Wisconsin; Publication of Commissions' Decisions, J. B. Walker, New York.

The secretary of the association is James B. Walker, 49 Lafayette street, New York City.

The Bridge and Building Supply Men's Association

The exhibit of the Bridge and Building Supply Men's Association presented at Atlanta, Ga., in connection with the American Railway Bridge and Building Association, was the largest as regards the number of exhibitors in the history of the organization. The exhibits of the 38 member companies consisted chiefly of literature and photographs, although in some instances models and samples of various types of equipment were shown.

The officers of the association for the past year were: President, Tom Lehon, the Lehon Company, Chicago; vice-president, C. E. Ward, U. S. Wind Engine & Pump Company, Batavia, Ill.; treasurer, M. J. Trees, Chicago Bridge & Iron Works, Chicago; secretary, G. R. McVay, The Barrett Company, Chicago; honorary director, P. C. Jacobs, H. W. Johns-Manville Company, Chicago. The members of the executive committee were: E. T. Howson, *Railway Age,* Chicago; C. W. Lindholm, Patterson-Sargent Company, Cleveland, Ohio; W. O. Washburn, American Hoist & Derrick Company, St. Paul, Minn.; A. J. Filkins, Paul Dickinson Company, Chicago; D. J. Higgins, American Valve & Meter Company, Chicago, and F. M. Condit, Fairbanks, Morse & Co., Chicago.

At the annual election on Thursday morning the following officers were selected: President, C. E. Ward, U. S. Wind Engine & Pump Company, Batavia, Ill.; vice-president, Merle J. Trees, Chicago Bridge & Iron Works, Chicago; treasurer, C. R. McVay, Barrett Company, Chicago; secretary, A. J. Filkins, Paul Dickinson Company, Chicago; honorary director, Tom Lehon, the Lehon Company, Chicago; members executive committee, W. O. Washburn, American Hoist & Derrick Company, St. Paul, Minn.; C. W. Kelly, the Kelly Derby Company, Chicago; D. J. Higgins, American Valve & Meter Company, Chicago; F. M. Condit, Fairbanks, Morse & Co., Chicago; T. W. Snow, the T. W. Snow Construction Company, Chicago, and W. H. Lawrence, the H. W. Johns-Manville Company, New York City.

The companies exhibiting, with the nature of their displays and the names of their representatives, were as follows:

American Hoist & Derrick Company, St. Paul, Minn.; literature; W. O. Washburn, F. J. Johnson, J. L. Prator and R. R. Nixon.

American Tar Products Company, Chicago; P. J. Griffiths and S. H. Fields.

American Valve & Motor Company, Cincinnati, Ohio; models of non-freezable drop spouts and water columns; J. T. McGarry and D. J. Higgins.

Asphalt Block Pavement Company, Toledo, Ohio; samples of asphalt paving; E. J. Snyder.

Barrett Company, New York; samples of shingles and roofing, literature; G. R. McVay and W. E. May.

Buda Company, Chicago; P. W. Wood.

Carter Bloxonend Flooring Company, Chicago; samples of paving blocks and photographs; R. G. Stowell.

Chicago Bridge & Iron Works, Chicago; literature; M. J. Trees and J. L. Zeller.

Detroit Graphite Company, Chicago; samples of white enamels; literature; L. D. Mitchell, A. B. Edge, W. D. Waugh, J. R. C. Hintz and J. F. Neiman.

Paul Dickinson Company, Chicago; ventilators; Arthur J. Filkins and D. B. Wright.

Dixon, Joseph, Crucible Company, Jersey City, N. J.; model of painted station; H. A. Nealley and J. H. Lewis.

Duff Manufacturing Company, Pittsburgh, Pa.; jacks; G. E. Watts and W. T. Willingham.

Fairbanks, Morse & Co., Chicago; literature; A. A. Taylor, F. M. Condit, H. E. Vogel, M. J. Kockendorfer, F. L. Daggett, B. S. Spaulding, C. T. Fugitt, J. M. Barron, J. T. Frame and D. K. Lee.

High Grade Manufacturing Company, Cleveland, Ohio; Gilso cement; S. A. Baber.

Johns-Manville Company, H. W., Chicago; asbestos roofing and pipe covering; W. H. Lawrence and H. J. Newman.

Kaustine Company, Buffalo, N. Y.; literature; D. A. Evans and J. H. Fotheringham.

Kelly-Derby Company, Chicago; C. F. Smale.

Lehon Company, The, Chicago; roofing and shingles; Tom Lehon and J. E. Eipper.

Massey Concrete Products Company, Chicago; literature; J. A. Higgs, Jr.

M. & G. Company, The, Chicago; yard and stock-pen hydrants; L. W. Millar.

National Water Main Cleaning Company, New York; Burt B. Hodgman.

Nelson (Jos. E.) & Sons, Chicago; photographs and literature; J. E. Nelson and W. H. Nelson.

Nichols (Geo. P.), & Brothers, Chicago; literature; George P. Nichols and S. E. Nichols.

Norton, A. O., Inc., Boston, Mass.; self-lowering jacks; G. R. Law and W. R. Kelly.

Patterson & Sargent Co., Cleveland, Ohio; W. W. Huntley.

Raymond Concrete Pile Company, New York; shell for concrete piles; H. D. Oliver.

Simmons-Boardman Publishing Company, New York; copies of *Railway Age* and Railway Maintenance Engineer; E. T. Howson, Milburn Moore and B. J. Wilson.

Railway Review, Chicago; W. M. Camp.

Robertson & Co., Wm., Chicago; model of culvert and photographs; R. F. Repasz.

Sherwin Williams Company, Cleveland, Ohio; M. E. Williams.

Snow Construction Company, T. W., Chicago; literature; T. W. Snow.

Standard Asphalt & Refining Company, Chicago; samples of waterproofing materials, etc.; G. A. Thornton.

Texas Company, The, New York; roofing and roof paint; J. F. Ryan and F. K. Dorrance.

U S. Wind Engine & Pump Company, Batavia, Ill.; literature; C. E. Ward.

Virginia Bridge & Iron Company, Roanoke, Va.; J. W. Leroux.

Volkhardt Company, Inc., Stapleton, N. Y.; W. Volkhardt.

Vulcanite Company, The, Chicago.

White (L. & I. J.) Company, Buffalo, N. Y.; adzes; C. H. Broward and C. S. Broward.

Railroad Guaranty Payments Still Held Up

Secretary of the Treasury Houston has told newspaper men that the decision of the comptroller of the treasury that the treasury must not honor certificates of the Interstate Commerce Commission for partial payments to the railroads on account of their six-months' guaranty, except where the applications were filed before September 1, but that the payment of the balance of the amounts due must await a complete determination by the commission of the amount, is final, and that the treasury does not expect any ruling from the attorney general which will lead to any reversal or reconsideration of the decision. The secretary took the position that the attorney general has no jurisdiction in the matter, although representatives of the railroads and of the Interstate Commerce Commission are undersood to hold the belief that precedents are available on which the comptroller could be overruled. Mr. Houston also took the position that if the railroads need their money they should "get busy" and increase their accounting forces for the purpose of figuring the final amounts due, now estimated at about $400,000,000, as about $234,000,000 has been paid on certificates of the commission for advances as authorized by the law up to September 1.

No information has yet been made public as to the position of the Department of Justice in the matter.

The Interstate Commerce Commission has issued a questionnaire on which railroads that accepted the guaranty provisions of the transportation act are required to give, on or before January 1, 1921, the complete information desired by the commission for the purpose of making settlements with the carriers as to the amounts necessary to make good the guaranty provided for in Section 209 of the act, which the commission is required to certify to the Treasury. Under the law the commission is also to determine the amount which may be charged to maintenance for the guaranty period for the purposes of fixing the amount of the guaranty. In the questionnaire it is stated that consideration has been given to the matter of formulas to be applied in making adjustment of maintenance expenses, but no such formulas have yet been adopted by the commission. Each respondent carrier may, therefore, prepare and submit for the consideration of the commission such data with respect to the adjustments which it may propose in connection with maintenance expenses as it deems proper under the provisions of the law applicable thereto. The principal factors which the commission will consider in fixing the amounts to be included in operating expenses for the guaranty period for maintenance of way and structures and for maintenance of equipment are:

(a) The differences in the cost of labor and material.

(b) The difference in the amount of property used; and

(c) The difference in the use of the property during the guaranty period as compared with the test period. The respondent carrier should be governed accordingly in preparing data in support of any adjustments proposed.

Traffic News

The Pennsylvania will open a commercial office in Dallas, Tex., on November 1 to be in charge of L. J. Warner, district freight representative, and L. G. Russell, district passenger representative.

The Traffic Bureau of Muncie, Ind., has been organized with W. C. Pike, formerly in the traffic department of the Maxwell Motor Company, Newcastle, Ind., as manager. The bureau is supported by the Chamber of Commerce and industrial and commercial interests of Muncie.

The Transportation Club of Decatur, Ill., held its annual "railroad night" on Wednesday evening, October 27, with a banquet at the Orlando Hotel of that city. Following the dinner, J. F. Holden, vice-president of the Kansas City Southern, addressed the meeting. A. B. Aiken, general agent, Chicago, Rock Island & Pacific at St. Louis, Mo., acted as toastmaster.

The Lumber Reshipping Yards Traffic Association has been organized at St. Louis, Mo., by traffic representatives of lumber companies having lumber yards in St. Louis and doing a reshipping business from these yards. The object of this association is to bring together the traffic representatives in order that by united action they can handle traffic matters to the mutual interest of themselves and the carriers. T. H. Lynch, traffic manager of the Philip Gruner & Bros. Lumber Company, is president; and Earl Kauffman, traffic manager of the Thomas & Proetz Lumber Company, is secretary and treasurer. Offices have been located at 3400 North Hall street, St. Louis, Mo.

Railway Courses in California University

Walker L. Trammell of the traffic department of the Southern Pacific is organizing a class in the study of railroad transportation and traffic management. Classes are to be held over a period of 40 weeks, meeting on Monday and Thursday evenings of each week and registrations are now being received at the San Francisco (Cal.) office of the university extension of the University of California. The course will comprise the study of railroad rates and rate making, shipping regulations, tariffs, routes and routings. Interstate Commerce Commission rulings and other phases of shipping. The extension division of the University of California is to maintain in the Monadnock building in San Francisco a freight traffic library for students and shippers who desire to increase their knowledge.

New York Traffic Club

The New York Traffic Club held its October meeting at the Waldorf-Astoria Hotel on the evening of the 26th. The principal speaker was George H. Ingalls, vice-president, New York Central Lines, whose subject was "The Problem of Increasing the Efficiency of Transportation." "It is not wholly the railroads' problem," said Mr. Ingalls, "any more than is the general responsibility of the American citizen to take sufficient interest in the necessities of such a fundamental industry as transportation as to exert his influence toward seeing that it receives fair consideration, treatment and co-operation. That the railroads emerged from the war period woefully short of good order locomotives is a fact, not a theory. In the absence of ample motive power the 'speeding up' of freight cars is to be accomplished largely through cutting down the delays in terminals. Ability to speed up is dependent upon the spirit or morale of the working forces, in railroading just as in everything else. If the shipper cannot induce his forces to load and unload freight cars with reasonable celerity, it should not be surprising if the railroads have difficulty in getting their switchmen, trainmen and freight handlers to break records. * * * There has been a distinct improvement in the morale of railroad service." The annual meeting of the club will be held on November 23, when the election of officers will take place. The nominee for president is R. J. Menzies, International Nickel Company.

Commission and Court News

Interstate Commerce Commission

The commission has suspended until November 16 the proposed cancellation of rates on soap from Meridian, Miss., and Bristol, Tenn., to stations on the Gulf, Mobile & Northern, leaving combination rates applicable.

The Commission has suspended until February 22 the operation of certain tariffs which propose to cancel the existing rating of one-half of fourth class, any quantity, and specific commodity rates on empty beer packages, etc., between points in western trunk line territory, leaving fourth class rates, l.c.l., and class D rates, c.l., applicable instead.

The commission has suspended to March 1, 1921, the operation of tariffs which provide fares from St. Louis, Mo., Peoria and other important Illinois points to Arizona and California destinations, via New Orleans, La., to make them in accord with short line fares from Chicago, Ill., to the same destinations via New Orleans which were suspended by the original order of September 30.

The commission has suspended until February 20 the operation of certain schedules which provide for the cancellation of the proportional class arbitraries, and through rates constructed by such arbitraries, from Norfolk, Va., to United States Naval Operating Base, Hampton Roads, Sewalls Point, Va., applicable on l. c. l. traffic from eastern territory, leaving local or combination rates applicable instead.

The Interstate Commerce Commission has announced a proceeding of investigation on the refusal of the Public Service Commission of Indiana to put into effect for intrastate traffic the full amount of the rate increase authorized by the Interstate Commerce Commission in the general rate advance case, and it has assigned the case for hearing before Attorney Examiner Disque on November 11 at Indianapolis. A similar proceeding has been ordered in the Louisiana case and a hearing has been assigned before Examiner Brown on November 22 at Baton Rouge.

State Commissions

The Illinois Public Utilities Commission has announced that the freight rate increases granted by that body are to become effective on November 1.

The Railroad Commission of California on October 11 granted the request of the South San Francisco Chamber of Commerce to place that city on an exact parity in connection with main line haul traffic, as exists at Oakland. This extends the San Francisco switching limits to take in the South City. The order of the commission also directs the removal of the discrimination in favor of the east bay section as against South San Francisco, as a result of the carriers' 30-cent switching zone in Oakland, which extends from Oakland Wharf to Elmhurst.

The Railroad Commission of the State of California in a letter to the governor of the state transmitting its annual report states that it reserves the right of adjustment in all railway matters. The letter says that: "It is a mistake to conclude that the commission is relieved from all work in connection with the steam railroads. Jurisdiction over service and safety, and especially over all grade crossing matters, is still undoubtedly vested in this commission. In the matter of rates, the commission, while adopting the general rate increases promulgated by the Interstate Commerce Commission, has reserved to itself the right of making such adjustments in this state as may seem necessary and fair in the particular circumstances surrounding the existing conditions." A similar statement of the committee's attitude toward the Transportation Act and the power of the Interstate Commerce Commission was included recently in a letter to the Interstate Commerce Commission.

Equipment and Supplies

Car Production—Nine Months' Figures

The production of freight and passenger cars for domestic service in September showed an increase over August. The passenger car deliveries were within one car of being as large as those for any two preceding months. The freight car deliveries were the largest for any month since February, although they were still on the low scale that has characterized this year's production to date. The figures, as reported to the Railway Car Manufacturers' Association by the 21 members of that organization and the two non-members co-operating with it in this matter, show deliveries in September of 3,529 freight and 38 passenger cars for domestic service; 1,088 freight cars for export, and freight car repairs amounting to 3,140. The figures for the month and the cumulative figures for the year are shown in the table below. The names of the car-building firms supplying the figures were given in the *Railway Age* of September 24, page 511.

The figures follow:

TABLE I—CARS DELIVERED

	Freight cars		Passenger cars	
	Domestic	Foreign	Domestic	Foreign
January	4,482	1,904	1	9
February	3,774	1,039	4	..
March	2,796	1,994	11	28
April	2,127	1,912	15	..
May	2,630	1,387	..	..
June	2,608	708	..	21
July	2,583	380	18	27
August	3,056	1,184	21	13
September	3,529	1,088	38	..
	27,585	11,596	108	98

TABLE II—CARS ON ORDER AND UNDELIVERED

(Figures for End of Month)

	Freight cars			Passenger cars		
	Dom.	For.	Total	Dom.	For.	Total
December, 1919	24,816	10,720	35,536	407	110	517
January, 1920	27,282	9,381	36,663	311	103	414
February, 1920	29,706	8,389	38,095	282	103	385
March, 1920	33,061	7,854	41,455	522	80	602
April, 1920	42,869	7,180	50,049	586	88	674
May, 1920	47,761	6,338	54,099	732	110	842
June, 1920	48,171	7,792	55,963	796	97	893
July, 1920	50,275	8,212	58,487	811	88	899
August, 1920	49,442	7,574	57,016	861	75	936
September, 1920	48,114	6,793	54,907	903	75	978

TABLE III—FREIGHT CAR REPAIRS

	Delivered during month	Delivered Jan. 1, to end of month	On order and undelivered at end of month
May	2,296	10,442	20,130
June	2,541	12,983	24,092
July	2,491	15,474	23,541
August	2,818	19,269	27,031
September	3,140	21,260	26,710

Locomotives

THE CHESAPEAKE & OHIO is inquiring for 5 Pacific type locomotives.

THE CHICAGO, TERRE HAUTE & SOUTHEASTERN is inquiring for some 0-8-0 type locomotives.

THE DELAWARE & HUDSON has ordered one locomotive from the American Locomotive Comuany.

THE RICHMOND, FREDERICKSBURG & POTOMAC has ordered 6 locomotives from the American Locomotive Company.

THE RAPIER EXPORT COMPANY, 30 Church street, New York, is in the market for 2 locomotives, new or second-hand, of from 15 to 20 tons weight, capable of hauling 80 to 100 tons over grades of 2½ per cent, for shipment to Mexico.

THE WINSTON-DEAR COMPANY, Hibbing, Minn., has ordered, from the American Locomotive Company, two six-wheel switching locomotives. These locomotives will have 21 in. by 26 in. cylinders and a total weight in working order of 160,000 lb.

Freight Cars

THE NEW YORK, CHICAGO & ST. LOUIS is asking for prices on 500 stock cars.

THE STANDARD OIL COMPANY OF INDIANA is inquiring for 20 steel gondola cars of 50 tons capacity.

SPANISH RAILROADS are asking car builders for prices on 20 refrigerator cars of 30 tons capacity.

THE PENNSYLVANIA RAILROAD is asking prices on 1,000 refrigerator cars and 1,500 box cars, all of 50 tons capacity.

THE DELAWARE, LACKAWANNA & WESTERN is having repairs made to 1,000 box cars at the Berwick shops of the American Car & Foundry Company.

THE NORFOLK & WESTERN is asking prices on specialties for 1,000, 120-ton hopper cars to have six-wheel trucks. The company may build these cars in its shops at Roanoke, Va.

THE UNITED FRUIT COMPANY, Pier 9, North River, New York, reported in the *Railway Age* of October 8, as inquiring for 100 flat cars, has ordered this equipment from the Magor Car Company.

THE CENTRAL OF GEORGIA, reported in the *Railway Age* of September 24 (page 547) as inquiring for 500 40-ton ventilated box cars, 200 50-ton flat bottom cars and 100 40-ton stock cars, has withdrawn these inquiries indefinitely.

THE CAROLINA, CLINCHFIELD & OHIO, reported in the *Railway Age* of October 15, as inquiring for 100, 40-ft. flat cars of 50 tons' capacity, is not in the market for this equipment. The inquiry for these cars was for an industrial located on its lines.

THE ACAR MANUFACTURING CORPORATION, 30 Church street, New York, recently ordered 50 8,000-gal. tank cars from the Pennsylvania Tank Car Company, also 35 10,000-gal. and 65 8,000-gal. tank cars from the American Car & Foundry Company. Deliveries are now being made on these cars.

Passenger Cars

THE PITTSBURGH RAILWAY, Pittsburgh, Pa., are inquiring for 25 sets of motor trucks.

THE CHICAGO & NORTH WESTERN has ordered nine smoking cars from the American Car & Foundry Company.

Iron and Steel

THE CHICAGO, MILWAUKEE & ST. PAUL has ordered 30,000 tons of rails from the United States Steel Corporation.

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 40,000 tons of rails from the United States Steel Corporation.

THE CHICAGO & NORTH WESTERN has ordered miscellaneous material amounting to 114 tons for an ore dock work at Ashland, Wis.

THE CHICAGO, BURLINGTON & QUINCY has ordered girders for a bridge at Rock Falls, Ill., amounting to 124 tons from the American Bridge Company.

THE CHICAGO & ALTON has ordered 121 tons of steel from the American Bridge Company to complete two additional stories in its new north freight and office building at Chicago.

MEXICAN OIL INDUSTRY.—According to an official report on the oil industry of Mexico, there are at the present time over 770 miles of pipe line in use. These lines have a daily capacity for transporting 382,016 cubic metres of oil, or more than two million of barrels. There are now in the petroleum zones a total of 1,103 wells, of which the number in production is 305. In this connection Mexico has the largest well in the world, the Cerro Azul No. 7, which produces 370,000 barrels daily. There exist about 900 tanks used for the storage of the petroleum destined for immediate exportation.

Supply Trade News

F. M. Whyte, vice-president, with office at New York, of the **Hutchins Car Roofing Company,** Detroit, Mich., has resigned, effective November 1.

The Colburn Machine Tool Company has removed its entire business from Franklin, Pa., to its new plant at 1038 Ivanhoe road, Cleveland, Ohio.

Clarence C. Brinley has been appointed eastern manager of the trolley carrier department of the **Conveyors' Corporation of America,** Chicago. Mr. Brinley's headquarters are at 110 West Fortieth street, New York.

D. J. Crowley has been appointed Michigan sales agent of the **Tacony Steel Company,** Philadelphia, Pa. Mr. Crowley's office is in the Dime Bank Building, Detroit, Mich. **D. B. Carson** has been appointed Cleveland district sales manager.

G. E. Anderson, formerly assistant eastern sales manager of the **Duff Manufacturing Company,** Pittsburgh, Pa., has been promoted to southwestern sales manager in charge of its new branch office in the Railway Exchange building, St. Louis, Mo.

C. C. Fredericks, whose appointment as general manager of the **St. Louis Pump & Equipment Company,** St. Louis, Mo., was announced in the *Railway Age* of October 22 (page 725), was born on August 18, 1882, at Richmond, Va. Mr. Fredericks was educated at Valparaiso University, Valparaiso, Ind. Practically his entire business experience has been with oil and liquid handling equipment. He entered the employ of S. F. Bowser & Co., Ft. Wayne, Ind., in 1912, and served this company in various capacities from salesman to executive assistant. For the four years preceding April, 1920, he had charge of the railway business of S. F. Bowser & Co.



C. C. Fredericks

Joseph Markham, formerly railway sales representative of the E. I. Dupont de Nemours & Co., Inc., has been appointed sales agent of the Pressed Steel Car Company and the Western Steel Car & Foundry Company, with office in the Peoples Gas building, Chicago.

Obituary

Elisha S. Williams, vice-president of the **United States Rubber Company,** 1790 Broadway, New York, died on October 8. He was born in 1873 at Malden, Mass., and after leaving school entered the employ of the Revere Rubber Company. He later became president of this company, and in January, 1910, when the Revere Rubber Company was bought by the United States Rubber Company, Mr. Williams was elected president of the Rubber Goods Manufacturing Company, which at that time, through its subsidiaries, controlled all the mechanical and tire business of the United States Rubber System. In 1915, Mr. Williams was elected vice-president of the United States Rubber Company, in charge of the mechanical goods business. He was also a director of the company, a member of the operating council, and president of several subsidiary companies.

Railway Construction

CANADIAN PACIFIC.—This company is constructing the following branch lines: From Rosetown, Sask., southwest a distance of 45 miles; from Milden, Sask., southwest a distance of 59 miles; from Wymark, Sask., to Archive, a distance of 25 miles; a line 60 miles long extending east from Consul, Sask.; and a section of line extending 18 miles west from Altawan, Sask. The company also expects to begin construction this fall on a line extending a distance of 50 miles northeast from Lanigan, Sask.; a 12-mile line extending north from Russell, Man.; 25 miles of line south from Leider, Sask.; and a line from Acme, Alta., to Empress, Alta., a distance of 25 miles.

CHICAGO, INDIANAPOLIS AND LOUISVILLE.—This company contemplates the construction of car repair shops at Lafayette, Ind.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—This company is accepting bids for the construction of a car repair shop at Bloomington, Ind., to cost approximately $35,000.

CHICAGO & NORTH WESTERN.—This company has awarded a contract to John Marsh, Chicago, for the construction of an extension to its Heineman branch line 2½ miles in length, tapping a lumber region near Antigo, Wis. The work will cost approximately $75,000.

CORNWALL.—This company has awarded a contract to the Austin Company, Cleveland, Ohio, for the construction of a machine and locomotive erecting shop at Lebanon, Pa. The new building will be of reinforced concrete, brick and steel construction. The dimensions will be 140 ft. by 180 ft. and 50 ft. high. The cost is estimated at approximately $160,000.

FT. DODGE, DES MOINES & SOUTHERN.—This company has awarded contracts to W. J. Bitterell, Webster City, Iowa, and the American Bridge Company for work in connection with the rebuilding of the frame trestle approach to a bridge crossing the Des Moines river, near Ft. Dodge, Iowa.

KANSAS CITY, MEXICO & ORIENT.—This company contemplates the extension of its line from San Angelo, Tex., to Del Rio. The construction will be financed by the company, independent of loans from the government.

MICHIGAN CENTRAL.—This company is constructing a frame passenger station at Cheboygan, Mich., to replace the station destroyed by fire last year. The company is also installing a transfer table at its shop at Jackson Junction, Mich., at a cost of approximately $30,000, and is rebuilding a coaling station at Jackson Junction which was recently destroyed by fire.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—This company has awarded a contract to the Consolidated Construction & Manufacturing Company, Withee, Wis., for the construction of a passenger and freight station at Phillips, Wis. The building will be a single story structure, 24 ft. by 150 ft., of reinforced concrete, brick and tile, and will cost approximately $35,000.

NEW YORK CENTRAL.—This company is accepting bids for the construction of a subway under its tracks at Brown street, Rochester, N. Y., to cost approximately $500,000. The company has recently awarded a contract to the Peckham Construction Company, Buffalo, N. Y., for the railway's share in the construction of a viaduct over its tracks at Herkimer, N. Y., which will cost the company approximately $46,000.

OCEAN SHORE.—The Railroad Commission of California has authorized this company to discontinue service permanently on its northern division, extending from San Francisco, Cal., to Tunitas, and to dismantle and dispose of this property. The application of the road for permission to discontinue service on its southern division will be taken up by the commission at a later hearing. Construction of the Ocean Shore was begun in 1905, and in 1911 the original company, the Ocean Shore Railway, was acquired through a foreclosure sale by the Ocean Shore Railroad Company.

The road is approximately 54 miles in length, and has been operated at a loss, continuously since 1912, occasioning the assessment of its stockholders on seven occasions at the rate of $29 a share, raising in all $1,107,164, a sum, however, which proved insufficient to meet the needs of the road.

Pacific Great Eastern.—This company has awarded a contract to the Northern Construction Company, Vancouver, B. C., for the construction of a line from Deep Creek, B. C., to Prince George, a distance of 136 miles. The project, which will cost $10,000,000, involves the construction of 36 timber trestles and one viaduct 600 ft. in length. The company has recently placed a line in operation from Squamish, B. C., to Deep Creek, a distance of 294 miles.

Pennsylvania Railroad.—The Interstate Commerce Commission has approved a loan to this company of $6,780,000 from the revolving fund for additions and betterments. The company's application shows the following as the principal items of the proposed expenditure:

New pier grain elevator, Baltimore	$740,000
New additional enginehouse facilities at Wilmington	500,000
New first and fourth tracks, Maryland division	632,000
Grade revision Oakville to Shippensburg	123,600
Raising bridge at Pittsburgh	187,802
Enginehouse facilities at Canton	699,790
Yard facilities at Canton	108,784
Third and fourth tracks at Canton	128,000
Third and fourth tracks Maximo to Canton	238,337
Polk street and Taylor street viaduct, Chicago	150,000
One Hundred and Twelfth street viaduct, Chicago	208,500
Fort Wayne shop improvements	350,000
Chicago Junction yard and enginehouse facilities	810,896
Wellsville shop improvements	122,112
Cleveland track elevation work	130,000
Grade revision Kenwood to Rochester	400,000

Richmond, Fredericksburg & Potomac.—This company has awarded a contract for the construction of a freight warehouse at Richmond, Va., to the J. T. Wilson Co., of Richmond. The new building will be 71 ft. by 253 ft. with a concrete foundation, brick walls and a steel truss roof and will cost approximately $100,000.

St. Louis-San Francisco.—This company has awarded a contract to the William McDonald Construction Company, St. Louis, Mo., for the construction of a roundhouse and machine shop at Dublin, Tex. The Frisco has also awarded contracts to the Hedges-Weeks Construction Company, Springfield, Mo., for the setting of a new turntable, and the construction of cinder conveyors and materials racks at Dublin.

Texas, Oklahoma & Eastern.—This company is constructing a line from Broken Bow, Okla., to De Queen, Ark., a distance of 25 miles, at a cost of approximately $600,000, which will permit the company to operate its line from Valliant, Okla., to Dierks, Ark., a distance of 76 miles, by January 15, 1921.

The Canadian National.—This company is constructing a station at Marchand, Man., to replace a structure destroyed by fire.

Union Pacific.—This company is constructing 1½ miles of additional yard tracks in connection with the extension of its terminal facilities at Shoshone, Idaho.

Western Pacific.—This company has awarded a contract to Twohey Brothers, San Francisco, Cal., for the construction of a line from Bidwell, 1½ miles, to Bidwell Bar, Cal. The building of the line will involve the excavation of 32,000 cu. yd. of solid rock.

Coal Output Per Miner.—The average production for each underground worker employed in the coal mines of the United States during 1918 were 1,134 short tons, according to statistics published by the United States Bureau of Mines. The closest competitor as regards output per miner is New South Wales, where each underground worker in 1918 produced 814 tons. British Columbia ranked third, with 790 tons, and Nova Scotia was fourth, with 718 tons. The smallest individual output for recent years was that of Japan in 1917, when an average of 155 tons was mined by the underground employees.

Railway Financial News

Alabama Great Southern.—Robert Mallory, Jr., of Spencer Trask & Co., has been elected a director.

Akron, Canton & Youngstown.—This company's application to the Interstate Commerce Commission for authority to resell or pledge as collateral for short term loans $382,700 of first mortgage, 6 per cent gold bonds, has been assigned for a hearing at Washington on October 28.

Atchison, Topeka & Santa Fe.—This company has been authorized by the Interstate Commerce Commission to issue $15,486 of California-Arizona lines first and refunding mortgage bonds for the purpose of effecting the exchange of bonds payable in sterling for bonds payable in dollars.

Baltimore & Ohio.—This company has applied to the Interstate Commerce Commission for authority to nominally issue $2,744,000 of its refunding and general mortgage six per cent Series B bonds maturing December 1, 1995, in reimbursement of expenditures made on property subject to the mortgage, and also to issue bonds of various subsidiary companies to be pledged as further security under the refunding and general mortgage.

Chicago, Indianapolis & Louisville.—The Interstate Commerce Commission has authorized this company to issue as of July 21, 1920, three promissory notes amounting to $87,000 and to assume payment of nine promissory notes amounting to $18,000.

Chicago, St. Paul, Minneapolis & Omaha.—This company has been authorized by the Interstate Commerce Commission to sell at par $770,000 of Series A, 1917, equipment trust certificates and to assume the obligation of paying the principal and interest of $950,000 Series B, 1920, equipment trust certificates, to be sold at 97 per cent of par or better.

Gulf, Mobile & Northern.—This company has applied to the Interstate Commerce Commission for authority to issue $4,000,000 of an authorized issue of first mortgage gold bonds, of which $2,806,000 is to be used to secure loans to replace bank loans now outstanding, also a loan from the revolving fund of $515,000 and $480,000 to be funded by the director general of railroads, and the remainder $1,194,000 is to be retained in the treasury to be used from time to time.

Illinois Central.—The Interstate Commerce Commission has authorized this company to execute an equipment trust and to obligate itself to pay $8,107,000 of 15-year equipment trust gold certificates and attached dividend warrants for the purchase of $13,515,918 of equipment. Kuhn, Loeb & Co., of New York, have agreed to purchase the entire issue at 97.36 per cent of par. No commission will be paid and no other expense will be incurred. The balance of the cost of the equipment, $4,440,000, will be paid from a loan for that purpose from the United States.

Maine Central.—This company has been authorized by the Interstate Commerce Commission to issue $3,619,000 of first and refunding mortgage 6 per cent gold bonds maturing December 1, 1935, to pledge $2,067,000 of the bonds with the Secretary of the Treasury as security for loans from the United States, to pledge $1,152,000 of the bonds as security for a loan for the financing in part of certain acquisitions of equipment, additions and betterments, and to pledge $400,000 of the bonds as security for a loan to redeem certain bonds of the Knox & Lincoln Railway maturing on February 1, 1921.

Midland & Northwestern.—This road presented a petition before United States District Judge W. H. Smith at El Paso, Tex., on October 16, asking that the receiver for the road be authorized by the court to issue certificates in indebtedness amounting to $100,000 for rehabilitation of the road. The Midland & Northwestern is a line 65 miles long running from the Texas & Pacific at Midland, Tex., to Seminole. The road was completed in 1918 and was operated under federal control as a feeder to the Texas & Pacific. It was placed in the hands of the receiver on March 1, 1920, and on July 20 ceased to

operate. In the testimony before Judge Smith a number of ranchers and business men of the district served by this road testified. The petition was taken under advisement. However, Judge Smith announced that he would name A. W. Norcop master in chancery to handle the affairs of the road in connection with the receiver.

NEW YORK, NEW HAVEN & HARTFORD.—This company has been authorized by the Interstate Commerce Commission to issue $2,000,000 of 7 per cent promissory notes and $8,130,000 of demand promissory notes and to issue and pledge $3,500,000 of equipment trust notes.

NORTHERN PACIFIC.—The Interstate Commerce Commission has approved the making of a loan to this company of $6,000,000 to aid the company in providing additional motive power, freight cars and additions and betterments to equipment, way and structures at a total estimated cost of $15,000,000. The company is to finance $10,000,000 to meet the government loan.

OCEAN SHORE.—This company has filed with the Interstate Commerce Commission an application for authority to abandon the operation of its line from San Francisco to Tunitas Glen and from Santa Cruz to Swanton, Cal. The application states that since the organization of the company in 1911 the business offered has not produced sufficient revenue to pay operating expenses and the stockholders have been assessed seven times. The growth of the automobile trucking business has seriously and adversely affected its freight revenues and the general increase in the use of automobiles has affected its passenger revenues, and both factors may be expected to retard any further increase in its business. The employees "with practical unanimity left its employ," thereby forcing the company to cease operations, on its refusal to raise wages to the scale awarded for the large railroads by the Railroad Labor Board. In the opinion of the company no increase in rates could be made which would result in larger revenues. The Railroad Commission of California has authorized the abandonment of the line to Tunitas Glen and an application for the remainder of the line is still pending before it.

PENNSYLVANIA RAILROAD.—The Interstate Commerce Commission on October 22 approved a loan of $6,780,000 to this company for making additions and betterments to its roadway and structures.

POTATO CREEK.—This company has filed an application with the Interstate Commerce Commission for authority to abandon that portion of its line extending from Keating Summit to its connection with the Pennsylvania at Liberty, Pa., 2½ miles, and on completion of a branch from Keystone 2 miles north to a junction with the Pennsylvania at Hamlin Siding, to abandon its line from Liberty to Norwich, 12 miles.

COAST ARTILLERY TRAIN IN MASSACHUSETTS.—The Forty-second Regiment, Railroad Artillery, of the Coast Artillery Corps, the only complete railroad artillery unit maintained by the United States army, passed through Providence yesterday and occupied nearly a mile of track while supplies were taken aboard and the last details of assembling the unique train were carried out. Forty-three cars were included in the travelling coast defence outfit, and carried personnel, armament and commissary of the regiment, which is en route from summer manœuvres on the New England coast to Railroad Artillery headquarters, Camp Eustis, Va., for the winter. Ten additional cars were to be added at New London. Because of State regulations in New York preventing the conveying of explosives over bridges and through tunnels, the train will be temporarily disbanded at New York City, the ammunition and artillery cars crossing the river on flats to the Jersey City terminals. The 42nd regiment has just completed its coast defence manœuvres at Rockland and Provincetown, Mass., including an extensive target practice which has been in progress since early in August. The regiment is quartered, fed and maintained entirely aboard the cars at all times. The train includes hospital cars, for caring for sick or injured; commissary cars, for the daily meals; sleeping and quarters cars, supply cars, kitchen cars, gun flats, ammunition coaches, machine shop cars and cars carrying full equipment for laying new railroads on short notice. Neither here nor in France, where railroad siege guns were an innovation, has a regiment been furnished in full detail before.—*Providence Journal.*

Railway Officers

Executive

Lee W. Spartlen has been appointed assistant to the president of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, effective November 1.

R. M. Dozier, assistant freight traffic manager of the Missouri Pacific, with headquarters at Chicago, has been elected president of the Union Railway, with headquarters at Memphis, Tenn., effective October 1.

Financial, Legal and Accounting

W. V. Wilson, assistant comptroller of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has been appointed comptroller, succeeding G. J. Bunting, resigned, effective November 1.

William W. Smithey, whose appointment as auditor of the Houston & Brazos Valley was announced in the *Railway Age* of October 1 (page 593), was born at Ft. Worth, Tex., on January 20, 1880, and entered railroad service in September, 1900, with the Ft. Worth & Rio Grande. From January, 1907, to September, 1913, he served as a clerk and division accountant with the Gulf, Colorado & Santa Fe, and as traveling accountant with the Missouri, Kansas & Texas. On the latter date he resigned from railroad service to engage in business for himself, but in September, 1915, reentered railroad service in the office of the superintendent of the Southern Pacific, at Ogden, Utah. In January, 1916, he became traveling accountant of the Oregon Short Line, with headquarters at Salt Lake City, Utah, a position which he held until August, 1918, when he was appointed traveling accountant on the International & Great Northern, with headquarters at Houston, Tex. At the time of his recent appointment Mr. Smithey was special accountant for the Gulf Coast Lines, with headquarters at Houston.

Operating

C. E. Leverich, superintendent of the Denver & Rio Grande at Grand Junction, Colo., has been appointed superintendent at Gunnison, Colo., succeeding D. E. Wilcox, assigned to other duties. **J. A. MacKinnon** has been appointed superintendent at Grand Junction, succeeding Mr. Leverich. These changes became effective October 15.

A. T. Dice, Jr., has been appointed assistant superintendent of the Philadelphia & Reading, with headquarters at Reading, Pa. **N. W. Jones** has been appointed assistant superintendent, with headquarters at Philadelphia. **N. T. Heisey,** trainmaster at Rutherford, Pa., has been appointed trainmaster with headquarters at Harrisburg. **B. H. Bowman** has been appointed assistant trainmaster at Rutherford, Pa. **W. D. Kinzie,** division engineer at Reading, has been appointed assistant superintendent at Tamaqua, Pa. These appointments are effective October 20.

Traffic

C. E. Thomas has been appointed commercial agent of the Midland Valley, with headquarters at Wichita, Kan.

W. D. Clifton has been appointed general agent of the freight department of the Union Pacific, with headquarters at Omaha, Neb.

D. M. Davis has been appointed general agent of the Chicago & North Western, with headquarters at Philadelphia, Pa., effective October 1.

F. F. Rice has been appointed traffic manager of the Cairo, Truman & Southern, with headquarters at St. Louis, Mo., succeeding **H. C. Rich,** who has resigned.

A. E. **Ladwig** has been appointed general agent of the Chicago & North Western, with headquarters at Detroit, Mich., succeeding F. G. Fitzpatrick, effective October 1.

C. C. Divine, traveling freight agent on the Chesapeake & Ohio, with headquarters at Columbus, Ohio, has been appointed commercial agent, with headquarters at Cleveland, Ohio.

R. L. Fairburn, general passenger agent of the Canadian National at Toronto, Ontario, has been appointed assistant passenger traffic manager, Eastern Lines, with headquarters at Toronto.

H. L. Purdy, division passenger agent of the Wabash, with headquarters at Chicago, has resigned to become general manager of the T. & S. Tours Company, Chicago, effective November 1.

A. J. Bessolo has been appointed district freight agent of the Gulf, Mobile & Northern, and **W. R. Tice** has been appointed commercial agent, with headquarters at Detroit, Mich., effective October 1.

S. D. Lutz, vice-president in charge of traffic of the Chicago & Alton, with headquarters at Chicago, has had his jurisdiction extended over the traffic department of the Peoria Railroad Terminal Company, effective September 26, with the same headquarters.

J. J. Devereux, traveling freight and passenger agent on the Atchison, Topeka & Santa Fe, with headquarters at Salt Lake City, Utah, has been promoted to general agent, with the same headquarters, effective October 1. Mr. Devereux succeeds **E. R. Leis,** who has resigned.

J. Noble Snider has been appointed coal freight agent of the New York Central, with headquarters at New York, effective October 16. Mr. Snider was born in Nyack, N. Y. He first entered railway service in 1904 as a stenographer and clerk in the coal traffic department of the New York Central. He occupied in turn various clerical positions, and in 1911 became chief clerk of the department. In March, 1918, he was appointed acting coal traffic manager in the absence of G. N. Snider, who was serving in Washington with the Fuel Administration. In August, 1918, he entered the army through the Infantry Officers' Training School at Camp Lee, Va. In January, 1919, he returned to the coal traffic department of the New York Central, where he remained until April of the same year, when he resigned to become sales representative for New York of Maderia, Hill & Co. He remained in this position until his recent appointment as coal traffic agent.

Mechanical

Charles A. Nelson, formerly senior mechanical engineer, Bureau of Valuation, Interstate Commerce Commission, will return to the mechanical engineer's office of the Delaware & Hudson, at Watervliet, N. Y., on November 1.

S. J. Kelley has been appointed master mechanic of the Erie, with headquarters at Hornell, N. Y. This appointment is the result of the division of the territory of C. H. Norton, who remains master mechanic of the Susquehanna and Tioga divisions, but relinquishes the Allegheny and Bradford divisions to Mr. Kelley. The change is effective October 21.

J. Gutteridge, foreman of the car department of the Kansas City Southern at Pittsburg, Kan., has been appointed general foreman, car department, with headquarters at Pittsburg, with jurisdiction over the entire line, effective October 16. **C. E. Oakes** has been appointed shop superintendent at Pittsburg, succeeding Wm. Turley, resigned, effective October 1.

C. J. Quantic, master mechanic of the Canadian National at Port Mann, B. C., has been transferred to Vancouver and given jurisdiction over all lines west of and not including Edmonton, Alta. **A. H. Mahan,** district master mechanic of the Grand Trunk Pacific at Edson, Alta., has been appointed assistant master mechanic of the Canadian National and the Grand Truck Pacific, with the same headquarters. Mr. Mahan will have jurisdiction over the lines from Edmonton, Alta., to McBride, B. C., and from Edson, Alta., to Mountain Park, Alta. **A. Walts,** district master mechanic of the Grand Trunk Pacific, with headquarters at Smithers, B. C., has been appointed assistant master mechanic of the Canadian National and the Grand Trunk Pacific, with the same headquarters. His jurisdiction will include all lines from McBride, B. C., to Prince Rupert. These appointments are effective October 19.

Engineering, Maintenance of Way and Signaling

W. E. Rivers has been appointed division engineer on the Canadian National, with headquarters at Kamloops Junction, B. C.

R. C. Bardwell, chemist for the Missouri Pacific at St. Louis, Mo., has been appointed engineer, water service, with the same headquarters, effective October 1.

F. D. Nauman, roadmaster on the Oregon Short Line, with headquarters at Cache Junction, Utah, has been promoted to division engineer, with headquarters at Pocatello, Idaho, effective October 18, succeeding **William Travers,** deceased.

J. S. Goodman, division engineer of the Philadelphia & Reading at Tamaqua, Pa., has been appointed division engineer at Reading, Pa., succeeding W. D. Kinzie. **N. W. H. Schafer,** division engineer at Harrisburg, Pa., has been appointed division engineer at Tamaqua, succeeding Mr. Goodman. **W. R. Dunn,** supervisor at Philadelphia, has been appointed division engineer at Harrisburg, succeeding Mr. Schafer. These appointments are effective October 20.

Obituary

George P. Biles, freight traffic manager of the Southern, Lines West, with headquarters at Cincinnati, Ohio, died October 7 at Hollywood, Cal. Mr. Biles was born in England on July 18, 1857, and entered railroad service in 1872 as a ticket clerk at the Victoria station of the London, Brighton & South Coast at London, England. In 1877, he became a clerk in the parcels department of the same road at its London Bridge station, and in October, 1883, entered American railroad service at Chattanooga, Tenn., as a rate clerk in the general freight office of the Alabama Great Southern, a subsidiary of the Southern. In January, 1884, he became a rate clerk in the general freight office of the Queen & Crescent, with headquarters at Cincinnati, Ohio, and served successively with that road as chief rate clerk and assistant general freight agent until 1895, maintaining his headquarters at Cincinnati throughout this period. On October 15, 1895, he was appointed general freight agent of the Cincinnati, New Orleans & Texas Pacific, also a part of the Southern system, with headquarters at Cincinnati, and in January, 1907, he was made freight traffic manager of this road, with additional jurisdiction over the Alabama Great Southern. In January, 1917, Mr. Biles was appointed freight traffic manager of the Southern, the position he held at the time of his death.



G. P. Biles

EDITORIAL
Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

The National Election and the Railways

THE RESULT of the national election cannot fail to inspire increased confidence in the future of the railway industry and that of the railway equipment and supply industry whose prosperity depends upon that of the railways. Both the Republican and the Democratic platforms declared in favor of a continuance of private ownership and management of railroads. Before Governor Cox was nominated he had indicated in public utterances that he was opposed to public ownership and in favor of fair regulation and he said nothing during his campaign which indicated that he had changed his attitude. But some of his most active supporters made statements and expressed views of a different character. W. G. McAdoo delivered several addresses attacking private operation, defending government operation and arguing that the railway problem never would be solved except by unified operation, presumably of the same kind which prevailed when he was director general. He bitterly denounced the Esch-Cummins Act restoring the railways to private operation and the recent advances in rates granted by the Interstate Commerce Commission. The heads of most of the labor organizations supported Mr. Cox and joined Mr. McAdoo in denouncing the Esch-Cummins Act. Senator Harding began years ago, even before he was elected to the Senate, to advocate fairer and more constructive regulation of railroads. Both before and after he was nominated for President he repeatedly expressed himself as strongly opposed to government ownership. He advocated the passage of the Esch-Cummins Act and during his campaign, in an address at Des Moines, Iowa, described it as "the most progressive measure and the most constructive act of federal legislation in 10 years." He and his party will go into power unreservedly opposed to government ownership and committed to the support of a policy of constructive railroad regulation. The President cannot, if he would, avoid exerting a strong influence on railroad regulation, for he appoints the members of the Interstate Commerce Commission. Nobody who knows Senator Harding will indulge in the belief that he will favor a policy which will give to the railways any advantages to which they are not entitled, but on the other hand his past career and his well-known views give confidence that if the railways are efficiently and honestly managed his attitude will be one of friendliness and helpfulness toward them during the period of rehabilitation and needed expansion that they are now entering.

While the Esch-Cummins Act deserves the praise Senator Harding has given it, the mere adoption of it did not solve the railroad problem. Neither did the advance in rates recently granted by the Interstate Commerce Commission. The earnings of the railways in September under these rates are not wholly encouraging, and it is by no means certain that further remedial measures will not have to be adopted by Congress, the Commission and the federal administration before the railroad problem will be solved. The meaning of the election is so clear, however, in so far as it bears upon the railroad situation, that the railroad industry and the railway supply industry can go forward with reasonable assurance of a period during which the attitude and policies of the federal government will be more friendly and helpful than they have been for many years. Railway traffic and earnings are now showing a tendency to decline, but the outcome of the national election and other conditions indicate that the period of declining business probably will not last long and that the railway and railway supply industries will soon enjoy with the other industries of the country a new era of prosperity.

Give Credit Where It Is Due

During the past few weeks, the railroads have handled an increased volume of traffic in spite of the inadequacy of their facilities and have at the same time reduced the car shortage. While railroad officers have every reason to be proud of the part they have played in setting this record, they should not overlook the fact that employees in the operating department are entitled to a share of the glory. The whole-hearted co-operation of the rank and file is essential if the maximum capacity of the transportation machine is to be realized. There are in most cases no pecuniary incentives for men to put forth extra effort to increase their efficiency and when, by their co-operation, they enable the management to set a new record, they deserve unstinted praise. Despite the barrier that labor organizations have tried to erect between the officers and the men, a word of official appreciation is seldom unwelcome. Statistics are used too often merely for analyzing operation though they have great potential possibilities for raising the morale of the organization, if railroad officers would learn to use them as a means for appealing to the universal American instinct which regards a record only as a mark to be excelled.

Graft in Ticket Offices

The dismissal of seven ticket sellers at the Pennsylvania Station in New York on October 31 for accepting gratuities from passengers for favoring them in the matter of space in Pullman cars, has attracted no small amount of attention. It has probably attracted considerably more attention than is justified, for we cannot believe that any considerable amount of this wrongdoing has been going on, taking the country as a whole. Nevertheless, there is no doubt that

many railway patrons really do have the idea that it is easy to get desirable accommodations if one goes at the matter in the "proper" way. The fact that these men have been discharged must therefore be regarded as of salutary influence. Ticket selling is one of the most difficult functions which a railway has to perform and in ticket selling more friends can be made by correct methods and more enemies by incorrect methods than in almost any other way. This indication that the railways will not tolerate unfair dealing in the relations of their employees with the public will not only serve as a warning to misguided employees and misguided passengers but it will also be regarded with favor by the public in general.

Winter Operation and Car Movement

To increase the average movement of cars to the extent that many roads have done recently is a performance of no mean magnitude, even during the exceptionally favorable weather of the past few weeks. To still further increase this movement or even to hold it at its present high level during the next few months will be an even greater achievement. The interruptions to service and the general slowing down of operations with the arrival of cold weather are known to all railway men. The snowfall in the northwest and the storms which have swept over the central states during the last few days, bring one to a realization of the fact that winter is here and that the railways must be prepared to meet its ravages. At the same time the demand for the prompt and uninterrupted movement of coal, grain and other traffic is still insistent and will become more so with the arrival of cold weather. It is therefore a vital necessity that operating officers take all reasonable precautions to avoid interruptions to service owing to adverse climatic conditions and to keep their forces keyed up to the present high pitch in the movement of cars. It is the easy thing to attribute delays to traffic to adverse weather conditions. It is the difficult but nevertheless necessary duty of every operating officer to realize his responsibility to his company and to the public to maintain uninterrupted service, bearing in mind that the goal of an average of 30 miles per car per day set by the railway executives in July was not fixed by them as a fair weather mark but as an average for the entire year, winter as well as summer.

The Present Tendency of Prices

One characteristic of all periods of reducing prices is an increasing spread between the prices of the basic materials and those of the finished products. Thus, the cost of a pair of shoes at the present time does not reflect the fact that one grade of hides has dropped from 51 cents to 24 cents in the past year. This tendency is now to be observed also in the railway supply market. With ingot copper at 15 cents, we do not find that the finished copper articles are quoted much below the prices in effect when ingots cost 24 cents a pound. Para rubber has dropped from 53 cents to 23 cents in the last year and cotton from 38 cents to about 23 cents, yet air hose, for instance, has not reduced in like proportion. Beyond doubt a permanent reduction in the price of the raw material must be reflected eventually in that of the finished product, but there are several basic reasons why there is a lag in the prices of the manufactured article. The manufacturer is governed by the cost of the material actually used in the product he sells, not in the quotation of the material on a particular day. Moreover, he has no way of telling when the lowering tendency will be supplanted by an upward trend. In other words, he is bound by the tendency of prices over a period of time instead of the influence of the passing moment. This is a period of readjustment and any tendency toward drastic changes would easily produce disastrous results. While the reductions in the prices of basic materials which have occurred probably forecast a downward trend in the future in the prices of finished products, the present condition of the railroads makes it inadvisable to withhold large purchases of supplies while awaiting such reductions in prices.

Progress in the Safety of Travel

November 5 ought to mark a definite step in the progress of the railroads of America toward their goal of complete safety to every passenger. This is the date appointed for the first conference between the railroads and the government on what shall be done with Section 26 of the Transportation Act, 1920. The section in question empowers the Interstate Commerce Commission to enforce by law well-known measures of safety, which are already approved by progressive railroad managers and engineers, but which have been neglected because of the difficulties attending their accomplishment. The language of the Act is not so specific as that which we are here using; but our words, it will be agreed, are appropriate, for, in line with what has been done by the Railroad Administration, and by the Commission itself, the present purpose of the Commission is, without doubt, (a) the promotion of the use of the space interval and (b) the perfection, for general use, of some apparatus which shall be an antidote for absentmindedness on the part of locomotive runners. The extension of the use of the space-interval principle requires no new ideas; only money. And the same is substantially true of the other problem; the cost is the crucial question; ideas are plentiful. It will take time, in this field, to develop the best and get rid of the second best, but the inventors and the government and railroad committees have done a great amount of useful preliminary work, and real progress may now be looked for. The New York Public Service Commission, Second District, is already working on the automatic train-stop problem. It is interesting also to note that the British Government has just appointed a committee on automatic train control, with Colonel J. W. Pringle, the veteran inspector, as chairman. England, like America, has long been considering automatic stops, but with the same universal hesitancy. Jealousy between railroads is said to have been one of the causes of delay over there; even jealousies within individual railroad official staffs. How true this is we do not know. It is a satisfaction to feel that nothing of that kind has made trouble in this country. When we can get over the feeling that we are too poor to indulge in refinements, we shall begin to move.

Electrification and Interchangeability

One of the principal arguments against the adoption of electric traction in this country has been the lack of interchangeability due to the different types of equipment used on the present electrified lines. An answer to this question for the English railroads has been recommended by the Advisory Committee on Electrification of Railways, appointed some time ago by the British Minister of Transport. An abstract of the first preliminary report of this committee appears elsewhere in this issue. Its salient feature is a recommendation in favor of the use of direct current power with either overhead or third rail collection. American engineers who have discussed the problem of electrification realize that this question must soon be decided for the railroads in this country. The time will come when the number of systems of electrification must be reduced to a minimum. However, we must realize that railroading in the United States is a

problem with greater ramifications than in England, and to decide on a system before those in use have been thoroughly tried out, would not be wise. In England the electrifications have been mainly of the suburban type using multiple unit equipment and with one exception for passenger service. The English railway authorities will be commended for their forehandedness, but their decision should not be given too much weight in this country because of the different conditions involved. It may prove desirable to adopt more than one system in this country. The number of electrification systems and different types of equipment will eventually have to be reduced to a minimum but there is still work to be done in the way of development before final decision can be made.

Equipment Orders in October

There were reported in the Equipment and Supplies column in the issues of the *Railway Age* in October orders for 81 locomotives, 4,888 freight cars and 9 passenger cars for Class I roads. The detailed figures for October and the cumulative figures for the first ten months will be found in the Equipment and Supplies column in this week's issue. It will be noted that although the total freight cars ordered reported in the issues in October, namely—4,888—was by no means a large figure, it was, nevertheless, sufficiently large to exceed the totals of each of the nine preceding months with three exceptions—February, April and May. Despite the small number of freight cars represented in the October orders, they were within 1,000 of being equal to the orders reported in July, August and September. The locomotive orders placed in October by Class I roads totaled 81, which made October one of the low months of the year. The passenger car orders were negligible, orders for nine only being reported. The cumulative figures for the ten months show that thus far this year orders have been placed for 45,142 freight cars, 1,484 locomotives and 823 passenger cars for Class I roads. It has been noted in these columns on a number of occasions that the equipment orders for 1920 are likely to reach only a rather low level. The October figures show no reason for changing this supposition. It was brought out at the meeting of the Association of Railway Executives in New York on Friday last that 135,000 freight cars had been retired from service since the termination of federal control and that the number of freight cars now in actual use is less than during federal control. The figures on orders for this year show to how small an extent this handicap is being overcome. They emphasize how important is the program of the Association of Railway Executives for improving freight car service, but they also indicate that plans must be formulated shortly for taking care of the equipment requirements so that the efficiency which is sought may be properly retained in the future.

The Heat Treating Equation

It sometimes happens in railway shop practice that a certain cutting tool does extraordinarily good work. Heavy cuts can be taken at high speed and the tool lasts a long time. With an accurate knowledge of conditions while heat treating, there is no reason why this tool should not be duplicated and all shop tools, in fact, brought up to the same high standard with a resultant increase in shop output. The possibilities in speeding up locomotive and car repair work make this subject of present interest and importance to mechanical department officers. Three vital factors enter into the manufacture of efficient shop tools: namely, quality of steel, tool design and method of heat treating. By maintaining the first two factors constant and varying the third, it is possible to arrive at a method of heat treatment that gives the most satisfactory results. Tool breakage can be practically eliminated and the maximum cutting efficiently secured. The heat treating of tools in railway shops as in other machine shops assumes the form of an equation: Cost of steel + labor in machining + overhead + poor heat treatment = scrap steel. In the case of plain carbon steel, the real loss is the cost of machining plus the overhead charges, but with tools made of high speed steel worth three or four dollars a pound, the cost of material wasted represents a larger loss. Probably the greatest loss of all is due to equipment delayed in shops indirectly caused by soft or broken tools. With the proper furnace equipment, including pyrometers and correct methods of heat treating, it is possible to produce efficient cutting tools. In this case the heat treating equation may be restated: Cost of steel + labor in machining + overhead + proper heat treatment = tools of maximum efficiency. From a negative point of view, this means that there is no loss in material, labor and overhead charges due to spoiled tools. From a positive point of view, it means increased production and shop output with a larger number of locomotives and cars available for service when most needed.

Checking Up Locomotive Efficiency

Locomotive efficiency is a subject that receives a great deal of attention in the abstract. Methods of increasing capacity and decreasing fuel consumption are discussed at length and railway officers are always alert to take advantage of new devices that promise improvement. Without detracting in the least from the importance of keeping abreast of every new development, it seems pertinent to inquire whether the average railroad gives enough attention to the matter of securing the best results from existing equipment. Locomotive design is not an exact science, and the few roads that have adequate facilities for testing their motive power usually find that some minor changes from the original design are absolutely necessary to secure the best results. In some cases, a new design, though prepared with the utmost care, has proved so uneconomical that the railroad after testing a sample engine has never built another like it. The deficiencies can only be determined by trial, preferably on a test plant, or in road service with a dynamometer car. Are the railroads getting the full benefit of such tests? The Pennsylvania is the only road in this country that has a test plant. The one at the University of Illinois is available to any railroad but has been used for only two series of tests. The roads that are using dynamometer cars consistently to determine what service is actually being obtained from locomotives could be counted on the fingers of one hand. No better evidence of the loss that railroads are undoubtedly experiencing if they are not using dynamometer cars could be offered than the results which one railroad obtained when it placed a dynamometer car in service. On a Mikado type locomotive, which was performing with no complaint from the crew, an exhaust tip 3/8 in. smaller in diameter increased the firebox temperature 400 deg. F. and resulted in a saving in coal amounting to $57,000 a year. The exhaust tips in these locomotives were in accordance with American practice and if the test had not been made, this serious loss would not have been discovered. An adjustment in the valve gear resulted in an increase of 7.8 per cent in the drawbar horsepower. On another locomotive, by making several changes as indicated by the test data, the fuel consumption was reduced 9.8 per cent and the engine was enabled to haul three additional passenger cars with less fuel and water than it had formerly used with the smaller train. A road that does not test every new order of locomo-

tives is buying a pig in a poke. The best way to insure that the maximum capacity is secured with the minimum fuel consumption is to conduct thorough tests. Many of the class I roads will spend over $10,000,000 for fuel in 1920. Surely no road that spends such a sum for fuel can allow the slight expense involved to prevent it from realizing the benefits of test plant or dynamometer trials of locomotives.

Increase the Per Diem Rate

The American Railway Association will at once take another letter ballot on the question of advancing the per diem rate charged by the railways for the use of one another's cars. The proposition submitted will be that the rate be advanced from 90 cents to $1.00 per day. Recently a vote was taken on advancing the rate from 90 cents to $1.10 a day. To raise the rate requires the votes of more than one-half of the railways belonging to the American Railway Association, and this one-half must own two-thirds of the freight cars. On the proposition to advance the rate to $1.10, 208 railways owning 1,454,582 cars voted favorably, while 152 railways owning 929,481 cars voted unfavorably, and 23 railways owning 22,600 cars did not vote. It will be seen that a majority of the railways voted favorably, but that they did not own the necessary two-thirds of the cars. The letter ballot now to be taken ought to result in the $1.00 rate being adopted. The cost of owning a car has greatly increased, not only within recent years but within recent months, and is still increasing. Furthermore, owing to the recent advances in freight rates and increases in the efficiency with which cars are being utilized, the earning capacity of each car has been increased. Therefore, not only justice to the owning lines, but the increased value of each car to the railway using it demand that the rate shall be advanced. In addition, the higher per diem rate would have some tendency to stimulate relocation of cars, and the more cars there are on the owning lines the more of a tendency there will be for individual lines to improve the condition of their cars and buy more of them. The $1.00 rate is the one which was originally recommended by the general committee of the Transportation Division of the American Railway Association. At a time when the railways are receiving higher freight rates, and demanding higher demurrage rates from shippers than ever before, consistency requires that they shall put the rate that they charge each other for the use of cars on a more reasonable basis.

Compensation Is the Most Important Factor

Any discussion of the employment of engineers in railroad service leads eventually to the question of compensation and owing to the importance of this issue it must be met squarely. To point out to the college graduate that he has an opportunity to become chief engineer or vice-president does not give him the information he desires as to the desirability of railroad employment. He must have something more tangible. This subject has recently had specific recognition from most of the roads, but should be kept well in mind. To study it intelligently, the engineering forces must be divided into two classes: those employed in administrative work, which places them in line for promotion to supervisory positions, and those engaged in purely scientific or technical pursuits. For the first class the question of compensation to engineers becomes submerged in the larger problem of adequate salaries for the supervisors and their immediate superiors. If these are being paid in proportion to their worth the problem of the engineer is largely solved. However, even here the pay in the preparatory positions has some influence. This, when considered with the average rate of advancement, must insure an aggregate compensation over a period of, say, 10 to 15 years that is commensurate with that obtainable in like positions in other lines of engineering work. In the case of the technical engineer employed by the railroad, advancement is more rapid for two or three years, after which promotions are likely to be slow. Consequently, the problem is largely one of market prices and it makes little difference whether the men are hired as beginners or as experienced men, the market values are pretty well established. Therefore, the employer will get just about what he pays for—a cheap man for a cheap wage or a good man for a good wage. Probably the greatest shortcoming of railroad employment for this class of men has been the establishment of some fixed rate as a standard for a given position, allowing the department head no latitude in rewarding the man who shows special ability. A recognition of the fact that there is a definite market rate, coupled with some plan of increasing the compensation where it is most merited, will not only make railroad employment attractive but will effect a reduction in engineering costs. In no branch of service is there greater merit in the axiom that a cheap man costs more than a high-priced one.

Automatic Train Control

For a good many years more or less agitation has gone on for the development of some form of automatic train control to act as a check on an engineman should be fail to heed fixed signal indications, as many accidents have occurred from such momentary lapses on the part of enginemen. The government and certain railroad technical societies have appointed committees to study this question, to draw up requisites and otherwise to determine what such devices should be required to do under actual service conditions. Legislation has been advocated in the past to make it compulsory on the part of the railroads to install such additional safeguards. However, but little progress was made with the development or use of train control devices, except by certain individuals working to perfect something which would act as a connecting link between the fixed roadside element and the moving train.

Now, automatic train control is a reality; after an investigation made by a committee appointed by the former United States Railroad Administration it reported that there were a number of devices which were developed by private initiative to such a point that they were applicable for use on railroads; in addition, the Transportation Act of 1920 empowers the Interstate Commerce Commission to order such installations.

At a joint meeting of the Western Society of Engineers and the Chicago Sectional Committee of the Signal division, American Railroad Association, in Chicago on October 21 this subject was thoroughly discussed from the government, the railroad, and the train control companies' standpoint, the need for such devices being well summed up in the statement of W. G. Bierd, president of the Chicago & Alton, in which he said, "It is well known to operating officers that there is a great necessity for something much better, more perfect and more reliable than at present in use. * * * As long as we employ men and trust to their agency we must expect these failures to occur. * * * So we must look for an automatic train control or train stop."

The problem now is, not merely the development of apparatus to perform the functions required, but the working out of plans whereby the apparatus will work interchangeably as between various roads which may be equipped with different devices. As an example, one road operates over, or has trains of other lines running over parts of its sys-

tem, to the number of 15 or more. This brings up the question of the location and clearance of roadside members and train apparatus. Railroad engineers in co-operation with train control men will have to work out changes which may be shown to be desirable in some cases after the apparatus has been installed and in service, as service operation often develops conditions which are not encountered in laboratory tests. It should be realized by railroad officers in general that train control affects not one department but several and this is recognized by the American Railroad Association in its appointment of a committee composed of operating, mechanical, maintenance of way and signal men to co-operate with the Interstate Commerce Commission in the administration of that section of the Transportation Act dealing with automatic train control. The development along this line makes it essential that those railroad officers directly affected give this question more serious study than has been devoted to it in the past.

The Part of Organized Labor in the Recent Election

THE RESULT of the recent election is a crushing rebuke for organized labor, or at least for the heads of the principal railway and other labor organizations. The American Federation of Labor, the Plumb Plan League and the various railway labor organizations openly opposed the election of Senator Harding to the presidency and the re-election of senators and representatives who had voted for the Esch-Cummins Bill. The Plumb Plan League and the Railroad Brotherhoods were especially bitter in their attacks upon men who had supported the Esch-Cummins Bill. For example, the heads of the "Big Four" railroad brotherhoods issued a special letter to their members in Iowa urging them to oppose the re-election of Senator Cummins. They recalled the part he had taken in framing and advocating legislation against strikes on railroads and went so far as to say "If Senator Cummins upon such a platform is elected from Iowa we can assume that it is because the citizens of Iowa desire such legislation, and many such citizens are members of the railway employees organizations." Glenn E. Plumb and other spokesmen of the Plumb League were persistent and vitriolic in their attacks upon Senator Harding.

If we may judge by the election returns, the only effect of the efforts on the part of organized labor, and especially of the railway labor organizations, to influence the election was to increase the vote cast for the men that they opposed. It is only fair to take the heads of the "Big Four" railroad brotherhoods at their word and accept the result in Iowa as indicating that the people desired and have endorsed the very kind of legislation which the labor organizations opposed when it was pending in Congress and have denounced since it was enacted. The implications of the outcome are even broader than this. One of them is that the American public resents the action of any class which attempts to use its supposed political influence to promote its own selfish interests without consideration of the welfare of the public as a whole, and that such class activity makes more votes against than for the policies that may be favored by the particular class.

Another plain implication of the result is that the American public is overwhelmingly opposed to radical measures such as government operation or Plumb Plan operation of the railroads. The American Federation of Labor first endorsed government ownership of railroads and then went into the political campaign and supported Governor Cox. The American public, including apparently a majority of workingmen themselves, went to the polls on election day and voted overwhelmingly against the candidates that the American Federation of Labor supported and thereby against the policies that the American Federation of Labor advocated. The outcome will hardly increase the political influence of organized labor at Washington during the next administration. It should be a lesson not only to organized labor but also to public men who in past years have allowed themselves to be intimidated by the threats of organized labor to destroy them if they did not do its bidding.

Largest Month's Freight Movement in History

STATISTICS compiled by the Bureau of Railway Economics disclose the fact that in August the railways moved more freight not only than in August of any previous year, but more than in any previous month in any year in history. This seems a conclusive answer to charges which have been made by W. G. McAdoo and others that the railways have been inefficiently operated since they were returned to private control, and that they can be operated with maximum efficiency only under unified government control. The number of tons of freight moved one mile in August was 42,706,000,000. The nearest approach to this ever made before was in August, 1918, when the number of tons moved one mile was 40,776,000,000.

The detailed figures regarding the way in which this record-breaking achievement was accomplished are very interesting and significant in view of the efforts the railways have been making for some months to increase the efficiency of operation. The average miles each freight car was moved daily in August was 27.4. This was the greatest mileage ever attained in any month except in May, June and July, 1917, under private operation. In other words, in none of the twenty-six months of government operation was this record for car movement ever equaled. The average tons handled in each loaded car in August, 1920, was 29.8, a record exceeded only in the months of July, August and September, 1918, when shippers for patriotic reasons were giving the railways the highest degree of co-operation.

The best test of the efficiency with which the country's freight cars as a whole are being utilized is the average number of tons of freight moved daily with each car. This figure is arrived at by combining the average number of miles each car is moved daily with the average tons handled in each loaded car. The average number of tons moved one mile daily with each car in August, 1920, was 526. This record has been surpassed only in August and September, 1918, when the average load per car was the highest ever reached, and in June, 1917, under private operation, when the average miles per car per day was almost the highest ever reached. The average number of tons moved one mile daily with each car in August, 1918, was 534; in September, 1918, 535; and in June, 1917, 542.

The statistics used in making the computations by which these various units of efficiency are arrived at include cars which are in bad order as well as those which are in serviceable condition. As an aftermath of government control the number of cars in bad order in August, 1920, was larger than in either 1917 or 1918. If only cars which were in good order and actually in service were included the statistics probably would show that more service was obtained from each car that was in good condition in August, 1920, than in any previous month.

The amount of freight moved in September probably will be found to have been less than in August, but the amount moved in October undoubtedly will be found, when all the

statistics are available, to have surpassed even that in August. In the week ending October 9 the number of cars loaded was 1,009,787, while in the week ending October 16 it was 1,005,000. The number of carloads moved in each of these weeks surpassed that handled in any week in August, and it is a fair assumption that there were further increases in the efficiency with which each car was used.

Mr. McAdoo referred critically in a recent address to the fact that the car shortage reported on September 1 was over 140,000. The car shortage, when there is one, usually increases in the late fall and early winter, but on October 16 it had been reduced to 69,000. This doubtless was partly due to the fact that the demands of traffic were beginning to slacken, but even more to the fact that the amount of traffic handled was still being increased.

It is a curious thing that the critics of private operation should continue to talk of its inefficiency, as compared with government operation, at the very time when records are being made which seem to demonstrate more completely than ever the superiority of private over government operation. However, if the public can be made to understand and appreciate the significance of such facts as those regarding the remarkable results which recently have been secured by the railways, there need be no fear of the effect of criticisms emanating from men who apparently are determined to find fault with private operation no matter what results are obtained.

September Earnings Do Not Fully Reflect Rate Adjustment

RAILWAY EARNINGS for September, as indicated by the reports covering a majority of the roads that have thus far been filed with the Interstate Commerce Commission, make an unsatisfactory showing for the first month in which the roads are again operating without a guaranty, failing to reflect the percentages of increase in rates allowed by the commission, to say nothing of the increase in traffic.

Estimates based on the net operating income of roads operating approximately half of the mileage of the country indicate that the roads as a whole for the month will fall about $30,000,000 short of what they should earn for net in September to produce a 6 per cent net return on a year's business. Part of the failure to realize the full increase, of course, is to be attributed to the failure of a large number of states to allow corresponding advances for intrastate traffic, and also a considerable volume of traffic was handled in September that moved on the old rates because it was started before their effective date, but it is impossible to estimate how much these factors contributed to the result. The fact that operating expenses increased by a larger percentage than the operating revenues indicates that there may have been an unusual amount of maintenance work done in September.

At any rate the result serves as a reminder that the net operating income account even as late as September this year was still affected by the underestimate of expenses made by W. G. McAdoo in May, 1918, at the time the last general advance in rates was made for the purpose of meeting what was then figured as the probable increase in expenses.

Mr. McAdoo has recently sought to place upon the return of the railroads to private management the responsibility for the large deficit incurred by the railroads this year and upon the transportation act the blame for the increases in rates. If he had not so often found it easier to depend on the principle that you can fool part of the people all the time and all the people part of the time than upon critical analysis, he might not care to make such rash statements. An analysis of the figures would have shown him that the cause for the ever-narrowing margin between railway expenses and earnings can be easily traced to the fact that the general rate level had not been changed, until August 26, 1920, since the time he made the estimate referred to.

In May, 1918, Mr. McAdoo was about to put into effect what was then considered a large increase in wages, about $300,000,000 to $400,000,000 a year. He also knew of some other increases in items of expense, notably fuel. The increases in wages and the increases in rates which it was figured would be necessary to meet them and the other increases in costs were announced to the public simultaneously on May 25. The increases in wages, however, failed to satisfy the employees and they were followed by a procession of supplemental wage awards throughout the entire period of federal control. This naturally rendered the rates too low but because of the spirit of optimism, accompanied by some vacillation which pervaded the Railroad Administration, the rates were not further advanced and the result was a constantly increasing deficit. It was over $200,000,000 in 1918; it was over $400,000,000 in 1919 and in the first eight months of 1920 it was over $600,000,000, having been increased by a further advance in wages made after the roads were returned to private management, of which some $200,000,000 was made retroactive to May 1 to be paid out of the earnings under the old rates before they could be readjusted by the Interstate Commerce Commission to meet the conditions which had been increasing expenses for over two years.

Undoubtedly the estimate of expenses which was made in May, 1918, was as accurate as it was possible to make it at that time. Mr. McAdoo certainly had plenty of competent assistance and there is no criticism to be offered on the point that they could not see far enough into the future. The only point is that after the estimate had been demonstrated to be too low on the side of expenses no effort was made to readjust the other side of the account correspondingly and a definite policy was adopted of continuing to meet the resulting deficits out of the taxes, while the Railroad Administration hoped in vain for offsets to result from unification. Meanwhile some of those who were advocates of that policy are attempting to criticise private management for its logical consequences in spite of the fact that most of the units of railway operating expense that now make up the increased total, as well as the rate units that are undeniably an important factor in the total earnings, were fixed during the period of federal control.

For example, the Interstate Commerce Commission has recently reported that the average cost of freight train operation per mile (selected accounts) was $1.89 in July, 1920, against $1.54 in July, 1919, an increase of 35 cents in a year, while the cost in February, the last month of government operation, was $1.91, showing that more than all of the year's increase occurred during the period of federal control and that there has been a slight decrease since February.

The decrease is probably due to the fact that train operation in the summer is normally cheaper than in winter, but at least private management is not responsible for much of the increase of 35 cents per mile in a year in which there was an increase of 37 cents in the seven months while the roads were still being operated by the government.

The increases in expenses which occurred during the war period are likely to last for some time and the September earnings make it apparent that it will be necessary to await the October returns before it will be possible to ascertain with anything like accuracy the effect of the rates which have at last attempted to catch up with the expenses.

Western Maryland

ONE OF THE MOST important features of the conduct of business by the Western Maryland is the fact that it is a relatively small and comparatively new line in highly competitive territory. Its lines, briefly speaking, extend from Baltimore westward approximately parallel to the northern boundary of Maryland. From Cumberland it has a line extending southwestward to the coal fields of West Virginia and one northwestward to Connellsville, Pa., where connection is made with the Pittsburgh & Lake Erie, whereby the road is given a traffic route from the Pittsburgh district. The total mileage operated is 708. From this resume it can be observed that the task of the officers of the road is primarily to build up the traffic in coal and to make the most of the through traffic route over its line and the Pittsburgh & Lake Erie from Pittsburgh to Baltimore. During federal control the road had to forego this work, so that now on the return to private control the road is presented with the task of taking up the work where it left off in 1917 and in addition of rearranging business from the basis it was on under government operation.

The Western Maryland's most active competitor is presumably the Baltimore & Ohio. During federal control, however, it was placed under the jurisdiction of the federal manager of the Baltimore & Ohio, and was operated as a part of that system. At the same time, the line of the Cumberland Valley was used as a connection between the Western Maryland and the Philadelphia & Reading instead of that portion of the Western Maryland's own line hitherto utilized for that service.

The report recently issued to the stockholders is written with these facts in mind. It draws attention to them and says that "These disarrangements of operation and transportation, while advisable in the best interests of a comprehensive regional operating unit, nevertheless resulted during their continuance in a complete dismemberment and disintegration of the Western Maryland transportation system." The report, therefore, is made to cover both years of federal control, 1918 and 1919, and it does not attempt to reproduce the federal manager's figures of operation during that period.

Other figures are available which are of assistance in showing how the road fared. The standard return of the Western Maryland was set at $3,075,048, but was later raised to $3,315,439. In 1918, the road (operated, it will be borne in mind, as a part of the Baltimore & Ohio) had a net operating deficit of $492,469 and in 1919 of $161,534. Some information may also be derived from the report of the earnings of the property for September, 1920. Of course, too much should not be made of the earnings for one month. The September earnings, however, are of interest as an indication of what the road may be able to do under the new rates and the road has given them an additional value by including a comparison with September, 1917, which was a good month. The comparison shows that in September, 1920, the operating revenues were $2,193,174 as compared with $1,205,513 in September, 1917. Operating expenses in September, 1920, were $1,749,802—nearly double those of September, 1917. The net operating revenues, however, were $443,372 in 1920 as against $389,671 in 1917. The net income after fixed charges in September, 1920, was $182,832, or $162 less than in September, 1917. These figures would seem to indicate that the business of the road is getting back in its former channel and that progress is once more being made along the lines of building up business which characterized the road under the administration of C. R. Gray.

This building up of traffic is a matter of importance on any road. It is a matter of special importance on the Western Maryland. This is indicated in one way by a brief resume of the capitalization of the road. On December 31, 1919, it had outstanding common stock amounting to $49,426,098; second preferred of $17,742,100, first preferred of $9,999,000—a total stock capitalization of $77,167,198. The bonded and secured debt totaled $60,840,561. The interest on the last named has been earned with a fair margin in recent years. No dividends, however, are paid on the stock, either common or preferred. The first preferred stock is 7 per cent cumulative but these dividends have not been paid. The Western Maryland, despite this situation, is by no means considered a poor road. This is shown by the financing it has done this year and by the progressive policy it has been able to adopt in the manner of equipment. The Western Maryland took 300 of the United States Railroad Administration standard 50-ton single-sheathed box cars. It was not allocated any open top equipment; in fact, it has sufficient open top equipment so that if it has 60 per cent of its ownership of open top cars on line it can usually meet all traffic demands. None of the standard locomotives were allocated to the Western Maryland. It has, however, ordered 40 heavy Consolidations recently. It has also secured two new car floats, each of 26 cars capacity, for its terminals at Baltimore, the purchase of which it financed itself at a rate of 6 per cent. In addition to these it is rebuilding its coal pier at Baltimore which was burnt down, and expects to have it completed by the end of the year. To assist in financing the purchase of 20 of the locomotives, extensions to the coal pier and other improvements, it has secured a loan from the loan fund of $1,372,000. The cost of the locomotives outside of that part paid for from the proceeds of this loan was financed at 7 per cent. Taking the cost of all the items mentioned, the officers have figured out that their total financing for these improvements has been at the rate of 6.4 per cent. These facts show that the Western Maryland is making an effort to continue the progressive policy adopted while C. R. Gray was president. The low rate at which the improvements have been financed will also be regarded as a favorable indication.

New Books

Text Book of Materials of Engineering, by Herbert F. Moore, research professor of engineering materials, University of Illinois. 6 in. by 9 in., 315 pages, illustrated, bound in cloth. Published by the McGraw-Hill Book Company, 239 West Thirty-ninth street, New York.

In addition to a general revision of the text, the new edition contains an entirely new chapter on concrete by Professor Harrison F. Gonnerman, which goes into considerable detail concerning such of the more recent developments as Abrams' fineness modulus and Edwards' surface area method for proportioning concrete. A chapter has also been added on rubber, leather, belting, rope, etc. This text book covers the mechanics of materials, their manufacture, use and testing and since it is limited to 315 pages, the treatment is essentially general or elementary. That it is intended primarily as a text book is indicated by ten pages of questions on the various chapters. However, the book will serve as a ready reference to the man who desires accurate, general information covering the entire field rather than the minute details of some particular branch of the subject. The work is up-to-date as indicated by the fact that the third chapter is devoted to repeated stresses, a subject also given some space under the subject of testing. The chapter on working stresses contains a valuable summary of the specific materials used for various classes of structures and equipment. Thus, one paragraph tells why many parts of railway equipment are now being made of steel castings. Of the specific materials, iron and steel are covered in 80 pages, non-ferrous metals in 12, timber in 22, concrete, stone, brick, etc., 70.

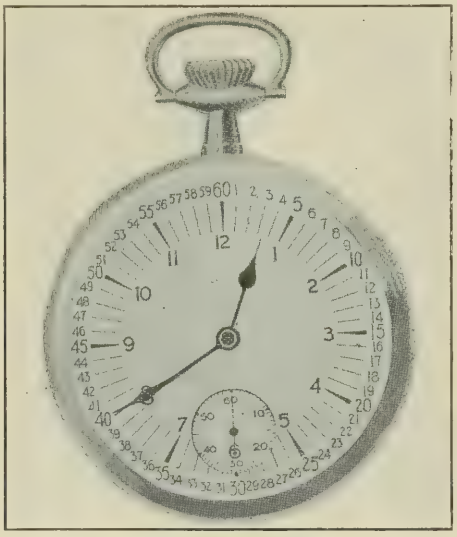
Letters to the Editor

The Montgomery Safety Watch-Dial

TOPEKA, KAN.

TO THE EDITOR:

In your report of the annual meeting of the National Safety Council, October 8, page 617, you unconsciously do an injustice in voicing the opinion of Webb C. Ball as to safety dials for watches. Mr. Ball styles the Montgomery safety dial "freakish and confusing." The highest railroad officials in America, government officials, watch manufacturers, watch inspectors and over half a million conductors, engineers and employees in all classes of service, who use the [Montgomery] safety dial in daily practice, certify that it is the greatest improvement made in watches in the past 50 years. As a safety device it is as essential as the watch itself. The safety dial is the standard for watches and clocks on the Santa Fe. Every clock on the system between Chicago and San Francisco on the west and Galveston on the south is equipped with the Montgomery safety dial. To



characterize such a device as "freakish" is a species of delirium. To the practical, thinking man, any device which offers a safeguard is worthy of employment in practice. The vital features on a watch dial are the *minutes*. The hour numerals are inconsequential in comparison. On the Montgomery safety dial the minutes are numbered, thus absolutely insuring correct reading. Large hour numerals interfere with quick vision of the minutes and are, therefore, objectionable. Criticism would surely and properly develop against the erection of obstructions which would prevent an engineer from plainly viewing block signals.

Mr. Ball says there should be "12 plain up-right Arabic figures to indicate the hours." I agree, and put them in evidence on the Montgomery safety dial. Mr. Ball places but 11 on the dial designed by himself (the 6th hour being, evidently, an outcast) and makes them so large that they hide the little dots which represent the minutes. Technically and legally the Ball dial is wanting. The dial is incomplete. The hour figure "6" is just as necessary from a legal standpoint as any other hour figures on the dial. It is an easy matter to misread the time on the dial Mr. Ball sponsors. A mistake of an even five minutes at such divisions as 17 when 22, 37 when 42, is easily made. Numbered minutes prevent such an error.

When "lights are dim and obscure" the safety dial presents the minutes, even though they might appear as a blur, in figures twenty times the size of the dots on the Ball dial. The long lines on the safety dial lead the eye to instantaneous vision of the minute in figures at the end of the minute-hand, and only a blind man could fail to read the time correctly. For the farmer, or individual who only cares to read the time approximately, large hour numerals may afford satisfactory results, but for a railroad man, the minutes are the essential factors.

The safety dial should be adopted as the standard of the nation, because of its educational value. The people should be taught to read time as it expires, and not in advance of its possible occurrence. For instance, to quote the time as "20 minutes to 1," is a flagrant error. Correctly read the time would be 12.40. In the pleasure of Providence one o'clock might not arrive.

An improved watch, accurate and dependable, is an important and desirable article; but to equip such a watch with an antiquated dial, when a dial of pronounced utility is available, is a serious mistake. Mr. Ball arbitrarily bars the use of the safety dial on all railroads under his jurisdiction, except the Rock Island. The officials of that road would not be a party to a scheme which prevented the use of a safety device on their lines. It is true he posted a circular prohibiting the use of the dial; but rescinded the order at the instance of the president of the company. So far as I know, Mr. Ball is the only man in the country who is not enthusiastically favorable to the safety dial.

I do not manufacture watches and have no preference for specials, or various brands, to catch the unwary and increase the price. My inspectors are at liberty to sell any make of watch, even the Ball if one should meet our requirements. I insist upon timekeeping quality; specials, secret order brands, and watches camouflaged with all sorts of deceiving inscriptions are welcome, if they "run right."

The Santa Fe was the first railroad in America to adopt a system of watch inspection of genuine merit and the rules are copyrighted. For a quarter of a century this service has proved its worth, the company requiring 157 employees on salary to conduct the department. Inspection bureaus on other roads copy the Santa Fe service so far as allowed, and in this respect exhibit wise judgment.

The illustration of the Montgomery safety dial needs no comment.

H. S. MONTGOMERY,
General Watch Inspector, A., T. & S. F. Ry. System.

A Suggestion Regarding Maximum Loading

NEW YORK.

TO THE EDITOR:

The most effective method that could be devised for accomplishing maximum loading of equipment would be to give the shipper and consignee an *incentive;* the shipper because it *costs* him something to load cars to capacity; the consignee because it costs *him* something to carry heavier stocks. There are two ways to do it: First, carry two columns of rates—a higher rate with lower minimum weight and a lower rate with higher minimum weight. There are examples of this in current tariffs. (See Trans-Continental eastbound rates on beans, canned goods and dried fruit and westbound rates on structural iron.) Second, carry one rate and minimum weight, with a rule providing that when cars are loaded over the minimum a percentage reduction will be applied on such excess. This has never been tried and there are some objections to it. So called "Equalizing," "Follow Lot" or "Two for One" rules should not apply to any rates so made.

RATE MAKER.

Canadian Pacific 60-Ton Hopper Bottom Box Cars

High Ratio of Load to Gross Weight in New Equipment Designed Especially for Grain Service

TWO FEATURES which make the equipment particularly suitable for service on a road with a heavy grain traffic stand out strongly in the design of the latest box cars recently placed in service by the Canadian Pacific. The limit load which the cars will carry is 60½ tons and the floors of the cars have special hopper bottoms which are designed to facilitate unloading of bulk material and to eliminate the need for temporary grain doors. Roads that have a heavy merchandise traffic generally consider that the cubical capacity usually limits the load in a box car and, therefore, a 40-foot car with a limit load of about 45 tons is most economical. However, where much grain and coal are carried in box cars, as is the case on the Canadian Pacific, the extra cost of the heavier car is, no doubt, more than offset by the higher ratio of load to total weight in a fully loaded 60-ton car. In these cars, which are 40 ft. 6 in. long, 8 ft. 6 in. wide and 9 ft. high inside, the ratio of load to gross weight is 71.4 per cent.



Box Car with Burnett Hoppers Built for the Canadian Pacific

Type of Construction

The cars are built with steel underframes, steel side frames, corrugated steel ends and outside metal roofs. The center sills consist of two 12-in. channels continuous from end to end of the car. The bolsters and cross bearers consist of pressed steel diaphragms with top and bottom cover plates, while the floor beams are pressed steel diaphragms. The decking, which is 2¼ in. thick, is secured directly to the center and side sill flanges by means of bolts.

The side frame consists of 9-in. channel sills, 6 in. by 3½ in. by ⅜ in. angle plates, 4-in. Z-bar door posts and U-shaped pressed steel posts and braces. The side sheathing, which is 1½ in. thick, is bolted to the flanges of the door posts, pressed steel intermediate posts and braces and to the flanges of the corrugated steel ends. Pressed steel posts and braces were chosen in preference to rolled sections because the ends have area for riveting without the use of gusset plates, and the ends of the braces can be brought much closer to the ends of the posts; also the pressed shapes provide superior support for the sheathing boards. The ends of the car are of pressed steel, each end being in two sections.

The roof is of the flexible outside metal type supported on metal carlines. All carline flanges are covered with strips of wood arranged to prevent the accumulation of dust that might be shaken down from time to time and possibly damage the lading.

Grain Hoppers

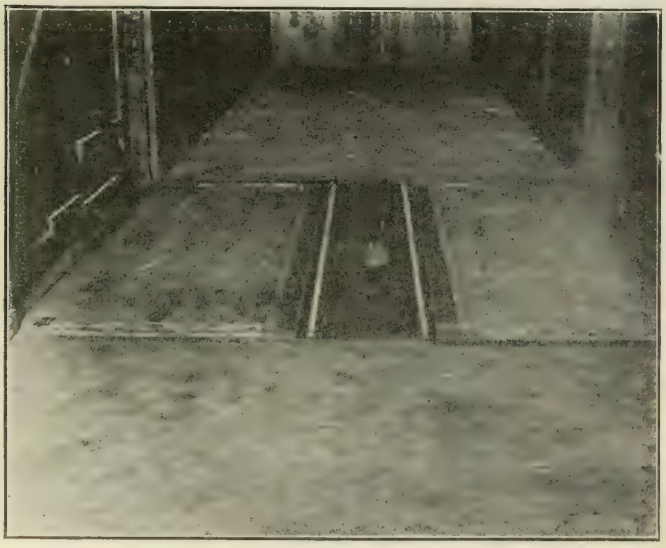
Hoppers of the Burnett type are located at the side door opening on each side of the car. When used for freight that cannot be dumped through the hopper the car has a solid level floor, the same as an ordinary box car; when grain coal, etc., are to be loaded the specially constructed sections of floor over the hoppers are turned up against the side door post. This arrangement allows the load to go directly into the hoppers, and also saves considerable temporary door lumber. When the cars are unloaded it is only necessary to remove the pin that locks the hopper doors; the doors open quickly by gravity and immediately a large percentage of the contents of the car discharges through the hoppers. The balance of the load may be shoveled to the middle of the car by hand, or if the unloading plant is equipped with

power shovels, as most elevators are to-day, the floor door on one side of the car is released from the door post and the cables are taken through the door opening as usual. The hopper doors have no operating mechanism, the doors being closed directly by hand and secured by a simple locking bar arrangement.

Special care has been taken to obtain a side door of satisfactory design. The interlocking front and back edges afford exceptional protection against weather and pilfering. The top edge is thoroughly weatherproof, yet so arranged that it cannot become blocked with ice. The bottom of the door is fitted with turned rollers that fit on a very substantial and rigidly supported track. This track is not likely to be blocked with ice but in case it should be the interference is plainly visible and easily removed. The location of the rollers at the bottom of the door does away with the binding or cramping so frequently noticed on doors suspended from the top.

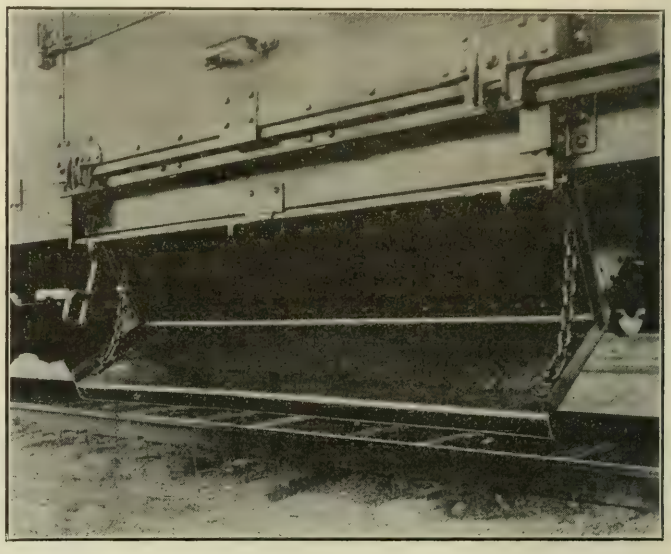


Floor Section Raised for Grain Loading



Interior of Car with Hoppers Closed

The brake arrangement includes a manually operated slack adjuster, which is a double safety device, as it enables inspectors to adjust the brakes to compensate for wear on brakeshoes without going under the trucks; and, as no truck parts are disconnected, the possibility of trouble due to oversight in replacing connection pins is eliminated. As the time required to adjust the brakes by this device is much less than with the old arrangement it enables inspectors to give attention to more cars in a given time, thus resulting in better maintenance and less detention. The hand brake arrangement is specially designed to be operative regardless of climatic conditions, this being accomplished by arranging the ratchet, pawl, etc., so that snow or ice on top of the parts will not interfere with their operation. The entire arrangement is located overhanging the end of the roof so that it is impossible for even the deepest snow to pile up underneath. The ratchet pawl is of the gravity type, and therefore the trainman is not required to use his feet for holding the pawl in position.



The Hopper When Open Discharges Outside the Track

The trucks are of the standard arch bar type with improved truck columns, spring plank and truck column fastenings, pinless brake beam hanger brackets, and four-point brake beam suspension. The railroad states that up to date this type of truck has given the best satisfaction in Canada.

Railroad Labor Board's Hearings

HEARINGS on the demands of employees of the short lines continued before the Railroad Labor Board at Chicago until October 28, adjournment being taken on that date until November 4 in order to allow representatives of the short lines and of the employees to return to their homes to vote on November 2.

The progress of the hearings up to and including October 26 was outlined in the *Railway* Age of October 29.

It became apparent early in the week that the presentation of testimony on behalf of the various short lines could not be completed for some time and on October 27, Chairman Barton announced that the Board would lengthen that and subsequent hearings so that adjournment would be possible on October 28.

Representatives of various short lines testified at the hearings on October 27 and 28 each witness outlining the physical, financial and other characteristics of his line: G. A. Wagstaff, superintendent of the Arizona & New Mexico; R. J. Lockwood, vice-president and general manager of the Apalachicola & Northern; Richard Doyle, assistant general manager of the Mississippi River & Bonne Terre; G. W. Hardin, vice-president and general manager of the East Tennessee & Western North Carolina; T. W. Parsons, vice-president and general manager of the Charlotte Harbor & Northern and others.

Transportation Act as Solution of Railroad Problem*

A Great Constructive Piece of Legislation, But Much Yet Remains to Be Done—Railway Labor a Preferred Class

By Daniel Willard
President, Baltimore & Ohio Railroad; Chairman, Advisory Committee, Association of Railway Executives

THE subject which I am to discuss is as wide as the world and is older than the recorded history of man, but I shall confine my remarks chiefly to one phase of the subject—namely, transportation by rail.

We have recently entered in this country a new epoch concerning transportation by rail, and the epoch of which I speak dates from the passage of the Esch-Cummins Bill, which is officially designated as "The Transportation Act of 1920." This act was passed by a substantial majority in each House of Congress after one of the most exhaustive inquiries into the subject matter ever made, and with the added knowledge acquired from 26 months' actual experience with government control and operation.

It was clearly the belief of Congress, as brought out in the debates during the preliminary discussion of this act, that the policy of private ownership and operation of the railroads in this country ought to be continued, and it was just as clearly the purpose of Congress, as finally expressed in the law, to enact legislation that would make private ownership and operation of the railroads possible. Personally I believe the Esch-Cummins Bill will accomplish that purpose. I do not say that the act in its present form provides a perfect and finished plan—one that need never be changed or revised, but I do believe that upon the whole, it is one of the most constructive pieces of legislation that has been enacted during my generation.

The first great epoch in the history of the American railroads may be said to have been brought to a close on December 31, 1917, when the President, acting under authority granted him as a war power, took possession and assumed control of the steam railroads in the United States and proceeded to operate them as if they were actually owned by the government. Undoubtedly there were many in this country at that time who favored government ownership and operation of the railroads as a national policy, and there were a great many more who opposed it, but all had opportunity to see how it actually worked during the period of federal control.

We then had a period of 26 months of federal control and operation, and on the first of last March we returned to the policy of private ownership and operation, but upon a basis as provided by the Esch-Cummins Act fundamentally different from anything that had ever before existed.

There are three outstanding features in the Transportation Act of 1920 which we may with profit consider at this time:

1. It was clearly the intent of Congress, as expressed in the act, that in the future, and especially in times of emergency, the 1,000 or more separate and independent companies should be considered as constituting in effect one national transportation system, and that their combined facilities and equipment, in such circumstances, and under some form of unified direction or control, should be used in such a manner as to best meet the transportation requirements of the public, always, of course, with due consideration for the rights of the owners of the property so used. It seems to be assumed by some that the advantages of unified direction or control of the railroads can only be realized in connection with the policy of government ownership and operation. That assumption, however, is wholly in error. As a matter of fact, the first actual demonstration in this country of the advantages of unified control was the result of voluntary action taken by the carriers themselves, nine months previous to the beginning of federal control.

On April 11, 1917, some 75 men representing at least that number of the more important railroad companies met in the city of Washington for the purpose of considering how and in what manner the railroads under the then existing conditions might be more effectively operated.

In furtherance of the policy outlined, a committee of five railway presidents was selected which came later on to be known as the Railroads' War Board, and this board continued to actively exercise the powers conferred upon it until the government itself actually took possession and assumed control of the properties.

Please bear in mind that this unprecedented action of the railroad presidents was taken within five days after our country entered the war with Germany, and from that time on, regardless of ownership, the railroad facilities of this country were treated as if they were all in fact a part of one national transportation system. Much was accomplished of unusual value, in the early days of the war, which received little recognition or appreciation on the part of the public generally. We were living at that time under new and trying conditions and the happenings of one day were quickly forgotten because of what was almost certain to take place the day after. The results accomplished by the Railroads' War Board were many and important. Perhaps the greatest single transportation achievement before, during or since the war was the assembling of the material necessary for the construction of the 32 large cantonments which were erected by the government in the late summer of 1917 for the housing of the army then being mobilized. Records kept by the Car Service Commission in Washington show that approximately 141,000 car loads of building material and supplies were moved to the particular location where required in connection with this immense construction program of the government, and all within a period of approximately eight weeks, and the secretary of war himself is the author of the statement that the government's building program was not delayed in the slightest because of lack of transportation. I repeat that the movement of this material from hundreds of different and out of the way places over branch lines, side lines and main lines to the points where needed, and within the time mentioned, while at the same time the railroads were handling a heavier tonnage of other commodities than ever before, was the greatest transportation achievement ever accomplished in this country under any circumstances, and it was done by the voluntary co-operation of the independent companies without guarantee or assurance by the government that they would ever be reimbursed (and as a matter of fact they were not reimbursed) for any losses or expenses resulting from the arrangement.

There were many difficult transportation problems to be dealt with during the period of the war, resulting from the unprecedented industrial activities caused by the war. Existing factories and shops were enlarged, new manufacturing

*From an address delivered before the Associated Industries of Massachusetts, at Boston, October 28, 1920.

plants of unheard of proportions were built, and the entire character of our industrial output was changed both as to quantity and direction of movement, and under all the circumstances I think the President acted wisely in taking over the control and operation of the railroads when he did. There were many questions involved besides the mere matter of transportation which made such action desirable. It was necessary, for instance, and as a war measure, to divert from some of the companies the business which naturally flowed over their rails in order that all the facilities of such companies might be used for the movement of other freight of a different character. This could not be done under the system of private ownership then in existence with all the restrictions under which the railroads were operating at that time. Under the Esch-Cummins Act, however, it is provided that when it is necessary to divert or reroute business because of emergencies of any character, the Interstate Commerce Commission shall have authority to order such diversions and to make such adjustment between the carriers on that account as may be fair and equitable, in case the carriers should be unable to agree between themselves. We had no law such as that previous to federal control; in fact, there were at that time laws on the statute books which definitely forbade many of the things now permitted or required. We have learned and profited by our experience.

The War Board, created by the railroads in 1917, established a Car Service Commission in the city of Washington, and this same commission or agency was continued by the director general during the entire period of federal control and is still in existence.

In harmony with the spirit of the Transportation Act, the railroads have recently created an Advisory Committee of eleven railway presidents geographically selected. This Advisory Committee supervises and directs the work of the Car Service Commission in Washington, and through that agency attempts to bring about such unification and co-operation between the carriers as may be necessary in the interests of the public. The law provides that the Interstate Commerce Commission, in the exercise of its newly imposed duties concerning matters of operation, may have use of such agencies as it may select, and it has seen fit to make use in large measure of the Car Service Commission of the railroads, just referred to. The Advisory Committee and the Interstate Commerce Commission have worked closely together in this matter, and I may say in full and complete understanding.

I wish to repeat that, under the terms of the Esch-Cummins Act, unified control or direction of the railroads can be quite as effective with private ownership and operation as it can be under government control and operation.

2. Congress, having determined after an exhaustive inquiry and a full consideration of the results obtained from federal control and operation for a period of 26 months, that it was in the best interests of this country as a whole to continue for a further period the policy of private ownership and operation, took definite steps to make that policy possible, and it wrote into the act a definite rule for the guidance of its agent, the Interstate Commerce Commission, for fixing the rates and charges of the carriers.

There can be no doubt that it was the intent of Congress, when it provided this definite rule for rate making, to make private ownership of the railways possible, because private ownership is not possible and cannot endure unless the railways are permitted to earn a return upon their properties sufficient to make investment in their securities attractive.

It is, I think, generally understood that a very large sum of money is required each year—certainly under existing conditions and with present prices not less than $1,000,000,000 in amount—for additions and extensions and new equipment in order that the railway system as a whole may be kept adequate to move the constantly growing commerce of our great country. It is, of course, possible that the provisions of the act in this connection may be inadequate. It is possible that Congress erred in its judgment and consequently in its instructions to its agent, the Interstate Commerce Commission, concerning the fixing of rates; that, however, can only be determined by actual test. If it should appear that rates fixed in accordance with the rules prescribed yield more than is fair and necessary, it is the duty of the commission to make appropriate reductions. If, on the other hand, the rates so fixed fail to yield enough to make investment in railway securities attractive, then in that event it will be necessary either to amend the law so as to permit higher rates and charges or accept the only alternative which, so far as I am now able to see, would be ownership and operation by the government.

Personally I do not think the alternative is desirable, nor do I think it will be necessary.

3. The third outstanding feature of the act is the provision which is made to assure just and reasonable wages and working conditions at all times and under all circumstances to the railway workers. Strangely enough this provision of the act seems to be opposed by some who speak for labor when I would suppose it would find in the ranks of labor its strongest supporters.

Section 301 of the act says that

"It shall be the duty of all carriers and their officers, employees and agents to exert every reasonable effort and adopt every available means to avoid any interruption to the operation of any carrier growing out of any dispute between the carrier and the employees or subordinate officials thereof. All such disputes shall be considered, and, if possible, decided in conference between representatives designated and authorized so to confer by the carriers, or by the employees or subordinate officials thereof, directly interested in the dispute. If any dispute is not decided in such conference, it shall be referred by the parties thereto to the board which under the provisions of this title is authorized to hear and decide such dispute."

Section 304 provides for the creation of the board above referred to and reads as follows: "There is hereby established a board to be known as the Railroad Labor Board and to be composed of nine members. * * *"

The members of the board are to be appointed by the President, but three of his appointees shall be from men nominated by the railway employees, three shall be from men nominated by the railway companies, and three shall be selected by the President himself as representing in a larger way the general public, but all nine shall be confirmed by the Senate. In fact, Congress has created for this particular purpose a special labor court consisting of the same number as the Supreme Court of the United States, appointed in the same way, that is to say, by the President and approved by the Senate, and has given the board or court a status and dignity in keeping with its importance. The law also says that it shall be the duty of the board to establish rates of pay and standards of working conditions which in the opinion of the board are just and reasonable, and in determining the justness and reasonableness of such rates the board shall take into consideration among other things:

(1) The scales of wages paid for similar kinds of work in other industries;
(2) The relation between wages and the cost of living;
(3) The hazards of the employment;
(4) The training and skill required;
(5) The degree of responsibility;
(6) The character and regularity of the employment; and
(7) Inequalities of increases in wages or of treatment, the result of previous wage orders or adjustments.

It may fairly be said that Congress by this act has made a preferred class of the railway workers, because so far as I know this is the first time that Congress has ever said that any particular class of the people should be given at all times and under all circumstances just and reasonable wages and just and reasonable working conditions. Of course it may

be said that Congress did not do this primarily in the interest of the workers, nor would Congress have been justified in doing so. Congress acted only as it had a right to act, in the interests of the nation as a whole. Congress acted with a full realization of the importance of an uninterrupted transportation system in a country such as ours, but being unwilling to deprive the workers of their right to strike (and nothing in this bill does deprive the workers of their ultimate right to strike), it sought to provide machinery which would make it unnecessary under any circumstances for the men to stop work in order to obtain just and reasonable treatment. In short, Congress provided by law so that the railway workers would at all times be assured of just as good wages and just as good working conditions without striking as they could reasonably expect to secure if they did strike, for it is clear that no one could justify a strike for wages or working conditions that would be unjust or unreasonable.

It may also be that in some respects this portion of the law is incomplete and inadequate, and time may develop that changes are necessary. If so, they will undoubtedly be made. In the meantime it is certainly in the interest of all that the law, or specifically this particular feature of the law, should be given a fair and just trial, and I firmly believe that as the law comes to be better understood by the railway workers as a whole they will realize that they have indeed been made a preferred class, in which event I venture to predict that we will be free from railway strikes in the future; not, however, because the men have been forbidden to strike, for I repeat there is nothing in the law which limits the right of the railway workers to strike if they want to do so, but simply because the law provides a way by which they can obtain without striking everything that they could reasonably expect to obtain even if they did strike.

While the act has been in effect but a short time, we have nevertheless had opportunity to see how it worked in one specific case. In the only award so far announced by the Labor Board it was stated that the effect of the higher wages then allowed would mean an aggregate increase in wages to all of the railway workers of approximately $600,000,000 per year.

If this provision of the act will indeed secure to the railway workers just and reasonable wages and working conditions, and I believe it will, and if on that account it actually does operate to prevent strikes upon the railways in the future—and I believe it will—then this particular section of the law does indeed rank as a great and worthy piece of legislation.

During the years immediately preceding federal control there were many who seriously doubted if private ownership and operation could continue as an economic policy in this country under the laws and conditions as they then existed. I shared that opinion at that time. I feel now, however, that Congress by virtue of the Transportation Act of 1920 has not only made private ownership and operation possible as an economic policy, but it has also provided so that there can and should be the fullest measure of unified direction and control whenever or wherever necessary in the interests of the people.

Further, it has provided by definite enactment so that there need be no fear in the future of interruption of service because of disputes between the railways and their employees concerning wages or working conditions. Although Congress by its action has made the continuation of private ownership possible, whether private ownership actually will continue or not, having been made possible, will depend upon whether the people as a whole continue to want it—and this will depend upon whether they are satisfied with the service which they receive from the railroads as a whole under the existing policy. In short, as I view the matter, whether private ownership continues to be the economic policy of this country depends very largely upon the railway managers themselves. If they are men of vision and if they realize their responsibilities as semi-public servants, as well as trustees of properties of great value owned alike by large and small investors, as I believe they do, if they feel that the policy of private ownership of property, which has been the fundamental economic policy in this country since its very inception, is upon the whole the best policy and should be continued, and if as good citizens they are willing, and not only willing but anxious to do all they can to make that policy enduring, as I believe they are, then I also believe they will succeed in their undertaking.

It must be borne in mind, however, that during the period of the war, while nearly all other industrial and productive activities were greatly enlarged, very little relatively was done to increase the capacity of the carriers, because they were in fact able to render the service required of them with the facilities they already had. The result is that to-day the railways of the country as a whole, due in part to the severe strain under which they were operated during the war, are under-equipped with motive power, cars and other facilities, and as a whole are not now in as good physical condition as they were at the beginning of federal control. The cars and engines purchased by the government during a period of 26 months were actually less in number than the railroad companies had been in the habit of buying during each period of 12 months. In short, at the present time and for the reasons mentioned, the railways are not adequately equipped to handle promptly all of the business offered. Even so, it is not possible immediately to increase railway facilities because if the money for so doing were available, time also is an element in such matters.

The railway managers, however, are making determined effort to improve the efficiency of the existing facilities, and to that end they have set up certain standards of operation which they hope to accomplish. They have undertaken as a whole to obtain an average movement of not less than 30 miles per freight car per day, to obtain an average loading of not less than 30 tons per car, and to reduce the cars in bad order and held out of service for repairs to not more than 4 per cent of the total number of cars owned. Not one of these standards has ever been accomplished before by the railroads as a whole, either under private ownership or under federal control and operation. If the railways should be able to achieve concurrently the three standards I have mentioned, it would in effect be equivalent to adding over 500,000 cars to those now available for service—an increase of approximately 25 per cent. I do not expect that the railroads will immediately reach the standards of operation they have set up for themselves, but when they are accomplished, as I firmly believe they will be, they will be simply stepping stones to still higher achievements.

While there is much that the public itself can do by way of co-operation, which will also tend to increase the efficiency of equipment, the railway managers are not depending upon the public to work out this problem for them. They consider it primarily as their own. I am glad to say, however, that upon the whole the public is co-operating in a most willing and helpful manner. Conditions on the railways as a whole have already much improved since the termination of federal control, and I feel confident that within the next six or eight months, perhaps much sooner, the carriers will be able once more to handle currently the business that is offered, and inspired by the possibilities of increased profits—that incentive which is wholly lacking in any system of governmental control but which is the inspiring motive behind all commercial and gainful effort—they will not only be in position to promptly accept the business you offer, but once more they will be seeking, by superior service, to obtain your enlarged patronage.

English Railway Statistics

By L. G. Lauck

THE RAILWAY GAZETTE of London has recently published some comparative traffic and operating statistics for eleven of the principal railways in England and Wales Owing to the fact that during 1919 the railways were still operating under the terms of their wartime arrangement with the government, detailed statements of revenues and expenses for the year 1919 are not available. However, the returns which throw the most light on the situation at the present time, as compared with 1913, are those relating to rolling stock, train and locomotive mileage, and passenger and freight traffic.

These eleven railways operate 39,535 miles of line or about 72.5 per cent of the total railway mileage of Great Britain.

The number of locomotives in 1919 were 19,273 as compared with 18,977 in 1913, an increase of 1.56 per cent. Several of the companies are introducing electric traction on their suburban lines and are replacing some steam locomotives with electric motor vehicles.

The number of passenger cars were somewhat depleted during the war. Comparing the number in the service in 1919 with the number shown for 1913, there is a decrease of 798 cars. As a result, the aggregate seating capacity was reduced, bringing about a reduction in accommodations for passengers amounting to 1.63 per cent. This decrease in passenger traffic capacity is a matter for serious consideration, for it makes no provision for the increased number of ordinary passengers amounting to 17.48 per cent, in addition to a large increase of 72.04 per cent in holders of workmen's tickets. The tremendous increase in the number of persons traveling on workmen's as well as season tickets was brought about partly by the greater increase in the price of ordinary tickets in 1917 than of the workmen's and season tickets, and partly by the housing difficulty, which has driven the urban population into outlying residence and suburban districts. The increased spending power of the English people is reflected in the increased number of passengers traveling first class.

ENGLISH RAILWAY STATISTICS, 1919 COMPARED WITH 1913 (a)

	1913	1919	Per cent increase or decrease, 1919 over 1913
Number of passengers carried (excluding season tickets)	700,848,998	823,357,555	17.48
First class	12,778,159	22,793,602	78.37
Second and third class	538,218,295	542,768,446	0.84
Workmen's tickets	149,848,544	257,795,507	72.04
Number of season tickets	421,042	649,293	54.20
First class	72,311	111,322	53.95
Second and third class	348,731	537,971	54.27
Aggregate seating capacity of passenger cars	2,049,104	2,016,179	d 1.63
Total freight carried.—tons	281,748,905	234,767,851	d 16.68
Freight cars	560,509	559,711	d 0.14
Passenger cars	58,277	55,962	d 3.97
Locomotives	18,977	*19,273	1.56
Locomotive-miles	465,063,391	391,778,696	d 15.76
Miles per locomotive	269,016	221,090	d 17.81
Freight train-miles	120,876,647	107,351,284	d 11.19
Passenger train-miles	197,588,305	143,900,223	d 27.17
Total train-miles	318,464,952	251,251,507	d 21.11

*Including 12 electric locomotives. (a) Comparisons are for 11 principal railways in England and Wales.

The number of freight cars in 1919 was 559,711 as compared with 560,509 in 1913, a slight decrease. While it has been impossible for the companies to increase the number of their freight cars, many are replacing old cars with those of greater carrying capacity. The figures for 1919, however, do not accurately represent the number of available freight cars, as some were in France in the government service at that time. This reduction in the available freight equipment was probably one of the factors that reduced the volume of tonnage moved by 16.68 per cent.

The number of locomotive-miles in 1919 was only 391,778,696 miles as compared with 465,063,391 miles in 1913, a decrease of 15.76 per cent, while there was a decrease of 21.10 per cent in the number of train-miles. Freight train-miles decreased at a relatively smaller rate than the freight tonnage handled, while passenger train-miles decreased 27.17 per cent along with a considerable increase in the amount of passenger travel. This leads to the inference that the freight train load decreased during the period, while the passenger train load greatly decreased. Inasmuch as the number of available passenger cars fell off during the period, it follows that the increase in number of passengers per train must have been accomplished through greater loading per passenger car, i. e., overcrowding.

National Transportation*

By Richard S. Hawes

President, American Bankers Association

ALTHOUGH the transportation problem belongs to an activity not directly under the control of the bankers, it is, nevertheless, germane to banking, since the tension of credit to a large extent was brought about by the breaking down of the transportation system, hampering the turnover of commodities and retarding the liquidation of loans.

One of the most important pieces of legislation passed in the Sixty-sixth Congress was the Transportation Act of 1920, stabilizing railroad credit and securities issued. Beneficial effect will also be felt in the general credit structure of the country. Investors should be able to reasonably count on what return can be expected from the railroad securities which they own. Several months will be required for adjustment in the relation of rates to the required return, because the Interstate Commerce Commission has tentatively valued railroad properties in groups, as required by the act. It would have been impossible to increase railroad wages, nor could the commission have made a substantial increase in rates, under the old method of operating.

Rate-making should be considered an automatic procedure in so far as it concerns the distribution of rates on commodities, or on the different classifications of traffic. Up to the passage of the Transportation Act, railroad executives hardly recognize the need of government regulation, and continued to operate along the lines of opposing what has since become necessary regulation.

The passage of the Transportation Act has taken railroad securities out of the highly speculative class, and stabilized conditions so that just returns on investment may be received, and proper service rendered to the nation.

The establishment of the revolving fund of three hundred million dollars was provided to meet the present equipment emergency, and from that has been evolved the National Service Corporation, which will enable the carriers to purchase equipment under a debenture plan that will make an attractive investment to the public.

The bankers of America should study the Transportation Act and its effect on securities and the general welfare. The financial institutions should co-operate with the Interstate Commerce Commission in its efforts to solve the problems of railroads. Naturally, more co-operation can be given when it is ascertained what effect the Transportation Act will have on railroad earnings, operating under these mandatory features. An amendment to the present law should be encouraged so that bankers or other business men, regardless of their dealings with railroads, can serve as directors, but charging them with full responsibility in their duties.

*From President's address at the forty-sixth annual convention of the American Bankers' Association, at Washington, D. C., in October, 1920.



There Are Four of These German Pacifics on the Antofagasta & Bolivia

Meter Gage Railways the Standard in Bolivia

This is the Seventh of the Series of Articles by the Railway Age's South American Correspondent

By John P. Risque

IN MY LAST ARTICLE I undertook the description of the three railway lines of Bolivia. The present article continues the comment concerning the third of these lines, the Antofagasta & Bolivia, and explains some of the projects for future expansion of the country's railways.

As far as the tourist is concerned, the one most awe-inspiring sight on the interesting line of the Antofagasta & Bolivia is the active volcano of Ollague which stands 20,000 ft. high in the back yard of the railway station of that name —and smokes continuously. At this point there runs a 58 mile branch to the Collahausi copper mines, said to be among the richest in the world. At Cebollar, a little further down, lies a borax lake, 24 miles in length, which is owned and operated by the Borax Consolidated Company, an American institution. The next station, Ascotan, marks the summit of the line, 13,000 ft. above sea level. At San Pedro station, 313 miles from Antofagasta, is located an interesting water-works development constructed by the Antofagasta & Bolivia Railway at a cost in excess of $6,000,000. Reservoirs were blasted out of solid rock and 11 in. pipes carry pure mountain water over 195 miles to Antofagasta and the surrounding nitrate fields. The celebrated Loa viaduct, just north of Conchi station, 185 miles from Antofagasta, is no longer used by the railway company, a detour having been built around it, but during "its day" passengers were known to have sat up all night for a view of this notable engineering structure 336 ft. above the Loa river. Nearing Antofagasta, near mile 152, is a 6 mile branch which runs to the famous Chuquicamata copper mines of the Chile Exploration Company. "Chookie," as this enormous camp is called by ex-employees in the district, is producing upwards of 600 tons of copper a day.



"El Internacional," All Sleeping Car Train of the Antofagasta & Bolivia

In spite of the English characteristics from one end to the other of this very narrow but none the less interesting railway, a former disposition to patronize the American market is evidenced by the appearance of automatic couplers almost

throughout. Westinghouse air brakes on the passenger trains and a sprinkling of old Baldwin Moguls with outside driving boxes scattered here and there among German Pacific type passenger locomotives and Consolidations. What would appear to an American as rather a curious interpretation of the Mallet type, is an assortment of single expansion "double enders," the product of a British designer. These engines can be described as 0-6-2-6-2 types with both sets of running gear headed towards the rear. An extension of the main frame supports the coal bin built on the rear of the cab under which the leading engine is mounted. The whole affair runs backwards, pulling the water tender from the smokebox end. The steaming qualities of these queer engines are said to be greatly exceeded by the superior abilities of "old Ollague," the steadily smoking volcano referred to previously.

Cars, like most of those in use in South America, are patterned after American designs, but berths in the "dormitorios," as the sleeping cars are called, invariably follow the Briton's preference for lying crosswise of the car, and are arranged in private compartments. The use of oil for fuel is on the program of this road and locomotives thus equipped are now being run from Antofagasta as far as Ollague. In this connection, it is pertinent to point out that, with few exceptions—notably the Chilean Central lines where coal is available from Chilean mines and relatively cheap—nearly all railways in South America have, where they conveniently can, undertaken the installation of oil burners in their locomotives.



Car at the Mejillones Shops of the Antofagasta & Bolivia Used to Carry Employees to Work

At Mejillones, a small town on the coast 43 miles—about two hours' run—north of Antofagasta, the general repair shops of the Chilean end of the line are located. The layout at this point is a study in complete arrangements. The provisions, in contrast to the somewhat limited facilities at Oruro, where the northern rolling stock is cared for, can be said to be elaborate. The entire equipment is, of course, of British origin throughout. Entering the shop yards, the stranger will be somewhat interested in seeing a line of saddle horses tied up at the gate of the administration building. When he has tramped a few miles through the soft dry sand which covers the town and the shop yards from one end to the other, however, he too may wish for a horse when he sees the "old man" and his aides emerge from the offices and ride away to lunch.



Freight House Scene on the Antofagasta & Bolivia

The most notable enterprise on Bolivia's construction program is the building of the meter gage La Paz-Yungas Railway, the capital for which was furnished by Chandler & Co. and the Equitable Trust Company of New York. The so-called Chandler loan to Bolivia is said to have been the only long-term issue of bonds of a foreign government placed in the United States during the war, and provides in its contract that all of the construction machinery and equipment as well as future rolling stock is to be purchased in the United States. The actual completion and operation of the line at this date has reached 14 miles. By next March, it is expected that the rails will have reached Pongo, 14 miles further. The Peruvians plan to make their proposed Paita to the Marañon river line (referred to in a previous article) an eventual transcontinental route. The ambition of the Bolivians is to make the La Paz-Yungas road of similar importance to their country. Coripata, in the center of the Yungas valley, is the present objective. After this point is reached the government intends to extend the road to a point on the Beni river, due north of Coripata. The Beni river reaches the Brazilian border, via the river Madre de Dios, at a point some distance below the terminal of the Madeira-Marmore Railway of Brazil which carries products from the interior to the Madeira river and thence to the Amazon and the Atlantic ocean.



There Are Six Locomotives of This Type on the Antofagasta & Bolivia

The Bolivian government's scheme is considered by some

to be extremely ambitious, but the apparent determination of the builders seems to be founded on something more than a desire merely to get to the other side. The Yungas region, in the vast northeast hinterland on the Atlantic slope of the Andes range just beyond La Paz, has long been that city's source of coffee, cocoa, lumber, fruits and other products which have hitherto found their way to the markets of La Paz on the backs of burros and llamas of which there is said to be a stream of several thousand a week in both directions. Uyuni, where the Antofagasta & Bolivia's gage changes, was said by a passenger to look like "the jumping off place." Uyuni, however, is destined by at least two of the influential republics on that coast to become eventually something more than that, and when the financing is rearranged in such a manner as to facilitate the completion of the gap of approximately 200 kilometers between Atocha and La Quiaca, via Tupiza, that same Uyuni will commence to figure as a jumping off place of extreme importance in the itinerary of Peruvians, Bolivians and all others seeking a short and relatively comfortable route to Buenos Aires. The contract for the completion of this link has recently been awarded. The transcontinental line through Argentina, Bolivia and Peru will before long become a reality and Peru and Bolivia may deprive the Chileans of much transcontinental trade.

The branch line from Rio Mulato on the Antofagasta & Bolivia north from Uyuni to Potosi is in operation 30 miles beyond the latter town in the direction of Sucre and construction has been completed to a point called Betanzos, about half way. The extension of this line beyond Sucre to the town of Lagunillas which lies in the path of the abandoned project of a north and south line from Puerto Rojas to Yacuiba on the Argentine frontier, is said to be a bare possibility. It is believed by those in authority that Santa Cruz, also in the path of the Puerto Rojas-Yacuiba project, will be connected by a railway with Corumba on the Brazilian border at latitude 19; the latter point is the western terminus of the Great Western Railway of Brazil. Similar authorities are responsible for the prediction that the Braden copper interests will shortly exercise their concession to build a line from Sucre to Yacuiba as well as a line from Santa Cruz, running in a southeasterly direction to a point on the Sucre-Yacuiba road, half way between the two terminals. This combination is said to be viewed with favor by those who were interested in seeing the Puerto Rojas-Yacuiba line put through, as it will provide an outlet for the Santa Cruz district, and while not quite as direct, will serve the purpose. Argentina is said to have authorized the construction of 87 miles of line from Yacuiba south to Embarcacion, the northern terminal of the Argentine government lines.

The "Best Friend of Charleston"

THE LAST MONTH marked the ninetieth anniversary of the landing of this historic locomotive in Charleston S. C., the ship Niagara, bearing the engine from New York, having reached Charleston on October 23, 1830. The Southern Railway Company, in which system the pioneer railroad is now included, commemorates the event by a brief notice in its News Bulletin for September.

The "Best Friend" weighed about four or five tons; or, say, from one-fortieth to one-thirtieth the weight of a Southern Railway express locomotive of today.

The engine was built at the West Point foundry, New York, and the design is credited to Horatio Allen, who ran the Stourbridge Lion, the first locomotive that was ever moved on a track in America. Allen was chief engineer of the South Carolina Canal & Railroad Company. This railroad, extending from Charleston westward to Hamburg, S. C., opposite Augusta, Ga., was the first continuous 10 miles of railway in the world; the second railroad in the United States; the first to run a steam locomotive built in the United States for regular service, and the first in America built with the intention of using steam as motive power.

Continuing, the News Bulletin says:

"In 1827 Alexander Black, of Charleston, and his associates, petitioned the South Carolina legislature for a charter to organize a railroad company. The charter was authorized and the South Carolina Canal & Railroad Company was organized at the Charleston City Hall on May 12, 1828. One year, ten months and twenty-one days later the road was opened as far as Branchville, 62 miles, to Hamburg, about 136 miles, on October 1, 1833.

The "Best Friend of Charleston" had, according to the best accounts available, a boiler hardly larger than a flour barrel and cylinders 6 in. in diameter. Its four wheels were each 4 ft. 6 in. in diameter. The track was of strap rail, laid on wooden stringers.

"The board of directors of the South Carolina Canal & Railroad Company, having rejected the idea of employing horses for motive power, upon the advice of Mr. Allen, and also having abandoned the suggestion of operating trains by sails, gave orders for two locomotives, the second one being the "South Carolina."*

The "Best Friend" made its first excursion trip with passengers on January 15, 1831, the anniversary of the commencement of the road. The first test of this locomotive has been described by David Matthew, foreman at the West Point Foundry. He says:

"On the 14th and 15th of December, 1830, the engine was tried and proved her force and efficiency to be double that contracted for; running at the rate of 16 to 21 miles an hour with 40 or 50 passengers in some four or five cars; and without the cars 30 to 35 miles an hour."

The Charleston Courier of January 17, 1831, tells the story of the first excursion trip:

"On Saturday last 150 stockholders assembled at the company's building in Line Street, together with a number of invited guests. . . . The first trip was performed with two pleasure cars attached, upon which was a detachment of United States troops and a field piece which had been politely granted by Major Bolton for the occasion."

Six months later the "Best Friend," in charge of an ignorant wood passer, exploded and the boiler was wrecked. Subsequently the locomotive was rebuilt and came out of the shops under the name "Phoenix." It was operated for several years in the service of the road under its new name. Following the explosion the patrons of the road became alarmed, and to allay their skepticism the directors caused a flat-car loaded with bales of cotton to be interposed between the engine and the passenger coaches.

A lady describing her first ride, wrote:

"We not only had no accident but no tendency to one in our 135-mile flight between sunrise and sunset; and it was like magic to be seated with a circle of friends at Augusta, sipping a quiet cup of tea at twilight."

The road enjoyed high favor with the public and in 1838 was authorized by an act of the South Carolina legislature to increase its passenger rates to 7½ cents a mile.

THE RAILROAD COMMISSION of California granted applications to provide funds for additions and betterments and for refunding, collateral, reorganization and miscellaneous purposes, to the amount of $324,666,014.89 to steam railroads during the fiscal year ending June 30, 1920. There are 50 steam railroads, operative; 9 steam railroads, lessor; and 3 steam railroads under construction in the state.

*The South Carolina, described by M. N. Forney in "The American Railway" (1889), had eight wheels and a flexible wheel base.

St. Louis Railway Exposition

A UNIQUE and most successful exhibition of railway appliances was held at St. Louis, Mo., October 25-30. It was developed by a group of railroad officers, representatives of employees, railway supply men and influential citizens of St. Louis to promote educational work along technical lines among railroad employees, and also to develop a spirit of fellowship and comradeship through the several programs.

Two important factors in arranging for the exposition were the St. Louis Railway Club and the Railroad Y. M. C. A. The latter organization loaned its buildings for the use of the exposition, a considerable portion of the first and second floors of the main building being used for the display of the exhibits. The Y. M. C. A. hut, which is on the same plot of ground as the main building and which was used to such excellent advantage for the entertainment of soldiers during the war, was used for the special meetings and for the social activities. It was intended to devote the remainder of the large plot of ground to various concessions under canvas which would lend a sort of carnival effect to the exposition as a whole. This part of the program, however, was interfered with by bad weather. The approach to the grounds was brilliantly illuminated during the evenings and an electrically lighted fountain, which flashed the railroad colors, added to the artistic effect as a whole. The lighting arrangement for the fountain was devised by one of the railroad men in the employ of the Terminal Railroad Association.

There were 35 exhibitors. The attendance averaged better than 1,000 railroad employees a day and the exhibitors are enthusiastic over the interest which was shown. The exhibit was intended purely for educational purposes among the railroad employees, with the thought that if the men thoroughly understood the devices and materials with which they work they could function more effectively.

Every day from noon until 1.00 a. m. of the following morning there was a more or less continuous program, including scientific talks, technical lectures, educational motion pictures, addresses and special demonstrations of apparatus. Special vaudeville programs were presented each evening by different groups of employees. For instance, the Monday evening program was given by employees of the Wabash Railroad; Tuesday was known as Frisco Day; Wednesday, Katy-Pennsy Day; Thursday, Missouri Pacific Day; Friday, Cotton Belt Day, and Saturday, Terminal and American Railway Express Day.

The program at the opening of the exposition included an address by Mayor Henry W. Kiel of St. Louis, and an address by B. C. Winston, assistant attorney and general claim agent of the Wabash Railroad. Other addresses of special note during the week were made by Vice-President A. Hilton of the Frisco; James L. Dalton, president of the Dalton Adding Machine Company; H. J. Bell, secretary, National Safety Council; Thomas O'Donnell, Bureau of Explosives; H. C. Woodbridge, Locomotive Stoker Company; Edwin G. Merriam, general solicitor, Missouri Pacific; L. S. Werthmuller, chairman, St. Louis Sectional Committee, Signal Division, American Railway Association; Col. F. W. Green, vice-president, Cotton Belt Railroad; Clarence H. Howard, president, Commonwealth Steel Company, and Roy V. Wright, managing editor, *Railway Age*.

The large attendance of ladies, including those in railroad service as well as members of the families of railroad employees, was a feature of the special programs in the evening. There was a family spirit about the whole affair which added much to its effectiveness. Special inspirational programs were held by the Railroad Y. M. C. A. on the Sunday afternoons preceding and following the exposition.

About 200 men were included on the committees which had charge of the various activities. The officers of the exposition were: President, I. L. Burlingame, formerly of the Terminal Railroad Association of St. Louis; vice-president, W. C. Doering, Southern Wheel Company; treasurer, F. P. Johnson; general auditor, Missouri Pacific, and secretary, Dr. Rubens Humphrey, general secretary, Railroad Y. M. C. A.

The principal committees with their chairmen were as follows: Exhibition committee, W. C. Doering, Southern Wheel Company; program committee, Dr. Rubens Humphrey, Railroad Y. M. C. A.; entertainment committee, Harry R. McClain; music committee, C. E. Lindquist, locomotive engineer, Terminal Railroad Association; speakers' committee, W. E. Williams, assistant chief operating officer, Missouri, Kansas & Texas; reception committee, T. K. Knight, chief clerk to the general superintendent, Chicago, Burlington & Quincy; finance committee, F. P. Johnson, general auditor, Missouri Pacific; decorating and lighting committee, H. J. Pfeifer, chief engineer, Terminal Railroad Association; publicity committee, B. W. Frauenthal, general passenger and ticket agent, Terminal Railroad Association, and secretary of the St. Louis Railway Club.

The expenses of the exposition were defrayed by a small assessment against the exhibitors on the basis of the square feet of space accupied. Unfortunately the total amount of space was limited and it was not possible to accommodate more than one-half or one-third of the applicants. It has already been practically decided to hold a similar exposition next year, but special arrangements will have to be made to provide larger space for exhibits. The exhibitors and the material displayed included the following:

The Rail Joint Company, rail joints.
Pyrene Manufacturing Company, fire apparatus and extinguisher.
Edna Brass Manufacturing Company, injectors and locomotive appliances.
National Malleable Castings Company, couplers, draft gears and other car specialties.
Southern Hardware and Supply Company, miscellaneous railway supplies and specialties.
The P. & M. Company, rail anchors.
Handlan-Buck Manufacturing Company, miscellaneous railway supplies and specialties.
Certes Supply Company, miscellaneous railway supplies and specialties.
Dalton Adding Machine Company, adding machines.
Monroe Calculating Machine Company, calculating machines.
Sellers Manufacturing Company, tie plates.
Martin Tool Holder and Machine Company, tool holders and machine shop specialties.
The Shaw-Walker Company, office equipment and devices.
Vapor Car Heating Company, car heating equipment.
Scullin Steel Company, freight and passenger car specialties.
Westinghouse Air Brake Company, air brake equipment.
American Brake Shoe and Foundry Company, brake shoes.
Dictaphone Company, office equipment.
Western Railway Equipment Company, miscellaneous railway supplies and specialties.
American Brake Company, air brake equipment.
Con. P. Curran Printing Company, printing and advertising.
Chicago Pneumatic Tool Company, pneumatic tools.
Galena Signal Oil Company, signal and lubricating oils.
Laclede Steel Company, axles, forgings and reinforcing materials.
Gustin Bacon Manufacturing Company, miscellaneous railway supplies and specialties.
Commonwealth Steel Company, freight and passenger car specialties.
Bird-Archer Company, boiler chemicals.
Fairbanks, Morse & Company, motor cars and other specialties.
Bradford Draft Gear Company, draft gears.
Corby Supply Company, miscellaneous railway supplies and specialties.
Elliot Frog & Switch Company, frogs and switches.
Southern Wheel Company, chilled iron car wheels.
Locomotive Stoker Company, locomotive specialties.
National Safety Council, safety appliances.
St. Louis Frog & Switch Co., frogs and switches.

THE BOND MARKET gives assurance that investors are inclined to put their money into transportation enterprises, and during the next five years we may expect great activity in all departments of transportation. Ideal facilities, however, cannot be provided at once; development has been stopped so long that the improvements needed cannot be made in a few months; enlargement of terminal yards and the purchase of equipment costing millions if not billions require considerable time. Besides it is no small undertaking to restore the discipline which deteriorated lamentably under the blight of federal operation, and it may fairly be said that morale is as essential as improvements in the physical property. But a beginning has been made, and if the managers prove that the public can depend upon them for better service than was given by the government, abundant capital will be placed at the disposal of the carriers.—*Providence Journal.*

Railway Electrical Engineers' Annual Convention

Organization Will Probably Soon Become a Part of the American Railway Association

THE TWELFTH ANNUAL CONVENTION of the Association of Railway Electrical Engineers was held in the Auditorium Hotel, Chicago, October 19 to 22, inclusive. The first session, held on Tuesday, October 19, included the address of the president, the report of the secretary-treasurer, the report of the auditing committee, the discussion of new and unfinished business and the report of the committee on illumination. In regard to the question of affiliation with the American Railway Association, President Billau said that the executive committee of the A. R. A. has taken the matter up for consideration and will take action as soon as all necessary arrangements have been made.

The report of the committee on illumination dealt with changes in methods of rating train lighting lamps, changes in rating of locomotive cab lamps, baggage car and coach illumination tests and standard lamp positions for coach lighting units. In the discussion the advantages to be gained by the gas filled lamps were emphasized. It was said that this type of lamp is more efficient than the round bulb lamp, that it will not blacken and that because of the concentrated filament a better light distribution is possible. The position of the lamp in the reflector is important, as a difference of from one-half to three-quarters of an inch in position may reduce the illumination by 50 per cent.

Electric Welding

On Wednesday reports were presented on electric welding, electric headlights and railroad stationary power plants. The work that is being done to develop the art of electric welding was outlined by the welding committee and recommendations were made regarding both experimental and everyday work. The report contained three rules which must be observed if the weld is to be a good one. These rules are (1) proper material for making the weld; (2) rules and methods for properly using these materials; (3) intelligent application of the process to the various mechanical devices or articles that are to be welded. After presenting the report, E. Wanamaker, electrical engineer, Rock Island, enlarged on the subject in substance as follows: Electric welding is the best form of autogenous welding for controlling the character of the metal applied to the weld. It is not a one-man job and needs the best experience of the metallurgist and the mechanical and electrical men. Much trouble has been incurred in the past because the purchase of equipment has been delegated to some one person. Not enough of the departments affected have been consulted. There must, however, be a leader; someone who will be responsible for the work done. A certain few condemn this process of welding because they have not had success and do not attempt to understand why others are able to get 100 per cent good welds.

H. C. Meloy, supervisor electrical equipment (N. Y. C.), asked if electric welding equipment could be used successfully for cutting out rivets in wrecked steel cars, and Mr. Wanamaker replied by saying that it could be done successfully with a large machine or with two machines connected in multiple.

L. S. Billau, assistant electrical engineer (B. & O.), questioned the economy of cutting rivets electrically. Mr. Wanamaker said that it might be done economically where the work in one place is sufficient to warrant the use of a large machine and said further that he was looking for a machine which might be used for both cutting and welding. He added that there was also a need for weather-proof units for out-door service, including some driven by gasolene engines.

Locomotive Headlights

The report of the committee on locomotive headlights was presented by E. W. Jansen, electrical engineer, Illinois Central. The report included tests made on locomotive headlights for yard service and dealt with signal lamps on locomotives and bolt and screw threads for electric headlight equipment. The committee recommended that on locomotives having pressed steel front ends the headlight should not be mounted on the front of the smokebox door, on account of the vibration caused by the pulsating action of the locomotive exhaust, and also on account of the difficulty of the towerman seeing the locomotive number in the headlight case where such locomotives operate in multiple service. It was recommended that the headlight be mounted as high as practicable on the front and above the smokebox door. The need for an improvement of the signal lamp supporting socket or bracket was expressed, and recommendations were made for appointing a joint sub-committee made up of the A. R. E. E. and A. R. A. headlight committees to develop a design, or designs, for standard headlight cases.

Adding to the report, Mr. Jansen said that if test results are to be of value, the tests should be made on the right-of-way. He also said that the test results indicated that smaller headlight lamps might be used.

J. L. Minick, assistant engineer, motive power department, Pennsylvania, agreed wtih Mr. Jansen that smaller lamps might be used, but pointed out that the lamps used must be large enough to allow for depreciation of silvered copper reflectors.

The relative merits of sheet and cast metal headlight cases and of silvered copper and glass reflectors were discussed at considerable length.

Railroad Power Plants

The report of the committee on stationary power plants was presented by L. C. Bowes, supervisor stationary power plant (C. R. I. & P.). The report included a capacity and distribution chart for making railroad power plant layout and dealt with minor requirements, power and air capacities for engine terminals, values for estimating steam consumption, distribution of heating charges and the modernization of stationary power plants to better adapt them to existing conditions.

J. R. Sloan, chief electrician, Central Region, Pennsylvania, spoke of the need for adequate pipe covering and suggested the use of colors for different kinds of pipe with arrows to show the direction of flow. J. E. Gardner, electrical engineer (C. B. & Q.), enlarged on the subject of pipe covering and suggested the use of small electrically driven air compressors for avoiding unnecessarily long air lines.

It was suggested that while superheat is desirable for railroad stationary power plants, it must be adopted with discretion as it may cause lubrication difficulties. Powdered fuel, it was said, effects only a little saving and is difficult to handle.

Electric Traction

The report on heavy electric traction was presented by J. R. Sloan, chief electrician, Central Region, Pennsylvania. From the manner in which this report was prepared, the greater part being in the form of an extensive table, only a

small part was read. The table listed the kind of equipment used by railroads which have electrified divisions. After presenting the report Mr. Sloan called on Mr. Allen, of the General Electric Company, to give a short talk upon the general subject. In response to this invitation Mr. Allen outlined briefly the various problems likely to be encountered in electrification projects, dwelling particularly upon what he considered a very important development, namely, the automatic substation. Mr. Sloan then called upon Q. W. Hershey, of the Westinghouse Electric & Manufacturing Company.

Mr. Hershey said that he felt the subject of electrification was one that should be considered from the standpoint of the road, the main issue being whether or not a road should electrify, rather than the consideration of the details of operation. Mr. Sloan added that it was more a matter of economy than of engineering. One type of electrification, he said, might be better suited than another to certain roads, but the economics of the question are changing continually, and 10 years ago a road which might have lost money by electrifying, might now find the proposition financially sound.

A. G. Oehler, of the *Railway Age,* called attention to the fact that so many associations were interested in the subject of electrification that various roads were being asked for so much duplicate information that it was becoming more or less of a nuisance to them. He suggested that the A. R. E. E. should prepare to take part in a movement, including all of the interested societies, to do away with unnecessary duplication of work. Mr. Billau stated that the committee had this matter under consideration.

In reply to a question as to whether or not electric locomotives were in use in switching service, it was stated by one of the manufacturers that electric locomotives could be built for any class of service desired for operation on either alternating or direct current. It was stated that the St. Paul was using a switching locomotive operating at a speed of from eight to ten miles an hour. Mr. Wanamaker emphasized the importance of a thorough consideration of electrification from the standpoint of greatly increased transportation facilities. He said that the railroads wanted all the information they could get on the subject. He also touched upon the relation of banking interests to the general subject.

Train Lighting

The train lighting report was presented by Mr. Billau. This report was substantially the same as when presented at the semi-annual convention in June, with a few minor changes, which were recommended at that meeting. Mr. Billau stated that the report as it stood now had already been accepted by the Committee on Train Lighting and Equipment of the American Railway Association. Some changes were suggested and Mr. Billau recommended that these be incorporated in next year's report.

The portion of the report dealing with battery box clearance, which was recommended last June, was read by E. Lunn, chief electrician, Pullman Company. The general consensus of opinion on that point seems to favor increased battery clearances, wherever they have been tried out. The question of direct drive was also touched upon and it was suggested that the committee give this matter some consideration in next year's report.

The report on Electric Repair Shop Facilities and Equipment was submitted by E. H. Hagensick, electrical engineer, Union Pacific. The object of the committee was to outline the requirements of a suitable electric repair shop for taking care of shop motors and various other electrical repairs apart from train lighting equipment, with the possible exception of armature repairs for train lighting generators. The principal point emphasized was the necessity for adequate facilities for performing the work required properly and efficiently. It was pointed out that too many times repair shops receive practically no attention whatever, or were located in some out of the way corner, without any opportunity of functioning efficiently.

Electric Trucks and Tractors

The final report of the convention, which was presented on Friday morning, was on the subject of Trucks and Tractors. It was stated that the work of the committee was of a preliminary nature, due to the fact that this work was the first of its kind to be done. It was found difficult to get much concrete information, for the reason that the field is extremely large. The chairman of the committee stated that the information secured had been obtained by a questionnaire sent out to the operating officials of the various roads. This course was pursued for the reason that trucks and tractors are at present largely in the charge of storekeepers and freight agents. In answering the questionnaire one road took the matter on a strictly labor basis, while another gave quite full details as to just how they arrived at the figures presented. The majority of the roads say they are saving money, but cannot tell how much on account of the fact that the equipment is not in charge of technical officers.

On the request of the committee, K. R. Hare, district manager, Transportation Engineering Corporation, gave a brief outline of some of the conditions he had found in his experience in connection with truck and tractor users. Mr. Hare emphasized the importance of making an individual study of conditions existing in any locality before making an attempt to specify truck, tractor or trailer equipment. He said that installations sometimes fail simply because conditions were not suited to standard equipment, whereas if special equipment was installed they were completely successful. Three-wheel tractors, he said, have a decided advantage in turning in narrow places. He cited one instance where a saving of $50,000 a year was being used to pay for the equipment installed, which made the saving possible. Computing the savings in terms of men, he stated, the work of as many as 25 men per tractor had been saved, and that the average saving was about the equivalent of 10 men. These figures refer to conditions such as found in freight houses, loading platforms and similar classes of work. In shops the lift type of truck has become most popular where it is possible to use them. Loading skids are now generally used.

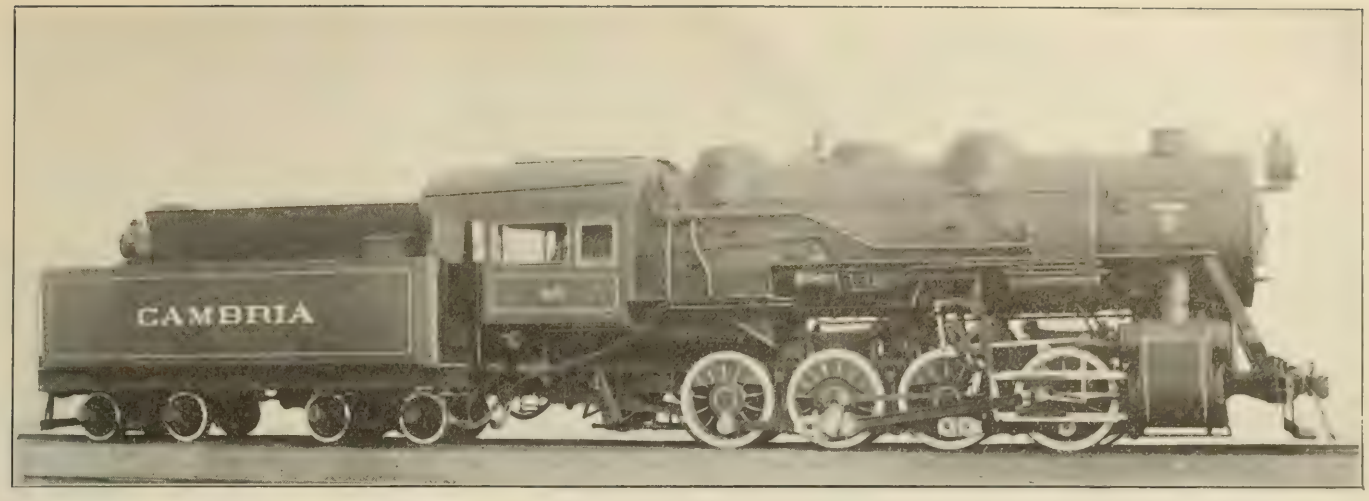
For small shops the ordinary load-carrying truck is possibly the most efficient. As a comparison, it was stated that the ordinary hand truck was capable of handling about 300 lb. at a speed of approximately one and a half miles an hour, whereas the load-carrying truck could easily handle 4,000 lb., at a speed of from three to four miles an hour.

It is important to have some one on the ground who understands trucking thoroughly, so that a system can be adopted which is effective. It was also pointed out that each installation was special, and that if necessary, specially designed equipment must be used in some cases, in order to secure successful results.

It was stated that such gasoline tractors as are in use find their application almost exclusively in industrial plants. Practically all trucks used on the railroads are of the electric type.

One of the most important factors in connection with any truck or tractor installation is the need of a good roadway over which the equipment is operated.

The meeting was concluded by the election of officers. The officers elected were: President, L. C. Hensel, electrical engineer (St. L.-S. F.); senior vice-president, E. S. M. MacNab, car lighting engineer (G. T.); junior vice-president, E. Lunn, chief electrician, Pullman Company. Two new members elected to the executive committee were Charles R. Sugg, electrical engineer (A. C. L.), and E. Marshall, electrical engineer (G. N.).



High Capacity Switcher for Cambria Steel Company

Heavy Power for Industrial Switching Service

Description of Several Interesting Locomotives Recently Designed for Industrial Service

THE DESIGN of locomotives for industrial service presents an interesting variety of types. The fuel problem does not affect the industrials to the same extent that it does the railroads, hence these locomotives have less to show in the way of refinements although the use of the superheater is becoming quite general on industrial switching locomotives. The power reverse gear has also come into general use as the value of this device as a time saver in switching service is recognized in industrial as well as in railroad yard service. The predominating characteristics of this class of power are simple, rugged construction and high capacity.



Six-coupled Switcher with Young Valve Gear

Cambria Eight-Coupled Switcher

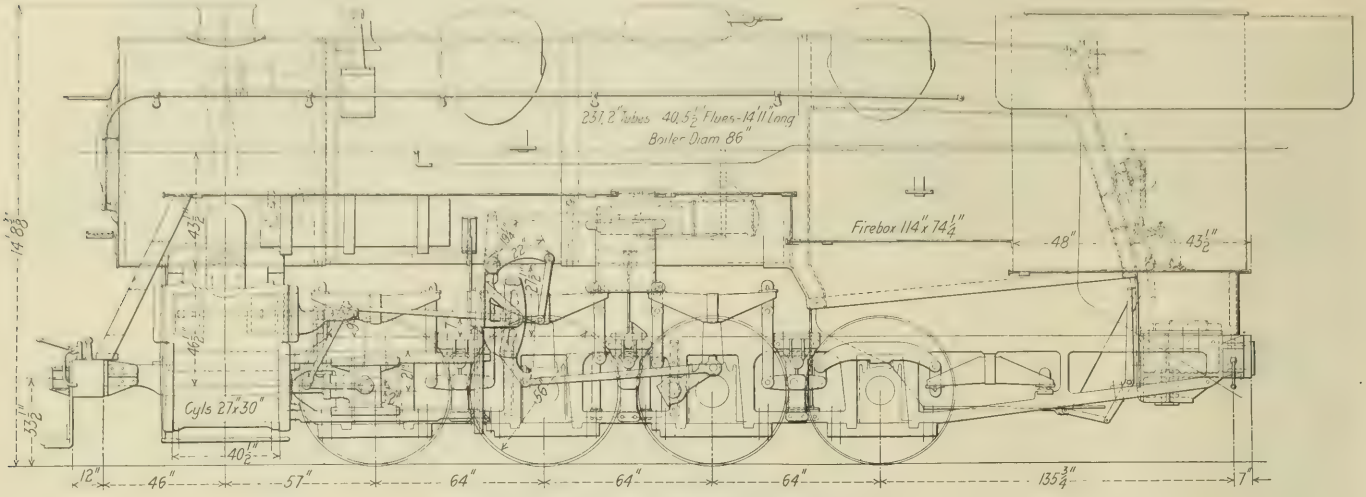
The Baldwin Locomotive Works has recently delivered two eight-coupled switching locomotives to the Cambria Steel Company which were designed in accordance with the regular practice of the builders. The design is simple throughout, with all parts of ample strength for severe service. These locomotives operate on maximum grades of 1½ per cent combined with curves of 12 deg. and they are capable of traversing curves as sharp as 24 deg. They are notable chiefly because of their high capacity. They exert a maximum tractive effort of 68,000 lb., which has not been exceeded by any other eight-coupled non-articulated locomotive thus far completed by these builders. The engines operate on rails weighing 85 to 100 lb. per yard.

The boiler is of the straight top type with a wide firebox and has the unusual diameter for a switching locomotive of 86 in. The front end of the firebox is supported by three rows of Baldwin expansion stays. The grates are arranged with drop-plates at the front and rear, and the ash pan has a single hopper of large capacity. A power operated firedoor is installed. The frames are six inches wide, of heavy construction, each frame being cast in one piece with a single front section to which the cylinders are bolted. The transverse braces include steel castings at the second and third pairs of driving pedestals which extend the full length of the pedestal jaws. The frames are also braced transversely between adjacent driving wheels. The locomotives are cross equalized in front and the equalization system is divided between the second and third pairs of driving wheels.

The valve motion, which is controlled by a Ragonnet power reverse, is of the Walschaert type designed to give

the valves a lead of $\frac{1}{8}$ in. The crosshead links are attached directly to the wrist pins, an arrangement which simplifies the construction and reduces weight, and is desirable provided there is room for a sufficiently long combination lever. With a maximum height limit of 14 ft. 8¾ in. and a width limit of 10 ft. 2 in., it was necessary to give careful attention to the location of the boiler mountings. The sand boxes are four in number, placed two right and two left, and the amount of space, has been placed at the side of the firebox on a level with the mud ring. The reverse shaft is placed between the second and third pairs of drivers; and the links, which are driven directly from the crosshead pins, are supported by longitudinal bearers outside of the second pair of drivers.

The main rods are connected to the rear driving wheels. The main stubs are of the strap type, fitted with adjustable



Elevation, Cambria Eight-coupled Switcher

bell is mounted on the round of the boiler on the left hand side. The cab roof is shaped to conform to the Pennsylvania Railroad clearance diagram.

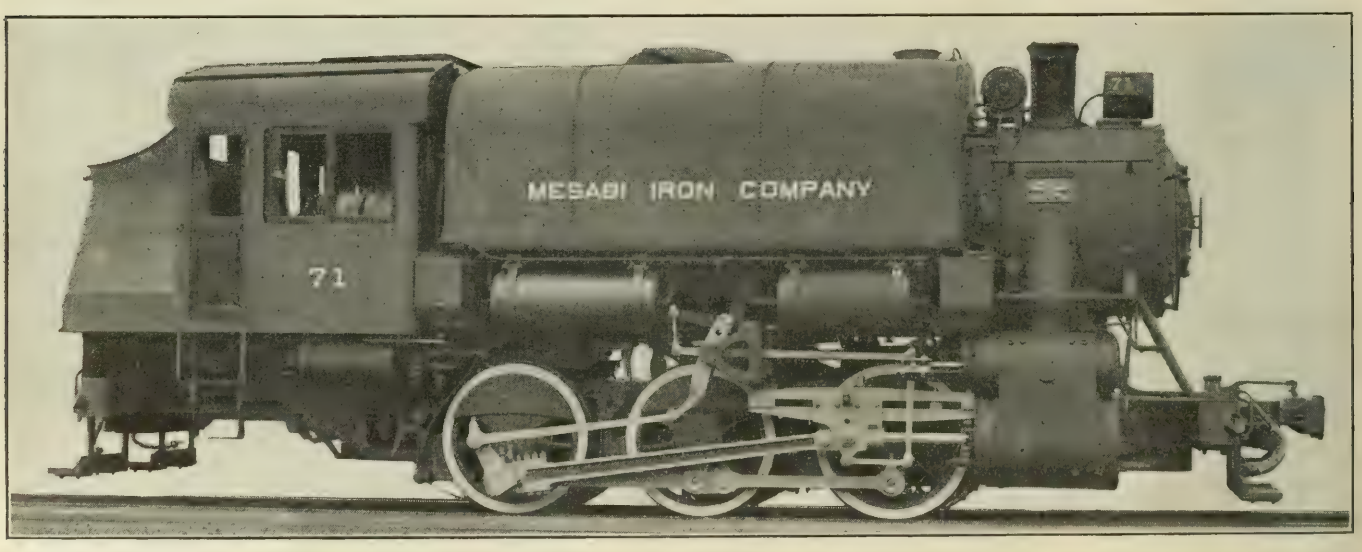
Six-Coupled Switcher for Transfer Service

Another heavy switching locomotive recently built by the Baldwin Locomotive Works is for the Chicago, West Pullman & Southern. This is a six-coupled switcher and is one of the heaviest locomotives of this type ever constructed by these builders. It weighs 178,200 lb. and develops a tractive effort of 44,400 lb.

The cylinders are 23 in. in diameter with a 28 in. stroke and piston valves 14 in. in diameter are used. The valves have a steam lap of 1 5/16 in. and are set with a 3/16 in. lead, the travel being 8¼ in. The maximum cut-off is 88½ per cent. The Young valve gear is applied and is controlled by a Ragonnet power reverse which, owing to the limited cast steel wedges, and so designed that the brasses can be removed without taking down the straps. The piston heads are of steel, and are made with a dished section to reduce weight. The boiler is of the straight top type with a wide firebox. The locomotive is equipped with a superheater and has a power operated fire door.

Heavy Saddle Tank Locomotives

The saddle tank type of locomotive still occupies a prominent place in industrial switching service. The additional load imposed by the water and fuel carried increases the factor of adhesion materially and where sustained boiler capacity is not the most important factor, locomotives of this class can render very effective service. In fact it is probable that the type would prove very useful in certain classes of railroad service as in coach yard work or more particularly in switching service around mine tipples.



Saddle Tank Locomotive with Over 35,000 Lb. Maximum Tractive Effort

The American Locomotive Company has recently designed an unusually heavy locomotive of this type which has met with considerable favor in industrial service. The locomotives are designed to operate on lines having 4 per cent grades and 12 deg. curves. Unusual flange wear is anticipated and flange lubricators of the Swanson type are applied. The locomotives have Westinghouse air brake equipment for train service and the American steam brake for locomotive use. On account of the restricted space available for the air pump, they are applied in such a manner that provision must be made for lowering them through the locomotive cab.

Three of these locomotives have been delivered to the Chino Copper Company, one to the Jeffrey Manufacturing Company and three to the Mesabi Iron Company. The locomotives for the Mesabi Iron Company are equipped with superheaters. These engines have a tank capacity of 2,500 gal. and fuel capacity of 2½ tons.

Principal Dimensions

The principal dimensions of the locomotives described are as follows:

	Baldwin Locomotive Works		American Locomotive Co.
	Eight-coupled switchers	Six-coupled switchers	Saddle tank locomotive
General data:			
Tractive effort	68,000 lb.	44,400 lb.	35,100 lb.
Factor of adhesion	4.0	4.0	4.7
Weight in working order	270,000 lb.	178,200 lb.	165,000 lb.
Weight of engine and tender	425,000 lb.	338,700 lb.	.....
Wheel base, driving	16 ft.	11 ft.	10 ft. 6 in.
Wheel base, engine and tender	52 ft. 2 in.	46 ft. 11½ in.	.....
Cylinders:			
Diameter and stroke	27 in. by 30 in.	23 in. by 28 in.	21 in. by 26 in.
Valves:			
Diameter	14 in.	14 in.	11 in.
Wheels:			
Driving diameter over tires	56 in.	51 in.	50 in.
Boiler:			
Working pressure	205 lb.	180 lb.	180 lb.
Diameter	86 in.	78 in.	62 in.
Firebox, length and width	114 in. by 74¼ in.	90 in. by 66 in.	90⅛ in. by 41¼ in.
Tubes, number and diameter	237-2 in.	228-2 in.	128 ft. 2 in.
Flues, number and diameter	40-5½ in.	36-5½ in.	19-5½ in.
Tubes and flues, length	14 ft. 11 in.	12 ft. 6 in.	10 ft. 6 in.
Heating surface, tubes and flues	2,710 sq. ft.	2,126 sq. ft.	982 sq. ft.
Heating surface, firebox	238 sq. ft.	158 sq. ft.	119 sq. ft.
Heating surface, total	2,948 sq. ft.	2,284 sq. ft.	1,101 sq. ft.
Superheater heating surface	750 sq. ft.	552 sq. ft.	227 sq. ft.
Grate area	57 sq. ft.	41.2 sq. ft.	25.8 sq. ft.
Tender:			
Water capacity	8,000 gal.	8,000 gal.	2,500 gal.
Coal capacity	14 tons	14 tons	2½ tons.

Railway Executives Meet in New York

THE MEMBER ROADS of the Association of Railway Executives met in the board room of the New York, New Haven & Hartford in the Grand Central Terminal, New York, Friday, October 29.

The attitude of the Association regarding the centralization of the settlement of labor disputes into the hands of adjustment boards was discussed at some length. The Association as a result of this meeting has gone on record as opposed to this centralization. Section 302 of the Transportation Act, under which the railroads are prepared to demand freedom of action, reads that "railroad boards of labor adjustment may be established by agreement between any carrier, group of carriers as a whole, any employees or subordinate officials of carriers, or organization or group of organizations thereof."

The railway labor unions proposed to the Association that it join with them in certifying as a dispute to the National Railway Labor Board the question of the establishment of these boards to decide all railway labor questions. The Association refused to join in certifying this question as a dispute, taking the view that the decision of the question was not within the jurisdiction of the Board. It was pointed out that Section 302 of the Transportation Act provides for the formation of these labor boards upon the agreement of the carriers on the one hand and the employees on the other. The National Railway Labor Board, then, cannot make any mandatory decision without the consent of the railways; Section 302 is not operative without the joint action of the employees and the carriers; and the Association has decided that it will not, as a whole, favor the establishment of the adjustment boards at the present time. Attention was called to the fact that the Association on September 8 requested a conference with the National Railway Labor Board on the question of the establishment of these adjustment boards. The Association asked that representatives of the employees and the public be admitted to the conference. The purpose of the conference was simply to allow an exchange of views and a statement of position. The Association did not concede the authority of the Board to hand down a decision in the case. As yet the Board has not granted the Association's request for a conference.

Increase in Per Diem

The member roads of the American Railway Association have recently voted on the question of increasing the per diem rate from 90 cents to $1.10. A majority of the roads voted favorably but not enough to include the ownership of two-thirds the cars which was necessary for action. The meeting of the executives took up this matter and in view of this vote and the general reductions in prices of commodities throughout the country it was voted, after some discussion, to suggest another vote on the increase in per diem on the basis of a proposed rate of $1.00.

Some time was devoted to the reports of the various members concerning conditions on their lines. Heavier loading of cars and greater mileage per car per day were reported, showing that the campaign of the Association for "more transportation" is bearing fruit. The saving effected in speeding up car movement and in increasing the load per car was said to be equivalent to the addition of 500,000 new cars, with loading and mileage at the rate they stood when the roads were returned to their owners on March 1. Since that date the average daily mileage per car has increased from 22.3 to 27.4 and the average tonnage per car from 28.3 to 29.6.

Other facts brought out at the meeting were that 135,000 freight cars have been retired from service since federal control because of their unfitness for further use, that the number of locomotives out of service awaiting repairs is 19.7 per cent of the total in use, and that the number of freight cars in service today is somewhat less than the number at the expiration of federal control.

No Discussion of New Rates

No formal discussion took place concerning the reports of September earnings, the first under the increased rates. It was not thought best that any course of action or official opinion be decided in reference to the new rates until reports for the returns of a few more months were available. It is understood that the showing of the September earnings was a source of some disappointment to many, but some of the executives are said to have stated that the September returns were abnormal in many ways and that the full effect of the new rates would not be felt until November.

The question of the determination of the percentage to be charged for depreciation of various forms of railroad property under Section 20 of the Interstate Commerce Act, as amended by the Transportation Act, was brought up and, after some discussion, referred to the valuation committee for further investigation.

George W. Stevens

GEORGE W. STEVENS, president of the Chesapeake & Ohio, fell dead at the Greenbriar Hotel, White Sulphur Springs, W. Va., on November 3 while dictating to his stenographer. His death was due to paralysis. Mr. Stevens was 69 years old. He had been president of the Chesapeake & Ohio continuously since 1900 with the exception of the period of federal control when he was federal manager.

Mr. Stevens attained the position of president of the Chesapeake & Ohio following a training in the operating department. He entered railway service as a messenger in the employ of the Baltimore & Ohio in 1864 at the age of 13. He was employed by that road until 1870, when he became an agent on the Pittsburgh, Cincinnati & St. Louis, now part of the Pittsburgh, Cincinnati, Chicago & St. Louis. Following three years service with that road he became a despatcher on the Wabash, St. Louis & Pacific, now the Wabash, and he had worked his way up to the position of assistant general superintendent when seven years later he left to become general superintendent of the Chesapeake & Ohio.



G. W. Stevens

It would be very interesting to sketch the development of the Chesapeake & Ohio in these 30 years in which Mr. Stevens was connected with it. In 1890 when he became general superintendent the road had been out of the hands of receivers but a short time. It was then controlled by the Morgan interests and Mr. Stevens was the man that those in charge finally selected to put it on its feet. The president of the road during the period in question—namely 1888 to 1900 — was Melville E. Ingalls. Mr. Ingalls was a lawyer, and not an operating man, so that the actual operation of the property was in the hands of Mr. Stevens, who at this time held the position of general superintendent and later that of general manager. In 1900 control of the road passed to the New York Central and Pennsylvania Railroads. Mr. Ingalls resigned and Mr. Stevens succeeded him as president on February 1, 1900. When control of the road again changed in 1906 to the syndicate headed by Edwin Hawley, and Frank H. Trumbull was elected chairman of the board, Mr. Stevens was also continued in his position as president. It will thus be seen that Mr. Stevens served as operating head under no less than three different administrations. If federal control were included, one would say four. This indicates beyond question the respect paid to his knowledge of the Chesapeake & Ohio and his ability to operate it successfully. It will be noted, however, that Mr. Stevens was not at any time during his 30 years connection with the road its financial head.

Enough has been said to indicate that Mr. Stevens' sympathies were with the operating department. This will not be construed to mean, however, that he did not understand the importance of the duties of the other departments or that he failed to have a keen appreciation of their problems. As an operating officer he was a strict disciplinarian. The stories told of him are to the effect that he had a temper by no means mild, but that when the storm was over, it was settled and all concerned were friends again. His popularity with the rank and file and with his fellow officers was noteworthy.

An interesting sidelight on his ideas and character is shown in connection with his keen interest in Y. M. C. A. work. In the early nineties, when he was general superintendent, he assisted in the establishment of the first Y. M. C. A. on the Chesapeake & Ohio at Hinton, W. Va. This proved so successful, and so much was Mr. Stevens impressed with its success that he lent his practical and sincere co-operation, until today there is a railroad Y. M. C. A. at every division point on the Chesapeake & Ohio. Mr. Stevens had taken a great interest in the International Railroad Y. M. C. A. Conference, which will be held at Richmond, November 18 to 21. It was largely because of his cordial invitation that Richmond was selected and he had made arrangements for co-operation, with special train service, etc. He had also sent out a personal letter to a large number of railroad officers to be present at a dinner to be given by him in connection with the conference. Comment on these facts is hardly necessary.

George W. Stevens was born at Utica, Ohio, in 1851. He attended school in his native town until the age of 13. He began work in 1864 on the Baltimore & Ohio, by which road he was employed for six years, first as a messenger boy, then as agent's clerk, and later as an operator. On February 1, 1870, he went to the Pittsburgh, Cincinnati & St. Louis, now part of the Pittsburgh, Cincinnati, Chicago & St. Louis, with which road he served successively as agent, despatcher's assistant and train despatcher. From 1873 to 1890 he was employed by the Wabash, St. Louis & Pacific and its successors which now constitute the Wabash. For eight years of this period he was train despatcher. He was then for two years superintendent of the Ohio & Indiana division; for the next 3½ years superintendent of the Eastern division and from January, 1887, to 1890, assistant general superintendent. He became connected with the Chesapeake & Ohio on January 1, 1890, as general superintendent. He was later made general manager, and on February 1, 1900, he was elected president of the property, succeeding Melville E. Ingalls. With the exception of the period of federal control, when he was federal manager, he held the position of president continuously until his death. In March, 1910, he was also elected president of the Hocking Valley, and in July, 1910, president of the Chesapeake & Ohio of Indiana.

THE MEXICAN POSTAL AUTHORITIES have arranged for air mail service between Mexico City and Tampico, a distance of about 185 miles. The time to be taken for the trip, it is estimated, will be about three hours.

The Necessity for Automatic Train Control Devices*

The Failure of the Human Element at a Critical Moment Makes Necessary a Mechanical Check

By W. G. Bierd
President, Chicago & Alton

There is, as is well known to all operating officers, a great necessity for something much better, more perfect and more reliable than present train control devices. The progress of train control, as we have it today, has been steady but slow. Only a short time back we had very simple signals displayed through the operator by direction of the train dispatcher. Finally we worked out the block signal system in a crude form. That had only begun to be effective when the greatest and most perfect train control device of all was handed to us in the automatic air brake as we now know it; in the beginning, however, it was not automatic and was what we then knew as the straight air brake. The braking capacity was on the engine, and its use was entirely dependent upon the engineman's application; the train, whether freight or passenger, long or short, was free. Bad results, collisions and breaking of equipment all followed when the automatic air brake was first developed. But it has been perfected to the high degree we now find it, so that when used properly we have an absolutely perfect train control, assuming that the mechanism is working as it was constructed to work. It has been so perfected that there is very little opportunity of failure. It is the operating man's experience with all of these devices which have been so ably perfected that we have perfect automatic train control, providing the human agency operates as perfectly as the apparatus.

Failure of the Human Agency

The failure of the human element is the thing now to be overcome. Nothing more would be needed than what the present automatic train control furnishes were it not for the failure of man. Therefore, we come to the point where we can no longer say automatic train control. We have to consider automatic train *stopping*. That is what we are seeking, and that function must be automatic.

We have the failure of the flagman. His duties are simple and very plain. We can discipline, educate, school, and make a very perfect flagman, but we have never been able, and we must assume that we cannot control the weaknesses of that human agency. It is really remarkable what does occur when men fail in performing their duties. I have been investigating such cases for a good many years, and I have been on the side to be investigated. I have made errors myself, and I have found every other employee of a railroad makes errors. In the train service and engine service there are three outstanding reasons for men's failure. For a long time failures were attributed to the drinking of liquor, and this was considered the greatest evil to contend with. It has been my experience, that railroad employees became a perfectly sober body of men some time back, so that the element of intoxication has not been seriously prevalent for some little time.

Yet other reasons exist. The largest number of failures of men in train service is due to various domestic troubles, such as illness in the family or illness of the man himself. Any thing that directly affects the harmony and peacefulness of the home, puts the man in an irresponsible frame of mind. When the family or home is a subject of concern to him he broods and studies over that more than any other one thing. No matter how simple, how thorough rules may be, or what precautions have been taken, men have left the classroom, instructed in every respect in their duties and upon the rules, and yet the striking thing is the way in which they forget their obligations. The mind ceases for that fatal moment to serve the man until the accident occurs, and because of that temporary derangement or absence of the mind, he makes a mistake. I have never yet found even an approach to the cure or remedy, and lack of safety is with us in the operation of trains, just so long as we rely on that human agency. A man ill is not fit to perform the duties of a locomotive engineer or a conductor, whose responsibility for the safety of the train is great.

Another important thing that there is no means of overcoming is a man's financial obligations. Just so long as things weigh down the mind to a degree that temporarily it is not a responsible one we must expect failures to occur. This has been emphasized more distinctly since our present method of signaling has been in effect than when we were dependent on the train order with the ordinary meeting point. Men have sat in their cabs knowing what the automatic signal was for, that it indicated caution or a positive stop, and yet have failed to observe or obey it and have allowed an accident to occur.

Then again we have failures that it is never possible to clear up or satisfy ourselves about.

If these things are true, and my experience has proved to me that they are true, then we must look for a truly automatic train control or train stop. That is what signal engineers have got to study and produce, if it is possible to do so. Automatic signal control of trains is about as near perfect as we could hope for, but it fails in that it cannot step in and perform the functions of the man when he fails. Therefore, we must look for and have that device, or mechanism, which will take the place of the man when he fails.

The Train Control Problem

We will have to rely upon the human agency for a time until those desired automatic devices are produced.

What should we undertake to do? Deal with and study the entire question as a whole, or first consider terminal protection? Out in the country, on straightaway lines of road it is true that the speed is higher, and to that extent the hazard perhaps the greater. We have accidents upon these tracks and with this class of trains, but in the congested terminals many movements are being made at the same time. Shall we devote our efforts to terminal protection, first?

My thought is that this is the first essential for the reason that, with any of the present mechanisms, as far as I know, the effect of high speed is not yet thoroughly overcome where the moving train and automatic control devices come in contact. I think that is the weakest point of any one of the present systems. We can work out the problem in congested terminals, because, as a result of present day operation, the speed of the trains and their approach is quite different there from what it is on high speed tracks.

Next it would be desirable to consider important crossings

* From a talk made before the joint meeting of the Western Society of Engineers and Chicago Sectional Committee, Signal Division, A. R. A., at Chicago, October 21, 1920.

At these places is located the only positive automatic stop that we now know, the derail, but this stop is attended always with disaster when the human agency fails. The railroad crossing is of great importance, and we must find something better than the present method of forcible stopping when the human failure occurs.

Necessity for Better Protection

It is no longer necessary to talk about the need of a better train control device. I doubt if any of us realizes in our own busy life and in our own small sphere, the loss of life and limb and personal injuries and death that are occurring in this country in the operation of our trains. This is still entirely too high to even think that it should be permitted to go on, when something better can be had. The loss of life runs into hundreds yearly. It does not seem possible that a word is necessary from me to impress upon any one the necessity of a better device, if such a better device is known. Therefore, I think it is as plain to each of you in your professional life as it is to me from an operating standpoint, that such a device is absolutely necessary.

Congress has been interested in this subject for a long time, but not in the way it should have been. It was a passing interest. It directed the Interstate Commerce Commission to make certain investigations which were made and reported back to Congress.

It hardly seems reasonable that such a process should have been permitted over the period of time that has passed. Congress is a large and unwieldy body of men, viewing things from different angles, slow to act, as a central government is always slow to act in such public things, while as public agents entrusted to protect the government, they are too prone to allow the individual, the corporation or the man himself to work out the device. Individuals were allowed to work out and perfect the signal. The government gave little help and assistance to bring about such a splendid device. The same was true with the air brake, and so on throughout the list.

The Need for Government Help

The government has done nothing in this important matter and it was said that if the railroads had expended the amount of money on developing the automatic train stop or control that they have upon signaling and interlocking plants, train control would be a developed reality today.

I want to reverse that and say that if the United States government had expended as much money to develop a train control device as it has expended upon its agents traveling through the country to try to find out the details of what caused accidents and injured or killed people, we would have developed and perfected a train control device today. The railroads are practically in the hands of the Interstate Commerce Commission. Congress has taken a definite and direct step in the right direction, and it has said to the Interstate Commerce Commission that "you are now empowered to say to and compel the railroads to develop and operate, as early as possible, these improved automatic train controls or train stops."

I believe that Congress should be appealed to through the Interstate Commerce Commission for a definite and ample appropriation of money with which to employ the best talent there is, divorcing the men from their many duties at home, and put them upon this task; let them develop and perfect it, and it will be unnecessary for this device to go through a long process of development as did the signal, the air brake and the other safety appliances on railroads today.

Therefore, it is my conclusion, that our general government will not have performed its full duty until it has made proper appropriation and placed it in the hands of the Interstate Commerce Commission, with direction that it shall be used to perfect this much needed device.

Wood Preservation Statistics for 1919

TIMBER PRESERVATION in the United States received a considerable impetus during 1919, which has served in some measure to overcome the gradual decline of this industry since the banner years of 1913 and 1914. This is the predominating fact brought out by the statistical report prepared by the United States Forest Products Service in co-operation with the American Wood Preservers' Association and published in the annual proceedings of that organization.

According to these statistics the volume of wood treated in 1919 was 139,878,584 cu. ft. as compared with 122,612,890 cu. ft. in 1918. The number of railroad cross-ties treated in 1919 was 37,567,927, as compared with 30,609,209 in 1918. The amount of piling treated in 1919 was 13,557,519 lin. ft. as compared with 12,286,517 lin. ft. in 1918. In wood blocks there was a reduction in the total from 2,398,869 sq. yd. in 1918 to 1,795,687 sq. yd. in 1919. There was also a reduction in the treatment of cross arms, the total in 1919 being 121,507 or about one-sixth of the total for 1918. The treatment of construction timbers aggregated 144,742,477 ft. b.m., representing a healthy increase over the preceding year.

With an increase in the activity in the timber treating industry, there has been a corresponding increase in the consumption of preservatives in both foreign and domestic creosotes and in zinc chlorides. The total consumption of creosote was 65,556,247 gal., or over 12,000,000 gal. more than was reported the year before. Of the total for 1919, only 11,268,379 gal. was imported creosote, although this represents a large increase over the amount of this preservative imported in 1918. Zinc chloride is becoming an increasingly important factor in the timber preserving field as indicated by the consumption of 43,483,134 lb. of zinc chloride in the past year, exceeding the quantity used in 1918 by 12,382,023 lb.

The table shows comparison of the consumption of preservatives from 1909 until 1919, inclusive.

CONSUMPTION OF WOOD PRESERVATIVES BY THE TREATING PLANTS OF THE UNITED STATES, 1909 TO 1919

Year	Plants, number	Creosote (a), gallons	Zinc chloride, pounds	Other Preservatives (b), gallons
1909	64	51,431,212	16,215,107	(c)
1910	71	63,266,271	16,802,532	2,333,707
1911	80	73,027,335	16,359,797	1,000,000
1912	84	83,666,490	20,751,711	3,072,462
1913	93	108,373,359	26,466,803	3,885,738
1914	94	79,334,606	27,212,259	9,429,444d 2,486,637
1915	102	80,859,442	33,269,604	3,205,563d 1,693,544
1916	117	90,404,749	26,746,577	5,675,095d 582,754
1917	115	75,541,737	26,444,689	7,579,819d 137,361
1918	107	52,776,386	31,101,111	4,057,862d 28,013
1919	108	65,556,247	43,484,134	2,412,592d 102,011

(a) Includes coal-tar creosote and water-gas tar.
(b) Includes refined coal-tar, corrosive sublimate, and carbolineum oils.
(c) Statistics not available.
(d) Paving oil.

The number of railroad cross-ties treated in 1919 was 37,567,927, as stated above. Of this total 26,662,277 were hewed and 10,905,650 sawed. Oak ties which formerly led in quantity treated dropped to second place with a total of 13,082,530, pine ties taking first place with a total of 13,896,820. Douglas fir ties were third with 4,085,950, and western pine fourth with 1,641,265.

As was the case in 1918 more cross-ties were treated with zinc chloride than with creosote. The number of ties that were injected with the first-named preservative was 19,637,448, while 14,979,405 ties were treated with creosote. A total of 2,950,074 ties were given the emulsion treatment, and 1,000 ties were treated with miscellaneous preservatives.

The Bridge and Building Convention at Atlanta

Reports on Forms for the Inspection of Structures and on the Reclamation of Materials

THE REPORT of the principal activities of the Thirtieth Annual Convention of the Bridge and Building Association which was held in Atlanta, Ga., on October 26-28, inclusive, was published in the issue of last week. Owing to lack of space it was necessary to hold out two reports which are abstracted below, together with a report on the closing business of the convention.

Report on Standard Forms for Bridge Inspection

To fulfill all the needs and serve as a standard pattern, any series of forms worthy of recommendation must conform to the following principles:

1. Facility in recording notes and saving the man in the field all unnecessary and onerous labor is a first requisite.
2. A diagram, sketch, or caricature of the structure to be inspected is a distinct necessity.
3. Provision for accurately recording conditions and findings which can be interpreted correctly in a review of the notes by anyone at any time subsequent to the inspection is essential.
4. Clarity of reference in the notes to any particular member so that the thought of the inspector cannot be misconstrued is of prime importance.
5. Utilization of the notes for maintaining correct office records of the consist of structures presents the best and most economical method known.
6. Provision for the compiling of field notes in a readily accessible form for subsequent use and future reference in the office is imperative.
7. A minimum of labor and expense must be involved in equipping the inspector with a concise and compact record of the consist of structures and findings of previous inspections.
8. The inspection is only the first step in the maintenance of structures, and the inspector's notes form the basis of the entire program of work. Forms, therefore, must facilitate the work of compiling bills of materials, making requisitions, and the issuance of shipping directions without error or confusion.
9. Any common standard proposed must be adaptable to all railroads regardless of mileage or form of operating organization, sufficiently comprehensive to cover all types of structures, and adequately elastic to permit of general or detailed expansion.
10. Simplicity and economy consistent with the end sought dictate that the number of forms be a minimum.

With these premises as a guide, the work of preparing a series of standard forms was undertaken. Some scheme of forms embodying sketches of structures was first considered. This immediately suggested the segregation of metal from wooden bridges. The sketch system was finally abandoned as entirely impracticable. Final recourse was had to the method of symbolic reference and forms worked out along this line. As the work and study progressed, it was evident that, by this method, one style of forms could be made to cover every type of bridge structure used. Great difficulty was encountered in symbolizing the different types of structures and kinds of construction. The symbols, as finally adopted, consist usually of the initial letter of the word or words by which the structure or kind of construction is customarily described.

With these conditions as a basis a series of four forms were presented, the first being a key to structural types and kinds of construction, the second a record on which is entered the formation as to the type, consist or make up of the structure, the third designed for use with culverts, cattle guards and other structures for which the second form is not adapted and the fourth for both detailed and summarized results of the inspection. A card index system of records for culverts was also presented.

Arthur Ridgway (D. & R. G.); G. E. Boyd (D. L. & W.); W. A. Clark (D. & I. R.); J. T. Harvey (B. & A.); R. H. Helick (Penna.); C. W. Lentz (I. C.); M. E. Nelson (A. C. L.); J. J. Taylor (K. C. S.) Committee.

Report on the Reclamation of Bridge, Building and Water Supply Materials

Changing conditions cause us to be constantly on the alert and we find ourselves frequently changing our points of view. This is nowhere revealed more forcibly than in our attitude toward the reclamation of building materials. That which was not worth the trouble of picking up a few years ago has so increased in value that it is very much worth while to spend considerable labor to reclaim it for further use.

On the Chicago, Milwaukee and St. Paul an effort is made to utilize all timber and lumber taken out of old structures to the best possible advantage. Bridge stringers that are too short for use in standard openings are resawed to sizes that will make sills for hand car houses, coal and oil houses, and outbuildings around smaller stations, and skids in the lumber yard. This material is given a treatment of carbolineum at the time it is resawed. Bridge ties are also resawed and pieces that are free from defects are used to make spacing blocks between ties on iron bridges, while such as are defective are used in loading concrete pipe to prevent the sections of pipe from coming in contact with each other. Much of the above material is also used for car stakes. The rippings from the resawing are used to make crates for material that cannot be shipped open. The usable portions of brace plank are cut to lengths in multiples of two feet and are used in highway crossings or sent out to concrete crews for use as runways or platforms on which to unload material. Cedar pile heads are sent to the mill and returned as shingles. Piles that have been pulled because of line changes and that are in good condition are used as foundation piles under masonry. At the company's Milwaukee shops a great deal of second hand bridge material is worked up for flat car floors, and such as is not good enough for that is converted into coal and grain door boards. At the Tomah plant second hand one-inch lumber is sorted into three grades; first grade, all lumber that is considered suitable for concrete forms above the ground level; second grade, such as can be used for concrete forms below the ground line; third grade, all short pieces or such as are split or have defects that can be cut out are used in the manufacture of boxes such as are used by the store department for shipping switch bolts and other material, and works off very rapidly. All 3-in. by 6-in. lumber is sorted into two grades, putting into the first grade such as can be used for concrete forms while the shorter lengths are classed as second grade and used as car stakes. All of this material is graded at the time of unloading and each grade is kept separate where it can be gotten at readily.

On the Philadelphia and Reading the materials recovered

by the bridge department are turned over to the stores department for reclamation. A large number of bridge ties 9 in. by 12. in. by 12 ft., after having been in service about 18 years, have become bad on top to a depth of several inches. It is found that about 95 per cent of them are solid in the dap over the girders or bridge chords. When these ties are taken off all spikes are removed and they are then shipped to the saw mill and five inches of the top sawed off, leaving a tie 7 in. by 9 in. by 12 ft. in good condition for use on industry trestles and places where the lighter tie will answer. The cost of loading, transporting, sawing and shipping from the mill to the store yard is much less than the cost of new ties, and they will last from 7 to 8 years on commercial trestles. Valves, that were considered worn out, are taken out and repaired at the shops at comparatively small cost, making them practically as good as new.

On the Kansas City Southern hardware recovered from old trestles, such as bolts, washers and spikes, is all used again in the reconstruction of the trestle as far as usable. Guard rail bolts that cannot be reused as such are used in place of boat spikes or line spikes. Old chord bolts or sway brace bolts similarly damaged are used for drift bolts. By this plan it is found necessary to purchase very few drift bolts or boat spikes. The same rule is applied to water service material. When renewing wooden tubs, water tanks, etc., all usable material such as supports, staves and hoops is salvaged and used for replacing decayed staves or weak hoops and supports on other old tanks of similar construction. All second hand pipe is recovered and when necessary the ends are cut off and rethreaded. Globe valve seats are reground and the serviceable parts of old valves are used in making repairs. The same plan is followed with pumps. Only such parts are scrapped as cannot be used for repair work.

On the New York, New Haven and Hartford recovered water pipe of 3-in. diam. or over, that is not good for high pressure, is used for drain pipe, and old leaky valves are sent to the storekeeper to be repaired.

On the Lehigh Valley a portable gasoline engine and circular saw are set up at the various places and the lumber taken out and sawed to sizes suitable in other work. The cost of sorting and sawing second-hand lumber ranges from $6 to $10 per thousand, depending on the quantity of lumber involved. Eye bars from iron bridges are sent to the locomotive shop for general use; I-beams, angles and heavy plates are usually taken in stock for future use; heavy floor beams of double track bridges are retained for use as longitudinal girders; deck plate girders are doubled up and reused; heavy double track girders are used for single track bridges, and such material as cannot be reused is disposed of as scrap as it comes from the bridge without cutting it apart. In removing water station material, a careful examination is made of all parts. In the case of pipe lines, when accessible, the joints are heated with an acetylene torch and the pipe and lead are stored for future use; in case of fixtures partly defective, the defective parts are renewed and fitted to other fixtures for reuse. Wrought pressure pipe which has become defective can often be used for wire conduits, saving the purchase of new conduit pipe. Any valves removed are carefully examined, any damaged or worn parts replaced and the valves again put in use. The extreme rise in the cost of all materials makes it imperative that the utmost use be obtained from all materials; while the cost of labor has also advanced, the use of mechanical means for salvaging and reclaiming materials reduces the cost of handling, and should generally show a considerable profit. It also conserves the available supply of new material and in a measure assists in keeping the prices from mounting still higher.

On the New York Central many old bridge ties are sent to the mill and resawed into frog blocking, this one item alone saving many thousands of dollars yearly. Oak pile butts are resawed into track shims. Old trestle timber is used over as far as possible.

On the Baltimore & Ohio large shops have been organized and are in operation at Martinsburg and Zanesville for the reclamation of old bridges, frogs, switches, track appliances, water station material, turntables, hand cars, baggage trucks, track scales and miscellaneous maintenance of way work. The shop at Martinsburg has been in operation for a number of years and has very clearly demonstrated its practical value and economy. In the rebuilding of bridges old spans are strengthened for branch lines and highway bridges. The cost of the work runs approximately 40 per cent of what new bridges would cost after allowing scrap value for the material. Short turntables of 60 ft. and under are worked over, the girders inverted and the necessary floor system installed for highway bridges. On water station work it has been found practicable to rebuild a great number of pumps at a price far below what it would cost to purchase new, including the scrap value of the pumps.

The Chicago & North Western has three saw mills for working up old second-hand bridge timbers, located at Boone, Ia., Winona, Minn., and Norfolk, Neb. The two former are electrically equipped while the latter is operated by a gasoline engine of 30 h. p. Bridge timbers are sawed into all sizes of smaller standard material and the lumber used for small buildings of every description. Cedar pile heads are sawed into shingles. Other pile heads are used for jack handles, car stakes, etc.

G. T. Richards (C. M. & St. P.), chairman; P. Aagaard (I. C.); F. E. Schall (L. V.); J. J. Murphy (S. P.); W. A. Pettis (N. Y. C.); G. W. Andrews (B. & O.); J. J. Wishart (N. Y., N. H. & H.); W. J. Jackson (C. & N. W.), committee.

Election of Officers

At the annual election of officers of the Bridge and Building Association on Thursday morning the following officers were elected: President, W. F. Strouse, chief engineer, Public Service Commission of Maryland, Baltimore, Md.; first vice-president, C. R. Knowles, superintendent water service, Illinois Central, Chicago; second vice-president, Arthur Ridgeway, assistant chief engineer, Denver & Rio Grande, Denver, Colo.; third vice-president, J. S. Robinson, division engineer, Chicago & North Western, Chicago; fourth vice-president, J. P. Wood, supervisor of bridges, Pere Marquette, Saginaw, Mich.; secretary-treasurer, C. A. Lichty, Chicago & North Western, Chicago. Members of the executive committee were chosen as follows: One year: A. B. McVay, supervisor of bridges, Louisville & Nashville, Evansville, Ind.; J. H. Johnston, Grand Trunk, Montreal; E. T. Howson, *Railway Age,* Chicago; two years: C. W. Wright, master carpenter, Long Island, Jamaica, N. Y.; G. A. Manthey, assistant superintendent of bridges and buildings, Soo Line, Marquette, Mich.; E. K. Barrett, supervisor bridges and buildings, Florida East Coast; St. Augustine, Fla. New York City selected as the location for the next convention.

The annual dinner was held at the City Club Wednesday evening. Part of Wednesday afternoon was devoted to an inspection of the new Hills Parks shops and the Chattahoochee River bridge of the Nashville, Chattanooga & St. Louis by special train. Following adjournment on Thursday noon a party attended a barbecue at Stone Mountain, going by special train over the Georgia Railroad.

SEVEN TICKET SELLERS of the Pennsylvania Railroad at the terminal station at New York City were dismissed on October 31, and a statement given out by the railroad company says that these clerks had accepted gratuities from passengers for favoring them in the sale of space in Pullman cars, holding back space from passengers who did not pay more than the regular price.

Heavy Freight Traffic Continues

WASHINGTON, D. C.

THE NUMBER OF CARS of revenue freight loaded passed the million mark for the second time this year during the week ended October 16, according to reports received by the Car Service Division of the American Railway Association. The total for the week, 1,005,663, was 4,124 less than that for the week of October 2, but was 33,000 greater than that for the corresponding week of 1918. There was an increase in the loading as compared with the corresponding week of 1919 in all districts except the Central Western and an increase as compared with 1918 in all districts. Increases were shown as compared with 1919 in the number of cars loaded with coal, coke, forest products, ore and merchandise and miscellaneous freight combined, but decreases in the number of cars loaded with grain and grain products and livestock. The coal loading was 227,642 as compared with 217,416 in 1919. The report follows:

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS; COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO, FOR WEEK ENDING SATURDAY, OCTOBER 16, 1920

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year, 1920	Total revenue freight loaded: Corresponding year, 1919	Total revenue freight loaded: Corresponding year, 1918	Received from connections: This year, 1920	Received from connections: Corresponding year, 1919	Received from connections: Corresponding year, 1918
Eastern	1920	6,456	3,206	58,067	3,751	8,553	10,609	47,431	99,379	237,451	.....	.....	254,795	.....	.....
	1919	6,756	3,672	58,641	3,006	8,105	6,095	25,651	121,795	.....	233,721	225,936	.....	255,860	253,170
Allegheny	1920	2,472	3,512	70,670	5,694	4,066	14,323	37,828	75,924	214,489	.....	.....	147,467	.....	.....
	1919	3,083	3,640	65,691	3,224	4,458	8,989	41,015	71,431	.....	201,531	206,270	.....	147,404	171,725
Pocahontas	1920	81	471	23,834	772	1,839	336	2,646	7,625	37,604	.....	.....	19,648	.....	.....
	1919	176	446	22,786	604	2,070	264	129	9,709	.....	36,184	35,363	.....	20,110	24,596
Southern	1920	3,063	2,715	29,059	1,570	19,756	3,315	36,707	37,869	136,074	.....	.....	77,370	.....	.....
	1919	3,093	3,169	26,557	319	18,637	4,147	20,629	56,402	.....	132,953	115,648	.....	76,912	70,621
Northwestern	1920	14,020	9,701	11,568	1,732	15,368	44,563	29,140	40,843	166,935	.....	.....	59,562	.....	.....
	1919	14,467	11,474	14,155	745	15,946	31,211	23,400	50,387	.....	161,725	159,951	.....	54,527	91,908
Central Western	1920	10,202	12,926	27,458	468	5,945	3,017	30,914	51,392	142,322	.....	.....	71,205	.....	.....
	1919	11,275	16,910	23,021	386	5,729	2,372	24,279	58,468	.....	142,440	127,878	.....	79,449	67,066
Southwestern	1920	3,684	2,865	6,986	152	7,146	371	17,795	31,789	70,788	.....	.....	52,316	.....	.....
	1919	4,227	3,509	6,565	151	6,116	256	13,176	29,524	.....	63,524	56,088	.....	50,683	54,375
Total, all roads	1920	39,978	35,395	227,642	14,139	62,673	76,534	204,461	344,841	1,005,663	.....	.....	682,463	.....	.....
	1919	43,017	42,820	217,416	8,435	61,061	53,334	148,279	397,716	.....	972,078	.....	.....	694,945	.....
	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	927,134	.....	.....	723,531
Increase compared	1919	.....	.....	10,226	5,704	1,612	23,200	56,182	.....	33,585	.....	.....	.....	.....	.....
Decrease compared	1919	3,039	7,425	.....	.....	.....	.....	.....	52,875	.....	.....	.....	12,482	.....	.....
Increase compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	78,529	.....	.....	.....	.....	.....
Decrease compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	41,068	.....	.....

*L. C. L. merchandise loading figures for 1920 and 1919 are not comparable as some roads are not able to separate their L. C. L. freight and miscellaneous of 1919. Add merchandise and miscellaneous columns to get a fair comparison.

Accompanying this increase in business there was a decrease in the car shortage amounting to 6,000 cars. For the week ending October 15 the average daily shortage was 69,517, including 31,000 box cars and 26,000 coal cars, as compared with 75,336 for the week ending October 8. The reduction in the shortage was due partly to the clearing of the congestion at terminals and in part to a lessened demand for cars.

The accumulations of freight cars on hand in excess of current movement during the week ending October 22 were reduced to 39,807 cars, of which 17,390 were held awaiting export or coastwise movement. This represents a decrease of nearly 4,000 cars in a week. Particularly satisfactory is the reduction in the number of cars held for reconsignment, which was 2,572. In July there were over 3,500 cars held for reconsignment but the later figures show that the restriction of the reconsignment privilege authorized by the Interstate Commerce Commission has had its effect.

Coal Situation Shows Marked Improvement

As illustrating the improvement in the coal situation, the Interstate Commerce Commission, in a press notice issued last week in connection with its suspension of the lake priority order, called attention to the fact that since October 15 it has not been found necessary to issue a priority order for any public utility or government agency, as the needs of such institutions have been taken care of out of the current car supply. The withdrawal of Service Order No. 10, the commission said, leaves in force no priorities except a general priority of coal over other traffic moving in open top cars suitable for coal loading, and about 170,000 cars have been specially released from that priority order for the movement of building and road materials and certain perishables, such as sugar beets. The commission did not mention the priority order issued for Navy coal to be shipped to tidewater, doubtless because that order was not issued on account of the transportation emergency, but under the general war powers, to enable the Navy to purchase its coal at a lower price. It is the general assumption among those in touch with the coal transportation situation that the general coal priority order may be withdrawn in the next two weeks, as the suspension of Service Order No. 10 should enable the mines and railroads to take care of the central territory, in which there has been a shortage of coal for domestic use, and also should make more fluid the movement of traffic throughout that territory and enhance the general car supply.

Coal Production

According to preliminary estimates of the Geological Survey, the production of soft coal during the week ended October 23 was 12,146,000 net tons, an increase of 45,000 tons over the revised figure for the preceding week. This represents the third week in which the output has exceeded 12,000,000 tons and telegraphic reports of loadings on Monday, Tuesday and Wednesday of the following week indicate that complete returns will again pass the 12,000,000 line. Production during the first 252 working days of the year has been 440,462,000 net tons, which is about 43½ million tons behind 1918, but nearly 51 million tons ahead of 1919. The percentage of full time output lost on account of transportation disability during the week ending October 16 is reported as 20.8. A further increase marked the dumping of bituminous coal at Lake Erie ports during the week ended October 23 and the cumulative lake movement from the beginning of the season stood at 18,962,000 net tons, as against 26,472,000 in 1918 and 21,423,000 in 1919. Congestion at Lake Erie ports continues, according to the Geological Survey report, and on October 29 there were on hand awaiting dumping 11,088,000 cars, with an additional 6,016 cars due to arrive within the next 24 hours. The movement to tide also continued in volume during the week ended October 26 and the all rail movement to New England, which had fallen off some time during the second week of October, recovered again in the week ended October 23.

According to the estimates made by the Car Service Division soft coal production again exceeded 12,000,000 tons during the week ended October 30, making the fourth consecutive week during which the output exceeded 12,000,000 tons. Production this week was expected to drop because of the election day holiday.

More coal was transported by the railroads during the week ended October 16 than in any previous week this year, according to reports compiled by the Car Service Division. The total number of cars loaded with coal of all kinds, including railroad fuel as well as commercial coal, was 254,361, an increase of 10 cars over the preceding week and an increase of 6,402 cars or 3 per cent, over the corresponding week of 1919. The loading of bituminous coal was 213,030 cars, an increase of 183 as compared with the previous week, and an increase of 6,073 cars over the corresponding week of 1919. There were also 5,217 cars of lignite and 36,114 cars of anthracite. The anthracite loading was 153 cars greater than for the preceding week but 225 cars less than for 1919.

The cars required for coal loading were 375,994, as compared with 338,435 in the corresponding week of 1919. The cars placed during the week were 306,264, as compared with 289,867 in 1919. The percentage of requirements filled was 81 as compared with 86 in the corresponding week of 1919. The coal loading by districts was as follows:

Districts	Cars loaded 1920	1919
	Bituminous	
Eastern	36,036	36,573
Allegheny	67,164	67,895
Pocahontas	25,823	25,292
Southern	31,410	29,077
Northwestern	9,770	7,698
Central Western	32,265	29,410
Southwestern	10,562	10,912
Grand total, bituminous	213,030	206,957
	Lignite coal	
Northwestern	1,526	1,341
Central Western	3,179	2,915
Southwestern	512	404
Grand total, lignite	5,217	4,660
	Anthracite coal	
Eastern	23,071	24,272
Allegheny	13,043	12,070
Grand total, anthracite	36,114	36,342
	All coal	
Grand total	254,361	247,959

The Car Service Division has issued the following summary of general conditions as of October 29:

Summary of General Conditions

Box cars—Requirements continue heavy. There is additional evidence of increased demand for cars for grain loading. While the offerings have not been as heavy as expected, it has not been possible to supply all cars required, and at some points grain is on the ground awaiting movement. Additional orders have been placed calling for a heavy movement of box cars to western grain-carrying roads in an effort to improve the present situation. The loading of ventilated box cars with dead freight must be confined to points in direct line to home roads, in order to build up supply for heavy fall movement of perishable freight.

Auto cars—There has been a decrease in the demand for automobile cars on account of reduced manufacturing schedules. Such cars should continue to be loaded to auto manufacturing territory. Cars should not be moved empty except when specifically ordered.

Stock cars—Demand heavy for protection of stock loading and for building up supply on Western lines for movement of range cattle and sheep, and efforts must be continued to move cars either to owning lines, or in accordance with specific orders issued for necessary relocation.

Refrigerator cars—There is continued heavy demand for refrigerators in all sections, particularly in eastern, middle western and extreme western territory, and it is necessary that all railroads continue drive to promptly release and move refrigerators to loading territory in accordance with current orders.

Open top cars—The production of bituminous coal should average better than 12,000,000 tons per week for the month of October, which is a very satisfactory increase over preceding months. As a result of Service Orders of the Interstate Commerce Commission supplemented by the special efforts of the individual railroads a substantial improvement has been made in car placements on the greater number of coal loading roads. The movement of coal to upper lake ports is now progressing on a satisfactory basis and it is felt that the fuel stocks in the northwest will have been fully replenished before navigation formally closes. It continues of urgent importance that all roads police existing instructions with respect to the handling of coal carrying equipment, observing in particular the Service Orders of the Interstate Commerce Commission that maximum use of coal cars will be had during this period of emergency.

Flat cars—Demand for this type of equipment continues to exceed the supply in the southeast for lumber and log loading. Flats should be promptly released and moved in accordance with specific orders to the territories as directed.

Cars for Grain

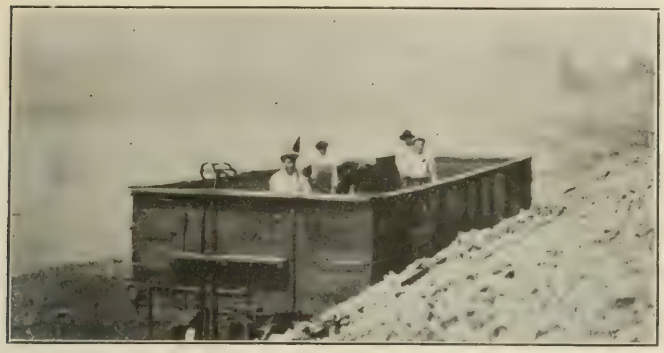
In a bulletin to the railroads the Car Service Division says that in view of the shortage of box cars for grain and grain products loading, it is manifest that every effort should be made to conserve cars suitable for that class of loading. Reports occasionally come to the office of good grain cars used for loading fertilizer, hides and other similar freight, thereby making the cars unsuitable for grain, flour and other commodities subject to damage by the odor remaining in the cars. There are so many freight cars suitable only for rough freight that there should be little difficulty in arranging distribution in such a way as to avoid the cause of complaints mentioned above, the bulletin says.



And There Is More to Fill the Bottles When They Are Empty

One Way to Save Cars

THE USE of 50 automatic side-dump, self-clearing cars in ash disposal service on the Delaware, Lackawanna & Western, whereby the cars are loaded by a clam shell bucket and overhead crane and unloaded with a minimum of attendance and no loss of time, is an object lesson in the reduction of car usage. It is estimated that the employment of these 50 dump cars effects a saving of 200 revenue earning cars. In addition to this, it has practically eliminated the labor cost in unloading and having eliminated this element the road is now able to dispose of the ashes with a degree of regularity and dispatch not possible with previous methods. These cars are balanced door dump cars built by the Clark Car Company, Pittsburgh, Pa. The group of three photographs illustrate how these cars are loaded and unloaded with a minimum of labor and with the material dumped at a distance from the rail that clears the track entirely.



How Not to Unload Refuse

In contrast with these methods is that shown in the single photograph where the car is being unloaded laboriously by hand labor. Back of such methods is a tremendous misuse of railway cars which might be considered the prevailing practice at the majority of engine terminals over the country. The foregoing deals only with ash disposal or waste produced by the railroads in their own operations. This in some sections of the country, at least, is a small amount compared with the total waste material handled, since in industrial sections the railroads handle a large amount of the waste produced by the industries.

Some idea of the cost in labor and car service entailed in the use of ordinary gondolas or bottom dump cars in the wasting of slag, cinders or other refuse will be obtained from a study of the table showing the average wasting cost to roads in the Pittsburgh district for a period of six months ending June 30, 1918. (The cost today with the same methods would show even higher totals than these figures for two years ago, owing to the increased cost of labor at the present time.) Of particular interest are the figures for car detention, which range from 5.6 to 12.2 days, figures which are obviously out of proportion to the service performed.

A further study of this matter will go to show that the principal difficulty has been in the methods of unloading the cars. Many of the railroads have installed car loading facilities, such as locomotive cranes, ditchers, grab buckets, etc., but have not given similar attention to the methods of unloading. The loading of hopper cars and gondolas with waste materials in most cases involves hand unloading. The general effect of this condition is to render it very easy to get these materials into the cars, after which they are subjected to considerable delay until the necessary labor can be gathered to unload them, and there is obviously a great difference between the time necessary to shovel out a car and that required to dump it by the simple turning of an air valve handle.

This matter is one of special importance to the railroads serving the iron and steel centers, owing to the burden placed upon them of disposing of large quantities of slag and other waste produced by the steel industry. For every ton of steel produced, either the steel company or the railroads must dispose of several tons of waste material. It is in connection with this service that the character of the equipment used is of great importance. Railway officers have objected to the use of special equipment in this service because it in-

AVERAGE COSTS OF WASTING SLAG, REFUSE, ETC., FOR THE PERIOD OF SIX MONTHS FROM JANUARY 1 TO JUNE 30, 1918

	Total cars unloaded	Labor and work train service. Unloading cost plus 10 per cent	Average distance hauled	Average car detention days	Average weight per car tons	Car value per day	Transportation cost	Total cost per car	Total cost per ton
P. R. R. East	11,202	$376,938	44.5	10	44	61.4c	3 mills per ton per mile	$45.66	$1.038
P. L.-W.	7,882	298,887	27.2	12.2	46.18	33	3 mills per ton per mile	42.02	.91
Erie	2,644	71,037	31.36	6.42	45.99	24.87	3 mills per ton per mile	32.79	.713
B. & O.	2,731	42,248	80.56	5.96	41.5	54.6	3 mills per ton per mile	29.02	.70
P. & L. E.	12,475	259,798	55.53	5.9	43	74	3 mills per ton per mile	31.76	.74
N. Y. C.	7,231	251,594	70.6	11.08	44.95	*36.62	3 milsl per ton per mile	48.39	1.076
W. & L. E.	2,396	70,705	57	5.6	45	56.27	3 mills per ton per mile	40.35	.89
Total	46,561	$1,371,207	50.6	8.55	44.26	49.4		$40.39	$0.9126

*Estimated.



Loading with a Clam Shell—Dumping in a Few Seconds Time with the Track Clear

volves an empty return haul, but a proper allowance for decreased labor charge, reduction in the number of cars involved and release of other cars for revenue service will show an advantage in the cost of the special equipment in most cases. The average haul for a large proportion of waste material is very short, and aside from the "dollars and cents" consideration, unloading by air pressure is an automatic operation, while it is not possible to unload cars by hand unless labor is available. The idea that increased motive power service is required in the case of the empty return of the dump cars, does not take into consideration the fact that about one-fifth of the number of cars would handle this disposal service, and that this reduction in the number of cars involved would naturally reduce the locomotive movements at terminals.

Another fact to consider in the purchase of special equipment is that its particular applicability to a certain class of service does not preclude the use of cars of the type used on the Lackawanna in regular revenue service, if necessary. While this would be unwarranted under ordinary circumstances, there is nothing about the construction of the car to make them unsuitable for such use and it is not uncommon to use them in this way when they are being shipped to the point of their regular service.

Electrification of the English Railroads

LONDON.

THE ELECTRIFICATION of Railways Advisory Committee appointed by the Minister of Transport in Great Britain for the purpose of inquiring into the electrification of railways has made its first preliminary report. The personnel of this committee has already been published in these columns.

The committee has held 28 meetings and has had before it as witnesses representatives of the various English railways interested in electrification, representatives from various electrical contractors in Great Britain and in addition Ivan Ofverholm, the chief electrical engineer of the Swedish State railways and Col. Huber-Stockar, consulting engineer to the Swiss State railways.

From information obtained from these witnesses and from questionnaires sent out to the chief railway companies, the committee has prepared full statistical tables which have been given detailed consideration. In this first report the committee covers certain general points, the more detailed problems being left over for a subsequent report.

Instructions to the Committee

The instructions to the committee by the Minister of Transport were to consider:

I. Whether any regulations should be made for the purpose of ensuring that the future electrification of railways in this country is carried out to the best advantage in regard to interchange of electric locomotives and rolling stock, uniformity of equipment and other matters.

II. If any such regulations are desirable, what matters should be dealt with, and what regulations should be made.

III. How far it is desirable, if at all, that railways or sections of railways already electrified should be altered so that they may form parts of a unified system.

The Recommendations Made

In respect to item I, the committee considers it is desirable that certain general regulations should be made for observance by the railways when electrifying their lines, insuring standardization of those methods and appliances which are likely to prove the most satisfactory under British conditions. At the same time, such regulations should put no avoidable difficulties in the way of the adoption in future of any improvements in methods or appliances which may from time to time become available with increasing knowledge and experience.

In respect to item II, the committee recommends that regulations should be issued in accordance with the following conditions:

(1) That in the case of those railways which have not as yet electrified any lines, as well as those which at present have electrified all or part of their lines on a direct current system, their electrification, or extended electrification as the case may be, should be carried out on the direct current system.

(2) That the standard pressure of the direct current system at the sub-station busbars shall be 1,500 volts, subject to—

(a) The continuance of any existing 600 volt and 1 or 1,200 volt installations.

(b) The adoption of half the standard voltages—750 volts—in those cases where it can be shown that advantage would arise from the use of this lower pressure.

(c) The adoption of higher pressures—limited to a multiple of the standard pressure—where it can be shown that sufficient advantage would accrue.

(3) That both overhead and rail conductor collection should be permitted, as long as the position and general design of the conductors and structures are in accordance with recommendations which will be made in a subsequent report.

(4) That the generation of current for direct current lines should be alternating three-phase at such voltage as may be desirable in each case.

(5) That in the case of existing generating stations supplying at any frequency between 25 and 50 cycles it is unnecessary to make any change in frequency, but that it is desirable that where any one such frequency is in general use in a particular electricity district, any new power station put down in that district for supplying a railway should adopt the frequency which has been approved by the electricity commissioners or is in general use in that district.

In respect to item III, the only line of any importance in Great Britain which would not come under the terms of the committee's recommendations outlined above, is the London, Brighton & South Coast. This road has adopted a single phase alternating current system for its suburban lines and did so with a special view to the adoption of a system which at that time appeared the only one admitting of extensions from London to Brighton when this extension became feasible. In this particular case the committee had to consider that with the present system on the Brighton a change of locomotives or multiple-unit equipment would be required in case other railway companies were to run trains over that line. On the other hand a large financial expenditure would be required to change the existing suburban system of the Brighton to a direct current system. The committee therefore decided that the Brighton system as at present in use or actually under consideration need not be changed and is one special consideration.



Photo by International

Senator Harding at Terre Haute, Indiana, a Few Days Before He Became President-Elect, Telling the Train Crew How He Enjoyed His Twenty Mile Ride in the Engine Cab

General News Department

Aerial mail service between the United States and Cuba is now a regular thing, two seaplanes having started from Key West for Havana on November 1. Each of the planes to be used in the service has a capacity of 1000 lb. of mail and twelve passengers. On the initial trip the planes carried a full list of passengers and a large amount of mail.

The American Rolling Mill Company, Middletown, Ohio, has reproduced in motion pictures the manufacture of open-hearth iron. The film shows the entire process of making Armco iron from the arrival of the ore at the blast furnace to the final inspection of the finished product. It is stated that this is the first time that the incandescent mass of molten metal in an open-hearth furnace has been shown in detail in motion pictures.

The Committee of Direction of the Telephone and Telegraph Division of the American Railroad Association, at a meeting in Chicago on October 28, appointed R. F. Finley, superintendent of telegraph of the New York Central, second vice-chairman, succeeding E. L. King, superintendent of telegraph of the Southern Pacific, who had resigned on account of his appointment as superintendent of transportation of the Salt Lake division of the Southern Pacific.

The Nashville, Chattanooga & St. Louis announces that the freight claim prevention bureau, heretofore a branch of the legal department, has been transferred to the operating department and merged with the safety department, these combined branches of the service to be known as the Safety & Freight Claim Prevention Bureau, with F. Whittemore, superintendent; office, Nashville, Tenn. Inspectors are to be employed to inspect the loading and stacking of freight at depots, the handling of cars at terminals and on line of road and the condition of freight at junction points and destinations; also to report all instances of improper handling of freight or of cars.

Correction

Through an error the address of the Eymon Crossing Company in the article entitled "Recent Improvements on the Eymon Crossing" in the *Railway Age* of October 15 (page 667), was given as Marion, Ind. The correct address of this company is Marion, Ohio.

Central Railway Club

The thirty-first annual dinner of the Central Railway Club will be held on Thursday evening, November 11, at 7 o'clock at the Hotel Iroquois, Buffalo, N. Y. The regular business meeting will be held at 2 p. m. E. R. Webb, master mechanic of the Michigan Central at St. Thomas, Ont., will present a paper on Enginehouse Organization, and action will be taken to change the day of meetings from the second Friday of each month to the second Thursday. The arrangements for the evening will provide for dancing and other entertainment between the dinner courses.

Strike of Shopmen at Houston

At the shops of the Southern Pacific in Houston, Tex., about 900 employees walked out on October 13, because of resentment occasioned by the reinstatement, by a foreman, of four negro employees who had been dismissed without proper investigation of complaints which had led to their removal. The union leaders declared the walkout unwarranted and in direct violation of the constitutions of the several crafts, and of the national agreement. Following unsuccessful negotiations the road made an offer to take back the men, which was not accepted; but, after waiting several days, notice was finally given that the strikers would be taken back at any time before October 28 at 1 p. m. By Monday, November 1, the majority of the strikers had returned to work as new employees; but considerable numbers had been refused employment, because of being agitators or for other reasons, and the outsiders were trying to keep up the agitation.

New England Railroad Club

The next regular dinner and meeting of the New England Railroad Club will be held at the American House, Boston, Mass., on Tuesday evening, November 9, 1920. The subject of the paper to be presented will be "The Locomotive Terminal as an Operating Factor," by L. G. Plant, associate editor of the *Railway Age*. Dinner will be served at 6:30 p. m., and reservations must be made in advance. The business session will start at eight o'clock.

Extensive Embezzlement by Express Employees

In the United States District Court, at Macon, Ga., on October 28, the grand jury returned indictments against 64 express messengers, express agents, railroad conductors and other persons, on charges connected with costly losses of freight. The complaints were made by the American Railway Express Company, which during six months has lost in southern states over $1,000,000 by thefts. An organized conspiracy was charged. Most of the accused were employed on the Central of Georgia between Macon and Montgomery.

American Railway Association

The regular session of this association will be held at the Blackstone, Chicago, on Wednesday, November 17. Eleven reports are to be presented at this session, as follows: Division I—Operating (Telegraph and Telephone Section); Division II—Transportation; Division III—Traffic; Division IV—Engineering—(a) Construction and Maintenance Section; (b) Electrical Section; (c) Signal Section; Division V—Mechanical; Division VI—Purchases and Stores; Division VII—Freight Claims; Division VIII—Perishable Freight; and from the conference committee on grain.

American Railway Development Association Meeting

The semi-annual meeting of the American Railway Development Association, the membership of which is composed of railroad industrial agricultural, immigration, publicity, real estate and marketing representatives, will be held at the Hotel LaSalle, Chicago, on November 11 and 12. The purpose of this association is to study and determine the best methods of developing the territories covered by the member lines and the inherent possibilities of their respective regions, create new traffic through the locating of new industries, promote the settlement of unoccupied lands, improve agricultural conditions, aid farmers in marketing their products and stimulate conditions generally.

The two-day meeting will be confined largely to round table discussions of the various business problems involved—the first place on the docket being reserved for the question of standardizing the developing work of the individual lines with a view to the elimination of waste, duplication and competitive practices, to increasing the efficiency of the work, and to broadening its possibilities.

The B. L. E. National Bank

The Comptroller of the Currency announces the issuance of a charter for the Brotherhood of Locomotive Engineers' Co-operative National Bank, Cleveland, Ohio; capital, $1,000,000. Warren S. Stone, grand chief of the Brotherhood of Locomotive Engineers, is president, W. B. Prenter, vice-president and cashier, and W. F. Caleb, vice-president and manager.

Mr. Stone says that this is the first labor bank. "We made the bank co-operative by distributing the stock to as many mem-

bers as possible. We have limited stock dividends to 10 per cent. We expect to pay four per cent on time deposits, and if there are excess earnings we expect to share them with our depositors who co-operate with us in making the bank successful. We have 85,000 members, but the bank, of course, is open to everybody and is not an exclusive labor bank. The stock was over-subscribed. For 50 years the brotherhood has carried on several kinds of life, accident and pension insurance. We have paid out many millions annually through the banks of Cleveland. We have paid out in charities alone more than $3,000,000 and not a single member of the brotherhood is a public charge. The total insurance on our books amounts to $184,000,000, and since 1868 we have paid out claims of $45,291,264. There are 55,000 co-operative banks in Europe, many of them small, and they have rarely lost a cent."

Temporarily the bank will be located at St. Clair avenue and Ontario street, in a building bought last June.

Society of Railway Financial Officers

The Society of Railway Financial Officers will hold its annual meeting at the Jefferson Hotel, Richmond, Va., on November 10 to 12. The meeting will begin at 11 a. m., November 10, and it is expected will be addressed by the Mayor of Richmond and the Governor of Virginia. At the afternoon session there will be an address by John M. Miller, president of the First National Bank of Richmond, and papers will be read by T. H. B. McKnight, treasurer of the Pennsylvania, on "Personality in Business," and by John T. Reid, treasurer of the Atlantic Coast Line, on "Settlement of Claim for Order Notify Shipments Delivered Without Surrender of Bill of Lading."

At the meeting of Thursday morning, November 11, there will be an address by John Kerr Branch, president of the Richmond Chamber of Commerce, and papers will be presented by F. H. Hamilton, treasurer of the St. Louis-San Francisco on "Practices under General Order No. 30," and by T. W. Mathews, assistant treasurer of the Seaboard Air Line, on "Preparation of Checks and Payment of Wages by Divisional Paymaster." In the afternoon there will be papers by A. B. Jones, local treasurer of the Chicago & North Western, on "Remittances of Agents and Conductors," by James A. Yates, assistant treasurer of the Grand Trunk, on "Railways of Canada," and by Carl Nyquist, secretary and treasurer of the Chicago, Rock Island & Pacific, on "All Passes, Art Alone Endures."

In the evening the annual banquet will be held.

The society will hold its closing meeting on Friday, November 12, when E. C. Mann, treasurer of the Lehigh Valley, will present a paper on "Selling Stock of the Company to Employees on Instalment Payment Plan," and the election of officers will be held.

September Earnings Insufficient

Railroad earnings for September failed to show the full effect of the increases in rates which were made on August 26, according to the returns of a majority of the large roads that have thus far been filed with the Interstate Commerce Commission. A total of 160 roads, operating 171,000 miles, show an increase in total operating revenues, as compared with September, 1919, of only about 25 per cent, whereas freight rates were increased an average of nearly 35 per cent and passenger rates 20 per cent. This is attributed largely to the fact that a large amount of traffic was handled in September that had started at the old rates, and also to the fact that many states have not allowed the full increases on intrastate traffic.

Operating expenses increased over 28 per cent and the net operating income for the 160 roads shows an increase of only 4.1 per cent over that of September, 1919. The net operating income for the Class I roads in September of last year was $77,763,000, and applying the percentage of increase shown for the 160 roads to this would give an estimate of about $81,000,000 for this September, which is about $28,000,000 short of what the roads should earn in September to make a net return of 6 per cent for the year. September should produce about 10 per cent of the year's net operating income, and on that basis the net operating income should be about $109,000,000. The eastern roads that have reported show an increase in operating revenues of about 30 per cent, an increase in expenses of about 34 per cent and an increase in net operating income of 2.4 per cent. The western roads' revenues increased 18 per cent, expenses 24 per cent and net decreased 8 per cent. The southern roads show an increase in revenues of 24 per cent, in expenses of only 22 per cent and in net of 78 per cent.

I. C. C. to Investigate Graft Charges

The Interstate Commerce Commission has taken cognizance of various charges which have appeared in newspaper interviews of a widespread system of "grafting" among coal car distributors and other railroad officers and employees, by announcing a proceeding of investigation "in the matter of the distribution of cars for shipments of coal in interstate and foreign commerce." It is understood that the investigation has particular reference to some general charges made through the newspapers by Gibbs L. Baker, a Washington attorney representing coal operators, and that the investigation may offer an opportunity for testimony under oath. The commission's order is as follows:

"The commission having under consideration the subject matter covered by the above title, and having received information from various sources that statements have been made, which, if true, tend to show that the law has been violated in certain ways, namely: That certain persons, firms and corporations have effered, granted and given money and other things of value to common carriers and their agents, and to others, for the purpose of obtaining, and that said persons, firms and corporations have obtained, unjust discriminations in their favor, and undue and unreasonable preferences and advantages, from said common carriers and their agents, and from others, in connection with the distribution of cars for use, and which have been used, in making shipments of coal in interstate and foreign commerce; that by reason of the premises, certain other persons, firms and corporations have been unjustly discriminated against and subjected to undue prejudices and disadvantages, and that the aforesaid common carriers and their agents, and others, have solicited, accepted and received money and other things of value for the purpose and with the effect above set forth.

"It is ordered, That a proceeding of inquiry and investigation be, and the same is hereby, instituted into and concerning the several matters and things above mentioned and described, in order that the commission may keep itself informed and that it may hereafter take such action concerning said matters and things as it may determine upon and consider necessary, proper, or appropriate.

"It is further ordered, That this proceeding be set for hearing at such times and places, and that such persons be required to appear and testify or to produce books, documents and papers as the commission may hereafter direct; and that the investigation be carried on in the meantime by such other means and methods as may be deemed appropriate, and,

"It is further ordered, That a copy of this order be served upon such common carriers and others as the commission may hereafter designate."

Government Loss Under Guaranty $659,000,000

The Interstate Commerce Commission's monthly summary of railway earnings and expenses for August and the first eight months of this year indicates that the government has sustained a loss on account of its guaranty to the railroads for the six months ending August 31 of approximately $659,000,000, without any allowance for the readjustment of maintenance expense. For the eight months, the large roads show a net deficit of approximately $155,000,000 and as the government had a net operating income for the first two months of the year of about $51,000,000 (of which about $50,000,000 was back mail pay), the operating deficit for the six months' period was $206,000,000. The 39 roads which did not accept the guaranty earned about $32,000,000, or practically the amount of their guaranty, which does not go into the government's accounts, so the deficit it had to make up would be about $238,000,000. The standard return for the large roads which accepted the guaranty was about $842,000,000, and for six months this would be $421,000,000, making the total which the government is to make good about $659,000,000. Of this $234,000,000 has been advanced and the balance is held up pending final settlement of the accounts with the Interstate Commerce

Commission under the recent decision of the comptroller of the treasury.

For the month of August, 187 Class I roads and 15 switching and terminal companies show an operating deficit of $155,000,000, of which $79,000,000 represents back wages under the decision of the Railroad Labor Board. Approximately $40,000,000 of back wages was charged into the July accounts and approximately $25,000,000 into the June accounts, making a total of $144,000,000. As the estimated back pay for the four months from May 1 to September 1 is about $200,000,000, this indicates that the September accounts will also include an item of this kind which will be added to the amount of the government's loss. The commission's summary for August and eight months is as follows:

Item	July Amount		Eight Months Amount	
	1920	1919	1920	1919
1—Average number of miles operated..	235,546.78	234,232.68	235,045.91	234,064.96
REVENUES:	Dollars	Dollars	Dollars	Dollars
2—Freight	368,985,467	313,839,603	2,582,905,855	2,233,721,976
3—Passenger	133,005,132	120,689,954	823,138,212	778,025,855
4—Mail	7,705,900	4,676,053	116,749,004	34,637,729
5—Express	15,144,055	9,978,809	103,924,176	70,434,006
6—All other transportation	14,454,521	11,354,690	95,808,827	80,772,644
7—Incidental	14,880,086	10,732,321	96,763,399	82,501,276
8—Joint facility—Cr.	859,014	623,543	4,998,887	4,458,916
9—Joint facility—Dr.	248,303	180,598	1,459,697	1,386,379
10—Railway operating revenues	554,785,872	471,714,375	3,822,828,663	3,283,165,723
EXPENSES:				
11—Maint. of way and structures	139,876,887	68,202,955	690,819,006	506,071,444
12—Maint. of equipm't	179,967,569	92,202,302	1,028,676,962	761,750,024
13—Traffic	8,064,511	4,012,487	46,023,065	30,765,249
14—Transportation ...	326,054,339	180,501,967	1,851,417,383	1,400,560,402
15—Miscel. operations	6,460,950	4,336,779	40,497,998	30,898,336
16—General	19,233,375	10,389,131	109,227,211	82,188,370
17—Transp. for investment—Cr.	928,949	496,097	3,083,778	4,051,733
18—Railway operating expenses	678,728,882	359,149,584	3,763,577,847	2,808,182,092
19—Net rev. from railway operations..d	123,942,810	112,564,791	59,250,816	474,983,631
20—Ry. tax accruals..	25,525,656	16,359,990	180,969,894	124,566,916
21—Uncollectible railway revenues...	129,436	72,945	719,025	492,734
22—Railway operating income .....d	149,597,902	96,131,855	d 122,438,103	349,923,981
23—Equipment rents (Dr. balance)...	3,638,968	2,222,298	19,457,552	13,738,996
24—Joint facility rent (Dr. balance)...	1,990,747	1,400,842	12,915,119	9,732,914
25—Net of items 22, 23 and 24.....d	155,227,617	92,508,715	d 154,810,774	326,452,071
26—Ratio of op., exp. to op. rev., per cent.	122.34	76.14	98.45	85.53

Note—(a) Federal lap-over items settled during the month are included in the above compilations for those roads that have indicated that estimates were not included for substantially all unaudited corporate items.

(b) To compare the earning power of roads in 1920 and 1919, it should be noted (1) that corporate war taxes and organization expenses are not included in the 1919 returns; (2) that the revenues of all roads for eight months of 1920 include approximately $50,000,000 back mail pay; (3) that, in some cases, back pay representing increased wage accruals, resulting from decision No. 2, by the United States Railroad Labor Board, retroactive to May 1, were charged to August expenses. The amounts of estimated increased wage accruals charged into August expenses, so far as reported are: Eastern District, $31,901,121; Pocahontas District, $926,347; Southern District, $5,510,850; Western District, $40,939,279; United States, $79,277,597. The amount of war taxes included in August, 1920, is $3,794,161, and for period, March to August, 1920, $20,224,409.

(c) Green Bay & Western R. R. Co. report not received.

(d) Debit.

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings:

AIR BRAKE ASSOCIATION.—F. M. Nellis, Room 3014, 163 Broadway, New York City. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Fred W. Venton, 836 So. Michigan Ave., Chicago. Meeting with Air Brake Association.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—S. W. Derr, Philadelphia & Reading, Philadelphia, Pa.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, Illinois Central, Chicago. Next meeting June 20, 1921.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, C. & E. I. R. R., 332 South Michigan Ave., Chicago. Next meeting, November 16-18, 1920, St. Louis, Mo.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next convention, August 24-26, 1921, Kansas City, Mo.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 8 W. 40th St., New York. Exhibit by American Electric Railway Manufacturers' Association.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOCIATION.—C. F. J. Dell, 50 E. 42nd St., New York. Meeting with American Electric Railway Association.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCATION.—Otto E. Schlinck, 185 W. 5th St., Peru, Ind.

AMERICAN RAILWAY ASSOCIATION.—J. E. Fairbanks, 75 Church St., New York. Next regular meeting November 17, 1920, Chicago.

Division 1, Operating (including former activities of Association of Railway Telegraph Superintendents).—W. J. Fripp (chairman), General Manager, N. Y. C. R. R., New York, N. Y.

Telegraph and Telephone Division.—H. Hulatt (chairman), Manager of Telegraphs, Grand Trunk. Exhibit by Railway Telegraph and Telephone Appliance Association.

Division 2, Transportation (including former activities of Association of Transportation and Car Accounting Officers).—E. J. Pearson (chairman), President, N. Y., N. H. & H. R. R., New Haven, Conn.

Division 3, Traffic.—Robert C. Wright (chairman), General Traffic Manager, P. R. R., Philadelphia, Pa.

Division 4, Engineering.—E. H. Fritch, 431 South Dearborn St., Chicago. Next annual meeting, March 15-17, 1921, Chicago.

Construction and Maintenance Section.—E. H. Fritch, secretary.

Electrical Section.—George Gibbs (chairman), Chief Engineer of Electric Traction, Long Island Railroad, New York, N. Y.

Signal Section.—H. S. Balliet, 75 Church St., New York. Exhibit by Signal Appliance Association.

Division 5, Mechanical (including former activities of Master Car Builders' and Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago. Next convention June 15-22. Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association.

Equipment Painting Section.—V. R. Hawthorne, secretary.

Division 6, Purchases and Stores (including former activities of Railway Storekeepers' Association).—J. P. Murphy, General Storekeeper, N. Y. C. R. R., Collinwood, Ohio.

Division 7, Freight Claims (including former activities of the Freight Claim Association).—Lewis Pilcher, 431 South Dearborn St., Chicago. Next meeting November 17, 1920.

Division 8, Perishable Freight.—E. F. McPike (chairman), 431 South Dearborn St., Chicago.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Austin Station, Chicago. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railroad Association, Section II.) E. H. Fritch, 431 South Dearborn St., Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railroad Association, Section III, Mechanical.)

AMERICAN RAILWAY PERISHABLE FREIGHT ASSOCIATION.—E. F. McPike, 135 E. 11th Place, Chicago. Regular meetings, 2nd Wednesday in March and September.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 1145 East Marquette Road, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Col. H. S. Crocker (acting secretary), Engineering Societies Building, 33 W. 39th St., New York. Annual convention, August 10-12, Multnomah Hotel, Portland, Oregon. Regular meetings, 1st and 3d Wednesday in month, except July and August, 33 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

AMERICAN STEEL TREATERS' SOCIETY.—W. H. Eisenman, 154 East Erie St., Chicago

AMERICAN TRAIN DESPATCHERS' ASSOCIATION.—C. L. Darling, Northern Pacific Ry., Spokane, Wash. Next convention, June 20, 1921, Kansas City, Mo.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Mt. Royal Sta., Baltimore, Md. Next annual meeting, January 25-27, 1921, San Francisco.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—Willis H. Failing, C. R. R. of N. J., Jersey City, N. J. Next meeting at St. Louis, Mo.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Exhibit by Railway Electric Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Thomas De Witt Cuyler (chairman), 61 Broadway, New York, N. Y.

ASSOCIATION OF RAILWAY SUPPLY MEN.—C. L. Mellor, 212 W. Illinois St., Chicago. Meeting with International Railway General Foremen's Association

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railroad Association, Section I, Operating.)

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railroad Association, Section V. Transportation.)

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—A. I. Filkins, Paul Dickinson Company, Chicago. Meeting with convention of American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—W. A. Booth, 131 Charron St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS.—Thomas B. Koeneke, Federal Reserve Bank Bldg., St. Louis, Mo. Meetings first Tuesday in month at the American Hotel Annex, St. Louis.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 2d Thursday in November and 2d Friday in January, March, May and September, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—J. C. Keene, General Car Inspector, Wabash R. R., Decatur, Ill.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—W. R. Elliott, Terminal R. R. Ass'n. of St. L., St. Louis, Mo.

Cincinnati Railway Club.—H. Boutet, 101 Carew Bldg., Cincinnati, Ohio.

Eastern Railroad Association.—D. G. Stuart, Washington, D. C.

Freight Claim Association.—(See American Railroad Association, Section VII, Freight Claims.)

General Superintendents' Association of Chicago.—A. M. Hunter, 321 Grand Central Sta., Chicago. Regular meetings, Wednesday preceding 3d Friday in month, Room 856, Insurance Exchange Bldg., Chicago.

International Railroad Master Blacksmiths' Association.—W. J. Mayer, Michigan Central R. R., Detroit, Mich.

International Railway Fuel Association.—J. G. Crawford, 702 E. 51st St., Chicago. Next annual meeting, May, 1921, Hotel Sherman, Chicago.

International Railway General Foremen's Association.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn. Exhibit by Association of Railway Supply Men.

Maintenance of Way Master Painters' Association.—E. E. Martin, Union Pacific R. R., Room No. 19, Union Pacific Bldg., Kansas City, Mo. Next convention October 4-6, 1921, Buffalo, N. Y.

Master Boiler Makers' Association.—Harry D. Vought, 95 Liberty St., New York.

Master Car and Locomotive Painters' Association of the United States and Canada.—(See American Railroad Association, Section III, Equipment Painting Division.)

Master Car Builders' Association.—(See American Railroad Association, Section III, Mechanical.)

National Association of Railroad Tie Producers.—E. E. Pershall, T. J. Moss Tie Company, 720 Security Bldg., St. Louis, Mo. Next annual convention, January 27-28, 1921, San Francisco.

National Association of Railway and Utilities Commissioners.—James B. Walker, 49 Lafayette St., New York. Next convention, November 9-12, 1920. Washington, D. C.

National Foreign Trade Council.—O. K. Davis, 1 Hanover Square, New York

National Railway Appliances Association.—C. W. Kelly, Kelly-Derby Co., Peoples Gas Bldg., Chicago. Meeting with American Railway Engineering Association.

New England Railroad Club.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting months of June, July, August and September.

New York Railroad Club.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

Pacific Railway Club.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meeting 2d Thursday in month, alternately in San Francisco and Oakland.

Railway Accounting Officers' Association.—E. R. Woodson, 1116 Woodward Bldg., Washington, D. C. Next annual meeting, May 11, 1921, Atlantic City, N. J.

Railway Business Association.—Frank W. Noxon, 600 Liberty Bldg., Broad and Chestnut Sts., Philadelphia, Pa.

Railway Club of Pittsburgh.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, Americus Club House, Pittsburgh, Pa.

Railway Development Association.—D. C. Welty, Missouri Pacific R. R., Little Rock, Ark.

Railway Electrical Supply Manufacturers' Association.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

Railway Equipment Manufacturers' Association.—D. L. Eubank, Galena Signal Oil Company, Richmond, Va. Meeting with Traveling Engineers' Association.

Railway Fire Protection Association.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.

Railway Real Estate Association.—R. H. Morrison, C. & O. Ry., Richmond, Va.

Railway Signal Association.—(See American Railroad Association, Section II, Signal Division.)

Railway Storekeepers' Association.—(See American Railroad Association, Section VI, Purchases and Stores.)

Railway Supply Manufacturers' Association.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meeting with American Railroad Association, Section III, Mechanical.

Railway Telegraph and Telephone Appliance Association.—G. A. Nelson, Waterbury Battery Co., 30 Church St., New York.

Roadmasters' and Maintenance of Way Association.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Next annual convention, September 20-22, 1921, Chicago. Exhibit by Track Supply Association.

St. Louis Railway Club.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.

Signal Appliance Association.—F. W. Edmunds, Schroeder Headlight & Generator Co., New York City. Meeting with American Railroad Association, Signal Division

Society of Railway Financial Officers.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.

Southern and Southwestern Railway Club.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

Southern Association of Car Service Officers.—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.

Supply Association of American Railway Tool Foremen's Association.—C. N. Thulin, Duff Manufacturing Company, 935 Peoples Gas Bldg., Chicago.

Track Supply Association.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association.

Traveling Engineers' Association.—W. O. Thompson, N. Y. C. R. R., Cleveland, O. Exhibit by Railway Equipment Manufacturers' Association.

Western Association of Short Line Railroads.—Clarence M. Oddie, Mills Bldg., San Francisco

Western Railway Club.—J. M. Byrne, 916 W. 78th St., Chicago. Regular meetings, 3d Monday in month, except June, July and August.

Traffic News

The Interstate Commerce Commission has issued a summary of traffic statistics from reports of large steam roads for the month of July and seven months ending July, 1920. The revenue ton miles for July aggregated 36,941,917,000, an increase of over 4,000,000,000 as compared with July, 1919. The revenue passenger miles totalled 4,785,323,000, an increase of over 250,000,000.

Fuel Conservation Campaign on the Reading

Special efforts are being made by the Philadelphia & Reading through a fuel conservation campaign to reduce the amount of coal used on the system. Printed leaflets, issued by C. P. Dampman, supervisor of fuel conservation, have been issued for distribution to the employees. These cover such matters as the reduction of coal lost in transit, proper inspection of locomotives for mechanical defects, quick movements in and out of the yards and maximum tonnage over ruling grades. Special committees to take charge of the fuel conservation campaign have been appointed on the different divisions.

Packers Protest Increased Demurrage Rates

A number of shippers headed by the Institute of American Meat Packers have entered protests with the Interstate Commerce Commission against the increased demurrage rates which the carriers have filed to become effective on December 1. The packers assert that shippers have been bearing more than their share of readjustment costs without corresponding reciprocity from the carriers in the way of improved service; that detention figures quoted by the carriers are based on antiquated statistics; that subnormal and crippled yard service with bunched deliveries will account for much of the detention; that no emergency necessitates even the temporary application of the proposed rates; and that the public generally would have to bear the expense of delays over which they have no control and which are brought about by the carriers themselves.

New Traffic Statistics

The Interstate Commerce Commission's Bureau of Statistics has compiled an elaborate statement showing the tonnage, number of carloads, freight revenue, and way-bill origin and destination by states for 15 selected commodities for Class I steam railroads for the month of April, 1920.

The tables included are the result of compiling the reports required by paragraph 2 of the order of the Interstate Commerce Commission of December 1, 1919, regarding freight commodity statistics. The first part of this order provides for quarterly reports of the number of carloads and number of tons for each of 70 classes of commodities, the reports of this nature previously required being on an annual basis with but 38 classes. The second part of the order required as a special study for the month of April, 1920, additional data for 15 selected classes. The switchmen's strike in that month renders the data somewhat less representative than they otherwise would be, but the main purpose of the study was to indicate the kind of information which would have resulted from the plan of commodity statistics embodied in General Order 59 of February 26, 1919, issued by the director general of railroads. This order was soon afterwards rescinded by the director general and no summaries were ever issued under it.

The need for the compilation of freight revenue by commodity classes has frequently been felt in connection with rate revisions. It is said in favor of the plan that it gives a survey of the commerce on railroads and permits of an approximation of the revenue per ton-mile on the various state to state movements. Whether the advantages are sufficiently great to warrant the adoption of this plan for regular monthly or quarterly reports, the Bureau of Statistics says, is an open

question. Since some traffic is rebilled, certain tons are reported twice in the tables, but in any particular state to state movement the tonnage and revenue shown are comparable.

Commission Authorizes Restoration of Per Diem Rates for Short Lines

The Interstate Commerce Commission, in a report by Division 4, on October 28 authorized the trunk line railroads to accord to the short lines during the period from March 1 to September 1 the same arrangements with respect to per diem charges on freight cars as existed on February 29. The matter was the subject of a recent hearing before the division, at which it appeared that since federal control ended most of the trunk lines which connect with short line railroads had refused to continue the practice established by the director general of railroads of allowing two days' free time on freight cars and have also sought to collect the per diem charge of 90 cents per car which was adopted by the American Railway Association in place of the 60 cent rate charged by the director general. The American Short Line Railroad Association took the position that the transportation act prohibited the trunk lines from charging their per diem practices during the guaranty period without the approval of the commission. The trunk lines, represented by the Association of Railway Executives, denied that they had violated the section of the act referred to, but admitted the reasonableness and equity of the short lines' claim.

Without at this time deciding that Section 208-b of the law is broad enough to justify the view that it is an inhibition against the amendment of any practice which results in a reduction in net revenues, Division 4, in its report, said it seems apparent that it was the intention of Congress that carriers in general should be protected in revenues to be received from the public and that particular carriers would be assured of the same proportion of revenues for joint service during the guaranty period as were in effect on February 29. It is, therefore, its view that it would be reasonable, proper and in accord with the spirit and intent of the act for the trunk lines to afford to the short lines the same arrangements as existed on February 29. As to the suggestion of counsel for the short lines that the commission also determine what would be a reasonable practice as to per diem and free time as between trunk lines and short lines after Sepetmber 1, the report says that that question is not within the scope of the investigation and cannot be determined upon the record.

Federal Reserve Board Finds Improvement in Transportation

Improvement in the transportation situation was noted by the Federal Reserve Board in its review of business conditions throughout the country during October. This improvement, the review shows, was particularly marked in connection with the coal mining, lumber and steel industries, while an improvement was also shown in the building industry in the Cleveland district.

The effects of this improvement in transportation, according to the statement, are being shown in both anthracite and bituminous coal production. The former is now being accelerated with the return of the miners to work and, with a speeding up of transport activities, the movement of coal is becoming more satisfactory.

The Richmond federal reserve district reported better output, freer car movements and fewer labor troubles while both the Chicago and St. Louis districts reported bituminous coal production as increasing with improved car supply. Within the Cleveland district, however (Ohio, Western Pennsylvania and parts of Kentucky and West Virginia) coal distribution is "far from satisfactory because of priority orders for late shipments and for public utilities and lack of cars." The Kansas city district reported an increase in efficiency of distribution, although transportation difficulties and mine disability had been given as the reasons for the greater part of the time lost in September in the Kansas and Oklahoma coal fields. Bituminous coal production for September totaled 51,093,000 tons, the greatest for any month since October, 1919.

Reports from the Southern Pine Association showed that lumber shipments had increased. Heavy movements of pig iron, cast iron pipe and iron and steel products were reported from the Atlanta district.

Commission and Court News

Interstate Commerce Commission

The commission has suspended until March 1 the operation of tariffs which provide increased charges for dumping, skidding, trimming and leveling coal and coke trans-shipped to vessels at Lamberts Point, Norfolk, Sewells Point and Newport News, Virginia.

The commission has ordered a hearing at Helena, Mont., on November 15 in the case arising from the refusal of the Montana state authorities to put in effect for intrastate traffic the full percentages of increase in rates allowed by the Interstate Commerce Commission.

Oral arguments are to be heard before the commission at Washington on November 12 in the Wisconsin passenger fare case arising from the refusal of the Wisconsin state authorities to put into effect for intrastate traffic the amount of increase allowed by the Interstate Commerce Commission for interstate traffic.

The Interstate Commerce Commission has issued a supplemental order in the case involving rates between Mississippi river points authorizing the carriers to file class rates revised in accordance with the previous order upon not less than 10 days' notice, to become effective November 15, 1920. The commodity rates which are to become effective on January 15 are to be filed on statutory notice.

The commission has suspended until March 3 the operation of a supplement to a Minneapolis & St. Louis tariff which provides for the cancellation of joint through rates on bituminous coal, c. l., from mines on the Minneapolis & St. Louis in Illinois to destinations in Michigan and Alexis, Ohio, leaving combination rates applicable instead. The increases resulting from the proposed concellation vary from 63 to 91 cents a ton.

The commission has suspended until March the operation of City of Norfolk, Virginia (Fort Commission of Norfolk, Virginia) Municipal Terminals tariff. The suspended tariff, the schedules of which having been filed for the first time on five days' notice, provides regulations governing wharfage, handling and storage charges at municipal terminals, Norfolk, applicable on export and outbound coastwise freight, on import and inbound coastwise freight and storage and handling at inland warehouses.

Fourth Section and Special Permission Orders

The Interstate Commerce Commission announces an extension of the time within which carriers may issue tariffs to correct inequalities not consonant with Section 4, which has been caused by the recent general advances, petitions having been received from carriers throughout the United States showing that further time is necessary. The final date for the filing of appropriate applications is March 1, 1921, as to rates for the transportation of freight, and until March 1, June 1 and October 1, 1921, as to various classes of passenger fares. The commission regards the correction of these departures from strictly statutory rates as a matter of the utmost importance, to which it is expected primary consideration will be given.

"Upon the date to which the orders have now been postponed the roads will have been in the possession of their owners a year, and more than seven months will have elapsed since the commission's report in Ex Parte 74 was issued. The carriers therefore should be able either to remove the departures protected by the commission's permissive orders or to file appropriate applications as provided therein within the additional time allowed. The commission will not look with favor upon any requests for further postponement.

"Attention is also directed to Special Permission No. 50340, which authorized the special supplement issued by carriers making effective the percentage increases authorized in our opinion in Ex Parte No. 74. The special permission contains an order

requiring that not less than 10⅔ per cent of the number of pages contained in all tariffs supplemented under authority of the special permission shall be reissued within three months from September 1, 1920, and that not less than the same number of pages of said tariffs shall be issued each three months thereafter until all schedules so supplemented shall have been reissued.

"It is not the intention of the commission either to modify the terms of this order or to make any extension of the periods of time named therein. It is convinced that the requirements of the order are reasonable and will insist upon compliance with its terms."

Joint Passenger Fares

Upon further consideration of fourth section order No. 7642 entered July 23, 1920, in response to application No. 11544, and of application No. 11639 of carriers operating in central, southeastern, southwestern, western, trunk line and New England passenger territories for a postponement of the effective dates named in the said order, the Interstate Commerce Commission on October 29 authorized the petitioners to continue until October 1, 1921, joint passenger fares increased as approved in Ex Parte 74, contained in tariffs as described in exhibit A to the application which exceed the aggregate of the intermediate fares, where such intermediate fares have been reduced to meet the fares of shorter lines or routes, provided that if said carriers desire to continue beyond October 1, 1921, any of the said joint passenger fares that are higher than the aggregate of intermediate fares, they shall file with the commission on or before October 31, 1920, applications as hereinafter provided for permission so to do.

State Commissions

The Illinois Public Utilities Commission granted an increase of 35 per cent in freight rates on October 18, to go into effect on November 1, but, owing to the fact that the roads would not be able to make out new tariffs by that date, the ruling will not go into effect until November 15.

Improvement of Overhead Bridges

The New York State Public Service Commission, Second District, acting on a petition of the New York Central, relative to a bridge in Saugerties, carrying the highway over the West Shore Railroad, which bridge was built at the sole expense of the railroad, when its line was constructed in 1882, holds that where increased traffic and weight of vehicles have made an existing bridge over a railroad unsafe, even though such bridge has been originally constructed and maintained solely at the expense of the railroad company, the cost of the alterations and strengthening is assessable under section 91 of the Railroad Law, which says that the railroad shall bear one-half the cost. The commission does not have to determine whether there are funds available to defray the expenses of such change, either on the part of the railroad or on the part of the State Commission of Highways. The necessity of the change in the crossing may be determined even though money for the State's portion of it is not available. The present bridge consists of two wooden Howe truss spans with a clear width of roadway of 14 ft. 3½ in. It has a rated capacity for trucks weighing four tons loaded. The highway is now state highway No. 5169, a part of the main trunk line highway north and south on the west shore of the Hudson river. On April 29 and 30, 1920, 168 pleasure automobiles, 14 motor buses, and 34 motor trucks, some of them weighing from eight to ten tons, were counted crossing the bridge. This overloading of the bridge and its narrowness constitute a menace to the safety of the public. A new steel plate girder bridge will cost $70,000.

Court News

Damage from Overloading

Where a railroad has taken charge of a shipment of cattle under a contract stipulating that it will not be responsible for overloading, the trial court's refusal to instruct the jury not to consider damages caused by overloading of the cattle is reversible error.—Panhandle & Santa Fe vs. Sanderson (Tex.), 218 S. W. 540.

Foreign Railway News

Chile Asks for Bids for New Line

The Chilean Ministry of Railways is asking for bids for the construction of a branch line to run 20 miles north from Pedegua to connect with a main line.

A New Railway in Ecuador

The construction of the new line from Puerto Bolivar, Ecuador, to Cuenca will begin immediately, according to advices from Guayaquil. The new road will be constructed by a Chilean syndicate and R. Torriblanca, a Chilean engineer, will be in charge of the work.

Argentine Government Buys American Rails

The Argentine government has announced the purchase of 6,000 tons of steel rails from American firms, according to reports from Buenos Aires. The price was $73 per ton and the rails will be used in the construction of a new line in the province of San Juan.

Railway Construction in Argentine

An extension of the Pacific Railway from Bahia Blanca to Patagones will soon be undertaken, according to reports from Buenos Aires. The Rosario & Puerto Belgrano will build a 14-mile line from Puerto Belgrano to Bahia Blanca. This is the first new construction undertaken in Argentine since July, 1919.

New Rolling Stock for New Zealand

LONDON.

Cammell Laird & Co., Ltd., of Nottingham, has recently received an order for 2,500 four-wheeled freight cars of small capacity from the New Zealand government railways. These were quoted for by American concerns, but the English firm secured the contract at the price of $1,137.50 at the prevailing rate of exchange.

Brake-Signal Combination in England

LONDON.

The Westinghouse Brake Company and the Consolidated Signal Company, both English concerns, have amalgamated under the name of the Westinghouse Brake & Saxby Signal Company. H. G. Brown, the chairman and managing director of the Consolidated Signal Company is to be managing director of the new company.

Construction on Lunghai Line in China

The Lunghai Railway, the only east-west line of any importance in China, has now been completed across the 346-mile gap from Hsuchowfu to Kuanyintang, according to a report from Trade Commissioner Meekins at Peking. This line forms the central section of a railway from the province of Kansu to the sea, for which a Belgian concern has a concession. It is now proposed to construct the western section of 515 miles and the eastern section of 160 miles.

Freight Cars for Belgium

LONDON.

The Ministry of Railways in Belgium refuses to pay more than an average of 24,000 francs (or approximately $1,680 at the prevailing rate of exchange) each for the 2,400 freight cars it is desirous of purchasing. Belgian manufacturers refuse to supply at that price. Later reports have been received that Germany has contracted for some of these at 21,000 francs.

Of the locomotives ordered by the Belgium government, the 100 placed in Belgium have not yet been delivered; of the 150 placed in the United States, 137 have already been unloaded in Antwerp.

Automatic Train Control in England

A committee on automatic train control is to be appointed by the British Ministry of Transport, and it is unofficially reported that the committee will be composed of Col. J. W. Pringle (government inspector), chairman; Major G. L. Hall (government inspector), secretary; E. C. Cox, South Eastern & Charham; George Hughes, Lancashire & Yorkshire, and W. C. Acfield, Midland.

A New Transcontinental Line

The government of Bolivia has awarded a contract for the construction of a railway from Tupiza, the terminus of an extension of the Antofagasta & Bolivia Railway, to La Quiaca, on the Argentine frontier. The construction of this line will bridge the gap between the railways of Bolivia and Argentine and will provide a transcontinental railway from Buenos Aires on the Atlantic to Antofagasta, Mollendo or Arica on the Pacific.

Swiss Railways Operated at a Loss

The board of directors of Swiss railways has allowed for a deficit of 50,000,000 francs (about $10,000,000 par) in the budget for 1921, according to a report from Consul Thornwell Haynes at Berne. Losses are laid to the high cost of fuel and increased wages for labor. In a supplementary report the board estimates construction work for the year at 119,130,940 francs (about $23,826,188 par). This estimate includes the work to be done on the electrification program of the railways.

Spanish Railways Need Material

LONDON.

In view of the poor financial condition of the Spanish railways, the government has arranged to guarantee funds for the purchase of a number of locomotives, passenger cars and freight cars, which are necessary for the operation of the railways and the purchase of which the railways themselves are unable to finance. No definite arrangement has been made as yet for obtaining these funds, but it is expected that an increase in railway rates will be the method employed.

Austrian Locomotive Industry

LONDON.

According to the Economic Review, the Austrian locomotive works have practically executed all the orders placed with them by the Austrian state railways and are expecting others. They have sent locomotives to Poland and Italy as well as other countries. Negotiations for the export of locomotives to Russia for the years 1921 and 1922 are making slow progress. The Austrian works are not adapted for the production of the required type and the question will have to be submitted to careful expert examination, which will take time.

Mexico Hopes for Better Railways

R. Perez, director-general of the National Railways of Mexico, made a frank statement recently concerning the deplorable state of the Mexican carriers. He is optimistic, however, and is looking forward to better conditions. Mr. Perez stated that the disturbances during the past ten years had reduced the number of freight cars in his country from 16,000 to 4,000. He said further that he wanted to have through freight service from St. Louis and Kansas City to Mexico City. Many of the lines will have to be rebuilt and all of them extensively repaired, however, before any improvement in the service can be expected, he pointed out.

Proposed New Line in Mexico

The state of Sonora, Mexico, has granted a concession to the Tucson, Cornelia & Gila Bend to construct the Mexican portion of a line from Ajo, Ariz., the present terminus of the railway, to St. Georges Bay at the northern end of the Gulf of California, according to reports from Hermosillo. The Tucson, Cornelia & Gila Bend is a line owned jointly by the El Paso & Southwestern and the New Cornelia Copper Company, connecting with the Southern Pacific at Gila Bend, Ariz. It is not believed that the construction of the line for which this concession has been granted will be begun in the near future.

Equipment and Supplies

Car and Locomotive Orders in October

The Class I railroads of the United States were reported in October as having placed orders for 81 locomotives, 4,888 freight cars and 9 passenger cars. These figures have been compiled by the *Railway Age* from the orders reported in the Equipment and Supplies column in the issues of the paper in October.

The orders for locomotives, totaling 81, compare with 137 placed by Class I roads in September. The total orders for locomotives reported during October for domestic use were 93; in addition to the 81 ordered by Class I roads, there were 12 ordered by smaller roads or by industrials. There were also 79 locomotives ordered for export, and Canadian companies placed orders in Canada for 15. The orders for locomotives placed so far this year for domestic service total 1,601, of which 1,484 were ordered by Class I roads.

The orders for freight cars for Class I roads reported in October totaled 4,888. This total is low compared with the years preceding government control. The total for the month was, nevertheless, the highest for any month this year, with three exceptions, and it was within 1,000 of being equal to the number of cars ordered in the three summer months of July, August and September. The orders placed by Class I roads for the ten months' period ending October 31 were 45,142. Including the orders placed by smaller roads, private car lines and industrials, the total was 62,820.

The figures for the month and the cumulative figures for the ten months are given as follows:

TABLE I—LOCOMOTIVES ORDERED IN 1920

	United States					Canada	
	Domestic						
Issue	Class I roads	Other roads	Car lines or industrials	Total Dom.	U. S. export	Dom.	Export
January	19	9	4	32	206	.....	7
February	283	6	4	293	86	85	.....
March	201	14	13	228	89	32	.....
April	414	17	2	433	108	28	.....
May	188	2	7	197	8	3	.....
June	64	1	.....	65	40	4	.....
July	86	.....	9	95	77	2	.....
August	11	.....	3	14	24	.....	.....
September	137	.....	14	151	31	.....	.....
October	81	8	4	93	79	15	.....
Total 10 months...	1,484	57	60	1,601	748	169	7

TABLE II—FREIGHT CARS ORDERED IN 1920

	United States					Canada	
	Domestic						
Issue	Class I roads	Other roads	Car lines or industrials	Total Dom.	U. S. export	Dom.	Export
January	1,300	6	914	2,220	1,000	.....	80
February	5,992	.....	400	6,392	516	.....	.....
March	3,069	100	500	3,669	625	6,567	.....
April	18,018	.....	1,304	19,322	350	4,206	.....
May	5,010	100	2,292	7,402	207	.....	.....
June	1,006	.....	2,757	3,757	375	.....	.....
July	2,850	.....	2,618	5,468	66	.....	.....
August	1,000	50	5,106	6,156	900	.....	.....
September	2,015	.....	771	2,786	408	.....	.....
October	4,888	.....	760	5,648	405	.....	.....
Total 10 months...	45,142	256	17,422	62,820	4,852	10,773	80

TABLE III—PASSENGER CARS ORDERED IN 1920

	United States			Canada	
	Domestic				
Issue	Class I roads	Total Dom.	U. S. export	Dom.	Export
January	107	107	...	...	...
February	35	35	...	...	...
March	148	148	...	102	...
April	328	328	50	...	...
May	57	57	...	72	...
June	...	...	...	...	...
July	60	60	16	...	...
August	...	...	...	...	...
September	79	79	...	...	...
October	9	9	14	...	...
Total 10 months...	823	823	74	174	...

Locomotives

THE BRAZILIAN GOVERNMENT is inquiring, of locomotive builders, for 20 locomotives.

THE TEMISKAMING & NORTHERN ONTARIO is inquiring for 4 Pacific type locomotives.

THE SOUTHERN PACIFIC has ordered one snow plow from the American Locomotive Company.

THE REID NEWFOUNDLAND COMPANY has ordered 5 locomotives from the Baldwin Locomotive Works.

THE STATE RAILWAYS OF SPAIN are inquiring of the locomotive builders for some 2-8-8-2 type locomotives.

THE ANTOFAGASTA & BOLIVIA is inquiring, through the locomotive builders, for some 2-8-0 type locomotives.

THE SEWELL VALLEY RAILROAD has ordered one Mikado type locomotive from the Baldwin Locomotive Works.

THE MONTANA, WYOMING & SOUTHERN has ordered one 2-8-0 type locomotive from the Baldwin Locomotive Works.

THE RIO GRANDE DO SUL, Porto Alegra, State of Rio Grande del Sul, Brazil, opened bids on September 20 for 25 locomotives.

THE HAVANA CENTRAL has ordered 12 Consolidation type locomotives from the Baldwin Locomotive Works. These locomotives will have 21 in. by 28 in. cylinders.

THE MISSISSIPPI RIVER & BONNE TERRE has ordered 2, 2-8-0 type locomotives from the American Locomotive Company. These locomotives will have 23 in. by 28 in. cylinders.

THE UNION RAILROAD, reported in the *Railway Age* of August 6 as inquiring for 7, 0-6-0 type locomotives, has ordered 6 of these locomotives from the Baldwin Locomotive Works.

THE NATIONAL RAILWAYS OF MEXICO.—Negotiations are now under way and are expected to be completed soon for financing the purchase, in the United States, of 300 locomotives and about 6,000 freight cars for the National Railways of Mexico.

Freight Cars

THE NATIONAL RAILWAYS OF MEXICO.—See item under locomotives above.

THE CHESAPEAKE & OHIO is inquiring for 2,000 or more freight cars, including a number of box cars.

THE LACKAWANNA STEEL COMPANY, Buffalo, N. Y., is inquiring for from 25 to 30, 70-ton cars and for 30, 55-ton cars.

THE RIO GRANDE DO SUL, Porto Alegra, State of Rio Grande del Sul, Brazil, opened bids on September 20 for 200 freight cars.

THE INTERNATIONAL STEEL CORPORATION, New York, is inquiring for 100 steel box cars and 50 flat cars; also for 100 additional trucks for box cars and 50 additional trucks for flat cars, all for service in South America.

Passenger Cars

THE CHICAGO, TERRE HAUTE & SOUTHEASTERN has advised the Car Service division of the A. R. A. that it is anxious to secure about 15 passenger coaches for use in miners' train service. C. E. Hair, general superintendent, Chicago, Terra Haute & Southeastern Railway, Terre Haute, Ind., should be addressed.

Iron and Steel

THE MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE has ordered 15,000 tons of rails from the United States Steel Corporation.

THE INITIAL SURVEY by the Illinois Central to ascertain what shippers think of the road's service was so successful that a monthly inquiry of the same character has been decided upon.

Supply Trade News

J. L. Worley, executive assistant of the Railway Business Association, has also been elected treasurer, succeeding Merle S. Clayton, resigned.

W. A. Ruth, who recently resigned from the sales force of the National Car Coupler Company, has become affiliated with the **Superior Steel Castings Company,** Benton Harbor, Mich.

L. Brandenburger has been appointed representative in Utah and parts of Idaho, Wyoming and Montana for the **Roller-Smith Company,** New York. Mr. Brandenburger's office is at 59 West Broadway, Salt Lake City, Utah.

Peter Aagaard, superintendent of buildings on the Illinois Central, with headquarters in Chicago, has been appointed president of the **T. S. Leake Construction Company,** Chicago, succeeding T. S. Leake, who has retired from active participation in the business. Mr. Aagaard was born on September 9, 1869, in Denmark. He was educated in the technical schools of Denmark, and later studied at Armour Institute, Chicago. Entering railway service in May, 1896, with the Illinois Central as a carpenter, his entire service up to the present has been with that company. In 1899, he became a general foreman, and in 1905 was appointed supervisor In 1912, he was promoted to superintendent of buildings, with headquarters at Chicago, the position he occupied at the time of his recent appointment.



P. Aagaard

R. G. Barrington, formerly connected with the Cleveland Twist Drill Company, Cleveland, Ohio, has been appointed Cleveland sales manager for the **Reed-Prentice Company,** the **Becker Milling Company** and the **Whitcomb-Blaisdell Machine Tool Company,** with headquarters at 408 Frankfort avenue, Cleveland, Ohio.

The Howard N. Potts medal, which is awarded for distinguished work in science and mechanical arts by the Franklin Institute, was presented October 20 to **E. P. Bullard, Jr.,** president of the Bullard Machine Tool Co., Bridgeport, Conn., for his work in connection with the development of automatic machinery in the metal-cutting field.

The J. B. Engineering Sales Company, 60 Prospect street, Hartford, Conn., has been appointed Connecticut sales agent of the **Conveyors Corporation of America,** formerly the American Steam Conveyor Corporation. The J. B. Engineering Sales Company is owned by **John Breslau,** who is a graduate of the Sheffield Scientific School, Yale University, and was formerly sales engineer, manager of publicity and production manager of the Terry Steam Turbine Company. The J. B. Engineering Sales Company is sales agent also for the **Griscom Russell Company** and the **Terry Steam Turbine Company,** in Connecticut.

J. B. Webb has been appointed western representative of the **Diamond Specialty & Supply Company,** Philadelphia, Pa. Mr. Webb has, for many years, been manager of the

railway supply department of the Simmons Hardware Company, and in that capacity handled the products of the Diamond Specialty & Supply Company, including water gage glasses, lubricator glasses, Watertown automatic cylinder cocks, Steinbrunn boring bars and other devices, and now through this new arrangement, will sell these goods to the railroads operating out of Chicago and west of the Mississippi river. Mr. Webb's headquarters are at 713 Chestnut street, St. Louis, Mo.

Midgley & Borrowdale

Stanley W. Midgley, formerly district manager of the Liberty Steel Products Company, Chicago, and **J. M. Borrowdale,** who was connected with the sales department of this company until the closing of the Chicago office, on September 30, have organized the firm of **Midgley & Borrowdale,** railway supplies, with offices in the McCormick Bldg., Chicago. They will handle the products of the Superior Steel Castings Company, Benton Harbor, Mich., manufacturers of steel and malleable castings; the Pneumatic Safety Valve Company, Woonsocket, R. I., manufacturers of safety valves for air tools; the Henry Giessel Company, Chicago, manufacturers of sanitary filters and coolers for railroad car and locomotive equipment; the Trumble Waste Company, of Philadelphia, Pa., and the Steel Fabricating Company, Chicago, manufacturers of sectional steel buildings.



S. W. Midgley

Mr. Midgley started his railroad career in 1898 in the office of the Car Mileage Bureau. In 1902, he became general sales representative of the National Car Coupler Company, at Chicago. He was appointed western representative and western sales manager of the Curtain Supply Company, with headquarters at Chicago, in 1906, remaining with this company until 1914. Subsequently, he became general sales manager of the Acme Supply Company, Chicago, and in January, 1918, became connected with the Liberty Steel Products Company. During the fall of 1918 he was promoted to district manager of the Chicago office.



J. M. Borrowdale

Mr. Borrowdale entered railroad work with the Fitchburg at Boston, Mass., in 1890. He was identified with this road until 1893, at which time he moved to Chicago, where he became connected with the Chicago, New York & Boston Refrigerator Company, as a car builder, holding that position until 1896. Upon the latter date he left that company and entered the service of the Illinois Central at the Burnside shops, where he started as a car builder, and was subsequently promoted to foreman, and later to general foreman. In 1909, he was made superintendent of the car department of the Illinois Central, retaining that position until 1917, when he left to join the sales force of the Johns-Manville Company. He joined the sales forces of the Liberty Steel Products Company in April, 1919.

Railway Construction

Atchison, Topeka & Santa Fe.—This company is accepting bids for a 100 ft. frame extension to its freight house at Topeka, Kan., to cost approximately $50,000. This company, which was noted in the *Railway Age* of October 15 as accepting bids for the construction on two brick lavatory buildings at Shopton, Iowa, has awarded the contract for this work to A. W. Smith, Fort Madison, Iowa.

Blue Ridge Development Co.—This company is having a preliminary survey made for the construction of an electric line from Mt. Holly, N. C., to Blowing Rock, a distance of 70 miles. Some heavy grading in the mountains and one long, high bridge will be necessary.

Central of Georgia.—This company recently awarded a contract for the construction of an engine house at Columbus, Ga., to the George B. Swift Co., Chicago. The improvement, which is now under way, will cost approximately $500,000.

Chicago & North Western.—This company has awarded a contract to the Ogle Construction Company, Chicago, for the construction of a 300-ton frame coaling station at West Chicago, Ill.

Chicago Great Western.—This company, which was noted in the *Railway Age* of September 24 (page 549), as accepting bids for remodeling and extending its passenger station at South St. Paul, Minn., has awarded the contract for this work to Otto E. Olsen & Co., South St. Paul.

Chicago, St. Paul, Minneapolis & Omaha.—This company has awarded a contract to the George J. Grant Construction Company, St. Paul, Minn., for the construction of a freight station at Sioux Falls, S. D. Additional yard tracks at Sioux Falls are being constructed by company forces.

Gulf Coast Lines.—This company is constructing temporary buildings at Kingsville, Tex., to replace the machine shops which were destroyed by fire, pending the completion of plans for permanent shop facilities.

Kansas, Oklahoma & Gulf.—This company contemplates the construction of a freight house at Henryetta, Okla.

New York Central.—This company will erect a new bridge to carry its main line over the Bessemer & Lake Erie at Osgood, Pa.

Ocean Shore.—The Railroad Commission of California has authorized the Ocean Shore Railroad to abandon service on its Southern division, extending from Swanton, Cal., to Santa Cruz, a distance of approximately 16 miles. Insufficient revenue was responsible for the abandonment of the line, which will be dismantled.

Pere Marquette.—This company will shortly accept bids for the construction of a new station at Sarnia, Ont.

Philadelphia & Reading.—This company has awarded a contract to Bennett & Randall, Lebanon, Pa., for the construction of a 30 ft. concrete and steel bridge over a highway near Brownstone, Pa. This contract is a portion of the company's program which calls for the elimination of five grade crossings between Swatara and Hummelstown on the Lebanon Valley branch.

St. Louis-San Francisco.—The T. S. Leake Construction Company, Chicago, is building an addition to the car repair shop of this company at Fort Scott, Kan., at a cost of about $15,000.

Tennessee.—This company has applied to the Interstate Commerce Commission for a certificate authorizing it to construct and operate a railroad up Beech Fork of New River in Campbell and Anderson counties, Tenn.

Wichita Falls, Ranger & Fort Worth.—This company contemplates the construction of a houndhouse and machine shop at Ranger, Tex.

Railway Financial News

Chicago, Milwaukee & St. Paul.—The United States Railroad Administration reports a final settlement with this company of all matters growing out of the 26 months of federal control. The adjustment was made as of November 1, and is the first to be made with a large railroad. The main differences in the mutual accounts, as between the Railroad Administration and the railway company, according to a statement to the Railroad Administration, were in matters of maintenance of way and structures, equipment, depreciation and interest. Mutual concessions were made in an across table conference, resulting in the payment by the Railroad Administration to the company of $13,750,000 in cash, being balance due on compensation, after the adjustments agreed upon. In connection with this settlement, $20,000,000 of indebtedness due the Railroad Administration from the railway company for additions and betterments were funded, in accordance with the transportation act, the debt due the Railroad Administration being secured by first mortgage bonds of the railway company deposited as collateral. The differences between the company and the Railroad Administration were ironed out in what might be termed a lump sum settlement. There was no agreement between the parties as to the construction of particular clauses of the standard contract.

Delaware & Hudson.—This company has been authorized by the Interstate Commerce Commission to issue $3,475,000 of first and refunding mortgage 4 per cent gold bonds, maturing May 1, 1943, to pledge $1,700,000 of the bonds as security for a loan of $1,125,000 for the United States and to hold $1,775,000 of the bonds in the treasury available for disposal as may hereafter be authorized.

Missouri, Kansas & Texas.—The receiver has been authorized by the Interstate Commerce Commission to issue $675,000 of equipment notes under an agreement of conditional sale and indenture of lease to be dated June 15, 1920, to the American Car & Foundry Company and the Central Trust Company of New York, under which the car company is to deliver to the trustee 300 50-ton, 10,000-gal. tank cars, for $902,169, to be leased to the railroad. The railroad is to pay to the trustee as rental for the cars $227,169 in cash and $675,000 in equipment trust notes.

New Orleans, Texas & Mexico.—The Interstate Commerce Commission has ordered a hearing at Washington on November 10 on this company's application for authority to issue promissory notes, to execute a contract for five locomotives, to issue first lien gold bonds, non-cumulative income bonds, and capital stock or voting trust certificates representing the same, and to pledge certain of the bonds as security for a loan from the government.

Northern Pacific.—The Interstate Commerce Commission has approved a loan to the Northern Pacific of $6,000,000 for the purpose of aiding the company in acquiring new equipment and in making additions and betterments to the amount of approximately $16,000,000, of which approximately $10,000,000 is to be financed by the company. Of this loan $3,600,000 is for equipment and $2,400,000 for additions and betterments to way and structures.

The equipment proposed to be acquired, according to the company's application, includes 6 Mountain Mallet locomotives, $611,785; 20 Pacific passenger locomotives, $1,408,878; 25 Mikado freight locomotives, $1,834,215; 24 switching locomotives, $1,241,953; 300 Hart convertible cars, $1,123,374; 60 air dump cars, $300,000; 100 steel underframe cabooses, $350,000; 1,000 steel underframe box cars, $2,500,000; betterments to equipment, $300,000, making a total of $9,690,208.

The proposed expenditures for additions and betterments to way and structures include $362,000 for widening cuts and fills, $407,454 for ballast, $1,103,400 for rail and other track material, $556,557 for bridges, trestles and culverts, $473,787 for grade crossings and crossing signals, $558,600 for additional main track, $334,750 for additional yard tracks, sidings and industrial tracks, $104,679 for signals and interlocking, $109,122 for telephone and telegraph lines, $56,585 for tunnel and subway improvements, $5,119 for section houses and other roadway buildings, $222,168 for freight and passenger stations, office buildings, etc., $105,456 for water stations and appliances, $104,038 for fuel stations and appliances, $644,121 for shop buildings, engine-houses and appliances, $475,542 for shop machinery and tools, $37,327 for electric power plants, etc., $506,000 for pile drivers, cranes, etc., and $201,000 for car sheds, making a total for additions and betterments to way and structures of $6,368,905.

Pennsylvania.—The board of directors of the Pennsylvania Railroad and the Pennsylvania Company on October 27 announced their intention to acquire the minority stockholdings of the Grand Rapids & Indiana, and lease its railway properties. The general basis for the proposed acquisition of the stock is that the Pennsylvania Company will use the Grand Rapids & Indiana second mortgage 4 per cent bonds, maturing in 1936, now owned by it, to purchase the minority holdings of Grand Rapids & Indiana Railway stock, par for par. This involves no new issue of securities, as the Pennsylvania Company already holds these bonds in its treasury. The interest on these bonds, which were issued in 1896, has been regularly earned by the Grand Rapids & Indiana. Action on the lease of the Grand Rapids & Indiana to the Pennsylvania Railroad Company will also be taken up promptly. The basis for the lease is that the Pennsylvania Railroad Company will pay a rental equal to fixed charges and a 4 per cent dividend on the capital stock of the Grand Rapids & Indiana. Both of the foregoing arrangements are subject to such approval of the regulatory authorities as may be requisite, but first of all the Grand Rapids & Indiana stockholders will be requested to consent to the respective propositions, viz: to exchange their stock for the bonds; or, in the case of those not consenting to the exchange, request will be made to approve of the proposed lease.

Southern Pacific.—The board of directors on November 1 adopted resolutions approving the separation of its 160,000 acres of California oil lands, which have been valued by government estimates between $480,000,000 and $500,000,000, and its stockholdings in the Associated Oil Company, from its railroad properties.

Western Pacific.—A special meeting of stockholders will be held at Wilmington, Del., on November 18, to vote on increasing the common stock of the company from 475,000 to 600,000 shares and from 275,000 to 400,000 shares of preferred stock in anticipation of acquiring the Denver & Rio Grande, which is to be sold on November 20 to satisfy a judgment of approximately $38,000,000 secured by bondholders of the Western Pacific.

If this reorganization be consummated, the Western Pacific Corporation will own the following: Entire capital stock of Western Pacific Railroad Company (the operating company); entire capital stock of the new Denver company, less such amount of preferred stock as may be issued to bondholders in exchange for bonds; the stock of the Utah Fuel Company, subject to mortgage of the Rio Grande Western Railway Company, under which it is pledged. Although Western Pacific stockholders will still be short of having retrieved the loss which they suffered in the Denver company, substantially all of the assets upon which they relied when they first invested will also have been applied to their reimbursement.

Negotiations with the protective committee representing the Denver & Rio Grande 5 per cent refunding bonds have been resumed. The committee has agreed to recommend to its security holders a reduction of the bonded debt to the extent of 50 per cent, or about $15,750,000, and the substitution of 7 per cent cumulative preferred stock in lieu of such bonds. The committee representing the 7 per cent adjustment bonds has agreed to recommend to its security holders the acceptance of an offer to exchange for such of these bonds as may be tendered, 4 per cent ten-year notes of the Western Pacific Corporation.

The notice to stockholders states that the additional $25,000,000 of Western Pacific stock, $12,500,000 preferred and $12,500,000 common, is to be distributed share and share alike to preferred and common stockholders. This will mean one share of common, and one share of preferred for each six shares now held and is to be in lieu of distributing representative securities or transferring the assets to the Western Pacific, the operating company.

Railway Officers

Executive

E. W. Grice, manager of purchases, stores and safety of the Chesapeake & Ohio, with headquarters at Richmond, Va., and **R. H. Snead,** manager of export traffic, have been appointed assistants to the president, with the same headquarters and duties as heretofore, effective November 1.

Financial, Legal and Accounting

H. G. Foreman, whose appointment as treasurer of the Canadian National and the Grand Trunk Pacific, with headquarters at Toronto, Ont., was announced in the *Railway Age* of October 15 (page 678), was born at Toronto, Ont., on September 2, 1882, and was educated at Detroit University. He entered railroad service in September, 1898, in the office of the general auditor of the Lake Erie & Detroit River, at Walkerville, Ont. In June, 1902, he was employed as a clerk in the office of the accountant in the engineering department of the Pere Marquette, at Detroit, Mich., but left the service of this road in February, 1903, to become a clerk in the accounting department of the Canadian Northern, at Toronto, Ont. In June, 1909, he was promoted to chief clerk, with the same headquarters, and in November, 1916, he was promoted to chief accountant. On January 1, 1919, Mr. Foreman was appointed assistant treasurer of the Canadian National, retaining his former headquarters at Toronto. He was serving in this position at the time of his recent appointment.

Operating

D. E. Murphy, superintendent of terminals of the Chicago, Indianapolis & Louisville, with headquarters at South Hammond, Ind., will transfer his headquarters to Chicago, effective November 15.

I. B. Richards has been appointed superintendent of transportation of the Northern Pacific, with jurisdiction over the lines west of Paradise, Mon., and headquarters at Tacoma, Wash., effective November 1.

P. H. McCauley, superintendent of transportation of the Northern Pacific, with headquarters at St. Paul, has been appointed general superintendent of transportation, with the same headquarters, effective November 1.

A. Bernard, terminal trainmaster on the Illinois Central, with headquarters at Chicago, has been appointed acting terminal superintendent, with the same headquarters, effective November 1, succeeding **A. M. Umshler,** who has been granted a leave of absence on account of ill health.

H. W. Matthews, superintendent of terminals on the Grand Trunk, with headquarters at Port Huron, Mich., has been appointed joint superintendent of the St. Thomas division, with headquarters at St. Thomas, Ont., succeeding J. C. Crombie, who has been transferred, effective October 27.

D. W. Kelly has been appointed superintendent of the Iowa and Dakota division, of the Chicago, Milwaukee & St. Paul, with headquarters at Mason City, Iowa, succeeding W. M. Thurber, who has been transferred to the La Crosse division, with headquarters at Portage, Wis. These changes are effective November 1.

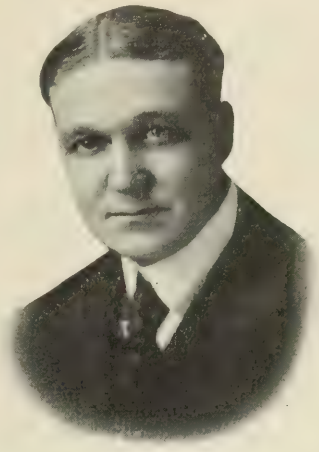
J. Ehrke, superintendent of the Chicago division of the Grand Trunk, with headquarters at Battle Creek, Mich., has been promoted to assistant to the general superintendent, with headquarters at Chicago, effective November 1. **D. T. Crawford,** inspector of transportation, with headquarters at Chicago, succeeds Mr. Ehrke, and the position of inspector of transportation has been abolished.

J. E. Craver, acting general superintendent of the Western district of the Northern Pacific, with headquarters at Tacoma, Wash., has been appointed general superintendent of the lines from Mandan, N. D., to Paradise, Mont., with headquarters at Livingston, Mont., effective October 28. He succeeds **A. V. Brown,** who has been transferred to Tacoma, with jurisdiction over lines west of Paradise.

T. E. Brooks, division superintendent on the Louisville & Nashville, with headquarters at Birmingham, Ala., has been promoted to assistant general manager, with headquarters at Louisville, Ky. **W. E. Smith,** division superintendent, with headquarters at Evansville, Ind., succeeds Mr. Brooks, and **M. Devney,** assistant division superintendent, with headquarters at Evansville, Ind., succeeds Mr. Smith. All appointments were effective November 1.

J. C. Barton, trainmaster of the Atchison, Topeka & Santa Fe at Pueblo, Colo., has been appointed assistant superintendent with headquarters at Wellington, Kan., succeeding B. A. West, transferred. **W. C. Ashcraft** has been appointed trainmaster at Pueblo, succeeding Mr. Barton. **H. R. McKee** has been appointed acting trainmaster at Las Vegas, N. M., succeeding Mr. Ashcraft. **J. R. Skillen** has been appointed acting trainmaster at Raton, N. M., succeeding Mr. McKee. **T. C. Looney** has been appointed chief despatcher at Raton, N. M. These changes are effective from October 3.

Edward E. Carter, whose promotion to superintendent of terminals on the St. Louis-San Francisco, with headquarters at Tulsa, Okla., was announced in the *Railway Age* of October 15 (page 679), was born at Independence, Mo., on September 25, 1875, and entered railroad service on September 1, 1892, as a yard clerk with the Kansas City, Ft. Scott & Memphis. He soon became an agent and operator and served at various stations on that road. In 1900 he became a stenographer and rate clerk in the offices of the St. Louis-San Francisco, at Omaha, Neb. Three years later he was promoted to traveling freight agent, with headquarters at Wichita, Kan., a position which he held until 1909, when he was appointed division freight agent, with the same headquarters. In 1914, Mr. Carter was appointed general agent at Wichita, and in March, 1918, he was promoted to assistant superintendent, with headquarters at Neodesha, Kan. Later, in the same month, he entered military service, was commissioned captain in the railway transportation corps, and saw service overseas. On his return to civilian life in July, 1919, Mr. Carter resumed his duties as assistant superintendent, with headquarters at Neodesha, the position which he held at the time of his recent promotion.



E. E. Carter

H. I. Battles, whose appointment as general manager of the Peoria Railway Terminal Company was announced in the *Railway Age* of October 8 (page 635), entered railroad service in March, 1882, as a clerk in the offices of the Chicago, Rock Island & Pacific at Joliet, Ill. In 1893 he was appointed agent at Joliet, where he served until 1903, when he was transferred to Peoria, Ill. In July, 1907, he was appointed general agent, with headquarters at Peoria; he was promoted to division freight and passenger agent, with the same headquarters, in March, 1918, serving in this position until the time of his recent promotion.

J. C. Hemming, whose appointment as superintendent of the Belt Railway, with headquarters at Clearing, Ill., was announced in the *Railway Age* of October 15 (page 678), was born on August 24, 1877, at Derby, England. He entered railroad service in 1897, in a machine shop of the Chicago &

North Western, and was employed there until 1899, when he became a fireman on the Belt Railroad. In 1902, he was promoted to engineer, was made traveling engineer in 1910, and in May, 1915, he was promoted to trainmaster on the same road. In July, 1918, during federal control, Mr. Hemming was appointed superintendent, a position which he held until March, 1920, when the roads were returned to private control. At the time of his recent appointment he was assistant superintendent of the Belt Railroad.

E. L. King, whose promotion to superintendent of the Salt Lake division of the Southern Pacific, with headquarters at Ogden, Utah, was announced in the *Railway Age* of October 15 (page 679), entered railroad service in September, 1894, as a clerk in the maintenance of way department of the Sacramento division, of the Southern Pacific. In 1895 he served as telegraph operator and agent at various stations on the Sacramento division, and in 1900 became a clerk in the office of the superintendent. In 1901, Mr. King was made train despatcher at Sacramento, Cal., and in 1906, he was promoted to chief train despatcher and transferred to Sparks, Nev. He returned to the Sacramento division as train despatcher in 1908. Two years later he was appointed chief train despatcher of the Shasta division, and in 1912 was promoted to trainmaster. At the time of his recent promotion, Mr. King was superintendent of telegraph, with headquarters at San Francisco, Cal., a position to which he had been promoted in February, 1914.

Traffic

Hugh S. Wilson has been appointed commercial agent of the Erie, with headquarters at Chicago, effective October 25.

H. Desmidt has been appointed general agent of the Southern Pacific, with headquarters at Paris, France, effective November 1.

G. J. Lovell has been appointed district passenger agent of the Wabash, with headquarters at Minneapolis, Minn., effective November 1.

A. E. Marteny has been appointed general agent of the Chicago Great Western, with headquarters at Leavenworth, Kan., effective October 16.

Mechanical

J. Herron has been appointed acting superintendent of motive power of the Duluth, South Shore & Atlantic, with headquarters at Marquette, Mich., succeeding J. J. Conolly, granted leave of absence.

D. M. Pearsall, superintendent of motive power of the Atlantic Coast Line, second and third divisions, with headquarters at Waycross, Ga., has been transferred as superintendent of motive power, first division, with headquarters at Rocky Mount, N. C. **J. E. Brogdon,** shop superintendent at Waycross, Ga., has been appointed superintendent of motive power, second and third divisions, with the same headquarters, succeeding Mr. Pearsall. **F. P. Howell,** master mechanic at Savannah, Ga., has succeeded Mr. Brogdon as shop superintendent at Waycross, and **J. W. Reams** has been appointed master mechanic at Savannah, succeeding Mr. Howell. These changes are effective October 15.

Engineering, Maintenance of Way and Signaling

William C. Allen, whose appointment as assistant valuation engineer of the Fort Worth & Denver City, with headquarters at Fort Worth, Tex., was announced in the *Railway Age* of October 15 (page 680), was born on May 7, 1886, at Hennepin, Ill. He was educated at the University of Kansas, and entered railroad service in November, 1907, with the Fort Worth & Denver City, as a rodman, and during the next eleven years served successively as instrumentman, ballast engineer, assistant engineer, and assistant valuation engineer. In June, 1918, he entered military service and served with the American Expeditionary Forces as a second lieutenant in the Forty-seventh Engineers, being engaged in construction work, and as a supervisor of track. In July, 1919, upon his return to civilian life, Mr. Allen was appointed engineer of the Lone Star Gas Company of Dallas, Tex., the position which he held at the time of his recent appointment.

Special

Julius H. Parmelee, as recently noted in these columns, has been appointed director of the Bureau of Railway Economics, with office at Washington, D. C., his title having been changed from chief statistician. Mr. Parmelee was born on October 10, 1883. He was graduated from Yale in 1904. He then attended the Yale Graduate School for three years and was an instructor in economics in Yale College, receiving the degree of Ph.D. in 1910. In 1907 Dr. Parmelee went to Washington as special examiner for the Interstate Commerce Commission. After two years with the commission he became connected with the Immigration Commission on special editorial work and he was for one year and a half with the Census Bureau as special agent. He was appointed statistician of the Bureau of Railway Economics in 1911 and on November 1, 1914, on the resignation of Logan G. McPherson as director, Dr. Parmelee was made resident head of the bureau at Washington, while Dr. Dixon was in charge as director. After the resignation of Dr. Dixon in July, 1918, Dr. Parmelee was placed in full charge of the bureau, but with the title of chief statistician. For five years Dr. Parmelee has been one of the editors of the American Statistical Association Quarterly and he is a member of the board of editors of the American Economic Review.



J. H. Parmelee

Obituary

C. C. Higgins, superintendent of motive power of the St. Louis-San Francisco, was killed at Racine, Mo., the night of November 3, when a freight train crashed into his private car.

Donald G. Stuart, secretary of the Eastern Railroad Association, died at the office of the association, Washington, D. C., October 23, 1920. Mr. Stuart was born February 20, 1855, at Washington and was educated in the public schools of that city. He entered the service of the Eastern Railroad Association in 1879 and in 1908 was made assistant secretary. From March, 1917, until May, 1918, Mr. Stuart filled the position of the secretary, who was absent on account of ill health, and in May, 1918, was appointed secretary.

M. F. Bonzano, formerly general superintendent of the Philadelphia & Reading and chief engineer of the Toledo, St. Louis & Western and the Pittsburgh & Shawmut, died October 29, at Guilford, Conn. Mr. Bonzano was born May 13, 1858, at Detroit, Mich., and was educated at Rensselaer Polytechnic Institute, Troy, N. Y. In 1878 he first entered railway service as an assistant engineer on the Pennsylvania. In 1882 he went to the Philadelphia & Reading in the same capacity and in 1885 was appointed roadmaster. In 1886 he was promoted to division engineer and, in 1890, to superintendent and, in 1893, general superintendent and assistant to the vice-president. Subsequently he served in managerial positions on various small roads. In 1901 he became chief engineer of the Toledo, St. Louis & Western, which position he left in 1904 to become chief engineer of the Pittsburgh & Shawmut. Mr. Bonzano retired from active railway work in 1906.

EDITORIAL

Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

The Man on the Firing Line Should Know

This country is replete with organizations for the scientific study of the problems of our industrial life, and railroad technology has come in for its share of attention from such bodies. Beyond any doubt, there has been a marked improvement in practices of the maintenance of way and other departments as to both design and workmanship during the last two decades because of the application of the fundamental truths thus evolved. But much still remains to be done. While there is a great fund of information at hand, there has been a restriction in its dissemination in a form that makes it of fundamental value to the man who does the work. Such information must be presented in the language of the foremen and the supervisors if it is to supplant the many "old wives' tales" of natural phenomena which seem to persist in spite of all modern thought. This fact is disclosed too often in meetings of the subordinate officers. The full return on the money invested in the investigation of rail failures, timber preservation, stresses in track, concrete practice, etc., can be obtained only when the information is placed in a form that makes the facts of direct, everyday application to the one who is to put them into practice. This is a problem for the railway associations and the technical publications as well as the railway managements.

Progress in Automatic Connectors

Conditions incident to the war centered interest on the problem of handling the unusual volume of traffic, and necessarily less attention was given to new methods and new devices. For that reason comparatively little notice has been taken of a significant development in automatic connectors for the air and steam lines on car equipment. Sporadic attempts have been made to introduce automatic connectors of various types in the past but after a more or less prolonged period of trial, the equipment has ultimately been taken out of service. Within the past four years, however, several new designs have been brought out and some of these are still in service after tests of many months' duration. One important system is now specifying automatic connectors on all new passenger cars and is rapidly applying the device to existing equipment. In districts where cars can be kept on the home line, this road has also used the connector in freight service. From the operating standpoint, the connector has been found to have several advantages. It lengthens the life of air hose by eliminating mechanical wear and saves time in coupling cars. Strange as it may seem, the connector has also increased the tonnage hauled in extremely cold weather. Investigations have shown that the reduction in tonnage in winter was in a large measure necessitated by the impossibility of supplying enough air for satisfactory brake operation, this being due to the leakage that occurs with the ordinary type of coupling when the hose becomes stiff from cold. The Committee on Train Brake and Signal Equipment of the Mechanical Division of the American Railway Association was delegated to investigate the subject of automatic connectors in 1919. In its report at the last convention the appointment of a special committee on this subject was recommended but no further action has been taken. The railroads have recently standardized the car coupler to do away with the multiplicity of designs now in use. With the adoption of automatic connectors, the roads will sooner or later be forced to standardize certain features to permit the interchange of equipment. Prompt action will be needed to avoid a condition similar to that which existed at the time of the general adoption of the automatic coupler.

The Cutting of Melons

A few weeks ago comment was made in these columns of the epidemic of rumors concerning consolidations of railroad lines. When attention was drawn by different financial papers to the fact that this matter was for the time being rather in the hands of the Interstate Commerce Commission, the rumors suddenly ceased. We now have a new fad in railway rumors—namely, in the form of reports concerning segregation of properties not used for railroad purposes and an accompanying cutting of melons for the stockholders. This new idea started from the announcement that the Lackawanna proposed to capitalize its surplus, and has appealed more and more to popular fancy since the Southern Pacific directors advised the stockholders of that road that it was planned to segregate the enormous oil properties. However, now that the idea has been suggested, it is being carried too far, and is being applied to other roads that have no such plans in mind. There is a reason for the manner in which these rumors relating to the finances of the railways are being taken up. It is that the Transportation Act has once more made railway investments worth while. The public has again begun to take notice of railway stocks and bonds. Railway men may well be pleased at these indications.

Keep Up the Full Car Loading

In a period of declining traffic such as we are now entering, when the freight equipment of the country becomes sufficient to handle the traffic offered for transportation, there is a natural tendency for shippers and railway men alike to let down in their efforts to secure maximum car loading. The tendency at once develops to load cars in the most easy manner, which usually means considerably less than the capacity loading. This is not economical from the standpoint of either the railways or the shippers. This is self-evident when it is realized that the average weight of an empty car is from 15 to 20 tons, while the average loading of all commodities is 27 tons. As the load of the car itself must be hauled with every movement of the contents and it requires as much tractive effort from the locomotive per ton to move this weight as it does for the contents, the importance of keeping the percentage of lading to total weight as high as possible is self-evident. This question assumes a new aspect to the shipper since the passage

of the Transportation Act, which stipulates that the rates must be sufficient to earn a fixed return on the value of the properties. Any wastes such as those due to light loading of cars add to the operating cost and thereby to the rates necessary to earn the specified return. Therefore the shipper now has a new interest in promoting economies of transportation and he can contribute to this end most effectively by co-operating in the heavy loading of cars.

Growth of the Railroad Y. M. C. A.

Unusual interest attaches to the fifteenth international conference of the Railroad Young Men's Christian Associations of North America, which will be held in Richmond, Va., on November 18-21. The work of the Railroad Y. M. C. A. has been growing steadily for many years, a number of new buildings being opened each year and some of the older buildings being enlarged and remodeled. The growth of the organization during the past few years, or since the big membership drive of 1916, has been greatly accelerated. Today there are 284 railroad associations with a membership of about 145,000. Far more important than this growth in membership, however, is the increase in the effectiveness of the work caused by the more intensive and extensive programs which were instituted in the greater number of the associations throughout the country as a result of the seven-fold drive which was inaugurated a year ago. All of the associations set aside specific weeks for considering different phases of the work and laying plans to carry it on intensively during the year. This program included religious work, boys' work, educational, health and happiness, citizenship and social, and thrift. The Richmond conference will reflect the advance which has thus been made all along the line and will doubtless develop a still larger and more ambitious program for the coming year. Keeping men fit—physically, mentally and morally—is a vital factor in the increased safety and the more efficient operation of our railroads.

Operating Studies of Locomotive Performance

No thorough study of the cost of locomotive operation under varying conditions has been made in the past fifteen years. At the time that this problem was analyzed, it was found that in most cases there was a definite tonnage, somewhat below the maximum which the locomotive could haul, that resulted in the lowest cost per ton-mile and the greatest number of ton-miles per locomotive per month. Under other conditions the maximum tonnage did not give the maximum traffic movement per month but there was a varying range for which the cost was practically the same and this gave considerable latitude in choosing the tonnage and speed for the division. When the analysis of this subject was made, it aroused much interest but the application of the principle was never given the attention it deserved, probably because the study involved was rather laborious. The economy of heavy train loads has been proved and roads have made great efforts to obtain motive power of high capacity, yet they have overlooked the possibilities of operating the existing power at the most economical tonnage. Recently there has been a great deal of talk about reducing operating costs by loading engines to get the greatest number of ton-miles per train *hour* instead of per train *mile*. The few tests that have been run tend to prove that when the tonnage is reduced to give the maximum ton-miles per hour, the fuel costs increase more than the wages are reduced. It seems reasonable to assume that the most economical operating condition is reached when the tonnage is at some value between the maximum that the engine can haul and that which gives the greatest number of ton-miles per train hour. A railroad cannot lay claim to being managed in a businesslike way unless the facts regarding the cost of operation under different conditions are definitely known. Is it not remarkable that the economics of operation, the primary function of railroading, is so shrouded in mystery? Every division superintendent can tell what economies he could effect with heavier motive power and increased train load. Of course, the operating officer should never overlook the possibilities of improvement by the use of better equipment, but in view of the fact that only a few hundred freight locomotives are purchased annually while forty thousand are in regular freight service throughout the country, it seems that too much attention is given to the results that can be obtained with new equipment and altogether too little study is devoted to methods of obtaining the best results with the facilities at hand.

The Pennsylvania Tunnel Route

The announcement that a through car from Boston, Mass., to Miami, Fla., will be put on the Federal Express which runs between Boston and Washington is the latest development in the use of the Pennsylvania Railroad's line into New York City. The through route furnished by tunnels under the North and East rivers and Manhattan, in conjunction with the Hell Gate Bridge line connecting Long Island with the mainland, is now used by four through trains each way daily. These are the Colonial and Federal expresses between Boston and Washington, a train each way between Boston and Pittsburgh and one from Boston to Philadelphia southbound and from Philadelphia to New Haven northbound. New England has thus been given an improved passenger traffic route to the south and is by way of securing a new passenger route to the west in competition with the lines through Buffalo. The development of these routes will be watched with interest. Incidentally the advocates of electrification who are very much in the public eye, have apparently missed, or at any rate have not given much attention to the argument in their favor in this development. This is a case where electrification has actually influenced a change in traffic conditions because it has permitted the opening of such through routes. There is always a question, of course, whether other than operating conditions will allow any great number of similar developments in other cities where electrification may eventually be adopted.

Attention to Details

It is frequently the case that the means at hand are the least frequently used. When a problem is to be solved it is natural to look to some remote point for assistance, ignoring help more readily available and frequently of equal or greater value. In reading the discussions of means of increasing car miles per day which appear elsewhere in this issue, one cannot help but be impressed with the unanimity with which the authors point to the simple, universally available but commonly overlooked methods of operation as affording the solution of the problem. Little is advocated of a new or novel character; instead emphasis is placed on adherence to those rules of operation which are recognized as good at any time, but which are honored all too commonly in the breach. The problem of securing the maximum car movement, like those confronted in other phases of railway transportation, is that of intensive supervision of details.

A Whole Month of Safety Rallies

The New York Central's faith in the value of "Safety-first" must be genuine and deep-seated. The sustained energy with which the work of the safety department is kept up and the amount of money expended for its support cannot be otherwise explained. The corps of supervisors (who devote their whole time to this work) has been enlarged so that now there is one such officer on each division of the road; and conferences of men from all parts of the twelve-thousand-mile system are held every month. For thirty days, beginning with November 5, Marcus A. Dow, the general safety agent, with members of his staff and a vaudeville company, is giving evening entertainments in the largest halls of thirty cities on the Central lines; and in five of these cities—Albany, Bellefontaine, Elkhart, Detroit and Indianapolis—the "show" is given twice (on the same day) in order to accommodate the thousands of employees who have asked for tickets. The musicians entertain the audiences for a time sufficient to put every one in the right humor, and the serious part—the new motion picture, "Bulletin 70"—follows. There are two ways (aside from the purely financial advantage, already suggested) in which to view the results and the hoped-for results of a railroad's safety activities. We may congratulate ourselves on the concrete fact that hundreds of men are today alive who, under the methods of ten years ago, would have been dead, killed by accident; or we may dwell on the purely theoretical considerations, as suggested by Mr. Dow in his recent Milwaukee address (*Railway Age,* October 22, page 702): "Real safety work is a service of the heart; the railroad man who pursues these well-known ideals with determination, thoroughness and patience does something more than earn his salary; he contributes to the great scheme of things which causes the world to progress and become better." Both views are eminently practical.

The Heat Treating Expert as a Staff Officer

Several editorials in recent issues of the *Railway Age* have stressed the importance of proper heat treating equipment and methods in railway shops for obtaining the maximum efficiency of cutting tools. The question may be asked, Why ought railway mechanical officers to be particularly interested in this subject? There are two all-important reasons. Shop production, adequate for present needs, cannot be maintained without high speed tools, so heat treated as to stand up under the heaviest cutting speeds and feeds of which machines are capable. Steel, especially high speed steel, is expensive and with improper heat treatment becomes relatively valueless. So important are the possibilities of increased shop output and decreased loss in spoiled tools that a practical heat treating expert ought to be appointed on the staff of every superintendent of motive power. A high grade man should be secured and be given authority to institute changes and be held fully responsible for results. He could then analyze failures, as well as successes, and introduce the best steel, equipment and methods of heat treating for all the shops on a system. Not alone does tool steel need the attention of an expert heat treater. The proper heat treatment of alloy steel locomotive motion work greatly increases its strength per unit weight, although there is still a question as to its effect on the fatigue strength of the metal. Steel castings for both cars and locomotives can be practically doubled in strength by the heat treatment known as normalizing. A more recent development is the heat treatment of rolled steel car wheels with a view to increasing their strength and wearing properties. Furnaces, pyrometers, water cooled oil baths, lead baths, etc., are needed for the different heat treatments, but most of all is needed some one who *knows* which treatment will give the best result in each case. If appointed a mechanical staff officer with the powers indicated above, a practical authority on the heat treating of steel could save his road thousands of dollars annually.

Six Per Cent

The Chicago, Burlington & Quincy has followed the example of the Delaware, Lackawanna & Western in asking the Interstate Commerce Commission to approve the capitalization of its surplus. Among the reasons advanced in both requests for this approval is the desire to bring the capitalization up to a parity with the book value of the property. Both carriers say that they wish to increase the amount of stock outstanding so that the dividends on this increased stock capitalization may not appear to be at an excessive rate. The Burlington and the Lackawanna are both eminently successful roads. Through their respective strategic positions and excellent operation they have earned sufficient net income to enable them to pay their dividends and also to plough back into the properties large expenditures for improvements. These expenditures have not been accompanied by increases in the bonds or stock outstanding. The result has been that the dividend rate of the Lackawanna of late has been 20 per cent and of the Burlington 8 per cent, with extra dividends from time to time. The old theory has been that the public should have no worries concerning the dividend rate of a public utility. This theory is, of course, right as far as it goes. The rates a utility may charge should be sufficient to pay a reasonable return on the investment; whether it is able to pay a certain per cent on the capitalization outstanding is another matter. It is also true in the case of a railway that the rates must be the same for all carriers operating competitively. In the case of the Burlington, a special argument comes in because all but a portion of the dividends paid go to the treasuries of the Great Northern and the Northern Pacific and not directly to the public. Nevertheless, it is a fact that the public does pay particular attention to the dividend rate. The man in the street gets the idea that a railway paying, let us say, 10 per cent is earning an excessive income. He may not know that this 10 per cent is paid on a stock capitalization which, with the bonds outstanding, may equal only one-half the actual investment in the property. The fact that these two important roads have used the argument that they desire to increase their capitalization so that their dividends will be at a rate which the man in the street terms reasonable rather disproves the old theory and is of more than passing interest.

New Books

Traveling Publicity Campaigns, by Mary S. Routzahn. 151 *pages, 19 illustrations, 5½ in. x 8 in. Bound in cloth. Published by Russell Sage Foundation. New York.*

Educational and demonstration trains, such as the agricultural colleges, the railroads and other organizations began running several years ago, to the great benefit of thousands of farmers and others who could not conveniently get the same instruction in any other way, have become such a well-settled feature of the educational world, and are now so numerous, that they have been made the subject of a book, as noted at the head of this article.

This work will serve as a thorough and detailed sketch of what has been done in this line; and, moreover, the author, citing the experiences of specialists in all lines, gives very full advice and instructions as to the best methods of conducting this kind of education and advertising.

Increasing the Miles Per Car Per Day

Discussion of Means of Securing Greater Service From Cars. Practical Methods for Attaining Goal

FORTY-ONE PAPERS were received in the contest on "Means for Increasing the Average Miles Per Car Per Day," which closed on September 30. These papers were referred to a committee of judges consisting of A. G. Wells, vice-president, Atchison, Topeka & Santa Fe; J. G. Rodgers, vice-president, Northwest Region Pennsylvania System, and T. H. Beacom, vice-president and general manager, Chicago, Rock Island & Pacific, who awarded first prize to the paper submitted by A. G. Smart, general superintendent, Chicago, Burlington & Quincy, Alliance, Neb., and second prize to J. Burnett, train despatcher, Atlanta Coast Line, Waycross, Ga. Other papers which received special mention from the judges were submitted by E. H. De Groot, Jr., assistant director, Bureau of Service, Interstate Commerce Commission, Washington, D. C.; F. P. Roesch, western manager, Standard Stoker Company, Chicago; and A. T. Mercier, division superintendent, Southern Pacific, Portland, Ore. These papers are published below, and others will appear in succeeding issues.

First Prize—Attention to Details Will Speed Up Movement

By A. G. Smart
General Superintendent, Chicago, Burlington & Quincy, Alliance, Neb.

Every department and every individual in railroad service can contribute materially to increasing the average miles per car per day, and thereby increasing the number of cars available for traffic, by co-operating intelligently and unselfishly in carrying out the various instructions governing the handling of equipment, and by persistently bringing to the notice of every shipper, receiver and handler of freight, the necessity of keeping cars in active service, so that the present number of available cars will reasonably care for the traffic that must be moved. Statistic indicate that railroad freight equipment stands still 80 per cent of the time. A concerted effort on the part of all interested can undoubtedly correct this condition to an appreciable extent.

The prompt loading, unloading and repair of cars will increase the miles per car per day materially, and when our patrons realize fully that prompt unloading and loading of equipment means more available cars for their individual business, the great majority will meet us more than half way. Close personal contact is essential to obtain the best results. Be in a position to show that your line is conserving equipment by unloading company material on arrival, releasing cars without delay. Use the resources of all departments for this purpose, if the department to which the material is consigned is not equipped to fulfil the requirements. Require way freight crews to transfer small lots of L. C. L. freight from one peddler car to another when an empty can be made available with reduced empty mileage in this manner. Solicit industries handling large numbers of cars to establish Sunday loading and unloading forces so delays over Sunday can be reduced. One group of Western industries has agreed to this plan, and as a result a delay from Saturday to Monday on approximately 40 cars each week is avoided.

In furnishing cars care should be taken to use equipment that can be applied on loading orders at or in the vicinity of destination of original load. A consignee will make every possible endeavor to unload promptly a car that is needed by his neighbor, and the neighbor will frequently furnish additional assistance for this purpose. Disposition of empties should be in the hands of billing agents on arrival of cars under load, so there will be no lost motion when cars are released. Way freight conductors, yardmasters and switch foremen should have advance advice of all special movements so they will know just what to do with every empty car they handle.

Demurrage rates should be such that no one can afford to use railroad equipment for warehouse purposes. Shippers' orders and reconsignment privileges are prolific sources of delay and should be cut to the vanishing point. In road and yard service, anything that interferes with the constant and unimpeded flow of traffic should be thoroughly analyzed and a remedy applied.

Serious delays to power occur frequently at engine terminals. An hour saved on an engine means an additional hour for effective work in making car miles. There are few places where necessary inspections cannot be made while engines are being clinkered and supplied, so that if repairs are necessary it will be known before the engine is housed and the foreman given an opportunity to arrange for the work without loss of time.

Yard delays can be largely overcome by: (1) Running solid trains with cars for certain destinations when the amount of business warrants. (2) Grouping cars in trains at originating points and maintaining these groups when picking up or setting out between terminals. (3) Running connecting trains from all intermediate terminals, so there will be only such time lost as is necessary to fill out, change engines and way cars and properly inspect the train. All roads handle their passenger trains in this manner. Why not extend the practice to freight trains more universally than at present? It will clear yard tracks for the reception of incoming trains and frequently avoid the necessity of holding trains out, which seriously delays both power and equipment.

Proper grouping of trains will make it possible to start cars to the various transfers and switching districts with the minimum delay after the arrival of road trains at terminals. Switching of industries and transfer tracks should be done on a prearranged program of sufficient frequency to insure prompt handling, and specials runs should be discouraged, as they tend to disarrange the orderly prosecution of the work. Advance notice should be given consignees of the probable arrival of loaded cars, so they may be prepared to unload them promptly on arrival, and to connecting lines of transfer trains, so they can arrange for prompt movement.

Light running repairs should be made in the train yard by a force of light repair men employed for this purpose. Many cars are set out of trains and switched to repair tracks which, with such an arrangement in effect, would run through and avoid the delay and consequent reduction of car miles that always occurs when cars are held off for repairs. Cases will occur where the condition of equipment makes transfer of the load imperative. Such work should be done by the car repair organization, furnishing them a labor force for this purpose. Frequently under this arrangement methods of repairing without transfer will be found, that would not be discovered if the transfer work was handled by a separate organization. It will also have a tendency to decrease the number of cars where cars are marked for the repair track,

and after being placed, are carded for transfer, causing additional switching and delay.

On divisions where coal mines supplying company requirements are located, numerous transfers can be avoided by taking over bad order coal loads for company accounts, unloading on chutes to release the cars. Space on repair tracks should be assigned for loads, light repair and heavy repair cars, and switching arranged so as to interfere as little as possible with the work of the car repair forces. While cars are in urgent demand, concentrating on light repairs will increase the output, but a certain force should be kept steadily employed on heavy repairs to avoid excessive accumulations of cars that cannot be moved.

Proper inspection of trains at terminals will avoid many serious delays caused by hot journals and defective equipment, and such delays invariably involve trains other than those carrying the defective equipment. Regular points should be established on each freight division where trains are required to be stopped and inspected by trainmen, so that incipient hot journals may be located and cared for before they cause trouble. Maximum speed limits should be established on long descending grades to prevent over-zealous enginemen burning trains up.

To avoid congestion on a busy railroad a clean up of the business must be made each day. Should yard checks show more cars at stations than were moved during the previous 24 hours, a danger point is on the horizon that will grow increasingly difficult to overcome if not corrected immediately.

While it is desirable to make maximum speed between terminals, the car miles per hour is the unit that must finally govern as a measure of efficient performance. An 80-car train moving over a 100-mile division in 8 hours makes 150 more car miles per hour than a 60-car train moving over the same division in 7 hours. Hence the proper loading of trains is a vital factor to consider.

Cars furnished for loading should run through to destination, and while it is unfair to the line that has modern equipment, maintained in proper condition, to be obliged to handle its business in a great many of the cars that are now in service, nothing will add to delay and congestion more certainly than arbitrary transfers to keep equipment on the owner's line. Per diem rates should carry penalties that will provide an incentive for all lines to return cars to the owners without delay.

Car mileage statistics as between divisions, if used judiciously, will have the effect of keeping all employees thoroughly interested in an effort to do as well or better than the other fellow, but unless some specific statement can be shown as to what is actually being accomplished, interest is likely to lag.

Second Prize—Intensive Supervision Will Accomplish Results

By J. Burnett
Train Despatcher, Atlantic Coast Line, Waycross, Ga.

A first-class railroad transportation service to every one should be one of our first considerations at this time. I do not know of any more far-reaching method than to increase the miles per car per day, because when you increase the miles a freight car travels in a day you give increase the therefore, a more satisfactory freight service. The car is released earlier; therefore, you increase the available car supply. You save per diem, now costing 90 cents per day; or, in the case of system cars, you get more service from the car, therefore you save money for your company that would ordinarily be spent for per diem or purchase of additional equipment, in addition to causing the individual car to earn more revenue. You save time and money for the shipper, consignees, the railroad and every one, which is a stimulus to the business and well being of the locality in which you reside, as practically every one is more or less affected by our transportation systems.

In the search for the most efficient means of increasing the miles per car per day, I suggest that the operating officer see that his afternoon daily telegraphic car report is absolutely accurate and that it specifies the exact kind of equipment desired for the next day's loading and the exact kind of equipment on hand at stations, loaded and empty, so that the chief despatcher or car distribution clerk can distribute the cars accurately and efficiently as ordered on his report. In rendering this report agents and local conductors should bear in mind that it is the basis from which the chief despatcher or car distribution clerk fills all car orders and from which the various requisitions for and reports of equipment for the district or division are rendered. Efficient car distribution is one of the essential steps to increased miles per car per day, and the chief despatcher or car distribution clerk should give the report careful study each day and distribute the equipment efficiently.

Agents and local conductors should see that cars are placed properly and promptly; when practicable, confer with shippers or consignees and insist that cars be loaded and released promptly. If a shipper is not going to begin loading within 24 hours, move the car elsewhere, where it will be loaded promptly, and impress the shipper with the fact that he must be prepared to load when he orders the cars. Insist that it is the car movement and not the demurrage that is desired, and that co-operation will be greatly appreciated. If a consignee is not releasing cars promptly, insist that unless he does release them promptly an embargo against his inbound business will be issued. Solicit his co-operation towards the prompt movement of cars, and if he does not respond ask the superintendent to place an embargo until he can unload promptly.

Agents, local conductors and transfer foremen should insist that each car be loaded to its full capacity. Put every pound of freight into each car that the capacity permits. It saves that much more space on the next car and gives prompter movement to the freight; it saves money for the company; it creates more cars for other movements.

Trainmasters, terminal trainmasters, yardmasters, agents and local conductors should watch closely the cars on side tracks and in yards and insist that cars be loaded, released and moved promptly. Have rendered promptly and study closely your report of cars on hand at stations. The chief despatcher or other designated officer should check the daily report of cars on hand at each station carefully, and handle by telegraph for the prompt movement of the cars. Cases where serious delays have occurred should be passed to the superintendent for proper investigation and action.

Chief despatchers and train despatchers should watch the movement of business from connecting districts and through terminals very closely, and keep engines and crews with proper rest in positions to move the business with the least possible delay. The results that can be accomplished by chief despatchers and train despatchers who will study and apply efficient operating methods along this line carefully and consistently are great indeed, and they should be encouraged by superintendents and division operating officers. The reports of loads and empties on hand to move from stations at 6 A. M., 5 P. M. and 12.01 A. M., and the reports of loads and empties in trains from connecting lines and districts, should be studied carefully, and particularly so on Saturday afternoons and Sundays, so that there may be no delay to cars that are ready to move from points ordinarily worked by local freights, and such cars should be moved by through freights if it will facilitate the movement, instead of being permitted to hang over for locals Monday.

I do not approve of the reduction of tonnage or the opera-

tion of trains light as a speed-up method, as train movement ordinarily is a small factor, since the delays to cars occur at stations and in terminals. Superintendents, trainmasters, terminal trainmasters, agents and yardmasters should watch the make up and proper and prompt movement of trains at terminals, and the handling of cars to and from and on the interchange, repair and industrial tracks and insist that there be no lost motion in the placing, releasing, loading and moving of cars. Confer frequently with agent, mechanical repair and inspection forces to the end that the movement of cars may be expedited. The movement of cars through terminals requires the utmost study and constructive thought and co-operation of the various forces. District operating officers can hardly find a matter that requires more study and co-operative team-work than the ferreting out and elimination of terminal delays.

Watch the individual car. Keep it moving. If you can't move it, tell the man who can. Confer, discuss, instruct and solicit co-operation of railroad employees, shippers, consignees and everyone for increased movement of cars which will help to solve the car shortage situation, help the shipper, help the consignee, help the railroad and the business in general through the section served by the railroad.

A Goal and a Plan to Reach It

By E. H. De Groot, Jr.
Assistant Director, Bureau of Service, Interstate Commerce Commission, Washington, D. C.

First reach the definite conclusion that the game is worth the candle and determine to play it through. Then see that every man for whom you are responsible understands what is sought, how it is to be accomplished and just what his part in the program is. Later it will be necessary to make sure that he does not weary of well doing.

It will doubtless be accepted without dispute that to increase the average miles per car per day no attention need be given to the performance of equipment in road trains. Improvement which it is practicable to make must come through a decrease in the average time that cars remain at stations and in yards and terminals. The requisite is definite knowledge concerning two points: (1) where the cars that are standing still are, and (2) how their time is spent while there. From this information must be worked out the questions of responsibility and opportunity for improvement, and with this information the rest is a matter of education, supervision and persistence; and the last is not least.

The following specific procedure is recommended: A meeting should be called by the ranking executive officer of the road or grand division, to be attended by the general managers, general superintendents of transportation, general superintendents, superintendents of transportation and division and terminal superintendents; also by the heads of the motive power, maintenance of way, traffic, purchasing and stores departments. At this meeting the executive officer should preside; the chief car service officer to be prepared with copies of a carefully developed, concisely written statement for distribution, showing what is to be done, how it can best be accomplished and why it is necessary. Statements should also be distributed showing previous accomplishments in car movement for the railroad and, to such extent as may be available, by grand divisions or districts and divisions.

Following the distribution of the statements described they should be gone over carefully and all present impressed with the fact that each department represented has a definite responsibility for the results sought and that each will be given full credit for its share in making the campaign a success.

Sufficient time should be allowed for asking and answering the questions which will occur to the various officers in the light of their now recognized responsibility and with respect to special and local conditions. The campaign will have a tremendous advantage in that it emanates from the executive himself and so is at once removed from any status other than that of adopted policy; co-operation will be assured from the outset.

Before adjournment, and as the best judgment of all, a definite goal in miles per car per day should be fixed for the railroad as a whole, and to such extent as may be practicable for the various units of the system or road. To the extent that the latter is feasible it will be found especially helpful on account of the opportunity it affords for introducing the element of friendly competition. A definite date should also be set by which this first goal is to be reached and as the campaign proceeds progressively higher standards should be set from time to time, to be attained by successively chosen dates.

Following the general meeting provided for above the superintendents and heads of the departments designated should call early staff meetings of their own at convenient points, using the statements before described and such supplemental material as may be available. The work should be inaugurated and prosecuted simultaneously, vigorously and with the greatest publicity so far as the employees are concerned, both with regard to (1) the gains made in average miles per car per day, and (2) the decrease in average detention of cars at stations, terminals, etc., which makes the increased mileage possible. Where there is an employees' magazine, it should be used for this purpose and the spirit of friendly rivalry encouraged between the employees of different parts of the railroad.

The specific information which is necessary, i.e., (1) where the cars are left, and (2) what they are doing, must be secured by systematically checking and analyzing the records of a sufficient number of cars at each point of sufficient importance, to show to what extent their movement can be improved and then making that improvement. This is the key to the whole problem. Use it and you will be surprised at your success. Neglect it and you will fail.

The following outline covers the plan:

(1) Make careful check at each yard, terminal, interchange point and important station to determine the average time that cars remain there.

(2) Analyze the information secured at each point to locate avoidable delays in handling each different movement involved; through, interchange, industry, company freight including fuel, house, team track, switch, repair track, transfer, weighing, etc. To avoid placing the division and local people on the defensive and to fully enlist them, they should be permitted to do this work themselves but required to render comprehensive reports at frequent intervals covering both the extent of their efforts and the results obtained.

(3) Decide in conference at each point, with the approval of the superintendent, what the goal or average time limit shall be and fix the date by which it is to be obtained.

(4) Check performance against this goal and circulate up-to-date specific information concerning progress made, both with regard to average time of cars at individual stations and yards, and average miles per car per day. Make much of success.

(5) Repeat checks and analyses at intervals, utilizing the lessons gained by experience and as each station, yard, terminal, division or grand division improves, make the new mark the point from which to advance further. When it is clear beyond doubt that the practicable limit has been reached for the time being, use this as the standard by which to measure performance until changed conditions warrant a further attempt at advance.

The foregoing has reference largely, of course, to those matters over which the operating department has control; switching, placing, billing, pulling, classifying, forwarding,

giving notice of arrival, removing when released, distributing, etc. The maintenance of way, maintenance of equipment and stores departments should all be held responsible for restricting the use of revenue cars to a reasonable minimum for loading them to capacity and for releasing them promptly. This is a fertile field and it will yield well if intensively cultivated. Prompt inspection and prompt repairing are also important factors, while the purchasing department should place its orders with the necessity for freight car economy clearly in mind.

The part of the traffic department is to secure the sympathetic co-operation of the shipping public, who are vitally and directly interested in the success of the movement and can assist materially by ordering only such cars as are needed for immediate loading, loading them promptly, and to capacity, furnishing billing instructions early, billing to final destination, surrendering bills of lading without delay, unloading without taking advantage of free time, giving prompt notice of release of cars, etc.

Let the slogan be, Car Hours—Save Them!

Reduce the Switching

By F. P. Roesch*
Western Manager, The Standard Stoker Co., Chicago

The answer to this problem can be stated in three words—reduce the switching. Freight car time can be divided into two general heads, viz., (a) that in the hands of the shipper, and (b) that in the hands of the railroad company. The latter can again be subdivided into (c) time in the hands of the mechanical department and (d) time in the hands of the transportation department, and the last item again divided into (e) time moving and (f) time standing. As time (a) is not entirely under the control of the railroad company, it will be disregarded and this discussion confined to time (b), as covered in (c), (d), (e) and (f).

Before we consider any reduction in time (c) we must first determine why (c) obtains. Obviously the only reason the mechanical department would hold a car is for repairs. It is equally clear that the cause for repairs is, as a sule, due to defects developed or damage sustained while in service; therefore, in order to reduce the time cars are held by the mechanical department we should first determine how and where the cars are damaged, and then by correcting the cause, automatically remove the effect. This brings us back to the original problem; viz., switching.

It is an established fact that while the time consumed on industrial tracks, loading and unloading freight is 37 per cent of the total, the greatest delay occurs in switching yards (43 per cent) breaking up and making up trains, therefore the possible time saving is as the possible reduction in train switching. Switching time alone, however, is not the only resultant time saving due to its elimination. There is a collateral saving not always considered, viz., repair track time.

Bad order statistics prove conclusively that bad order cars are proportionate to the number of times a train is broken up. While the damage incidental to switching may not be evident immediately, yet the defective draft timbers, drawbars, etc., produced by switching shocks are there nevertheless, and sooner or later relegate the car to the rip track. Each day or hour on the rip track is that much time lost in forward car movement; consequently, all possible rip track time saved means more car miles.

It is entirely possible to so make up through freight trains as to enable them to pass through the intermediate terminals without any change in make-up, except in locomotives and caboose, and where power is scarce even the locomotive need not be changed. Every switchman knows how to make up trains, otherwise he would not be a switchman. In making up local or peddler trains, the proper method is to place the cars to be set out enroute in station order, beginning usually at the head end for the first set out. The same method can be used for through trains, building up the train at the originating point, first to conform to the ruling grade on the first division over which it is to be handled, then if there is a possibility of handling increased tonnage between point of origin and the ruling grade sufficient to justify, add the excess tonnage to one end of the train, either head or hind end, depending on the nature of the set out point, *but keep all units together,* i.e., the through stuff and the set out, so that one switch will be all that is necessary. Do not scatter set outs among the other cars and do not try to handle local traffic in through freight trains, regardless of its apparent importance or "rush" and regardless of the fact that by leaving off the short load, the train may go out somewhat light in tonnage.

In car movement, it should always be kept in mind that (1) many cars are marked 'rush" that are not really rush loads and (2) assuming one of these so called "rush" loads, or any other short load is put into a through train to be set out enroute, if the train consists of 50 cars and the delay incidental to setting out the car is 30 minutes, we have by this one movement made a 25-hour car delay and each additional switch or stop enroute adds to the total. Therefore, in considering car movement, it is preferable to hold the one "rush" car for the local than to delay the other 50 cars enroute. If one local train won't take care of all of the short business between two freight terminals, run two, or as many as necessary, but don't delay through trains by making locals of them.

The plan outlined above has been worked out by one railroad running out of Chicago with the result that on a single track division of 312 miles, handling an average of 2,000 cars daily, the average daily freight car mileage including "bad orders," "empties," etc., is 85 miles. On another railroad having freight divisions of 88, 100 and 117 miles between terminals, the trains are made up solid for the entire distance. The locomotives are only detached from the train to take coal and water, the engine crews being changed at the intermediate terminals, the engines running through. The trains are not broken up or in fact do not leave the main line. The result is a saving of from six to ten hours per car per train, or in other words, the trains make 188 or 217 miles in practically the same time as they formerly consumed making 88, 100 or 117 miles.

Some years ago the writer was a party to the framing up of what was afterward known as Kansas City Rule 8, which reduced to its simplest terms was—"Any loads arriving in this terminal to be accepted by the railroad serving the industry to which the load is billed, regardless of the condition of the car, the car to be set to the proper unloading track if at all possible to move it and unloaded before repairs are made." The rule not only saved the time that would otherwise have been consumed in transferring the load, but also saved the car to which the load would have been transferred. This rule has since been modified and adopted as standard at interchange points where it is assumed the car moves forward, but where the car is to be unloaded at point of acceptance Kansas City Rule 8 could still be used to advantage.

Time (c) Rip track:—Repair tracks are usually located at some distance from the main switching yard, making it necessary to make special trips to "spot" and "pull" them. There are two good reasons for this: first, because all yard room is valuable; second, bad order cars should be placed convenient to the source of material supplies and tools. However, as many cars are daily placed on rip tracks that can be and are repaired in one hour or less, and as the time between

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spotting and pulling will average four hours, not including the time consumed between yard and rip tracks, time could be conserved by having a light repair track (protected, of course), adjacent to the main switching yard. Repair parts could be carried at this point, to be replenished when needed, and the track, if connected at both ends, could be pulled as cars are repaired, this to apply only to terminals where practically all trains are switched, bearing in mind the cutting out of all intermediate switching terminals possible.

To sum up. Make up and handle freight trains the same as passenger trains. Keep them out of the yards. Change engines and cabooses on the main line. Let the locals do the local work and keep the through trains moving.

Success Lies in Improving Existing Methods

By A. F. Mercier
Division Superintendent, Southern Pacific, Portland, Ore.

In keeping cars moving, the personnel of the car despatching forces is an important consideration; therefore, employees selected for such positions must be exceptionally well versed as to the operating and physical conditions obtaining on their districts, must possess the faculty for systematizing the handling of the rather voluminous detail matters and by energetic work and clear thinking keep the situation well in hand with accurate instructions issued in advance so that equipment may be moved immediately when available.

The greatest obstacle to greater car miles is the delay in or moving through terminals. The big opportunity for improvement is through efficient yard organization and close supervision on the part of officers to insure effective co-operation between connecting line forces, advance information on car transfer and train movements and the numerous related matters.

The "Bad Order" tag is likewise an enemy with which we must reckon. The defense is apparent and I believe all lines are maintaining an efficient repair department, providing sufficient forces to effect the release of cars with minimum of delay. This feature, however, should receive close attention and situation be closely checked by supervising officers.

The remaining factor bearing on car mileage is the time cars stand idle or still. The responsibility for time may be roughly divided as follows:

Status of Car.	
Awaiting placement for unloading at destination.	Those responsible for or in position to improve handling. Conductors, agents, yardmasters under supervision trainmaster.
Unloading—Loading.	Consignee or shipper. Carriers can do much by educational campaigns among their patrons, having representatives follow up their handling of cars.
Awaiting movement to reloading point: Movement to loading point: Placement for reloading:	Representatives of the carrier, with co-operation of consignees, get advance information as to the time cars may be released, and arrange immediate movement. Car despatcher to follow up through proper channels seeing that car is moved and placed without unnecessary delay.
Awaiting movement; loaded; Movement of load to destination:	Representatives of carrier, with co-operation of shipper, secure advance or immediate advice as to time ready, move load out on first available train, and keep the load moving with minimum of delay, until placed for unloading.

Receipt of concise, workable telegraphic reports reflecting actual check of yards, at such time of day as may best fit local conditions of distribution districts, is very necessary in order that the car despatcher may direct the distribution of available equipment intelligently. Accurate, up-to-minute work reports, covering cars ordered, furnished and actual immediate requirements of shippers, are likewise required that the car despatcher, in lining up distribution, may avoid the placement of cars at points not actually needed for immediate loading, avoiding the loss of car days through delay at loading point or cross-haul.

It is also important that a thorough and intelligent check of agent's daily report of cars on hand be made by a competent officer of the district, who will take effective action to prevent delays to equipment loading and unloading, by enlisting aid of shipper or consignee and arrange prompt application of released equipment on existing orders at that or adjacent station.

With car handling, as with any other thing of far-reaching scope, those officers and employees concerned must be thoroughly imbued with the importance and necessity of following energetically to a conclusion those details and responsibilities assigned them, in order that the existing system of distribution may not be clogged or its efficiency retarded through some shortcoming of theirs. In this the earnest and intelligent co-operation of the shipping public must be enlisted, as dilatory handling on the part of either will tend to defeat the effectiveness of the other's activity.

When all reports and clerical features are taken care of, the simple fact remains that our success depends almost wholly upon the collective efficiency of the personnel engaged in the handling of cars. Supervising officers must inject or bring about an enthusiasm and intelligent understanding co-ordination among all employees concerned, as each and every one must be on his toes and actively behind the subject with his best thought and attention.

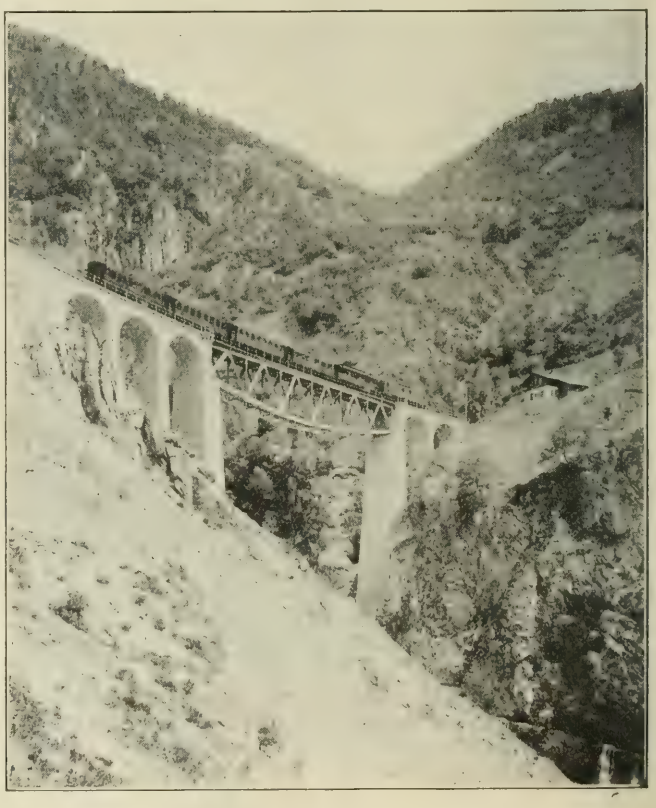


Photo from Kadel & Herbert, N. Y.

On the Lötschberg Railway of Switzerland

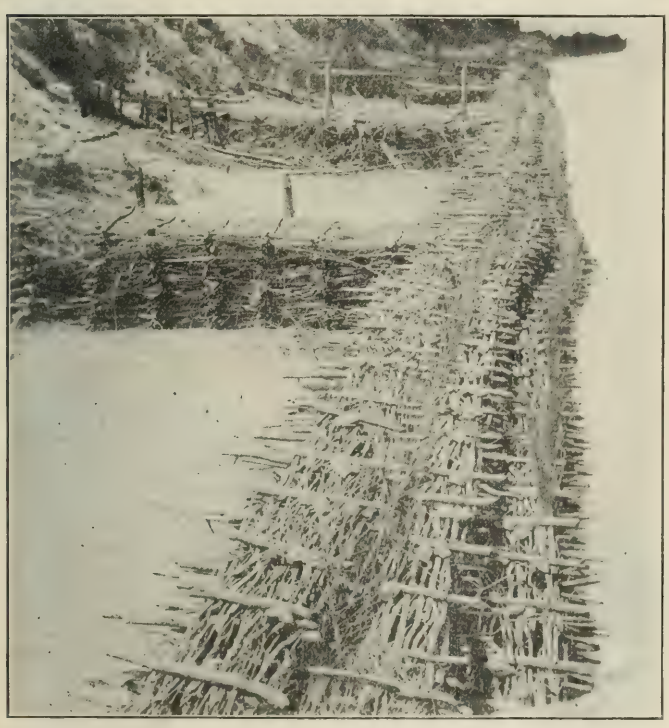
Railroad Completes Unique River Bank Protection*

Graded Slope Was Restored by Sedimentation and Then Protected by Concrete Slabs

By W. C. Curd
(C. E. Smith & Co., Chicago, Ill.)

THE PROPERTY AND TRACKS of the Natchez & Southern, at Natchez, Miss., are located for 2½ miles along the left bank of the Mississippi river on a high bank that rises precipitously to an elevation from 125 to 150 ft. above low water and being on the concave side of a sharp bend, receives the force of the current for several miles. A considerable amount of revetment has been placed along the city front by the Mississippi River Commission in past years, but it did not extend sufficiently far down stream to prevent erosion along the Natchez & Southern property. However, this latter part of the bank does not receive the full effect of the current, since the channel crosses some distance above.

In 1890, when the railroad was constructed, the intervening space between the brow of the hill and the tracks was of ade-



A Close View of the Mud-Cell Construction

quate width, but protection against future loss by erosion was evidently deemed advisable, since a single row of piles, spaced from 5 to 6 ft. apart, was driven at that time along the water's edge where erosion was in progress. This work was of little benefit, and as the years went by other ineffectual forms of protection were tried with a continued loss of bank. Up to 1912, more than $50,000 had been expended in this manner without satisfactory results.

Following the severe flood of 1912, an examination of the location was made and so much of the bank was found to be lost that it was considered imperative to take steps for relief. Surveys for a new location back in the hills were made, but the estimated cost of a new line was in excess of $150,000. It was deemed advisable, therefore, to make another effort to preserve the river-front location, which could be done, it was thought, at considerably less expense than that required for a new line.

The writer, then drainage engineer for the Missouri Pacific System, and in charge of river-protection work, made an investigation of the conditions and designed an improvement, the completion of which was to extend over a period of from 5 to 6 years, at an estimated cost not to exceed $50,000. The design was subsequently approved and all work in connection therewith completed in the early part of 1918, at a total expense of $38,741.

The geologic formation of the Natchez hills consists of well-defined strata of clay, sand, and a deposit known locally as conglomerate or iron stone. The clay forms the surface covering, is very absorptive, and is 40 ft. or more in depth. The sand is clean and coarse, and lies between the clay and the conglomerate. The conglomerate outcrops slightly above low water in this location. The sand stratum being exposed along its vertical face was being ground away continually by the action of the elements. The clay was thus undermined and, when saturated by rainfall, would break off in large pieces and slide to the foot of the bank, carrying with it large quantities of the surrounding material. During high stages of the river, at a gage of about 35 ft., direct currents would always set in and cause a rapid loss of bank.

The previous loss of much bank made it apparent that the correction of the difficulty lay, not only in preventing further erosion, but in a restoration of the foot of the bank so that a toe might be formed and a slope worked back to the brow of the hill. Material was scarce, as the few cuts along the track would not yield enough excavation to form the toe, and the expense of having such material loaded, hauled, unloaded, and placed in the right locations along the river-front was excessive.

With the local conditions to be met, and having in mind his previous experience with various types of control works for producing scour and deposits, the writer decided to adopt mud-cell construction as affording the cheapest means for getting results. The conglomerate offered a foundation secure against scour and one on which a deposit of required width and height could be carried safely. The problem then was to gather sediment from the river, deposit it to as great a height as possible, and hold it in position against erosion, so that future slides from the top of the hill would find a permanent lodging place and a stable slope be built up by casting over the side of the hill such material as would become available from time to time.

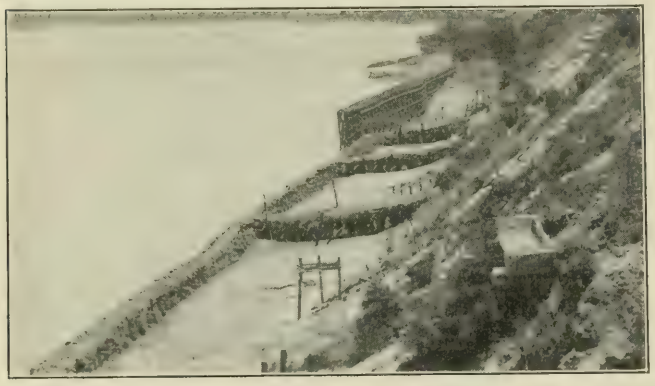
The design required that the improvement be carried out in two parts: First, to produce sedimentation, and, second, to protect permanently the slopes after sedimentation had progressed sufficiently. The first part called for the construction of a mud-cell dike with a pile dike at its head as a protection against direct currents, and the second, the construction of a low concrete toe or retaining wall with a reinforced concrete slab paving on the slopes above.

In the fall of 1912, the mud-cell dike was constructed. It was 1,100 ft. long, 23 ft. high, and from 75 to 100 ft. from the foot of the hill. The distance from the foot of the hill

*Abstracted from a paper published by the American Society of Civil Engineers.

was regulated by the width required to give a 2 to 1 slope from low water to the top of the hill. The height of 23 ft. put the top of the dike at the 37-ft. level, Natchez gage, which was considered to be the maximum elevation to which sedimentation could be forced.

The mud cells were made from live brush and poles which were cut and towed from an island several miles up stream from the work. A 12-in. foundation mattress, 30 ft. wide, was first laid directly on the conglomerate. This was formed by laying the brush in bundles, or fascines, which were wrapped at 4-ft. intervals with single lashings of No. 9 galvanized wire. Anchor lines of ½-in. galvanized strand, spaced 50 ft. apart and woven into the mattress, were run back to deadmen at the foot of the hill. A tier of cells, 5 ft. by 5 ft., was built on the foundation mattress by placing single rows of brush and poles at right angles to each other, very much after the fashion of a log cabin. At a height of 5 ft. the cells were floored over with a layer of brush and a second tier of cells was started 5 ft. back from the river face of the dike. Five tiers of cells were placed in this manner, forming a completed dike 28 ft., or five cells, wide at the bottom and 5 ft., or one cell, wide at the top, and a settled height of 23 ft. All cell walls were bound with wire and cable to the foundation course, as well as to deadmen at the foot of the hill. To prevent the cells from floating when submerged, they were ballasted with loose conglomerate picked up along the river



Sediment Deposited within the Mud-Cell Construction After One High Water

front. A connection with the hill at the lower end of the dike was made by joining the latter to an old abandoned transfer barge which had been sunk in line during high water just previous to the commencement of the dike. Six lateral mud-cell dikes, or baffles, 15 ft. wide by 100 ft. long, were connected into the main dike and run up the hill to Gage 40 to prevent parallel currents and eddies in the enclosed area where sedimentation was being sought.

During the low-water period of 1913 the permanent pile dike to protect the mud-cell dike against head-water was completed. This dike extended from a point up stream to an outside lap connection with the mud-cell dike, a distance of 600 ft. The structure ranges from 8 ft. to 42 ft. in height above the natural ground surface, the top being at an elevation of 56 ft on the Natchez gage. It is made up in width of 112 lin. ft. with piles in single rows, 216 lin. ft. in double rows, and 272 lin. ft. in three rows, with 3½-in. by 10-in. white oak sheeting spaced 2 in. apart, applied to the outer, or river, face of the dike. Cypress piles ranging in length from 32 ft. to 62 ft. were used and 16 ft. to 20 ft. penetrations were obtained through the conglomerate, under hard driving. The piles were spaced 8 ft. center to center, and driven in staggered position so as to gain additional strength against overturning. This necessitated an intricate system of bracing. The deflection of head-water in succeeding floods was obtained successfully with the pile dike after its completion in the spring of 1914, and sedimentation progressed very satisfactorily within the area enclosed by the mud-cell dike.

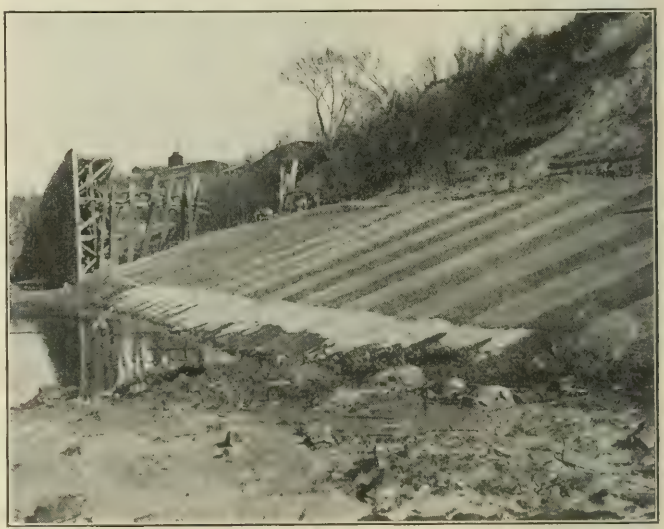
The dikes were permitted to stand through the high water of 1914 and 1915 and until the low water of 1916 without additions or changes. When an examination was made in the summer of 1916, it was found that decay had begun to show among the brush and poles forming the mud cells, and as sedimentation had progressed to an extent that the enclosed



Placing the Concrete Reinforcing on the Slab Forms

area was practically filled and a growth of willows had appeared on the surface, it seemed advisable to proceed at once with the second part of the plan, the permanent protection of the slopes.

In preparation for the permanent slope protection, all the projecting ends of the brush and poles in the mud-cell dike not covered by deposits, were chopped away. The débris was



A Completed Section of the Concrete Paving

deposited on the slopes for further use and a trench dug along the foot of the mud-cell dike for the toe wall. The bottom of the footing course was placed at about the 10-ft. level, Natchez gage, which gave a depth below the exposed surface of the conglomerate of from 3 ft. to 5 ft., this depth being ample to afford protection against under-scour in this location. The toe wall was reinforced with galvanized mesh and carried to a gage height of 14 ft., at which elevation the concrete slabs were connected to it.

The bulk of the sediment recovered by the mud cells was deposited between the dike and the foot of the hill, and did not completely fill the cells. After removing the projecting cells, it was found that some filling would be required to bring the surface of the slope to the elevation at which concrete paving was to be placed. This condition was provided for by casting the slabs in place on supported forms. The slabs were 4 in. thick, 54 in. wide, 14 ft. long, and reinforced with galvanized mesh. They were placed on a 3 to 1 slope, and cast in alternate sections.

On all supported work, the space underneath the forms was filled with débris from the mud cells. This was done to collect sediment during high water. As the first row of slabs was nearing completion, high water came and, as was expected, sufficient sediment was collected to fill solidly the space thus left. The flooring was made up in panels or sections which were removed after the concrete had hardened sufficiently to support itself. Formwork was unnecessary for the upper part of the slope, and the slabs were cast directly on the ground. The amount of paving constructed was 39,744 sq. ft., being 46 ft. wide on the slope, or up to a level of 33 ft., Natchez gage, and 864 ft. long.

A subdivision of the total cost of $38,741 between the three classes of work performed is as follows:

Mud-cell dike	$ 9,292
Permanent pile dike	10,604
Concrete paving and wall	18,845
Total	$38,741

Cross-sections of the amount of deposits obtained through the use of the mud-cell dike were taken, but the records have been lost or cannot be located at this time. However, it is the writer's recollection that approximately 56,000 cu. yd. of material were recovered. On that basis the unit cost of restoring the foot of the bank was 16.6 cents per cu. yd., very much less than would have been required in that location by any other method. It must be borne in mind, in this connection, that had material from the hills been hauled in, some form of protection against its loss by high water would have been necessary until it had settled and the permanent paving was placed.

The general results of the work have been satisfactory and all that could have been expected. A permanent toe has been furnished on which a proper slope can be founded, and the deficiency in the width of the brow of the hill can be filled out whenever the exigencies of the situation demand it.

All work, with the exception of the permanent pile dike, was executed by the railway forces under various men, as assigned. Special credit is due J. C. Bauer, inspector of river protection, Missouri Pacific, for the execution of the mud-cell dike; it was through his efforts, while in charge of that part of the work, that the greatest obstacle was overcome. Credit is also due C. B. Colpitts, now of Coverdale & Colpitts, New York City, for the successful completion of the pile dike. The dike was contracted for, but when about 75 per cent complete, the contractors refused to proceed further, and it was completed by railway forces working under Mr. Colpitts' direction.

The writer left the employ of the Missouri Pacific System in the spring of 1917 during the interruption of the work on the concrete paving due to high water, and the final stage was carried to completion under the direction of his successor, J. A. Lahmer, principal assistant engineer, Missouri Pacific.

TELEPHONES are being substituted for the Morse telegraph for train despatching on the Colorado & Southern for a distance of 493 miles. The order for the apparatus has been placed with the Western Electric Company, the largest order of the kind received by that company since the railroads were released from federal control.

New Definitions of Subordinate Officials

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION has issued an order containing revised regulations designating the classes of employees that are to be included within the term "subordinate official" under Title III of the Transportation Act, 1920, which provides that the term "subordinate official" includes officials of carriers of such class or rank as the commission shall designate by regulation formulated and issued after such notice and hearing as the commission may prescribe. A public hearing was had on March 15 for the purpose of determining what classes of officials shall be included within the term, and the commission issued its regulations on March 23. Pursuant to petitions filed, a further public hearing was had on October 1, for the purpose of determining whether the regulations should be extended or otherwise modified.

The commission in the new order prescribes that the term "subordinate official" as used in the act shall include the following, and that these regulations shall supersede the regulations of March 23, which are set aside:

Auditors. This class shall include traveling auditors engaged in auditing station accounts, checking transportation and other papers, etc., who are not vested with discretionary power to determine the scope or character of their duties.

Claim agents. This class shall include claim agents below the rank of assistant general claim agent or chief claim agent. It does not include the so-called "claim investigators." We are of opinion that such employees who are engaged in clerical work are not "officials of carriers."

Foremen, supervisors and road masters. This class shall include road masters with rank and title not higher than division road master, track supervisors, maintenance inspectors, supervisors of bridges and buildings, with rank and title below that of superintendent of bridges and buildings, supervising carpenters with rank below that of superintendent, supervisors of water supply, supervisors and inspectors of signals with rank and title below that of assistant signal engineer, and foremen or supervisors of machinists, boiler makers, blacksmiths, sheet metal workers, electricians, car men, and their helpers and apprentices, with rank and title beneath that of general foreman.

Train despatchers. This class shall include chief, assistant chief, trick, relief and extra despatchers who are vested substantially with the authority of superintendent or assistant superintendent.

Technical engineers. This class shall include civil, mechanical, electrical and other technical engineers inferior in rank to engineers of maintenance of way, chief engineers and division engineers; engineers of maintenance of way and other technical engineers. We are of opinion that instrument men, rod men, chain men, designers, draftsmen, computers, tracers, chemists and others engaged in similar engineering or technical work are not "officials of carriers."

Yard masters. This class shall include yard masters and assistant yard masters, excepting general yard masters at large and important switching centers where of necessity such general yard masters are vested with responsibilities and authority that stamp them as officials.

Storekeepers. This class shall include storekeepers or foremen of stores who are not vested with authority to make purchases. It does not include general storekeepers and assistant general storekeepers.

"The above definitions," the commission says, "include all of the classes of employees whose claims to recognition as 'subordinate officials' were presented at the hearings, except supervisory station agents. The supervisory station agents are those who have supervision of the work of other station employees. They cover the range from the station where one employee other than the agent is employed to the agents at the largest and most important points. They are the official and responsible representatives of the company in its relationships with the public and frequently in a legal sense. Their compensation naturally varies with the responsibilities of their positions. It is not believed that this class can be consistently included within the term 'subordinate official'

as that term is used in Title III of the Transportation Act, 1920.

"The list of subordinate officials above prescribed may be enlarged or restricted after due notice and hearing, if and when occasion warrants."

New Regulations Relating to Nominations

The commission also issued the following regulations to supersede all previous regulations governing the making and offering of nominations of members of the Labor Board:

Section 304 of the Transportation Act, 1920, provides for the creation of a Railroad Labor Board to be composed of nine members. Of these nine, three are to constitute the labor group representing the employees and subordinate officials of the carriers, and three are to constitute the management group representing the carriers, to be appointed by the President by and with the advice and consent of the Senate from not less than six nominees whose nominations shall be made and offered by such employees, and not less than six nominees whose nominations shall be made and offered by the carriers, in such manner as the commission shall by regulation prescribe.

The commission is required by regulation, formulated and issued after such notice and hearing as the commission may prescribe to the carriers and employees and subordinate officials of carriers, and organizations thereof, directly to be affected by such regulations, to determine the classes that shall be considered as coming within the term "subordinate official."

The overwhelming majority of the railroad employees and subordinate officials, stated by those who are in a position to speak with confidence and authority to be more than 90 per cent, are members of or represented through certain organizations of employees. These organizations and their representatives have been recognized as authorized to speak for and represent the several classes of employees by the railroad companies prior to federal control, by the Railroad Administration during federal control and by the President in conference and negotiations conducted by him. It is deemed advisable to classify these representative organizations into three groups with respect to the more or less analogous character of the services performed, aiming to have the nominees, as nearly as possible, representative and conversant with the interests of all the classes of employees and employment. For the purpose of making and offering nominations as members of the labor group on the Labor Board the commission prescribes that these organizations of employees shall be grouped as follows:

Group 1:
- Brotherhood of Locomotive Engineers,
- Brotherhood of Locomotive Firemen and Enginemen,
- Order of Railway Conductors,
- Brotherhood of Railroad Trainmen,
- Switchmen's Union of North America.

Group 2:
- International Association of Machinists,
- International Brotherhood of Boilermakers, Iron Ship Builders and Helpers of America,
- International Brotherhood of Blacksmiths, Drop Forgers and Helpers,
- Amalgamated Sheet Metal Workers, International Alliance, Brotherhood Railway Carmen of America.
- International Brotherhood of Electrical Workers.

Group 3:
- Order of Railroad Telegraphers,
- United Brotherhood of Maintenance of Way Employees, and Railroad Shop Laborers,
- Brotherhood of Railway Signalmen of America,
- Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees,
- International Brotherhood of Stationary Firemen and Oilers.

The accredited representatives of the organizations embraced in each of the above groups and duly authorized so to act shall agree among themselves upon nominees representative of the group, but the three groups must present a total of not less than six nominees.

The nominations agreed upon by each group shall be signed by the representatives of the several organizations in the group or by some one authorized by them so to act and shall be transmitted direct to the President accompanied by a certificate that the nominations have been made in accordance with these regulations.

The great mass of railroad employees are members of or represented through the organizations named above. These organizations, however, include or may include only a small percentage of the subordinate officials, and the subordinate officials not so included, as well as employees who may not be members of or represented through the above organizations, are entitled under appropriate regulations prescribed by us to make and offer recommendations for members of the labor group. It should be stated, however, that a percentage of the organizations and employees who contend for their separate right of making and offering nominations for members of the labor group is included in the membership of the above-named organizations.

In view of the above considerations, we have added a fourth group for the purpose of making and offering nominations. Included in this group 4 are the following organizations, which comprise all organizations not included in groups 1, 2 and 3, which have appeared at our hearings and shown that their separate right to make nominations ought to be accorded under the Transportation Act, 1920, excepting the Supervisory Station Agents' Association, the membership of which we have held are not included in the term "subordinate official":

Group 4:
- Railway Men's International Benevolent Industrial Association,
- American Federation of Railroad Workers,
- Order of Railroad Station Agents,
- American Train Despatchers Association,
- The Roadmasters & Supervisors Association of America,
- National Order of Railroad Claim Men,
- Railroad Yardmasters of America,
- International Association of Railroad Supervisors of Mechanics,
- International Association of Railroad Storekeepers,
- Colored Association of Railway Employees,
- Brotherhood of Railroad Station Employees,
- Order of Railroad Telegraphers, Despatchers, Agents and Signalmen,
- Brotherhood of Railway Clerks,
- American Association of Engineers,
- Grand United Order of Locomotive Firemen of America,
- Porters Union,
- Skilled and Unskilled Laborers (Railway),
- Order of Railway Expressmen,
- Railway Traveling Auditors Association of America.

The accredited representatives of the organizations included in group 4, duly authorized so to act, shall agree among themselves upon nominees representative of each organization, or of nominees jointly representative of a number of such organizations, provided they agree among themselves upon nominees jointly representative of any of the organizations in this group.

The nominations agreed upon by each of the organizations in group 4, or agreed upon as jointly representative of any of the said organizations, shall be transmitted direct to the President, accompanied by a certificate that the nominations have been made in accordance with these regulations; and should also include statements submitted by the duly authorized representatives of each of the organizations, or of such organizations voluntarily associated for the purpose of making joint nominations, setting forth their total membership, exclusive of officials not embraced within the classes of subordinate officials as defined by the commission's regulations of November 1, 1920, or as same may be amended, distinguishing between subordinate officials and higher officials; the percentage of the membership of such organizations, exclusive of such higher officials, who are or may be members of the organizations named in groups 1, 2 and 3, and the distribution of such membership as between employees and subordinate officials.

The Association of Railway Executives is representative of approximately 95 per cent of the railroad mileage of the country and is authorized by the carriers members thereof to speak for and represent them in matters of this kind. The officers of that association have consulted with most of the carriers not members of the association and secured their assent to the presentation of nominees by the association.

For the purpose of presenting nominees for appointment on the Labor Board to represent the management group the commission prescribes that such nominations, not less than six in number, shall be made and offered by the Association of Railway Executives.

The nominations so made shall be transmitted to the President accompanied by a certificate that they have been made in accordance with these regulations.

The act provides in section 304 that any vacancy on the Labor Board shall be filled in the same manner as the original appointment. There is no specific provision for modification of the regulations prescribed by the commission, but the authority to prescribe the regulations is believed in the absence of provisions to the contrary to also confer authority to modify them if and as occasion or necessity for such modification should arise.

State Commissioners Meet in Convention at Capital

Interstate Commerce Commissioners and Others Discuss Various Phases of Rail Regulation

WASHINGTON, D. C.

THE THIRTY-SECOND ANNUAL CONVENTION of the National Association of Railway and Utilities Commissioners was begun in the rooms of the Interstate Commerce Commission at Washington on November 9; President Walter A. Shaw, of Illinois, in the chair and James B. Walker acting as secretary. Twenty-four states were represented by about 75 delegates. Edgar E. Clark, chairman of the Interstate Commerce Commission, delivered an address of welcome, President Shaw in his address made various recommendations which were referred to the executive committee with instructions to report thereon later in the session. John E. Benton, general solicitor of the association at Washington, reported the activities of his office during the last year. Abstracts of the principal addresses delivered on Monday are given below:

Railroad Regulation Under the New Law

By Edgar E. Clark

Federal control of railroads was terminated February 29 by an act of Congress which formulated a public policy widely different from that theretofore pursued. The conditions necessitated and forced substantial increases in the rates, and the carriers were encouraged to present petitions for such increases as they felt were necessary. Those petitions were given the widest circulation and through weeks of hearings all who desired to be heard with regard thereto were heard. Conclusions in this matter reached by the federal commission were assented to by the members of the state commissions who sat at the hearings; and corresponding increases in intrastate rates were with reasonable promptness accorded by the Commissions in 23 states. In only two states were the petitions for increases wholly denied and in these instances, as we are informed, the carriers made no effort to present to the state commissions evidence in support of their petitions. In several states the commissions held that they were without jurisdiction to authorize increases in rates. In each case in which increases sought have been denied by the state commission the carriers have petitioned us to institute investigation. These questions, upon which widely varying views are entertained, are troublesome and, in a sense, unpleasant. It is to be devoutly hoped that their discussion may serve to clarify doubtful or controverted points and assist us all materially in rightly doing that to which we have devoted our energies. . . . Even if we should come to government ownership and operation the necessity for a separate tribunal with jurisdiction to determine questions of reasonableness of charges and alleged discriminations will be present. It is to be noted that the government-owned railroad in Alaska and the government-owned water lines acquired during federal control are subject to the provisions of the Interstate Commerce Act. The Transportation Act, 1920, is a solemn declaration of the federal policy respecting the relation of the carriers to the public and to the government and with regard to regulation of the carriers' activities. The field of supervision and regulation has been widened and activities heretofore untouched by federal regulation have been definitely and specifically brought within that field.

The experiences of the war and of the period of federal control of railroads brought home to the whole country a realization of the vital importance of adequate transportation facilities. It has become clear, as it was always obvious upon a little reflection, that private capital will not furnish transportation unless it can receive a reasonable return. The public must pay prices that will make the business reasonably profitable. The determination of reasonable return and fair value is a perplexing problem, embarrassed by a multitude of details.

In the transportation act Congress has in effect assured the carriers that they will be accorded opportunity to earn a reasonable return upon the value of their property and has placed upon the Interstate Commerce Commission the duty of adjusting rates so as to produce that result. This is a very definite departure from the policy formerly followed of empowering the federal commission to prescribe only the reasonable maximum rate, fare or charge.

The commission is now charged with the duty of supervising the issuance of securities by the carrier companies. Careful study of the conditions led to the practically unanimous view that in this matter the federal jurisdiction should be exclusive. Supervision by states was unsatisfactory and in a large sense impracticable.

For the first time the federal law requires the securing from the commission of certificates of public convenience and necessity before a new road can be constructed or operated and before a road in existence can be abandoned. In this connection certain powers are appropriately reserved to the states. So long as the public must pay reasonable return upon the value of the property that it uses it has the right to protection against unnecessary or unwise expenditures for duplication of lines by competing systems, and against the building of roads for purposes of pure speculation or spite. When a railroad is constructed industries and homes that are wholly dependent upon it for transportation grow up along its line. Surely the owners of those industries and homes are entitled to an assurance that that road will not be abandoned except for reasons that appeal to the honest and fair judgment of an authority that represents the public interest.

For the first time the federal commission has sweeping powers in regulating the service of the carriers. Our somewhat brief experience has furnished abundant evidence that when it comes to a question of getting or being deprived of service the business interests of the country are more interested in service than they are in the exact measure of compensation which they are to pay therefor.

Mr. Clark here discussed briefly the sections of the Transportation Act providing for consolidation of railroad systems, and said: "If the government determines what the reasonable charge shall be and requires safe, reasonable and adequate service, it is difficult to see how the public interest can be served by fostering a cut-throat competition between a large number of small and impecunious roads rather than to consolidate them into a strong, comprehensive and logical system which can at less cost furnish better service. . . ." After discussing federal control of the compensation of railroad employees and other details of the new law the speaker concluded with an appeal for co-operation of state and federal bodies. "A full measure of success can not be achieved unless we can have a cordial spirit of helpfulness and co-operation on part of the state commissions, the railroads, the shipping public and ourselves. That spirit now obtains in large part in these several quarters. If it can be made universal or unanimous it will bring much of good to all concerned and we shall rapidly approach those conditions in

transportation affairs for which we so ardently hope and so earnestly strive."

President Shaw's Annual Address

Regulation came about by reason of insistent demands by the public to correct abuses by so-called monopolies engaged in the utilities field. The public was of the mind that many of the charges exacted by the common carriers were excessive . . . Prior to our entry into the great war, regulatory bodies such as state commissions had corrected many abuses, particularly as to capital issues. In many cases rates were substantially reduced. The authorization of increased rates was the exception. . . . Now, however, the public is convinced that in order that the carriers may function properly substantial relief must be granted; therefore, they have accepted the findings of the Interstate Commerce Commission as necessary and for the best interest of all. Within the last two or three years insistent demands have been made upon state commissions to increase all classes of rates and in the majority of cases it has been necessary to meet those demands by authorizing substantial increases. In most instances, especially as to street car fares, the increases authorized exceeded those prescribed by so-called contract ordinances or franchises granted prior to the creation of the state commissions. The abrogation of many of these franchise provisions has quickly been seized upon by self-seeking politicians with the idea of furthering their own selfish ends by making the commissions unpopular. These individuals of course conveniently forget to tell the public that in the absence of commissions, utility corporations have the right to resort to the courts which would fix the rates under provisions in our federal and state constitutions that prohibit the confiscation of property without due process of law. Such procedure has been adopted by certain carriers in obtaining increased passenger rates in Illinois and other states.

That the arguments of the politicians are popular is to be seen in the fact that Mr. Esch, chairman of the committee on interstate and foreign commerce in the House of Representatives, was defeated for renomination because of the part taken by him in the passage of the so-called Esch-Cummins bill. Many other members of Congress who participated in that piece of legislation have met determined opposition in recent elections. In some of the states the abolishment of the state commission or an entire change in the personnel has been made the leading political issue, and in all candor I must say that in some instances the movement has met with much popularity.

Politics and regulation will mix no more than will oil and water. In at least one of the states the terms of all commissioners expire simultaneously with that of the governor. Hence, when a new governor comes into power it is possible for him to make a complete change in the personnel of the commission, a possibility which in the long run means defeat to regulatory efficiency. In nearly all states the compensation is in no way commensurate with the exacting duties of the position and the sacrifices required. Such conditions should be corrected as far as possible, and I recommend action by this convention. Unless regulation and politics can be divorced and some continuity of service assured, accompanied with commensurate compensation, the whole structure will fail, to the detriment of the public. The improper attitude of many utilities towards the public interferes with efficient regulation. Under government control of railroads during the war competition was suspended; and there was much complaint on the part of the public as to service rendered and as to the attitude of employees as compared with competitive conditions existing before the war. In my judgment, unless the public shall receive at least as good service and as low rates through a regulated monopoly as would be received under the whip of competition, regulation will fail and some form of governmental ownership will necessarily prevail.

The question of finances is another important adjunct to regulation, and especially so at the present time. During the last few years we commissioners repeatedly have been told that the financing of public utility enterprises has been seriously hampered by reason of conditions brought about by the war, by the activities of politicians in obstructing franchise negotiations, and by the failure of regulatory bodies to grant needed financial relief because of political expediency or similar considerations. Perhaps the time has come for those who control the finances of this great republic of ours, to take a broad view and honestly examine themselves to see if they can satisfy their own consciences as to whether or not they have performed their full duty during this readjustment period and crisis. Having in mind their public duties and obligations to the nation, those who control the financial policies of this nation might well assume much greater responsibilities and burdens than they appear to the public to have done thus far.

As a result of the direct application of the increases authorized by the Interstate Commerce Commission and the subsequent action of the carriers and state commissions, many so-called Shreveport cases have been started and are now pending before the Interstate Commerce Commission. It must be kept in mind that state commissions must be guided by their various statutes, for example, the so-called maximum fare laws. I believe it is possible to iron out many of the conflicts by both the federal and state commissions making an honest endeavor to carry out the spirit and intent of the co-operative provisions in the Transportation Act of 1920. To the Interstate Commerce Commission may I suggest that at the earliest opportunity it promulgate general rules governing joint hearings as provided in the Transportation Act. This will be helpful because it will not require the Interstate Commerce Commission to take the initiative in all cases, as is now the case, owing to the absence of rules.

Many carriers have asked the federal commission to set aside orders entered by state commissions. Stripped of the nice phraseology used to soften the assault upon state authority, the contentions of the carriers are that the Transportation Act of 1920 takes away from the states all real control over intrastate rates; that Congress has empowered the Interstate Commerce Commission to determine all the elements by which intrastate rates are fixed and has imposed upon the state authority the purely ministerial duty of recommending legislation or promulgating orders naming the rates made necessary by the findings of the Interstate Commerce Commission.

I am of the opinion that Congress, by the Transportation Act of 1920 did not intend to abridge the authority of the states, or extend the power already possessed by the federal commission as construed by the United States courts. If the carriers shall continue their warfare against state authority I trust and urge that this association will continue to use every honorable means to protect rights each state is entitled to under the Constitution of the United States and the Constitution of the state under which the commission may be acting. This is a sworn duty from which I can see no escape. No doubt in the future, as in the past, it will be charged that your action was based upon the selfish motive of retaining your position and thus keeping yourself in power. My answer to this calumny is that the only standard one human being has by which to judge another is himself. . . . I strongly recommend that this association create a new committee composed of at least five members, known perhaps as the Committee on Litigation, to act in a capacity similar to that of the present Committee on State and Federal Legislation.

The Freight Car Situation

By Clyde B. Aitchison

Commissioner, Interstate Commerce Commission

Of all the tasks of the regulatory commission, none are more thankless than those which come in floods when the railroads of the country cannot transport traffic currently as offered. These "car shortages" have long occurred, recurred, and at times persisted over considerable periods, in varying degrees of intensity. No sin of a railroad is regarded as so heinous as the omission to perform the primary duty of a common carrier. Most of the state commissions created in 1905 and 1907 owe their origin, in part, at least, to the despair of a public, which, unable to move its commodities, and thereby confronted with most serious consequences, turned to the regulating body as a possible means of obtaining relief.

But the problem was incapable of such solution. No waving of a legislative wand by a state commission could bring cars into being as expected; nor could the fiat of government move trains over tracks or through terminals fully occupied with other cars. And, it soon developed that the relief which a state could give was either wholly inadequate because of the small compass of the territory in which it could be made operative, or else was totally void because it necessarily infringed upon federal power. It must be confessed, after long experimentation, that state legislation has not prevented the repetition of these conditions of distress; and no state commission, however zealous in the discharge of its duties, or well fortified by drastic state legislation, has been able to do more than slightly mitigate the effects of the frequently recurring situations commonly called car shortages.

And yet these convulsions of commerce have been followed by periods of comparative calm. It has also been observed that in a particular section of the country there were more cars than needed and the supply and movement of cars has been limited by some cause wholly distinct from the number or location of the cars, such as the condition of the motive power, fuel supply, lack of track and terminal facilities, or labor disturbances. The thoughtful man has ceased to think of these recurring conditions as car shortages, except as that term may be used as a convenient short expression for that which is the practical result of many different causes which may exist in varying degrees and in different combinations to bring about a partial or complete failure of transportation.

The national government has at all times been slow to enter upon the regulation of railroads, and has only done so when the way has been blazed in advance by the states. This has been particularly so as to matters of service, which, for various reasons of policy, have until recently been left practically wholly with the states. Even during federal control it was deemed advisable to leave the determination of many matters of policy to local authority. Not until the Esch car-service act of May 29, 1917, did Congress undertake to prescribe a means for the requirement of adequate service upon interstate carriers, and the operation of that act was halted almost before it started by the inception of federal control.

By the Transportation Act, 1920, unjust and unreasonable rules and practices with respect to car service are declared unlawful, and regulations or practices imposed by state authority may be brought into harmonious relation to those applicable to interstate and foreign commerce. Congress also anticipated extraordinary conditions and has clothed the commission with extraordinary powers in emergencies. It may require the joint use of terminals, give directions for preference or priority in transportation embargoes and do numerous other things. Congress provided, however, that nothing in the Act should impair the right of a state, in the exercise of its police power, to require just and reasonable freight and passenger service for intrastate business, except in so far as such requirement is inconsistent with lawful orders of the commission.

It is obvious that there must be complete harmony of action and policy, or the promotion of good service in this matter can not be attained. We can not have 49 different policies. Indeed, with respect to matters of car service, the necessary extent of the federal power seems even more clear than as to rates. There is such a close and direct relation between the two classes of traffic, when moving over the same railroad, that adequate service for interstate traffic is best promoted by applying the requirements of the transportation act to vehicles used in moving intrastate traffic as well as to those used in moving that which is interstate. The power of Congress to regulate interstate commerce is plenary and competently may be exerted to secure adequate service for persons and property transported therein, no matter what may be the source of the impediment which tends to prevent it. If a conflict does occur, in the interest of *all* the states, there can be no doubt that one policy must prevail.

In times of car shortage the treatment must be along lines of preference, by determining which of many crying needs is first to be met with the inadequate supply at hand. The states are not well equipped with legislation to meet such a situation. There is grave danger of serious conflict between the states themselves, which has already cropped out. To illustrate: the western states require cars for the movement of accumulations of grain, and the surplus of those cars as in other states, where nothing but federal authority can compel them to be moved to the grain fields. Simultaneously, the eastern states must have returned to them the surplus of open top cars located in the western states. If a coal producing state, through a fuel administrator, attempts to retain to itself an undue amount of coal cars, manifestly it may prevent free intercourse and commerce between the states, the achievement of which was a primary reason for superseding the Articles of Confederation by the Constitution. It is intolerable that a state, through the control of the instrumentalities of commerce, should proclaim non-intercourse with other states; and a state which attempted such course would inevitably itself be the subject of similar action on the part of other states. . . . The delegation of control over interstate commerce can not be waved aside. The responsibility has been lodged with Congress, and Congress has met that responsibility by suitable legislation.

There is every reason, practical and legal, why the federal and state authorities should face the service problem squarely, and each act in the public interest within its appropriate sphere of activity, to obtain that harmony and concord of action. The task is too great to be performed from Washington. All regulating authorities have their part; and that part calls for full and cheerful co-operation between them. But without the fullest measure of co-operation with the regulating bodies on the part of the carriers, their officers and employees, and the shipping public, regulation will be futile in dealing with emergency transportation situations. This must require at times a subordination of local views and local interests. In times of shortage, all can not be served. But in times of famine it is infinitely better that an equitable system of rationing should be observed, than that we should revert to the power of the strongest to determine who should be fed and who should starve. In the transportation crisis from which we are emerging it has been shown beyond cavil that by means of hearty co-operation between the state and federal authorities, the carriers and the shippers, coupled with philosophical forbearance, we can pull through the gravest sort of emergencies.

The speaker here reviewed the freight car situation since last March, declaring that "the situation was met, squarely and courageously, in a business-like way, without political interferences or pressure of any character whatsoever, under

the orderly processes of law. By the unceasing efforts of railroad operators and employees, with the assistance of the shippers, and under the policy laid down by the commission and enforced and carried out in details by the carriers individually and through their Car Service Division, the back of the car shortage was broken, and we are now facing the possibility of a surplus of equipment." Mr. Aitchison here cited the records of improvement in car movement as reported by Class I railroads, and continued:

"But the situation is still acute in places. What has been done was first aid, and not a cure. The cure can come only with the present equipment being placed in the best possible condition; with suitable additions to rolling stock and motive power; with considerable improvements of terminals; with the additions of passing tracks and the construction of additional main tracks. These additions to the physical plant will be wholly insufficient without a continuance of such degree of centralized control as will insure a unified national policy and a high degree of co-operation as between the carriers. But even an improved plant, operated substantially as a unit, can not do the requisite amount of business unless it receives the full benefit of localized aid in avoiding every cause tending to stop the fluid movement of commerce. No organizations can so well aid in removing these obstacles as the state commissions, standing, as they do, indifferently between shippers and carriers, the representatives of the power and justness of law, and possessing an intimate and first hand knowledge of situations within the boundaries of their jurisdictions.

The present financial situation, coupled with the apparent downward trend of construction costs, makes it seem prudent not to engage upon any undue or avoidable construction program until conditions become more normal, and seemingly there can be no letting down in the intensive use of equipment. The part which has been played locally by the limited number of terminal committees which could be organized in the short time and out of the material at hand, is well known. Upon these committees, headed by a representative of the Interstate Commerce Commission, the carriers, the shipping public and the state commissions have found opportunity for co-operative service. In the interest of good administration, it is contemplated that this plan of bringing the activities of federal and state governments, of the shippers themselves, and of the operators of the railroads, into local organizations with an agency of the Interstate Commerce Commission, shall be broadened and continued. In such committees the representatives of the state commissions can be of the utmost service, without in any way detracting from their authority as regulating bodies. The transportation act marks the beginning of a new era in transportation, and the recognition therein of the necessity for the utilization by the federal authorities of the advice, assistance and co-operation of the state regulating bodies is a striking feature of that law, and one which marks a distinct step in advance.

Public Ownership and Operation

The committee on "Public Ownership and Operation," submitted a report on the general subject which in part read as follows:

The question of private ownership with regulation as against public ownership without regulation should no longer be considered by intelligent investigators as an open question.

We recognize that in some special locations public ownership and operation may appear to be successful but we hold that if the real facts might be ascertained and the same test applied to the publicly owned and operated utility as is applied by regulatory bodies to the privately owned and operated utility, the general result will apply in all instances.

We need no better illustration of the result of the attempt of the public to operate utilities than the recent operation of the railroads by the United States government, operated by the director general with such autocratic power and independent irresponsibility, that the financial and other business interests of the country wondered what, if any, limitations really existed and in what forum conflicting claims of right might be adjusted. There was no limitation on the power of the director general and he operated these utilities as a unified system with full power and authority to make and change all rules and regulations to accomplish the most beneficial results. The rate of wages and the rates to be paid by the shippers and the rate of return to the owners of the property were arbitrarily fixed by the officers of the national government.

The result is common knowledge. The manner and method of turning the roads back became such a complicated question that the situation became similar to that of the man who had hold of the bear—he was unable to hold on and feared to let go. The national government had to create a fund which might be loaned to the railroads for the purpose of rehabilitating them. Is there any reasonable and thinking man who has paid the slightest attention to the subject matter who can be heard to maintain the doctrine that governmental operation, not to speak of governmental ownership, was a success?

The argument is generally advanced that in the early construction days of the railroad and other utilities the public was defrauded by wild cat financing, and as a result thereof, public opinion is prejudiced against utility corporations in general. These charges may or may not be true but we know that under the present system of public regulation these abuses can no longer exist. We know that as a result of the depreciation in all values resulting from the Great War that any "water" which might have existed in these properties has been thoroughly squeezed out and cannot get back in.

We have noted many changes in the functions of the government during these later years and many enterprises and duties have been assumed by the state and national governments which were not dreamed of by the founders of our system, and it may be necessary to continue the experiments even to the extent of taking over the utility corporations in order to convince the public at large that such is not the proper method and manner of operating them.

It stands to reason that no business enterprise dependent upon the varying changes of political thought can be operated by the public in as efficient, methodical and careful a manner as can a similar business enterprise managed by a body of men who have their capital invested therein, or who represent those who have invested their fortunes therein. Destroy private ownership with public regulation and the next step is government ownership and government operation. When that time comes, if it does, our system of government will have changed to meet it. In order to take over and operate these properties at a less cost than their owners can operate them, it will be necessary to confiscate all or a large portion of the actual value of the properties; and if that can be accomplished it will be notice to the world that our constitution has changed, and that our courts are no longer able or capable of protecting private property from public confiscation. We believe that the present system of private ownership and private operation with public regulation as is now the custom in this country, is the proper, logical and indeed the only just, equitable and honest manner of conducting the great public utility business of this country.

The report was signed by P. J. Lucey, of Illinois, chairman. George R. Van Namee, of the second district, New York, commission, a member of the committee, declined to sign the report. It was ordered printed.

Judge Anderson Advocates Unification and Federalization

Hon. George W. Anderson, of Massachusetts, judge in the United States District Court, and formerly a member of the Interstate Commerce Commission, addressed the convention, proposing that state railroad commissions function as regional federal commissions. Judge Anderson said he saw no solution of the railroad problem until the railroads should be both unified and federalized. He criticized the transportation act but asserted that it will be found to go much farther toward essential federalization than has yet been generally recognized. He referred to the rate-making provision as "a clumsy pooling device sure to produce an expensive crop of expensive rate-division litigation." The results since March 1, he said "are hardly less than appalling" and he could find "no sign of economy and hardly a sign of efficiency." Under the law, he said, the state commissions will be gradually shorn of most of their powers and he proposed that Congress give them something to do by delegating to them matters of local regulation as representatives of the federal government.

Officers were elected on Wednesday as follows: President, J. A. Perry, Georgia; first vice-president, Carl D. Jackson, Wisconsin; second vice-president, Dwight N. Lewis, Iowa; secretary, James B. Walker, New York, and assistant secretary, L. S. Boyd, librarian of the Interstate Commerce Commission

Labor Board Continues Short Line Hearings

After an adjournment of six days to permit voting, the Railroad Labor Board resumed its public hearings on the wage demands of employees of the short lines on November 4, completing the executive's presentations on November 8 and starting an investigation as to the origin of a fraudulent interpretation circulated throughout the country before adjourning on November 8 until November 22. On that and subsequent days the employees' and executives' rebuttals and sub-rebuttals in the short line case will be heard.

The progress of the hearings up to and including the sessions on October 28 was outlined in the issues of *Railway Age* of October 29, (page 747), and of November 5, (page 786).

On November 4 the following roads were represented before the Board by the executives indicated: The Detroit Bay City & Western, A. C. McDannel, general superintendent; the Green Bay & Western, C. H. Smith, superintendent; the Lake Erie, Franklin & Clarion, H. M. Johnston; the Copper Range, G. H. Wescott, general manager; the Delaware & Northern, Andrew M. Moreland, president; the Wabash, Chester & Western, J. Fred Gilster, receiver; the Butte, Anaconda & Pacific, Paul Benedict, assistant to the president; the Chicago & Illinois Midland, Maurice Dailey, general manager, and the Greenwich & Johnsonville, Mr. Bates. W. A. Pattberg, F. A. Lewis, and Mr. Cowan, representing the employees of the Delaware & Northern, presented their side of the controversy, insofar as that road is concerned.

The public hearing on November 6 was devoted entirely to B. G. Dahlberg, vice-president of the Minnesota, Dakota & Western and L. H. White, general manager of the Boyne City, Gaylord & Alpena who testified on behalf of their lines. Judge R. M. Barton, chairman of the Board, announced at this session that arguments in this case would begin on November 22.

W. T. Hargrett, representing the Live Oak, Perry & Gulf, testified on behalf of that line before the Board on the afternoon of November 8 and subsequently Chairman Barton called an adjournment until November 22.

The testimony presented to the Board by these representatives of various short lines was similar to that already described in the previous reports of this case. Each representative outlined the physical, financial and other characteristics of his line, the prevailing wages and working conditions, the traffic arrangements and tendencies, its operation and other factors which the Board must consider before it makes a decision.

Board Inquiries as to Origin of Fraudulent Ruling

On November 8 the Board instituted an open investigation as to the origin of a fictitious interpretation of its Decision 2. This interpretation alleged to have been issued by the Board and to have been signed by the chairman was called to the Board's attention by J. G. Walber, secretary of the Bureau of Information of the Eastern Railways and W. N. Neff, chairman of the Southwestern Railway Executives' Association.

The hearing, which was conducted by the Board's attorney, L. G. Brooks, first developed that the alleged ruling, reading as follows, has been widely circulated among railway labor leaders throughout the country:

"(1) Employees leaving the service for any reason or cause prior to June 12, 1920, are entitled to receive back pay from May 1, 1920, to the date of their separation from the service. The reason for this ruling is, that the Labor Board did not issue their notice until June 12, 1920.

"(2) Employees leaving the service from any cause or reason on and after July 20, 1920 (date of the wage award by the Labor Board) are entitled to receive back pay.

"(3) Employees dismissed from the service at any time subsequent to May 1, 1920, or employees laid off account reduction in the force on and after May 1, 1920, are entitled to receive back pay.

"(4) Employees leaving the service of their own accord between the dates of June 12, 1920, and July 19, 1920, inclusive, are not entitled to receive back pay.

"Signed"—or purporting to be signed—"R. M. Barton, Chairman, U. S. Ry. Labor Board."

Mr. Walber, Mr. Neff, E. T. Whiter, chairman of the Conference Committee of Managers, E. F. Grable president of the United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers, John Scott, secretary-treasurer, and James F. McGrath, vice-president, of the Railway Employees' Department of the American Federation of Labor, R. A. Davis, secretary-treasurer of Division 2 of the Railway Employees' Department and W. J. Fitzinger, general chairman of the carmen on the Central Railroad of New Jersey, were called as witnesses.

Mr. Walber, Mr. Neff and Mr. Whiter outlined the manner in which the fraudulent interpretation had been brought to their attention. The circular issued by Mr. Grable's organization and containing the interpretation stated that he had certified the ruling as authentic. When questioned as to this, Mr. Grable stated that the circular in question had been issued during his absence from his office on account of sickness and that as soon as his attention was called to the ruling, he had issued orders for the recall of the circular.

Further questioning of Mr. Grable and the other labor representatives developed the fact that the ruling was first promulgated by a "National Agreement Interpretations Committee" composed entirely of representatives of the various labor organizations. This interpretation was later attributed to the Board, the chairman's name appended and circulated throughout the country.

At the close of the hearing Chairman Barton indicated that the Board would continue the investigation and the representatives of both the carriers and the employees offered their fullest co-operation.

Correction

The report of this hearing in the *Railway Age* of October 29 (page 748) stated that W. L. Seddon, representing the Macon, Dublin & Savannah, the Raleigh & Charleston, the Charlotte, Monroe & Columbia, the Tampa Northern, the Tampa & Gulf Coast, the East & West Coast and the Florida Central & Gulf, testified that Decision No. 2 of the Board had been applied to these lines and that therefore they were not properly before the Board in the short line case. Mr. Seddon has called attention to the fact that Decision No. 2 has not been applied on these lines and that he offered no technical objection as to the manner in which the dispute had been brought before the Board.

Car Service Under Private and Under Government Operation

WASHINGTON, D. C.

THE CAR SERVICE DIVISION of the American Railway Association, at the request of one of the railway executives, recently prepared a memorandum in reply to some comparisons between government and private operation of the railroads made by W. G. McAdoo in a speech at Indianapolis on October 16, as quoted in newspaper accounts. The memorandum, which was written before some of the August statistics, which make possible an even more favorable comparison in favor of private operation, were available, is as follows:

"It is assumed, of course, that the figures used by Mr. McAdoo, in that part of his speech referring to car service, were obtained from data compiled by the Railroad Administration. If this is the case, these figures were compiled by the Car Service Section of the Railroad Administration of which the present Car Service Division of the American Railway Association is the successor, and which has both the records from which the data quoted by Mr. McAdoo was compiled and also a continuation of similar records under the Car Service Division. The Car Service Division has made an analysis of the published statements of Mr. McAdoo referred to above, and makes the following comments:

"The article states that 'The former director general of railroads asserted that under government operation there had been an actual car surplus in the crop moving season of 1918, and surplus in 1919 except during the coal strike, in contrast with a shortage placed at 143,349 on September 1 of this year.'

"The railroads were taken over by the government as of January 1, 1918, during the war period when, under the existing emergency, the entire transportation facilities of the country were devoted to war purposes. It is recalled that the commercial interests not essential to the war were being curtailed by the various agencies of the government, and necessities for transportation thereby were correspondingly reduced. This reduction provided ample transportation for war purposes, and it was further possible to set to one side in the grain producing territory a reserve supply of box cars in anticipation of the heavy initial movement at the time of harvest. This reserve supply of from 40,000 to 50,000 cars was exhausted shortly after the time of harvest and after the initial movement there was no available surplus. It is not entirely proper to credit this as a surplus in comparison with previous years, as the practice but followed the custom of railroads under private operation when they individually set to one side their estimate of initial requirements according to crop conditions.

"Following the armistice in November demands for transportation rapidly decreased so that in the following March (1919) there was a peak period of surplus of between 400,000 and 500,000 cars. This again made it possible for the railroads in the spring and early summer of 1919 to store in the crop producing territory box cars to the extent necessary to care for the initial movement and approximately 50,000 cars were thus set to one side.

"The resumption of business activity in the early summer of 1919 and which increased rapidly entirely dissipated the surplus. This factor coupled with the railroad shopmen's strike in August, 1919, turned the scale so that by September, 1919, shortages were again being reported. Such shortages were also reported in October, while the coal strike did not take place until November 1 of that year. Mr. McAdoo is, therefore, in error in the reported statement that 'there was a surplus in 1919 except during the coal strike.'

"This shortage has continued in varying amounts up to the present and has been due to the constantly increasing demand for transportation following the return to pre-war industrial conditions. Beside the normal increase there was a considerable excess demand from those industries which had been curtailed during the war; furthermore, conditions were aggravated by the switchmen's strike beginning early in April and which lasted for several weeks thereafter. These conditions made it impossible for the railroads during the spring and early summer of 1920 to set any cars to one side in anticipation of the grain movement. For this reason the initial movement of grain following the harvest this year fell somewhat short of the records of the two previous years, inasmuch as the car supply for grain movement, demand for which is heavy at the start, had to be taken from cars available for general distribution on a prorata basis. The car supply has since been adjusted so that grain loading compares very favorably with that of previous seasons.

"Mr. McAdoo further states:

" 'Use of all cars on all railroads under single direction under federal control had increased the freight carrying ability of the cars by 15 per cent, producing the equivalent of 300,000 new cars without the cost of a penny.'

"We do not know by what measuring stick Mr. McAdoo arrives at his estimate, but presumably the most accurate unit in measuring railroad operations is expressed in ton miles per car per day. The following statement as to ton miles per car per day is therefore of interest:

During 1917, under private operation average performance	495
During 1918, under federal operation	491
During 1919, under federal operation	441
First two months of 1920, under federal operation	455
During March, 1920, under private operation	487
During April, 1920, under private operation, affected by switchmen's strike	401
During May, 1920, under private operation	488
During June, 1920, under private operation	504
During July, 1920, under private operation	523

"It should in fairness be said that the low figure for 1919 was due to the slump in demands for transportation during the first six months of the year.

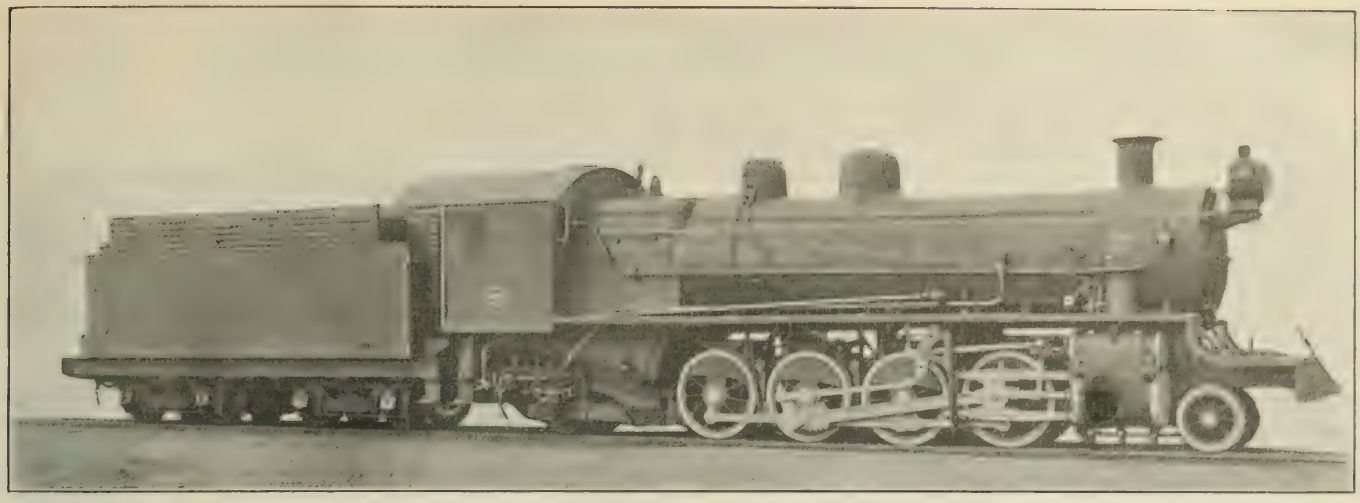
"The total cars of revenue freight loaded for the year 1919 and the first two months of 1920 under federal control averaged, per month	3,552,481
"The corresponding average for the succeeding seven months under private control was	3,755,145

"Similarly the miles per car per day for 1917 averaging 26.1 was in excess of the corresponding figures under federal control which were 24.9 and 23.1, respectively, while under private control following the switchmen's strike in April the figures have shown a consistent increase—

May, 24.2; June, 25; July, 26.1.

"All of the above would not seem to in any way substantiate Mr. McAdoo's deduction as to a 15 per cent increase in the freight carrying ability of the cars under single direction."

THE PACIFIC RAILWAY CLUB met November 8 in Oakland, Cal. The topic for the discussion at the meeting was "The Future of Ferry Transportation."



Meter Gage Mikado for the Central de Cordoba

New Meter Gage Locomotives for South America

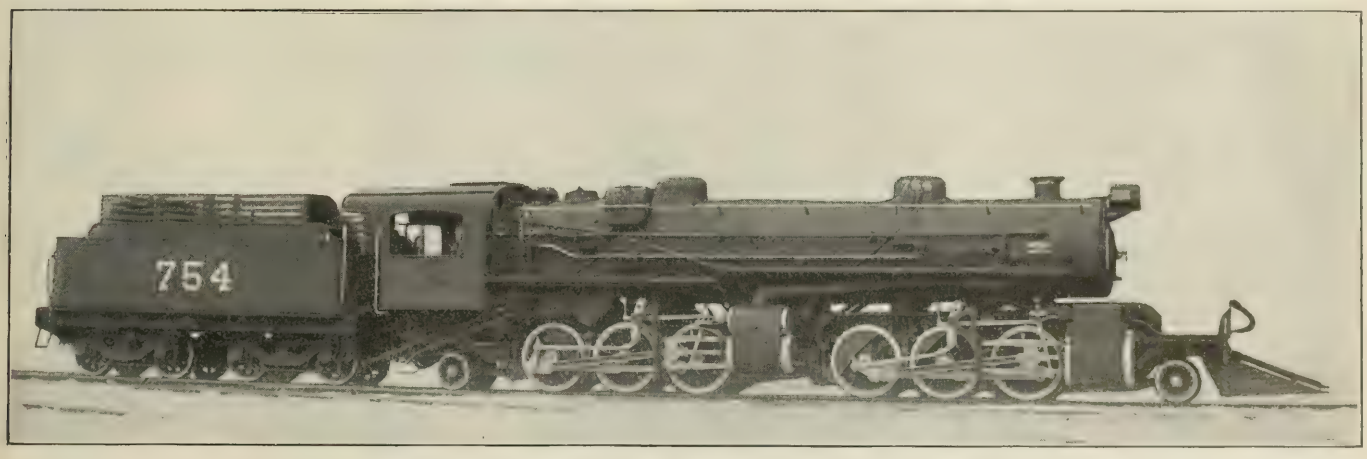
Description of Mallet, Mikado and Santa Fe Type Locomotives Designed for Narrow Gage Lines

CONDITIONS following the war have placed the locomotive builders of this country in an advantageous position to figure on export business and statistics relating to exports from the United States during the current year indicate that the builders have taken full advantage of this situation. There is no question but that they have a relative advantage in their ability to effect early deliveries. Moreover, the strong financial condition of the builders has enabled them to negotiate business that might not otherwise be available and their representatives have shown breadth and foresight in dealing with the export situation. The acceptance of large quantities of fuel oil from Rumania in payment for locomotives which that country would have found difficult to purchase on any other basis, as described in a recent issue of the *Railway Age,* has been commented on as an instance of unusual initiative in the export field.

The statement has been made that American manufacturers are not as generally inclined to adapt their merchandise to the peculiar tastes of the foreign user as European manufacturers are. A study of the designs of locomotives recently built in this country for export would tend to contradict this view. Many locomotives have been constructed to the metric system of measurements throughout, and there are not many locomotives exported that do not deviate from domestic standards in many important details so as to conform to the particular standards of the foreign user. For instance, locomotives recently shipped to India in competition with British builders are constructed with plate frames in conformity with the usual English practice.

On the other hand, the situation referred to has made it possible for American builders to impress upon foreign users many of the advantages in locomotive construction which have developed in this country. Within the last few months this country has exported to South America Mallet, Mikado and Santa Fe type locomotives designed for meter gage railroads. These locomotives are conspicuous for their high capacity, which compares quite favorably with the capacity of many locomotives operating in this country on standard gage lines.

The use of many specialties designed and built in this country has become almost universal on locomotives built for export, and many of the locomotives recently exported



Meter Gage Mallet for the Magyana Railway of Brazil

lead our own domestic locomotives in the number of labor-saving and efficiency and capacity-increasing devices applied.

The Mogyana Mallet

Meter gage locomotives constitute but a small portion of the number constructed for export, but at the same time serve to illustrate the wide variety of designs encountered, and more particularly the possibilities with respect to size and capacity

The first of an order of 6 Santa Fe type locomotives to be locomotives recently constructed for South America by the American Locomotive Company are excellent examples of what may be accomplished in this line.

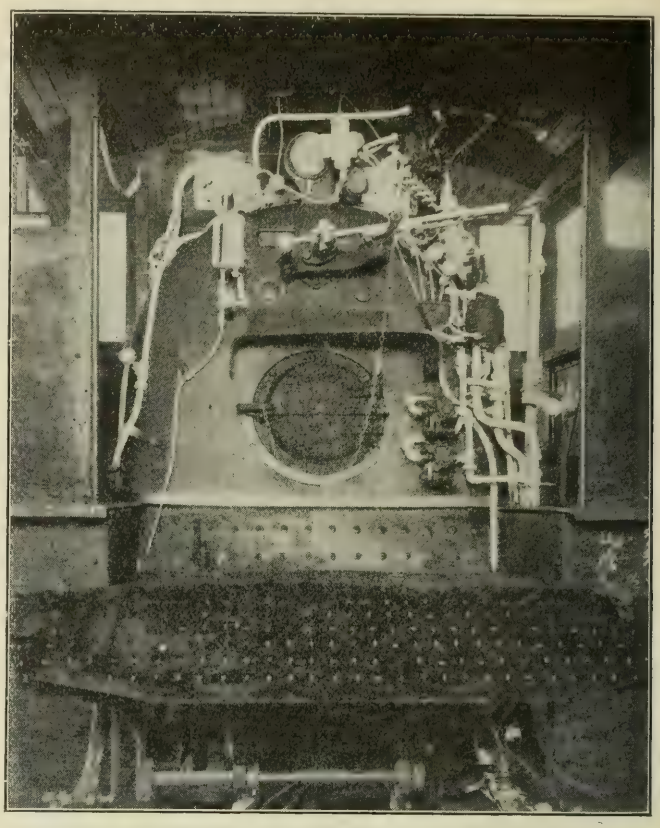
The Mallet type loomotive for the Mogyana Railway of Brazil is an unusually heavy locomotive for narrow gage service. Four of these locomotives have been shipped to Santos, Brazil. In addition to being equipped with superheaters, the following specialties are applied: Both power gear and hand lever reverse; steam brake on locomotive and vacuum brake connections for trains, Alco flexible expansion stays, copper staybolts in firebox tube sheet and back sheet (other bolts of iron). The back tube sheet and firebox back sheet are of copper, while the crown and side sheets are of steel. An interesting detail in connection with these locomotives is the fact that the specifications call for polished hand rails and a running board with polished edges. Appearance is an important factor on all South American locomotives, and great pride is taken in keeping all locomotive fixtures, particularly the apparatus in the cab, in a state of spotless perfection.

The Mogyana Railway is one of the largest narrow gage railways in South America. Its equipment includes 176 locomotives, 284 coaches and 2,618 freight cars. Wood is used for fuel.

Mikados for the Central de Cordoba

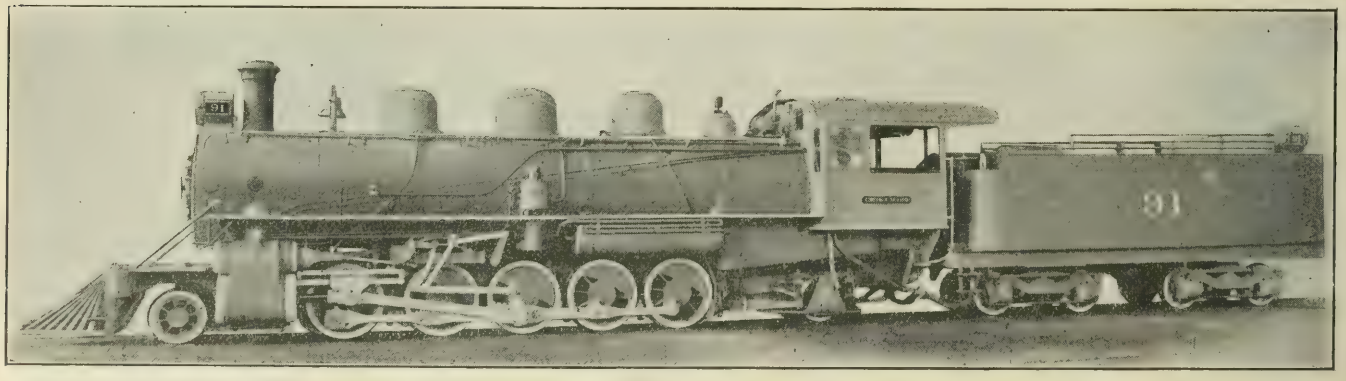
The American Locomotive Company has recently shipped five Mikado type locomotives to the Central de Cordoba in Argentina, which are of unusual capacity, considering the fact that they are of meter gage construction. In fact, the tractive effort of these locomotives is not greatly exceeded by that of the Mallet type just described. However, the Mallet locomotive is designed to operate on a 22 deg. curve, while the Mikado locomotive is designed for a maximum curvature of 16 deg. These locomotives are built to haul 1,000 metric tons up a 1¼ per cent grade. The details follow British standards more closely than is the case with the Mogyana Mallets. The Whitworth form of 11 threads per inch is used for all fittings screwing into the boiler. Whitworth standard threads are also used for all parts that use a nut and all studs that screw into parts other than the boiler sheets. The pipe threads are British standard, but the internal threads of outside purchased fittings are cut to the maker's standard.

The locomotives have superheaters and are equipped with a pyrometer graduated in both degrees, Fahrenheit and Centigrade. The steam gage is marked in pounds per square inch, and in kilograms per square centimeter. There are two Dewaner water gages, but no gage cocks. The boiler is



Cab Interior Meter Gage Santa Fe Locomotive

of the Belpaire straight top type, and Alco flexible expansion stays are used. The vacuum brake, excepting the ejector, was supplied by the New York Air Brake Company. A 30/20 Dreadnaught ejector, using a separate steam brake valve, is applied. A number 9 Metcalfe hot water injector is applied on the left hand side of the locomotive, and a number 10 hot water injector of the same make is applied on the right hand side.



Meter Gage Santa Fe Type for the Paulista Railway of Brazil

First Santa Fe Types for South America

The first of an order of 6 Santa Fe type locomotives to be operated in South America were recently shipped from the Eddystone plant of the Baldwin Locomotive Works direct to Santos, where they are now being erected in the Sao Paulo

Railroad shops for the Paulista Railway of Brazil. These locomotives are an excellent example of the development that has been accomplished in the design of high capacity engines working on a gage restricted to one meter. They are the first Santa Fe type locomotives to be put in operation in South America and are the most powerful single-expansion locomotives ever operated in Latin America. Up to the present time the only other foreign railway that has ordered the Santa Fe type of locomotive is the Lourenço Marques, Portuguese East Africa.

The Paulista railway, which is considered one of the most progressive and efficiently managed roads in South America, contemplated the purchase of either Mikado or Santa Fe type locomotives to move the increased amount of freight from the coffee plantations to Rio Claro and Jundiahy. As the Santa Fe type will develop approximately 25 percent more tractive effort than the Mikado type of the same restricted wheel loading, it was decided to use this type for main line freight service. As can be seen from the specifications, they will be comparable in respect to size and power, to standard gage American locomotives, and are equipped with up-to-date labor-saving devices. The maximum tractive effort is 32,000 lb. The firebox being placed behind the drivers and over the rear truck, allows an exceptionally wide and deep firebox to be used, which is necessary, as either coal or wood may be used for fuel. The equipment includes Westinghouse air brakes, Southern valve gear, electric headlights, automatic sanders, spark-ejectors and electric pyrometers.

With the shipment of these locomotives was included a long flat car of 5 ft. 3 in. gage, also manufactured by the Baldwin Locomotive Works, on which the locomotives are to be mounted when erected at Santos. They will thus be carried over the Sao Paulo Railway to Jundiahy, and then put in operation on the meter gage road.

Principal Dimensions

The chief dimensions of these locomotives are as follows:

	American Locomotive Company		Baldwin Locomotive Company
General Data:	Mallet type	Mikado type	Santa Fe type
Gage	39⅜ in.	39⅜ in.	39⅜ in.
Service	Freight	Freight	Freight
Tractive effort.....Simple	46,800 lb.		
Compound	39,000 lb.	35,300 lb.	32,000 lb.
Weight in working order	185,000 lb.	163,000 lb.	164,500 lb.
Weight on drivers	156,000 lb.	121,500 lb.	130,000 lb.
Weight on leading truck	14,500 lb.	18,000 lb.	13,000 lb.
Weight on trailing truck	14,500 lb.	23,500 lb.	21,500 lb.
Weight of engine and tender	278,900 lb.	271,000 lb.	256,000 lb.
Wheel base, driving	8 ft. 4 in. 8 ft. 4 in.	13 ft. 6 in.	15 ft. 10 in.
Wheel base, total	39 ft. 2 in.	29 ft. 8 in.	30 ft. 4 in.
Wheel base, engine and tender	63 ft. 3 in.	56 ft. 1¼ in.	57 ft. 5 in.
Cylinders:			
Kind	H. P. L. P.		
Diameter	16½ in. 26½ in.	21½ in.	20 in.
Stroke	24 in.	24 in.	22 in.
Wheels:			
Driving, diameter over tires	45 in.	48 in.	42 in.
Engine truck wheels, dia	24½ in.	31 in.	28 in.
Trailing truck wheels, dia	24½ in.	31 in.	28 in.
Boiler:			
Working pressure	200 lb.	180 lb.	190 lb.
Inside diameter	60 in.	65 in.	62 in.
Firebox, length and width	101¾ in. by 52¼ in.	81¼ in. by 63¼ in.	96⅝ in. by 60⅜ in.
Tubes, number and diameter	104—2¼ in.	160—2 in.	129—2 in.
Flues, number and diameter	21—5¾ in.	27—5¾ in.	22—5¾ in.
Tubes and flues, length	20 ft.	17 ft. 6 in.	19 ft. 1 in.
Heating surface, tubes and flues	1,803 sq. ft.	2,119 sq. ft.	1,871 sq. ft.
Heating surface, firebox	131 sq. ft.	147 sq. ft.	129 sq. ft.
Heating surface, total	1,934 sq. ft.	2,266 sq. ft.	2,000 sq. ft.
Superheater heating surface	506 sq. ft.	570 sq. ft.	500 sq. ft.
Grate area	36.9 sq. ft.	35.6 sq. ft.	40 sq. ft.
Tender:			
Water capacity	4,000 gal.	5,400 gal.	4,500 gal.
Coal capacity	.....	.....	8 tons
Wood capacity	4 cords	4 cords	.....

THE GREAT LAKES TRANSIT CORPORATION has renamed its steamer Wilkesbarre the Edward E. Loomis in honor of the president of the Lehigh Valley Railroad.

A New Study of Rail Creeping

THE CREEPING OF RAILS has been a subject of investigation and discussion among railway engineers for many years, particularly among the officers of the track department. It is of particular interest to learn that the latest study of this subject to be carried out at any length has been made by a bridge engineer, Dr. J. A. L. Waddell, consulting engineer, New York City. This investigation was undertaken through the issuance of a questionnaire containing 16 queries sent to the federal manager or president of each of 70 of the principal railroad systems of the United States, Canada and Mexico. The information thus obtained, together with the conclusions based thereon, has been made the subject matter of a paper presented before the American Society of Civil Engineers on November 3. Dr. Waddell summarized the conclusions reached as a result of his study as follows:

The principal troubles caused by rail creeping are slewing of joint ties and bunching of all ties; distortion of gage; loosening of joints; pounding down of rail ends; grinding of railheads and wheel flanges; splitting of joint ties; churning and sliding of ties; splitting and breaking of angle-bars; shearing of bolts; cutting of ties and consequent starting of decay therein; loosening, pulling and shearing of spikes; bunching and squeezing out of ballast; kinking and waving of rails; breakage of track; kicking or buckling of track with consequent derailment; interference with operation of frogs, switch-points, signals, interlocking, crossings, derails and other track devices; injury to rolling stock due to rough riding track; and, in short, the augmenting of all the difficulties known to trackmen.

Undoubtedly, the primary cause of the fundamental trouble is traffic; because, when a stretch of track is absolutely idle, there is no creeping on it whatsoever. It is true that other influences, such as temperature changes and weather conditions, aggravate the difficulty; but, alone, they are powerless to cause it. Wave action of rails and ties in front of the passing wheels pushes the rails ahead; and, if these are firmly spiked to the ties, the latter move forward, carrying the ballast with them. Again, the traction of the locomotive drivers and the friction of all braked wheels tend to impart a longitudinal motion to the rails. Long cars and widely spaced axles and trucks augment materially the amount of creeping, as does also unbalanced traffic; but these are unfavorable conditions that may very properly be termed unavoidable. The principal avoidable ones, however, are yielding roadbed, lack of thorough drainage, soft or decaying ties, unequal spacing of ties, badly adjusted super-elevation of outer rails on curves, rails too light for the traffic, inefficient or badly maintained rail-joints, either scant or excessive provision for rail expansion, inadequate or defectively maintained gage, poor or insufficient ballast, and improper use of train brakes. If the avoidable evils thus listed were effectively corrected, a large proportion of the trouble experienced from creeping track would no longer exist.

Rail creeping increases with the amount of traffic, although not necessarily in direct ratio; is greater on down grade than on up grade; on a single-track line is larger in the direction of the preponderance of traffic; in general, is of like amount on tangent and on curve; is often quite different on the opposite rails of a track; is of more serious import on light rails than on heavy ones; is less with firm roadbed than with soft; decreases with improvement in quality of ballast and with augmentation of its depth; varies with changes of temperature, season of year, and weather conditions; is reduced by improving the character of rail-splicing; is not materially affected by the use or non-use of tie-plates; enlarges with the spacing of wheels and trucks; and augments with the speed of trains and with the weights of engines and loaded cars.

In respect to the longitudinal forces in track developed by creeping and the horizontal pull between rail-anchors and rails—this is a question to be settled by experiments and not by mathematics. A few valuable experiments have been made to determine the longitudinal thrust of track for creeping, but the results thereof require confirmation by an elaborate series of tests before being accepted as standard or final by railroad men. The inauguration and carrying out of such a series of experiments is naturally the function of the American Railway Engineering Association; and the writer hopes that that organization will soon undertake such a series of tests as will settle this question with sufficient accuracy for all practical purposes.

In respect to rail-anchors or anti-creepers, these may be divided into two general classes, *viz.*, those which attach to the ties and those which are buried in the ballast. The former type is often effective when the track conditions are first class, but usually fail when they are not, and in that case the second type should be used. To be really effective, however, the latter should extend into the ballast well below the elevation of the bottoms of the ties, because otherwise they would move along with the ballast between the ties, which ballast, of necessity, travels with the track.

In respect to the prevention of rail creeping on important bridges, the writer's practice is to fasten the rails firmly to the deck at the middle of each span and let them slide on tie-plates out to the ends thereof, where a break in the track over each pier is provided.

Finally, the writer desires to state that the effective drainage of both roadbed and right of way is the main essential in good railroad engineering practice.

Tries to Help Railroads Collect Guaranty

WASHINGTON, D. C.

HOPE THAT the government may find a way for making immediate payment to the railroads of funds due them under the guaranty provisions of the transportation act is expressed by the Board of Directors of the Chamber of Commerce of the United States.

At a meeting held on October 7, the directors of the chamber passed a resolution expressing the earnest desire of the board that a way may be found quickly for making immediate payments on account of the government's guarantee in order that the roads may use these funds to liquidate the obligations incurred during the guarantee period, and also that all of the government's financial transactions with the roads may be expedited to the end that no delay on the government's part may retard provision of railroad equipment adequate for the transportation services that are so urgently needed at this time.

Members of the chamber are requested to consider carefully the action taken by the board of directors, and if this action meets with approval and they desire to support it, it is suggested that they can accomplish this purpose by addressing a communication by letter or telegraph to the President and to the Secretary of the Treasury supporting the position already taken by the board of directors of the Chamber of Commerce.

In a circular issued to its members the Chamber sets forth in some detail the situation brought about by the decision of the comptroller of the treasury that the Secretary of the treasury is not authorized to make payments to the roads under the guaranty for March-August, 1920, until the Interstate Commerce Commission has ascertained and certified to the Treasury the entire amounts necessary to make good the guarantee to each railroad. The position of the comptroller is that the Treasury cannot make partial payments on account, but must wait for a final accounting from each railroad and make a single payment in final settlement.

"The total amount of the operating deficit for all roads during the guaranty period," says the circular, "was about $634,000,000. Of this amount approximately $234,000,000 has already been paid to the roads in the form of advances requested before September 1, 1920. The railroads are, however, very much in need of the $400,000,000 still due. Some of them are facing strikes because of their inability to pay the wages due their employees under the retroactive provisions of the recent wage decision of the United States Railroad Labor Board. Others are unable to secure the necessary funds to provide any new facilities and equipment or even to maintain their present facilities and equipment. None of them can expect that their credit will be fully restored at once by the new rate schedule which went into effect September 1, 1920.

"It is therefore of great importance to the financial stability of the roads, and is obviously in the public interest, for United States government officials to find some way to pay promptly the amounts due to the railroads from the government.

"The Interstate Commerce Commission interprets the law to mean that it is the duty of the commission to ascertain at the earliest possible date definite amounts that are due to the railroads under the guaranty provisions of the act and to certify these amounts to the Secretary of the Treasury for immediate payments to the railroads. This the commission has done but, on the advice of the comptroller of the treasury, the Secretary of the Treasury has refused to make partial payments on account of amounts due as recommended by the commission and has asked that each road be required to make a final accounting before any further payments are made, and that the commission present a single certificate for each road that will serve as a basis for a single warrant making final settlement of the amount due to that road under the guaranty provisions of the Act.

"It is thus evident that the comptroller of the treasury, who is the law officer of the Treasury Department, interprets the guaranty provisions of the transportation act in one way, and the Interstate Commerce Commission interprets them in another; and that if the amounts due to the railroads are to be paid promptly these two opinions must be reconciled on some basis that will permit partial payments. In an order dated October 18, 1920, the commission outlined the form to be used by carriers in presenting their claims under the guaranty provisions of the act, and ordered each carrier to file its claim on this form on or before January 1, 1921.

"After the claims are filed it will be necessary for the commission to review and adjust the amounts in accordance with the provisions of the act before the commission can ascertain the total amounts due and certify them to the Secretary of the Treasury for final payment. In some cases this process may require many months or perhaps years, and meantime large sums of money which the government agreed to pay to the railroads to enable them to take care of their current expenditures during the guaranty period will be kept from them."

DELAYS TO PASSENGER TRAINS on the Pennsylvania Railroad, due to locomotive failures, during six months have amounted to an average of 67 minutes for every 10,000 miles, and a record for one month shows that for every 10,000 passenger car miles, the total delays to trains due to car trouble, such as a hot box, amounted to 3.9 minutes. The total number of minutes lost by all of the 129,745 passenger trains on the whole railroad because of locomotive and car trouble, in September, was 53,183, as compared with 60,792 in April, when 106,508 trains were operated.

August Breaks Freight Traffic Record

Statistics Also Show Improvement in Efficiency. Weekly Freight Car Loading Makes New Record for Year

WASHINGTON, D. C.

ALL RECORDS for the amount of freight handled by the railroads of the United States in a single month were again broken in August, following a record-breaking performance in July, according to statistics just compiled by the Bureau of Railway Economics.

The net ton miles totalled 42,706,835,000, which represents an increase of 6,345,000,000 over August, 1919. The August freight traffic also represents an increase of 2,574,000,000 ton miles over July, 1920, which, according to a recent statement by the Interstate Commerce Commission, exceeded the greatest volume of traffic previously recorded for any single month.

Material progress in the campaign to speed up the movement of freight cars is shown by the report. The average mileage per freight car per day was 27.4, as compared with 24.2 in August, 1919; 26 in August, 1918, and 27.1 in August, 1917.

An increase in the average mileage per car per day was one of the principal objectives set for themselves by the railway executives when at a meeting in New York in July they adopted resolutions pledging themselves to make every effort to attain an average of 30 miles, which has never been attained.

The average of 27.4 miles is the highest that has been reached in any month since July, 1917, exceeding the average for any month during federal control. It was exceeded in May, June and July, 1917, when the average car mileage was 29, 28.4 and 28.3, respectively. For the year 1917 the average was 26.1; for 1918 it was 24.9; for 1919 it was 23.1. Since the roads were returned to private management on March 1 the average has shown an improvement in each month except April, as compared with the preceding month and as compared with the corresponding month of 1919, but August was the first month to show an improvement in this respect over any month during 1918. An increase of one mile in the average movement per car per day is roughly equivalent to the addition of 100,000 cars.

The average freight car during the month of August also carried a greater load of freight than the average for any month since December, 1918. The average tonnage per car was 29.8, as compared with 28 in August, 1919, and 29.6 in July, 1920. The mark set by the executives was 30 tons.

The average of 29.8 tons is greater than was attained in any month during 1919, when the average for the year was 27.8 tons. It was exceeded in July and August, 1918, when the average car load was 30.1 tons, and equalled in December, 1918. For the year 1918 the average was 29.1. For 1917 it was 27 tons.

Freight car performance for August is shown in the table on this page, summarized from the bureau's bulletin.

A new record for 1920 in the number of cars loaded with commercial freight was made during the week ending October 23, according to reports compiled by the Car Service Division of the American Railway Association. The total for the week was 1,010,961 cars, which was within 500 cars of the peak recorded in September, 1919. This was 5,298 cars more than were loaded during the previous week, 33,910 cars more than for the corresponding week of 1919, and 90,850 cars greater than for the corresponding week in 1918. This was also the third successive week that the total had exceeded the million mark.

Weekly Car Loading Report

Except for the Central, Western and Pocahontas districts, increases as compared with the same week in 1919 were reported by all districts, while the number of cars loaded in all districts during the week of October 23 exceeded the number loaded in the same districts during the corresponding week in 1918. Increases were shown, as compared with 1919, in the number of cars loaded with coke, forest products, ore, merchandise and miscellaneous freight, although decreases were shown in grain and coal loading.

The total commercial coal loading was 229,043 cars, 1,401 cars more than for the previous week. During the corresponding week last year 231,972 cars were loaded, but October, 1919, was the heaviest coal-carrying month on record, owing to the fact that in anticipation of the coal miners' strike, on November 1, every available car was turned to transporting coal. The loading report for the week of October 23 is shown in the table on the following page.

AUGUST, 1920

Region	Average miles of road operated	Net ton-miles (thousands)	Freight car miles (thous.) Total	Loaded	Per cent loaded to total	Freight cars on line daily Total	Unserviceable	Efficiency ratios Car-miles per day	Tons per car	Per cent Unserviceable
New England Region	8,134.11	1,107,355	60,612	43,658	72.0	106,060	9,186	18.4	25.4	8.7
Great Lakes Region	22,123.71	7,949,392	381,875	266,318	69.7	491,047	38,942	25.1	29.8	7.9
Ohio-Indiana Allegheny Region	26,566.71	10,352,575	436,033	286,347	65.7	629,069	37,269	22.4	36.2	5.9
Pocahontas Region	5,340.44	2,631,863	99,778	61,810	61.9	85,339	7,102	37.7	42.6	8.3
Southern Region	37,726.21	5,025,076	256,519	182,103	71.0	272,587	19,651	30.4	27.6	7.2
Northwestern Region	47,421.01	5,495,176	307,841	200,709	65.2	346,444	27,631	28.7	27.4	8.0
Central Western Region	52,202.01	7,072,486	395,368	274,264	69.4	339,869	24,652	37.5	25.8	7.3
Southwestern Region	32,072.69	3,072,912	163,097	116,728	71.6	204,847	12,433	25.7	26.3	6.0
Grand total—all regions	231,586.89	42,706,835	2,101,123	1,431,937	68.2	2,475,262	176,866	27.4	29.8	7.1

Car Loading for 12 Weeks

For the 12 weeks ending October 23, the total revenue car loading was 11,654,567 cars, as compared with 11,291,665 in the corresponding period of 1919, and 11,431,467 in 1918. This represents an increase over 1919 of 362,902 cars, and over 1918 of 223,100 cars, and probably represents the largest volume of freight traffic for a similar period in railroad history. For the 12 weeks the cars loaded with grain and grain products totalled 495,134, against 559,693 in 1919, and livestock loading was 370,277 cars, against 419,112, but the other classes of commodities all show increases. Coal loading was 2,513,138 against 2,412,249 in 1919; coke, 176,617 against 123,019; forest products, 767,571 against 747,348; ore, 921,512 against 649,663; and l.c.l. merchandise and miscellaneous combined 6,410,318, against 6,369,805.

A decrease in the car shortage amounting to 3,552 cars was also shown for the week ending October 23. The average daily shortage for the week was 65,965, as compared

with 69,517 cars for the previous week, and 147,309 on September 1, when the peak was reached for this year. Of the total shortage for the week, 26,878 were box cars and 26,412 were coal cars.

For the week ending October 29 the car shortage yas 55,412.

The report for the week of October 30 will show a decrease in the loading of about 37,000 cars as compared with the week of October 23. The reduction is principally in miscellaneous freight, which dropped about 25,000 cars, mainly in the Eastern, Northwestern and Southwestern districts. The loading was, however, greater than for the corresponding weeks of 1919 or 1918.

Accumulations of freight cars on hand in excess of current movement totaled 40,040 cars for the week which ended on October 29, an increase of 233 over the previous week. Of this number, 19,750 cars were being held with freight consigned for export or coastwise movement.

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS; COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. FOR WEEK ENDED SATURDAY, OCTOBER 23, 1920

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year 1920	Total revenue freight loaded: Corresponding year 1919	Total revenue freight loaded: Corresponding year 1918	Received from connections: This year 1920	Received from connections: Corresponding year 1919	Received from connections: Corresponding year 1918
Eastern	1920	5,872	2,849	59,563	3,428	7,509	10,799	49,196	107,593	246,809	.....	.....	262,385	.....	.....
	1919	6,706	3,811	60,784	3,071	7,774	5,297	26,670	126,572	.....	240,685	224,962	.....	258,002	249,482
Allegheny	1920	2,329	3,720	72,552	6,388	4,031	14,551	39,802	71,079	214,452	.....	.....	148,302	.....	.....
	1919	3,226	3,960	69,962	3,876	4,375	8,675	43,112	69,565	.....	206,751	205,659	.....	144,506	178,377
Pocahontas	1920	62	356	23,842	709	1,824	209	2,753	7,434	37,209	.....	.....	19,259	.....	.....
	1919	217	434	24,393	665	1,851	261	140	9,846	.....	37,807	36,477	.....	20,269	23,716
Southern	1920	2,936	2,163	28,627	3,881	16,891	2,966	38,467	37,782	133,713	.....	.....	74,224	.....	.....
	1919	3,117	3,050	29,766	2,506	16,091	2,415	20,401	55,951	.....	133,297	114,306	.....	73,556	71,508
Northwestern	1920	13,513	10,328	12,050	1,864	15,322	41,676	29,236	47,107	171,096	.....	.....	61,062	.....	.....
	1919	14,744	10,361	13,599	676	15,778	26,354	23,068	46,556	.....	151,136	161,436	.....	65,167	78,654
Central Western	1920	10,303	12,923	25,194	475	5,703	2,738	31,098	49,010	137,444	.....	.....	70,920	.....	.....
	1919	11,682	16,295	25,683	419	5,454	2,247	24,095	58,144	.....	144,019	123,033	.....	80,005	64,392
Southwestern	1920	3,851	2,632	7,215	153	7,540	243	17,632	30,972	70,238	.....	.....	55,757	.....	.....
	1919	4,329	3,665	7,785	131	5,684	331	13,001	28,430	.....	63,356	54,238	.....	53,010	46,070
Total all roads	1920	38,886	34,971	229,043	16,898	58,820	73,182	208,184	350,977	1,010,951	.....	.....	691,909	.....	.....
	1919	44,021	41,576	231,972	11,344	57,007	45,580	150,487	395,064	.....	977,051	.....	.....	694,515	.....
	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	920,111	.....	.....	712,199
Increase compared	1919	.....	.....	.....	5,554	1,813	27,602	57,697	.....	33,910	.....	.....	.....	.....	.....
Decrease compared	1919	5,135	6,605	2,929	.....	.....	.....	.....	44,087	.....	.....	.....	2,606	.....	.....
Increase compared	1919	.....	.....	.....	.....	.....	.....	.....	.....	90,850	.....	.....	.....	.....	.....
Decrease compared	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20,290	.....	.....

L. C. L. merchandise loading figures for 1920 and 1919 are not comparable as some roads are not able to separate their L. C. L. freight and miscellaneous of 1919. Add merchandise and miscellaneous columns to get a fair comparison.

Coal Production

Production of soft coal during the week of October 30 not only continued above the 12,000,000-ton mark, but rose to a new maximum for the year, according to the weekly bulletin of the Geological Survey. The total output is estimated at 12,338,000 net tons, an increase of 97,000 tons over the preceding week and, except for the week of October, 1919, just before the coal strike, the largest production since the armistice. The average production per working day was 2,056,000 tons. For four consecutive weeks the daily output has been above 2,000,000 tons, the daily rate which corresponds to 12,000,000 per week, and this is the longest period on record of sustained output at that rate except during the summer of the war year, 1918. Production during the week ending November 6 was expected to show a marked decrease because of Election Day and the observance of religious holidays. Production during the first 258 working days of the year has been 452,904,000 net tons, which is 7,000,000 tons behind 1917, and nearly 42,000,000 tons behind 1918, but over 51,000,000 tons ahead of 1919. The loss of full-time output on account of transportation disability during the week of October 23 is reported as 20.8 per cent. The total coal dumped at Lake Erie ports during the week of October 30 was 1,081,275 tons, and the cumulative lake movement from the beginning of the season now stands at 20,043,000 net tons, as against 27,317,000 in 1918 and 21,870,000 in 1919.

The immediate soft coal wants of the whole nation have already been met, according to a statement issued by the National Coal Association, excepting in a few isolated communities, while the storage of coal for winter uses in many parts of the country has begun. With the release of open-top cars from the lake movement, due to the recent suspension of the lake priority order by the Interstate Commerce Commission because of adequate dumpings at the lake docks, some 2,000 more cars are now at the disposal of operators and distributors in the movement of soft coal to the Middle Western States, where until recently an acute shortage prevailed.

In a speech at a meeting of the National Coal Association in Cleveland on October 26, President Wentz of the National Coal Association described the efforts of the association to prevent federal control of the coal industry and the appointment of a fuel administrator. He told of frequent conferences with Secretary Tumulty, who had received protests regarding coal shortage from many parts of the country, and demands that the President appoint a fuel administrator, and said that during the time the Interstate Commerce Commission was attempting to deal with the situation through priority orders on recommendations of the railroads and the coal operators, President Wentz or Vice-President Morrow of the Coal Association went to the White House daily for three weeks to keep Mr. Tumulty informed of what was being done, to show that it was not necessary to appoint a fuel administrator.

Because of the improvement in the coal situation following four weeks of maximum production, the Interstate Commerce Commission on November 6 issued an amendment to its Service Order No. 20, the general order giving preference to coal in the use of open-top cars, exempting from the order gondola cars having sides 42 inches or less in height. This will release for the movement of commodities other than coal several thousand cars, in addition to 170,000 cars that had been previously released in various ways.

During the week ending October 23 the railroads made a new record for the year in the number of cars loaded with coal. The total for all kinds of coal was 258,402, an increase of nearly 4,000 cars over the total for the previous week, which had also made a record for 1920. Comparisons are now being made with the heaviest month on record. For the first three full weeks of October this year the total loading of coal was 766,854 cars, or 8,233 cars less than for the corresponding period of 1919.

Burlington Asks Authority To Capitalize Surplus

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION on November 5 made public the application filed by the Chicago, Burlington & Quincy for an order authorizing the company to capitalize a part of its surplus, representing earnings invested in its property, by issuing $60,000,000 of additional capital stock to be distributed pro rata among the stockholders (the Great Northern and Northern Pacific own most of the stock), and $109,000,000 of 6 per cent first and refunding mortgage bonds, to reimburse the treasury for money previously expended out of earnings. Of the bonds, $80,000,000 are to be held in the treasury to be used for any lawful purpose, including dividend purposes, and the balance of $29,000,000 is to be disposed of only for future additions and betterments after further application to the commission. The bonds are to be issued under a new mortgage, dated February 1, 1921, to the First National Bank of New York, and Walter S. McLucas as trustees.

The application, filed by Hale Holden, president, states that the property investment of the Burlington, as of December 31, 1919, was $535,210,890, and that it had a corporate surplus of $241,781,197. Depreciation on its equipment has been charged to the amount of $48,514,239, and if the application is granted there will remain a corporate surplus of $101,781,197.

The company's total capitalization is given as $278,889,100, of which the capital stock outstanding amounts to $110,839,100, and the funded debt outstanding to $168,050,000. The stock and bonds in the hands of the public, per mile of road, are $31,164.

The application describes the outstanding bond issues and mortgages to explain why the company finds it "an absolute necessity to its future expansion and growth as a railroad system to issue a new mortgage which will provide for financing its additions and betterments for a considerable period." Before the passage of the transportation act it had obtained authority from the Illinois Public Service Commission for an issue of $109,000,000 of bonds under its general mortgage, which is so limited that not over $300,000,000 of bonds can be outstanding under it at any time, and the rate of interest is limited to 5 per cent. It has not been considered advisable or prudent, under present market conditions, to put 5 per cent bonds on the market.

The applicant further states that the state laws relative to corporate securities provide that, in order to be legal investments for savings banks, etc., bonds shall not exceed three times the capital stock of the issuing corporation, and that it is therefore imperative, in order to make a refunding mortgage and provide for adequate future financing, that applicant increase its capital stock.

"By the proposed increase to approximately $170,000,000," the application states, "applicant will have under the laws of such investment states a basis for a bond issue up to approximately $510,000,000 instead of approximately $332,000,000 as at present. Five hundred and ten million dollars is the necessary limit to enable applicant to finance its necessary additions and betterments for a reasonable term of years.

"Since July 1, 1901, applicant has invested in additions and betterments to its railway operating property the sum of $189,070,776 out of earnings from operation which justly belonged to its stockholders, at least to the extent of two-thirds thereof, or more. For the most part, these additions and betterments added to the fair value of applicant's property and to the earning capacity thereof fully in proportion to the expenditure, only a small portion of the expenditure having been in non-revenue producing additions and betterments. During this period applicant has not increased the aggregate of its bonds or stock, substantially financing all its improvement and betterment work out of earnings.

"This policy has resulted in the abnormal capitalization heretofore shown, and is a policy not just to the stockholders and of which they oppose the continuance."

From July, 1901, to December 31, 1919, it is stated, the company has invested from earnings in additions and betterments, road extensions, retiring bonded debt, purchase of securities of other companies and other items properly chargeable to capital account, $191,348,478, which has not been capitalized, and its net income applicable to dividends for the past 10½ years has aggregated $202,490,286, or an average per year of $19,284,789.

"Notwithstanding said large amounts of net income which might have been distributed to the stockholders at the discretion of the directors, the average of all dividends paid to stockholders on the very low capitalization mentioned, for the period of July 1, 1901, to June 30, 1920, was only 8.51 per cent on the par of stock and on property investment during the same period in excess of bonded debt 3.916 per cent," the applicant states.

"The physical valuation now being carried on by the Bureau of Valuation of the Interstate Commerce Commission will support a value clearly in excess of the property investment above stated.

"A policy clearly recognized in the transportation act, 1920, is to bring all the railways eventually to substantially the same principle of capitalization, which is to be as nearly as practicable the value of their respective railways operating properties, so that the cost of transportation, as between competitive systems, and as related to the values of the properties, through which the service is rendered, shall be the same so far as practicable, so that the railways can employ uniform rates in the movement of competitive traffic and under efficient management earn substantially the same rate of return upon the value of their respective railway properties.

"Applicant's present interest and sinking fund charges amount approximately to $7,250,000 per annum, and the issue of $80,000,000 bonds as proposed would increase this amount by $4,800,000 per annum. During the five and one-half years from July 1, 1914, to December 31, 1919, the average annual net income yielded by applicant's railways, plus applicant's other income, was $17,324,704 in excess of the proposed new interest requirements, which is a large and safe margin above all dividend requirements, in respect of the proposed total $170,000,000 of capital stock.

"The annual net income available for dividends as shown by the above statement, and present rate and traffic conditions in applicant's territory, prove that by the most conservative estimate the additional securities proposed will not impair applicant's credit or its ability adequately to serve the public as a common carrier.

"The unduly low capitalization of applicant as compared with other railroads in the same territory, and as compared with its property investment, has led to a misunderstanding on the part of the public as to the rate of return on fair value of property shown by applicant's earnings. The partial capitalization of applicant's surplus now proposed is just in relation to the capitalization of said other companies with reference to applicant's fair value, and is in furtherance of the policy of the transportation act."

The commission has announced a hearing on the application, to be held before Director W. A. Colston of its Bureau of Finance, at Washington on November 22. Notice of the application and of the hearing has been given to the governors of the states served by the road.

BERNARD DE ROMANET, a French aviator, making trial trips near Paris, following the recent races, flew one kilometer in 11.65 seconds, or at the rate of about 193 miles an hour.

A Centralized System for the Feeding of Laborers

AT THE RECENT CONVENTION of the American Railway Bridge & Building Association at Atlanta, Ga., Hunter McDonald, chief engineer of the Nashville, Chattanooga & St. Louis, Nashville, Tenn., gave an account of the organization and methods in effect on that railroad for the feeding of the laborers of the maintenance of way department. The essential feature of this system is the centralization of the purchasing and distribution of supplies, together with strict rationing. This plan was put into effect in 1918 during a period of rapidly advancing prices, and had the effect of providing the men with food of good quality without the necessity for increasing the charges to the men. The men are contented and the gangs are generally full. In case of wrecks or washouts, complete outfits are at hand to feed section men and other additional forces who have to be assembled quickly. The meals are furnished promptly, well cooked and well served, while the cost is much less to the men than they could obtain by any other method. There is no profiteering on the men, such as may often be the case where they are boarded by contractors or by the foremen.

The purchase of all supplies is assigned to the purchasing agent and a commissary agent appointed to look after it. The rationing allowance is estimated largely from the past average consumption of various articles as checked with prevailing United States Army rations that were known to be ample if proper economy and care were exercised. Thorough control over the system is obtained through a detailed accounting system which insures the proper disposition of the food in proportion to the number of men employed.

Each foreman is allowed to purchase locally dairy supplies, including fresh meat, butter, eggs and milk, equal in amount to an authorized allowance per man. At present this is 6 cents per day for bridge and building gangs, and 15 cents each per day for the foreman and assistant foreman, the only white men on extra gangs. In emergency, other than dairy supplies can be purchased locally, and during the summer season fresh vegetables and fruit can be purchased in lieu of potatoes, canned goods, etc., allowed on the ration list. These purchases are offset by deductions from the requisition, and emergency purchases must be fully explained.

The commissary agent checks all requisitions carefully and sees that they are properly balanced as to food values and in accordance with the ration allowance for the estimated number of men to be worked for the succeeding month. After the quantities to be purchased are determined, bids are solicited from reliable firms for such as are not already in stock. Complete specifications accompany all solicitations for bids. Orders are awarded to the lowest bidder on any article regardless of whether or not his bid is the lowest on all articles.

It is the duty of the division engineers to note all cases of apparent extravagance or dishonesty of cooks, and the commissary agent also calls attention to irregularities. A lunch club is operated in the purchasing department and the food for it is furnished at cost by the commissary agent. He thus makes a practical test of the quality of all foodstuffs purchased and none are sent out that are not known to be of quality specified and in good condition.

Three months after the inauguration of the enlarged plan in 1918, the balance was on the company's side of the ledger. Advances in foodstuffs and cooks' wages have again run the cost above the price charged. By the experience already gained and training of cooks and foremen, the loss has not yet reached a point where a raise in the board cost is considered imperative. It is hoped that with the advent of lower food costs, notwithstanding recent very heavy advances in cooks' wages, the balance will again fall below the price charged. It is the purpose to feed the men at cost, and when the recent losses are made good and conditions justify, it is expected that the boarding charge will be reduced.

Temperatures in Stored Coal

A NEW DEVICE for indicating the thermal conditions of stored soft coal has been placed on the market recently by F. C. Thornley & Co., Inc., New York, and is called the Thornley coalometer. Bituminous coal has the well known property of spontaneously heating in certain spots and at varying depths. This heating does not always cause actual combustion, in the sense that the coal burns with the presence of flame, though this condition is also often encountered. There does exist almost universally, however, in stored coal of this character, a slow combustion which is even more destructive than combustion by flame, owing to the fact that it cannot be so readily detected. This slow combustion goes on unnoticed throughout an ever-increasing zone beneath the surface of stored coal.

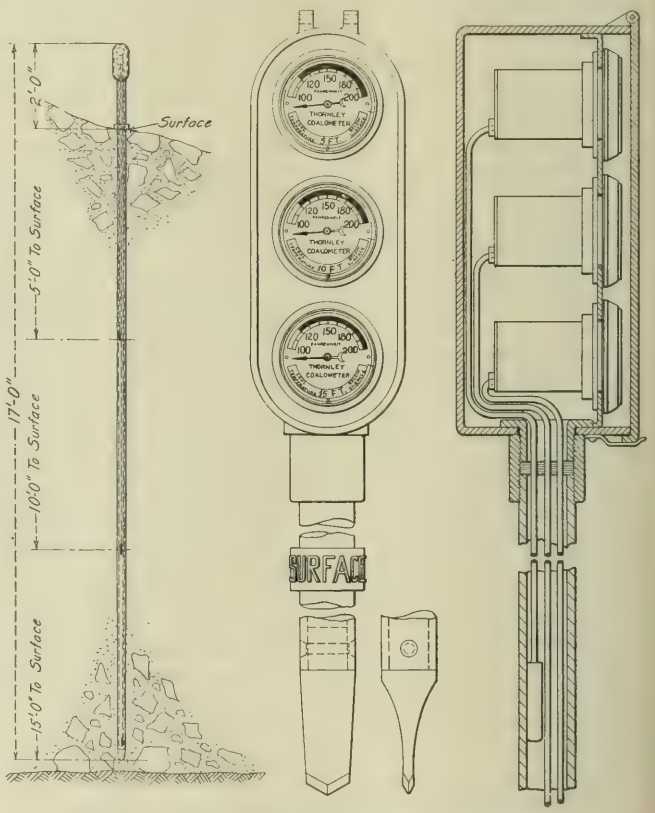


Fig. 1—Triple Unit Thornley Coalometer

The Thornley coalometer consists of a set of temperature indicators encased in a long pointed steel tube, carrying at varying depths metal bulbs (corresponding to the bulbs of thermometers), and at its upper end a set of dials and pointers, which indicate, under all atmospheric conditions, the exact temperature of the bulbs which actuate them. These units are forced down into the coal pile to definite depths and at various points. and collectively furnish definite data to the consumer as to the exact temperatures existing beneath the surface. If an accurate record of daily readings of these instruments is kept, the slightest rise in temperature is at once detected, and should it become excessive, the con-

sumer can remove this particular portion of fuel, thus saving the greater part of the heating value of the coal which has started to dissipate.

Tests have shown that an installation of one coalometer each 50 ft. in both directions from its neighbor will efficiently indicate conditions of temperature below the surface. Thus the installation of one triple unit will protect approximately 900 tons of coal if the volume is about 50 ft. by 50 ft. by 16 ft.

A triple unit coalometer for use in coal piles from 15 ft. to 20 ft. deep is shown in Fig. 1. A galvanized steel tube, having a hardened steel diamond point drill at its lower end,

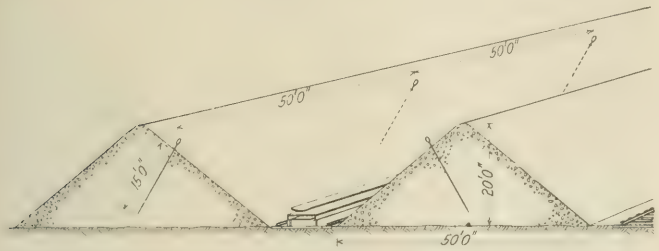


Fig. 2—Typical Installation of Coalometer

carries three pressure bulbs at depths of 5, 10 and 15 ft., respectively. Tubes from these three bulbs register temperatures in deg. F. on three dials, by means of pointers provided for this purpose. The scale on each dial starts at 32 deg. F., and is colored black. At and above 120 deg. the scale is red, indicating excessive heat at any point in this zone, and warning the coal man to remove this portion of the coal. The depth of the hot spot is determined at a glance, for the dials are plainly marked 5 ft., 10 ft. and 15 ft., respectively. The dial showing the hottest temperature thus indicates the depth at which the heat is generating.

The dials are enclosed in weathertight metal cases with thick crystal faces, and the set is again enclosed in a galvanized cast iron case. This furnishes ample protection when not in use, and added protection when in service. A slidable pipe wrench is provided on each unit to aid the rapid and easy boring of the tube to the desired depth. A large, plainly-marked lug, 12 in. below the instrument head, determines the exact depth at which the coalometer is to be placed, and thus allows of no guess-work on the part of the man who does the installing. The construction throughout is very rugged and will allow of the rapid removal and stacking of one or more units repeatedly, without fear of damage to the temperature indicators themselves. These indicators are especially constructed to indicate accurate temperatures under the varying conditions encountered throughout the year. They will indicate exact bulb temperatures regardless of the temperature of the head of the instrument, and will retain their calibration under conditions of extreme vibration or violent shocks.

Thornley coalometer units are supplied in two lengths, 12 ft. and 17 ft., which carry, respectively, two and three temperature indicators, a typical installation being shown in Fig. 2. The indicated temperatures when taken daily and recorded furnish complete knowledge of conditions beneath the surface of the coal.

The Railroad Commission of the State of California granted applications to provide funds for additions and betterments for refunding, collateral, reorganization and miscellaneous purposes, amounting to $324,666,014.89, to steam railroads during the fiscal year ending June 30, 1920. There are 50 steam railroads operative, 9 steam railroads lessor, and 3 steam railroads under construction in the state.

Proposed Specifications
Classifying Old Bridges

The classification or rating of old bridges to determine their safe load-carrying capacity was one of the principal subjects of discussion at the meeting of the A. R. E. A. Committee on Iron and Steel Structures held at Montreal, Que., on August 12 and 13. Because of the importance of the subject, the tentative rules and unit stresses covering bridge ratings submitted by a sub-committee at that meeting have been published in Bulletin No. 228 of the association in order to give members an opportunity to study the rules and submit criticisms or comments to the committee. An abstract of these rules is presented below:

Before recalculating an existing bridge, a careful inspection should be made to determine: (a) whether the actual sections and details conform to the drawings; (b) the loss of metal due to corrosion and wear; (c) the general physical condition, noting defects, such as loose rivets, worn pins, cracked metal.

The equipment in actual use, or which it is supposed to use, shall be taken for determining the live load stresses. Where the design or details are such as to cause unusual eccentric or secondary stresses, these stresses shall be taken into account. It is recommended that stresses in members subject to marked secondary effects be determined by strain gage measurements.

Where speeds may exceed 15 miles per hour, the dynamic increment of the live load shall be added to the maximum computed live load stresses and determined by the formula.

$$I = S \frac{300}{300 + \frac{L^2}{100}}, \text{ in which}$$

I = impact or dynamic increment to be added to the live load stress.
S = computed maximum live load stress.
L = the length in feet of the portion of the span which is loaded to produce maximum stress in the member.

If a bridge is so located that speeds are definitely limited, or where absolute control of speed can be secured, 50 per cent of the impact given by the above formula shall be used when the speed is between 10 and 15 miles per hour, and 25 per cent when the speed is less than 10 miles per hour. If the bridge is located where the locomotive must be started, the speed increased, or the brakes applied, full impact shall be used in the calculations.

Impact shall be added to stresses produced by centrifugal force, but not to those produced by lateral forces.

For bridges on curves, and at other places where tracks are off center, provision shall be made for the increased load carried by any truss, girder or floor member.

In spans exceeding 150 ft. in length, and in viaduct towers, the effect of lateral (or wind) force shall be taken into account. The lateral force shall consist of a moving load equal to 15 lb. per sq. ft. on the vertical projection of the structure on a plane parallel with its axis, and a moving load of 400 lb. per lin. ft. applied 8 ft. above the base of rail.

On curves, the centrifugal force, based on actual speed of operation, the limiting unit stresses shall not exceed the following in pounds per square inch:

	Open hearth steel	Wrt. iron and Bessemer steel
Axial tension (net section)	20,000	22,000
Axial compression (gross section)	$24{,}000 - 100\frac{l}{r}$	$20{,}500 - 80\frac{l}{r}$
but not to exceed	20,000	17,000
Tension in extreme fibers of rolled shapes (except rolled beams), built sections and girders (net section)	26,000	22,000
Tension in extreme fibers of rolled beams (net section)	24,000	20,000
Tension in extreme fibers of pins (figured by assuming stresses concentrated at centers of bearings)	60,000	50,000
Shear in plate girder webs (gross section)	18,000	15,000
Shear in rivets and pins	22,000	19,000
Bearing on rivets, pins, outstanding legs of stiffener angles, and other steel parts in contact	44,000	38,000

The stress per square inch in the compression flanges of plate girders shall not exceed

$$23{,}000 - 400\frac{l}{b}, \text{ for open hearth steel,}$$

and $19{,}000 - 300\frac{l}{b}$, for wrought iron and Bessemer steel,

in which l = the length of the unsupported flange, between lateral connections or knee braces.

b = the flange width.

One-eighth of the gross section of the web, if continuous or properly spliced, may be used as a flange section.

When the calculated stresses exceed the foregoing limits, or when the design or physical condition makes it necessary, the structure shall be strengthened or renewed.

Plumb Plan Campaign Ineffective in Election

WASHINGTON, D. C.

A CHECK OF the returns from the election on November 2 against the names of the members of Congress who voted for the conference report on the transportation act last February fails to indicate that the campaign conducted by the Plumb Plan League and the railroad labor organizations, assisted by the American Federation of Labor, succeeded in carrying out their threat to place many new faces in Congress in place of those who voted for the bill opposed by those organizations.

The campaign conducted by the labor organizations was non-partisan but the returns show that most of those who voted for the bill and were candidates for re-election were re-elected, and while many who voted for the bill were defeated, the large percentage of them that are Democrats indicates that the overwhelming Republican landslide had more to do with the result than the labor organizations, although Samuel Gompers claims the credit for his organization. It also appears that the mortality among those who voted against the bill was much greater than among those who were for it, doubtless because a majority of those who voted against the bill were Democrats.

Of the 47 senators who voted for the railroad bill, only 16 were candidates for re-election. Of these 13 were re-elected, and three were defeated. Of the 17 senators who voted against the bill, only five were up for re-election. Of these, four were defeated and only one re-elected.

In the House there were 250 votes for the bill, and 150 against it. Of the 250 who voted for it the present unofficial returns indicate that 201 were elected on November 2, including two who were elected senators. Two are dead. Of the remaining 47 information is not available to show exactly how many did not run for re-election, but the best information obtainable indicates that 16 were not candidates at the primaries and that 31 were defeated either at the election or at the primaries. In some cases they were candidates for senator or governor and were defeated. Twenty of the 47 who were defeated or did not run are Democrats.

Of the 150 representatives who voted against the railroad bill, the returns now indicate that only 82 were re-elected, including one who was elected senator. One is dead. Of the 67 who were not returned to office, 59 are Democrats. Apparently about 50 were defeated and the others did not run for re-election.

Chairman Cummins of the Senate committee on interstate commerce, against whom an especially bitter contest was waged by the labor leaders as the principal author of the railroad bill which became law, and particularly as the author of an anti-strike provision which did not become a part of the law, was re-elected by the enormous Republican majority in his state.

John J. Esch, who as chairman of the House committee on interstate and foreign commerce was largely responsible for putting into the law those parts of it which labor did not particularly object to, and who opposed some of the provisions in the law which labor has objected to most strenuously, was the most prominent victim of their campaign. He was defeated at the primaries by a combination of the labor forces with those of the LaFollette organization, who agreed in their opposition to the railroad bill, but to those who followed the legislative progress of the bills that were finally merged and submerged in the transportation act, it does not appear that labor has gained much by his defeat. The next man in line to succeed Mr. Esch as chairman of the House committee, Samuel E. Winslow, of Massachusetts, has the reputation of not being particularly friendly to the labor organizations and he was particularly outspoken in his characterization of the Plumb plan during the hearings before the committee last year. Mr. Esch not only vigorously opposed the proposed anti-strike provision, but he also opposed until the last minute the rate-making provisions which the labor organizations have attacked as constituting a guaranty, but because he declined to favor the Plumb Plan, and because he stood firm for the return of the railroads to private management, to the extent of aiding the final passage of a bill many of whose provisions he did not like, he was marked for slaughter.

On the other hand, some of those most closely identified with the labor organization forces went down to defeat. Probably the most conspicuous example is Thetus W. Sims of Tennessee, who introduced the Plumb plan bill in the House and who led the opposition to the passage of the railroad bill. Mr. Sims had been in Congress for many years and had been chairman of the House committee on interstate and foreign commerce. He was defeated.

Another advocate of the Plumb plan who will not be in the new Congress is J. M. Baer of North Dakota, who has been the cartoonist of the Plumb Plan newspaper "Labor."

W. N. Doak, for several years vice-president and legislative agent of the Brotherhood of Railroad Trainmen at Washington, ran for Congress from a Virginia district, as a Republican, but was defeated.

Results of Private Control*

By Robert S. Binkerd

THE custody of civilization is in the hands of the great mass of mankind. It is not by any social or political or economic invention but by greater leadership, by steadier and more enlightening ways of taking the public into the confidence of great and important matters, that we shall work our way forward to a better day. In assuming the competitive operation of railroads on March 1 the railway executives not only took over one of the biggest jobs of setting our National house in order, but they at the same time sank a test pit through all the supposedly popular panaceas of socialism, communism, Bolshevism and government ownership and operation as the solution of any and every problem that people are too lazy or too impatient to work out soundly.

Six months of private operation of the railroads has shown that still, as of old, the instincts of rivalry and emulation, the chance for personal gain and advancement of the individual worker, and the chance for profit and the necessity for solvency on the part of management, are the keys which unlock men's energies and give zest and meaning to their accomplishments. Six months of private operation, by its increased efficiency, without the investment of an additional dollar, has added to the transportation capacity of the country the equivalent of approximately 600,000 freight cars, which, with necessary locomotives would today cost something like two and one-half billion dollars.

*From an address before the Yale Alumni Association at Hartford, Conn., November 9, by Robert S. Binkerd, Assistant to the Chairman of the Association of Railway Executives.

General News Department

Americanization of foreign-born employees, which has been carried on by the Pennsylvania Railroad systematically for several years, has now been extended to the wives of such employees, plans looking to action in this direction having been adopted at a meeting of the Pennsylvania Railroad Women's Club, in Philadelphia, last week. The Pennsylvania Railroad Mutual Aid Society will cooperate in carrying out these plans.

Election bulletins, issued as rapidly as information was received, were read on all passenger trains of the Cleveland, Cincinnati, Chicago & St. Louis, on election day, from noon until definite results of the election were determined. These bulletins were sent from the general superintendent's office in Indianapolis, and were transmitted to every train on each division. This news service was established to further the policy of the New York Central Lines to be frank with the public, and to retain old friends and make new ones.

"The Evolution of Bridge Design," with special atttention to its application to railroad bridges, was the subject of a paper by Charles Evan Fowler, consulting engineer, New York City, before the Structural section of the Western Society of Engineers, at its last meeting. Mr. Fowler reviewed the development of bridge design practice and particularly the increase in the loadings to be provided for. The paper was discussed by C. F. Loweth, chief engineer, Chicago, Milwaukee & St. Paul, G. A. Haggander, bridge engineer of the Chicago, Burlington & Quincy, and others.

Signal Engineers to Meet in New York

The Signal Section of the American Railway Association (heretofore the Signal Division) will hold its regular meeting at the Hotel McAlpin, 34th street, New York City, on Thursday and Friday, December 2 and 3. Reports of committees will be mailed early next week.

September Earnings

Returns for the month of September for 197 railroads operating 225,000 miles show a net operating income of $75,780,000, an increase of only 3.3 per cent over September, 1919. Operating revenues increased 23.8 per cent, while operating expenses increased 27.1 per cent. On this basis it is expected that all the roads for which monthly summaries are usually published by the Interstate Commerce Commission will show a net operating income of about $80,000,000, which is approximately $29,000,000 short of what these roads should earn in September to produce a net return of 6 per cent.

Formula for Determining Maintenance Allowance

The adjustment committee of the Association of Railway Executives has adopted and recommended to the railroads a formula developed by a sub-committee for determining the allowance for maintenance of way and structures and maintenance of equipment for the guaranty period, March 1 to August 31. The formula was considered at a meeting of representatives of the carriers at Washington on November 5, and although there was not complete agreement as to all of its provisions any road that desires to do so may use a formula of its own or use variations for different circumstances provided in the committee formula.

A Correction

In an article in the *Railway Age* of October 29 (page 769), announcing a meeting of the member roads of the Association of Railway Executives, entitled "Executives to Meet Friday," a statement was made which indicated that the executives who were opposed to the formation of national boards of adjustment for labor matters were in the minority, but that those of them who were flatly opposed to "nationalization" in any form might be expected to express their views at the meeting. All of this is misleading and the use of the term "nationalization" in this connection is not clear. It is understood that at no time has a majority of the railroad executives favored national boards of adjustment.

Commissioner Woolley Not a Candidate for Reappointment

R. W. Woolley, member of the Interstate Commerce Commission, has issued a statement commenting on reports that if he is reappointed on January 1 the Senate will refuse to confirm the nomination, and that in his place Representative Esch, for whose ability and character he has great regard, will be named by President Harding. "An admirable choice, indeed," says Mr. Woolley. Nearly a year ago Mr. Woolley asked Secretary Tumulty to notify President Wilson that he "was seriously thinking of resigning from the commission in order to enter private life to my distinct financial advantage," and that he did not wish to be reappointed. He also informed his colleagues to like effect.

Farm Bureau Committees

According to the observations of an interviewer for the Illinois Central who visited a score of representative farmers in Champaign County, Ill., to secure their views on transportation problems, farmers are taking an active interest in railroad progress and are ready with suggestions for improving the relations between the railroads and their patrons. The suggestion was brought out that the chief obstacle in the way of a better mutual understanding had been a lack of information concerning railroad affairs on the part of farmers, or, more often still, actual misinformation. As a result of the investigation it has been suggested that each farm bureau organize a railroad committee of a half dozen farmers to study railroad matters, keep in close touch with local railroads and constantly be in a position to advise the farm bureau on means for co-operating to get better and more efficient service. The trip into Champaign County was the second in a series which is being made by the Illinois Central in the interest of developing better understanding of railroad problems by the farmers patronizing the railroad, and better understanding of farmers' problems by railroad officials and employees. The first visit was made a month ago to Cherokee County, Iowa.

Annual Report Under Hours of Service Law

The Interstate Commerce Commission has issued its annual statement, for the year ending June 30, 1920, on the work of its inspectors in connection with the law regulating the hours of service of trainmen and telegraphers. This is a statistical analysis giving, by names of roads, all instances in which employees were on duty for periods other than those prescribed under the federal hours of service Act. The total number of cases in which employees in train service were on duty for longer periods than sixteen consecutive hours were 67,468, as compared with 78,883 in the year ending June 30, 1919, and much larger numbers in 1918 and 1917. Cases where men returned to duty after sixteen continuous hours of service without having had ten consecutive hours off duty numbered 396 in the last fiscal year; cases of those returning to duty after aggregate service of sixteen hours without having had eight consecutive hours off duty, 159; number continuing on duty after an aggregate service of sixteen hours, 2,964. Telegraphers on duty more than nine hours in offices operated day and night numbered 33,566, as compared with 66,265 in the preceding year; 54,662 in 1918 and 25,124 in 1917. Telegraphers on duty in day offices more than thirteen hours numbered 1,948 as compared with 1,373 in 1919; 3,429 in 1918 and 3,394 in 1917.

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF SEPTEMBER, 1920

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of—										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	141	$289,279	$81,087	$387,708	$81,646	$71,445	$7,733	$128,835	$11,594	$303,771	78.35	$83,937	$14,639	$69,275	$30,466
Ann Arbor	293	457,704	69,404	559,031	70,983	107,033	7,808	231,468	13,919	431,231	77.14	127,800	17,560	110,240	14,606
Atchison, Topeka & Santa Fe	8,830	12,152,957	4,950,905	18,448,570	3,795,041	4,243,168	184,419	6,378,077	324,989	14,922,148	80.89	3,526,422	958,253	2,567,734	—2,926,372
Atlanta & West Point	93	129,429	112,105	271,461	45,861	42,955	7,313	123,348	10,911	235,040	86.58	36,420	8,928	27,493	—22,163
Atlanta, Birmingham & Atlantic	639	363,249	100,271	496,325	140,691	138,939	23,347	278,293	18,559	599,918	120.79	—103,593	16,560	—120,271	—68,113
Atlantic City	177	82,728	331,699	437,133	77,668	38,368	3,483	274,489	1,226	395,286	90.43	41,847	15,342	26,398	—60,372
Atlantic Coast Line	4,887	3,153,164	1,490,177	5,061,891	962,568	1,175,540	82,746	2,780,862	144,092	5,173,880	102.21	—111,989	300,000	—412,253	—441,708
Baltimore & Ohio Chicago Terminal	90	.....	.....	224,969	30,267	57,475	2,562	187,017	12,283	295,535	131.37	—70,566	31,169	—101,734	—38,861
Baltimore & Ohio	5,153	19,940,718	3,065,887	24,570,399	3,045,011	6,275,286	211,466	10,536,283	491,871	20,709,668	84.29	3,860,730	555,219	3,304,244	729,583
Baltimore, Chesapeake & Atlantic	87	123,368	62,237	193,743	5,379	27,342	1,184	95,736	4,943	134,585	69.47	59,157	1,000	58,158	42,487
Bangor & Aroostook	658	532,910	121,569	704,349	160,613	140,702	3,394	211,910	19,720	545,823	77.49	158,526	26,564	131,963	124,496
Birmingham Southern	31	45,362	.....	61,014	4,100	7,423	1,041	34,351	3,756	50,671	83.05	10,343	1,754	8,589	7,347
Belt Ry. of Chicago	31	.....	.....	524,900	77,078	91,457	1,172	270,954	9,966	450,627	85.85	74,273	24,767	49,506	—7,309
Bessemer & Lake Erie	225	2,238,880	48,206	2,320,512	242,703	408,032	13,525	600,980	27,661	1,300,599	56.05	1,019,913	15,800	1,004,113	653,865
Boston & Maine	2,304	5,472,031	2,778,282	8,903,195	1,586,147	1,696,819	80,212	4,657,186	287,532	8,364,860	93.95	538,335	258,415	279,908	—828,066
Brooklyn Eastern District Terminal	9	118,625	.....	126,474	5,641	20,331	25	61,318	3,259	90,574	71.62	35,900	6,244	29,657	29,689
Buffalo & Susquehanna Ry. Corp.	296	326,841	7,294	338,385	35,618	106,988	2,652	96,540	10,192	251,990	74.47	86,394	13,075	73,319	106,778
Buffalo, Rochester & Pittsburgh	589	2,117,209	184,707	2,383,780	455,033	503,414	19,871	871,674	45,221	1,895,946	79.53	487,835	35,000	452,834	396,797
Canadian Pacific (Lines in Maine)	233	123,282	37,806	174,405	120,443	40,494	3,308	103,354	3,373	270,971	155.37	—96,566	12,200	—108,766	—85,360
Carolina, Clinchfield & Ohio	291	626,434	56,629	696,047	68,499	157,368	26,518	228,743	28,761	509,832	73.88	186,215	45,000	141,237	—16,450
Central New England	301	772,683	32,884	829,467	135,687	171,588	3,555	439,696	21,351	776,157	93.57	53,310	18,225	35,085	—109,576
Central of Georgia	1,924	1,440,087	617,433	2,238,913	459,428	507,635	56,170	1,138,786	86,841	2,252,509	100.61	—13,596	88,000	—101,689	—106,601
Central R. R. Co. of New Jersey	686	3,851,139	1,008,798	5,273,344	629,833	1,152,140	41,912	2,330,874	109,087	4,285,968	81.28	987,376	274,967	712,410	773,508
Central Vermont	413	600,236	157,789	829,717	139,862	169,758	8,782	378,928	23,675	722,909	87.13	106,808	17,400	89,356	107,871
Charleston & Western Carolina	342	147,996	60,220	227,116	58,415	57,340	6,843	128,324	8,708	259,642	114.32	—32,526	11,625	—44,151	—72,529
Chesapeake & Ohio	2,520	7,544,678	1,244,399	9,207,145	1,198,524	2,043,766	50,832	3,306,182	164,748	6,804,082	66.08	2,403,063	189,810	2,213,149	1,170,911
Chicago & Alton	1,050	2,059,983	704,867	2,974,650	482,089	670,996	47,178	1,144,964	67,913	2,412,440	81.11	562,220	60,058	501,957	298,067
Chicago & Eastern Illinois	1,130	2,415,739	542,026	3,112,978	308,716	842,157	23,931	1,193,841	248,023	2,628,903	84.45	484,074	100,000	383,960	160,764
Chicago, Detroit & Can. Grand Trk. Jct.	62	206,021	11,917	233,593	19,322	26,301	1,706	83,372	4,727	135,466	57.99	98,128	4,596	93,531	—2,545
Chicago & Erie	269	1,004,461	111,368	1,180,725	151,714	186,643	18,337	615,333	49,303	1,022,301	86.58	158,425	40,909	117,439	—110,644
Chicago & North Western	8,405	11,775,336	3,767,069	16,940,079	2,342,972	3,148,158	150,146	6,613,814	384,531	13,753,528	81.19	4,186,551	725,000	3,461,401	563,600
Chicago Great Western	1,496	1,515,463	581,661	2,271,745	486,249	503,415	52,888	970,035	62,506	2,099,285	92.41	172,460	81,836	90,618	—337,661
Chicago, Indianapolis & Louisville	654	1,131,611	351,117	1,617,908	246,361	385,312	31,216	666,979	34,310	1,383,173	85.49	234,736	49,725	185,008	129,537
Chicago Junction	12	.....	.....	359,921	94 327	68,555	207	286,777	9,947	459,813	127.75	—99,892	3,215	—103,107	—45,870
Chicago, Milwaukee & St. Paul	10,629	11,740,913	3,133,574	16,356,784	2,839,956	3,673,174	166,526	7,335,748	455,211	14,597,957	89.28	1,758,827	652,656	1,106,171	—895,944
Chicago, Peoria & St. Louis	247	244,777	27,626	289,316	40,753	84,218	6,499	154,535	15,944	301,949	104.37	—12,633	7,100	—19,733	30,708
Chicago, Rock Island & Pacific	7,662	8,519,318	3,433,100	12,767,205	2,208,000	2,881,601	181,207	5,381,638	307,416	11,024,456	86.35	1,742,749	476,083	1,265,947	—732,611
Chicago, St. Paul, Minn. & Omaha	1 749	1,961,117	795,061	2,974,366	400,468	523,417	51,198	1,270,466	83,427	2,343,112	78.78	631,254	137,705	491,786	53,276
Chicago, Terre Haute & Southeastern	374	673,215	25,658	713,197	100,198	180,544	5,048	246,958	12,089	547,354	76.75	165,843	19,500	146,343	108,920
Cincinnati, Indianapolis & Western	321	344,995	78,014	443,728	74,991	96,351	12,631	217,517	22,775	425,538	95.90	18,190	13,538	4,652	48,309
Cincinnati, Lebanon & Northern	76	120,254	10,162	134,505	34,131	16,010	3,060	72,415	2,878	128,494	95.53	6,011	6,810	—819	—11,375
Cincinnati Northern	245	361,279	22,270	392,168	73,979	79,080	4,857	145,253	7,847	311,016	79.31	81,153	14,403	66,750	6,380
Cleveland, Cincinnati, Chic. & St. Louis	2,409	6,018,841	2,049,476	8,672,757	1,213,986	2,227,026	115,491	3,412,241	163,877	7,194,862	82.96	1,477,895	258,429	1,218,456	—927,246
Colorado & Southern	1,099	1,132,540	324,881	1,552,564	213,620	228,587	12,305	496,618	57,283	1,021,599	65.80	530,965	59,791	470,993	247,434
Colorado & Wyoming	43	30,789	1,254	102,401	22,304	17,849	220	48,468	4,236	93,079	90.90	9,322	5,000	4,322	—5,139
Delaware & Hudson	881	4,178,721	542,556	5,030,160	455,470	1,082,680	34,795	1,853,580	185,492	3,648,716	72.54	1,381,444	81,500	1,299,944	1,062 581
Delaware, Lackawanna & Western	956	5,958,031	1,458,127	8,191,558	1,111,103	1,721,976	78,188	3,543,034	176,134	6,706,216	81.87	1,485,342	489.583	994.630	68,534
Denver & Rio Grande	2,585	2,957,135	837,307	4,058,873	525,813	775.887	41,164	1,306,018	87,432	2,819,606	69.47	1,239,268	135,000	1,103.861	153,778
Denver & Salt Lake	255	227,954	50,377	289,575	58,726	56,900	1,612	119,053	7,524	243.815	84.20	45,760	5,000	40.731	87,572
Detroit & Mackinac	376	169,934	38,890	221,292	33,890	48,848	3,777	99,670	8,544	194,678	87.97	26,614	9,389	17,224	27,966
Detroit, Grand Haven & Milwaukee	195	556,600	52,564	650,753	104,290	80,345	6,723	263,146	14,661	470,105	72.24	180,648	3,088	177,600	40,927
Detroit, Toledo & Ironton	454	511,010	19,241	564,492	260,767	113,042	8,309	247,070	18.278	647,467	114.70	—82,975	9,420	—92,628	—75,467
Duluth & Iron Range	298	1,547,837	24,694	1,686,336	183,465	163,983	1,270	461,434	23,802	835,079	49.52	851,256	85,997	765.083	184,296
Duluth, Missabe & Northern	406	2,501,015	53,755	2,793,028	334,877	241,116	3,606	634,330	28,151	1,243,954	44.54	1,549,074	151,510	1,397,563	—596,335
Duluth, South Shore & Atlantic	613	443,023	134,249	618,110	109,500	91,554	5,095	278,554	11,458	503,348	81.43	114,762	25,000	89,762	22,265
Duluth, Winnipeg & Pacific	178	157,308	33,221	194,170	36,857	44,131	3,987	97,407	8,145	190,522	98.12	3,648	11,207	—7,558	—11,345
East St. Louis Connecting	3	.....	.....	182,312	20,287	35,016	339	95,732	3,945	155,320	85.20	26,992	2,864	24,128	36,235
El Paso & Southwestern	1,027	984,953	228,880	1,287,359	228,629	249,355	25,346	354,775	50,319	917,598	71.28	369,760	100,415	269,676	—57,113
Elgin, Joliet & Eastern	835	2,279,679	3	2,540,693	285,994	396,711	10,633	865,642	40,551	1,595,623	62.81	945,070	51,760	893,310	614,039
Erie	1,989	8,790,233	1,440,525	11,133,125	1,657,775	3,073,418	131,203	5,316,127	268,581	10,520,673	94.49	612,452	247,583	360,976	—389,535
Florida East Coast	764	596,456	221,146	959,400	212,506	201,837	8,000	412,735	28,655	872,655	90.99	86,745	50,317	36,417	—28,664
Ft. Smith & Western	253	131,463	42,952	185,995	30,799	38,371	5,522	66,835	7,723	150,510	80.92	35,486	5,000	30,442	—5,446
Galveston Wharf	13	.....	.....	217,101	46,196	6,259	644	47,064	2,733	140,807	64.89	76,293	17,000	59,294	82,733
Galveston, Harrisburg & San Antonio	1,384	1,908,725	495,539	2,533,152	525,000	756,831	33,599	884,675	69,558	2,303,573	90.94	229,579	64,814	162,998	—12,551
Georgia	328	396,361	169,110	609,286	111,213	122.702	19,488	300,413	21,297	575,325	94.42	33,961	5,950	28,011	—110,666

REVENUES AND EXPENSES OF RAILWAYS.

NINE MONTHS OF CALENDAR YEAR 1920

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	141	$1,668,958	$649,043	$2,537,130	$497,344	$510,463	$57,060	$963,346	$28,107	$2,155,409	84.95	$381,722	$125,617	$256,003	$113,075
Ann Arbor	299	3,079,601	537,706	3,887,647	604,438	843,771	65,370	1,872,601	132,952	3,519,417	90.53	368,230	155,900	212,266	—184,496
Atchison, Topeka & Santa Fe	8,745	101,055,489	39,542,464	155,941,213	30,795,838	37,728,666	1,807,356	56,814,955	2,976,422	129,868,893	72.45	26,072,321	7,896,405	18,156,095	—8,403,333
Atlanta & West Point	93	1,129,277	857,985	2,280,628	321,231	398,900	54,066	875,074	86,966	1,773,419	77.76	507,209	74,438	432,771	—7,603
Atlanta, Birmingham & Atlantic	639	3,124,526	777,711	4,288,928	1,070,899	1,312,854	181,538	2,384,963	174,341	5,125,281	119.50	—836,353	147,608	—985,225	—214,698
Atlantic City	177	997,773	2,640,796	3,824,801	549,312	415,948	24,531	2,062,290	13,278	3,065,885	80.19	758,915	133,546	625,340	—322,524
Atlantic Coast Line	4,890	34,658,631	13,901,906	53,470,773	9,528,580	11,784,068	666,767	25,600,297	1,234,061	49,154,575	91.93	4,316,198	2,500,000	1,806,521	—2,907,970
Baltimore & Ohio Chicago Terminal	90	.....	.....	1,533,344	376,529	516,700	12,874	1,359,857	104,632	2,418,107	157.70	—884,763	272,183	—1,156,951	—373,679
Baltimore & Ohio	5,153	126,522,201	22,450,910	162,573,871	24,010,184	50,733,967	1,999,604	81,746,148	4,426,983	164,152,772	100.98	—1,578,901	5,134,010	—6,746,048	—10,676,652
Baltimore, Chesapeake & Atlantic	87	742,236	397,847	1,221,736	125,272	405,925	11,968	769,895	37,052	1,350,112	110.51	—128,375	30,600	—158,975	101,305
Bangor & Aroostook	658	3,648,975	789,485	4,778,375	1,125,065	1,150,894	36,161	1,854,358	172,679	4,409,198	92.27	369,267	228,019	141,247	109,015
Birmingham Southern	31	330,888	.....	457,780	39,844	73,493	8,932	277,112	32,199	431,581	94.28	26,199	15,788	10,382	—66,971
Belt Ry. Co. of Chicago	31	.....	.....	3,182,960	449,750	630,583	6,992	2,068,472	78,779	3,234,576	101.62	—51,616	206,074	—257,690	—415,426
Bessemer & Lake Erie	225	9,845,875	377,337	10,504,448	1,247,889	3,175,987	126,380	3,616,127	266,134	8,498,205	80.90	2,005,942	138,400	1,867,514	—552,938
Boston & Maine	2,294	38,007,395	18,320,360	63,009,183	10,793,392	14,024,972	485,497	37,269,783	2,214,591	65,133,952	103.37	—2,124,768	2,146,352	—4,318,852	—7,841,779
Brooklyn Eastern District Terminal	9	762,055	.....	839,121	128,832	269,652	1,260	572,622	38,866	1,011,232	120.51	—172,111	56,030	—228,142	22,063
Buffalo & Susquehanna R. R. Corp.	296	2,074,980	62,848	2,179,283	483,931	974,267	23,119	819,576	93,950	2,394,842	109.90	—215,559	63,175	—278,734	—55,118
Buffalo, Rochester & Pittsburgh	589	12,962,318	1,377,132	14,946,531	2,761,347	4,964,083	159,091	7,083,152	375,528	15,359,490	102.76	—412,959	295,000	—708,612	1,392
Canadian Pacific (Lines in Maine)	233	1,524,525	454,319	2,091,768	563,800	523,507	27,732	1,325,440	31,797	2,472,276	118.19	—380,508	109,800	—490,308	—169,000
Carolina, Clinchfield & Ohio	291	4,802,812	390,341	5,335,509	709,075	1,274,670	145,110	1,707,481	183,854	4,018,419	75.31	1,317,090	297,523	1,018,984	—13,434
Central New England	301	4,648,536	234,199	5,125,067	1,512,333	1,301,203	31,156	3,183,650	152,607	6,190,839	120.80	—1,065,772	162,063	—1,229,245	—1,491,698
Central of Georgia	1,924	11,642,111	5,053,568	18,889,251	3,699,315	4,415,782	445,352	9,056,953	710,492	18,369,240	97.25	520,010	761,821	—242,333	—1,451,052
Central of New Jersey	686	25,905,741	7,430,696	36,185,727	5,669,199	12,291,305	291,683	19,536,373	950,380	38,984,080	107.73	—2,798,353	2,429,347	—5,227,831	—7,452,570
Central Vermont	413	3,706,236	938,250	5,187,996	915,453	1,500,428	89,971	3,502,511	187,394	6,214,959	119.80	—1,026,963	156,600	—1,183,975	—486,711
Charleston & Western Carolina	342	1,918,709	501,179	2,569,183	629,660	580,240	49,773	1,434,485	49,567	2,743,726	106.79	—174,542	98,375	—273,037	—419,792
Chesapeake & Ohio	2,519	49,814,517	8,488,542	62,968,523	9,506,641	17,738,469	509,496	26,811,338	1,335,358	56,205,845	89.26	6,762,678	2,188,290	4,573,130	—4,695,439
Chicago & Alton	1,050	14,422,944	5,114,131	21,562,801	3,457,135	5,920,125	330,976	10,039,931	570,030	20,428,675	94.74	1,134,126	593,503	539,200	—597,772
Chicago & Eastern Illinois	1,131	15,291,899	3,979,317	12,695,867	3,083,915	7,177,276	234,706	9,645,889	771,932	21,032,578	96.94	663,290	870,000	—209,583	—19,708
Chicago, Detroit & Can. Grand Trk. Jct.	62	1,021,418	167,622	1,386,244	164,219	245,807	14,602	716,965	34,603	1,176,335	84.86	209,908	40,320	169,568	—468,684
Chicago & Erie	269	7,468,968	697,933	8,991,129	1,109,075	1,613,856	137,818	4,820,290	368,791	8,016,563	89.16	974,565	362,272	611,718	—368,403
Chicago & North Western	8,266	78,121,053	28,061,503	119,213,091	21,155,103	28,255,154	1,001,868	58,171,762	3,050,056	112,689,675	93.34	6,523,416	6,200,621	317,214	—11,514,588
Chicago Great Western	1,496	11,317,969	4,241,350	17,372,303	4,507,872	4,881,507	335,121	8,381,127	507,800	18,779,335	108.10	—1,407,032	633,773	—2,039,233	—3,677,378
Chicago, Indianapolis & Louisville	654	7,806,629	2,461,332	11,506,462	1,661,212	3,574,324	259,449	5,369,093	289,820	11,296,444	98.18	210,022	431,549	—221,871	—1,319,041
Chicago Junction	12	.....	.....	2,465,049	530,310	569,871	2,136	2,598,186	88,274	3,788,777	153.70	—1,323,728	28,558	—1,352,287	—841,242
Chicago, Milwaukee & St. Paul	10,628	83,050,121	23,398,218	121,277,140	22,690,441	31,142,419	1,138,812	60,860,667	3,873,054	120,600,381	92.40	676,758	5,921,969	—5,278,954	—8,507,944
Chicago, Peoria & St. Louis	247	1,601,138	249,001	1,986,381	366,018	678,694	39,482	1,056,333	104,561	2,245,620	113.03	—258,639	61,900	—320,554	314,210
Chicago, Rock Island & Pacific	7,633	65,252,613	25,454,099	99,420,806	19,370,764	25,692,468	1,218,735	45,678,735	2,355,769	94,615,350	95.17	4,805,456	4,005,955	793,263	—7,772,600
Chicago, St. Paul, Minn. & Omaha	1,749	14,851,262	6,189,610	23,098,263	3,932,378	4,536,390	261,681	11,031,005	709,468	20,599,203	99.14	2,499,061	1,165,697	1,326,362	—843,032
Chicago, Terre Haute & Southeastern	374	3,794,257	223,415	4,130,603	355,557	1,446,767	42,578	1,770,314	101,830	4,033,150	97.64	97,453	172,500	—75,046	—146,329
Cincinnati, Indianapolis & Western	321	2,467,450	540,245	3,281,691	609,478	1,150,547	81,272	1,600,885	175,096	3,627,582	110,54	—345,891	118,872	—464,769	—129,681
Cincinnati, Lebanon & Northern	76	749,518	82,944	899,051	195,839	197,389	17,753	633,191	23,061	1,067,233	118.71	—168,182	56,418	—224,622	168,289
Cincinnati Northern	248	2,290,704	186,717	2,597,353	499,072	583,570	33,551	996,140	57,152	2,169,462	83.53	427,890	97,200	330,654	—113,106
Cleveland, Cincinnati, Chic. & St. Louis	2,408	43,239,161	14,649,110	64,450,863	8,804,756	15,385,755	894,892	27,478,029	1,303,420	54,375,759	84.37	10,075,104	2,120,008	7,949,815	—3,033,626
Colorado & Southern	1,099	7,739,808	2,257,399	10,910,121	2,165,097	2,719,054	108,725	3,993,941	426,787	9,502,550	87.10	1,407,572	520,520	884,870	—501,159
Colorado & Wyoming	43	196,979	8,762	730,269	137,704	171,470	2,492	381,871	37,583	731,120	100.12	—851	45,000	—45,851	—170,153
Delaware & Hudson	881	26,796,967	2,841,815	31,515,408	3,649,448	8,994,914	264,650	15,482,397	1,345,721	29,979,045	95.13	1,536,363	725,642	810,257	—1,149,183
Delaware, Lackawanna & Western	956	38,976,501	10,021,840	56,003,639	7,662,211	13,471,902	724,269	28,422,836	1,370,262	52,443,382	93.64	3,559,257	3,502,083	54,841	—9,029,888
Denver & Rio Grande	2,585	20,043,273	5,732,791	28,034,370	4,580,078	6,845,898	349,575	10,284,246	738,827	23,398,207	83.46	4,636,163	1,167,000	3,453,267	—438,343
Denver & Salt Lake	255	1,553,411	366,164	2,021,432	651,406	641,952	10,806	1,091,348	71,460	2,466,972	122.04	—445,540	83,332	—528,981	138,382
Detroit & Mackinac	376	1,017,483	329,425	1,476,074	276,953	404,054	25,043	743,526	69,891	1,518,518	102.88	—42,443	114,925	—157,466	—60,038
Detroit, Grand Haven & Milwaukee	195	2,717,112	421,812	3,563,608	629,369	755,240	55,825	2,212,810	120,554	3,776,730	105.98	—213,121	29,201	—242,687	—786,167
Detroit, Toledo & Ironton	454	3,256,618	139,775	3,632,854	1,224,688	855,854	58,840	1,949,431	191,270	4,277,916	117.76	—645,063	80,633	—727,163	—279,673
Duluth & Iron Range	298	7,784,533	212,686	8,650,127	1,116,411	1,104,475	9,240	2,195,235	171,614	4,603,003	53.21	4,047,124	447,605	3,598,795	538,316
Duluth, Missabe & Northern	406	13,236,272	459,965	14,993,720	1,932,848	1,494,231	26,761	3,227,140	199,927	6,897,273	46.00	8,096,447	784,604	7,311,810	—2,859,680
Duluth, South Shore & Atlantic	613	2,761,312	991,181	4,203,025	907,826	750,516	47,204	2,108,187	105,405	3,977,547	94.64	225,478	216,000	9,218	—116,868
Duluth, Winnipeg & Pacific	178	1,469,211	253,497	1,763,403	327,318	356,536	32,364	849,407	77,999	1,643,624	93.21	119,779	93,853	25,865	—55,112
East St. Louis Connecting	3	.....	.....	1,044,737	135,762	287,033	2,728	820,453	35,567	1,281,543	122.67	—236,806	21,257	—258,063	—167,611
El Paso & Southwestern Co	1,027	7,905,064	1,927,232	10,550,137	2,359,637	2,154,164	157,198	3,014,270	384,164	8,151,566	77.26	2,398,571	823,734	1,574,537	—884,467
Elgin, Joliet & Eastern	833	15,327,055	90	17,470,105	1,931,429	4,133,975	71,291	7,295,316	333,989	13,758,069	78.75	3,712,036	452,739	3,258,887	—91,844
Erie	1,989	57,867,274	10,514,931	76,084,974	12,011,305	27,015,159	906,239	42,106,204	2,370,491	85,043,733	111.77	—8,958,759	2,227,488	—11,213,318	—11,238,429
Gulf Coast Lines	920	6,425,211	2,425,094	9,416,899	2,359,963	1,687,649	198,281	3,327,128	372,236	7,936,525	84.28	1,480,374	247,417	1,231,005	114,067
Florida East Coast	764	5,520,100	2,934,915	9,881,252	1,420,644	1,744,162	79,990	3,858,999	238,313	7,453,676	76.34	2,427,576	416,013	2,008,979	1,189,169
Ft. Smith & Western	253	949,248	301,064	1,348,400	311,482	326,694	39,961	558,628	69,162	1,317,014	97.67	31,386	45,000	—14,218	—104,846
Galveston Wharf	13	.....	.....	1,227,505	414,846	39,271	3,965	363,954	22,466	1,052,299	85.73	175,206	148,200	22,623	103,060

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF SEPTEMBER, 1920—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Georgia & Florida	405	$114,402	$32,650	$157,558	$36,487	$21,147	$6,763	$93,722	$8,946	$167,065	.....	—$9,507	$6,689	—$16,467	$20,512
Grand Trunk Western	350	1,245,078	302,852	1,661,860	306,654	320,717	21,154	671,660	49,899	1,380,076	83.04	281,784	51,084	230,992	—130,716
Grand Trunk of Canada	166	192,664	67,007	279,003	103,811	74,320	3,162	173,467	11,181	365,968	131.17	—86,965	17,722	—104,687	41,139
Great Northern	8,171	9,936,339	2,160,081	13,246,097	2,101,758	1,832,905	111,722	4,704,822	169,606	9,055,675	68.36	4,190,422	945,869	3,241,207	432,616
Gulf & Ship Island	307	227,919	60,476	312,649	62,891	63,470	7,453	110,828	13,993	259,165	82.89	53,484	21,947	31,536	45,934
Gulf Coast Lines	920	978,668	335,760	1,376,487	214,347	203,174	26,037	400,571	46,068	889,550	64.62	486,937	28,417	458,354	281,340
Gulf, Colorado & Santa Fe	1,907	1,918,882	609,473	2,657,106	689,280	527,611	30,219	977,773	60,062	2,284,251	84.84	372,855	87,016	285,744	—88,612
Gulf, Mobile & Northern	470	339,495	63,854	420,357	88,265	95,344	16,263	183,177	19,600	402,650	95.79	17,706	14,175	3,530	17,552
Houston & Texas Central	915	748,791	274,766	1,086,474	275,000	287,986	16,045	408,314	31,814	1,018,660	93.76	67,813	51,380	15,999	—94,891
Houston East & West Texas	190	179,775	60,124	251,661	97,500	53,768	3,040	103,563	7,517	265,388	105.45	—13,727	7,786	—21,725	—77,032
Illinois Central	4,799	10,752,459	2,526,048	14,120,780	2,282,659	3,164,642	114,499	5,666,664	290,253	11,616,070	82.26	2,504,710	704,623	1,799,597	1,693,703
Illinois Terminal	1,920	109,752	.....	112,678	10,447	11,917	796	26,376	5,502	55,039	48.85	57,640	1,117	56,523	17,770
Indiana Harbor Belt	120	.....	.....	1,100,346	118,861	286,391	3,789	622,956	26,422	1,059,366	96.26	40,980	10,686	30,294	103,527
International & Great Northern	1,159	1,286,938	407,548	1,849,636	266,596	412,835	23,511	841,296	54,131	1,610,663	87.08	238,972	30,000	208,969	305,494
International Ry. of Maine	233	123,282	37,806	174,405	120,443	40,494	3,308	103,354	3,373	270,971	155.37	—96,566	12,200	—108,766	—85,360
Kanawha & Michigan	176	474,365	69,526	559,103	96,311	168,654	3,673	182,473	14,503	465,613	383.28	93,489	33,813	59,634	33,454
Kansas City, Mexico & Orient	272	127,167	21,942	160,387	48,784	57,298	3,596	91,308	25,797	226,783	141.39	—66,395	7,700	—74,095	—19,088
Kansas City, Mexico & Orient of Texas	465	162,095	27,385	197,081	93,251	14,239	4,057	95,213	5,958	212,718	107.93	—15,637	6,250	—21,887	32,736
Kansas City Southern	779	1,745,223	282,977	2,162,095	204,817	318,080	33,320	784,076	68,753	1,407,908	65.12	754,187	73,300	680,521	362,975
Kansas, Oklahoma & Gulf	329	240,222	29,381	282,416	55,337	62,316	2,147	115,517	10,207	245,696	87.00	36,721	8,000	28,721	118,181
Lake Erie & Western	741	1,181,773	75,558	1,302,732	143,191	343,307	13,600	461,038	28,584	988,175	75.85	314,556	43,738	270,969	120,604
Lake Terminal	12	.....	160	145,090	21,531	15,774	.....	112,368	278	149,952	103.35	—4,862	5,843	—10,705	—3,822
Lehigh & Hudson River	96	340,114	5,444	356,044	37,530	56,685	2,459	177,427	8,700	282,801	79.43	73,243	8,600	64,643	—8,401
Lehigh & New England	229	303,673	1,595	318,737	90,902	75,620	11,683	141,910	14,260	334,370	104.91	—15,633	15,453	—31,086	—135,882
Lehigh Valley	1,435	5,733,999	852,151	7,051,143	911,176	2,071,067	87,994	3,266,613	150,536	6,519,969	92.47	531,174	223,000	307,765	—130,737
Long Island	398	786,102	1,785,313	2,807,845	304,308	436,625	19,420	1,340,315	64,684	2,185,516	77.84	622,329	105,450	516,840	249,470
Los Angeles & Salt Lake	1,168	1,128,322	522,008	1,799,768	249,371	354,934	41,131	662,657	40,594	1,417,199	78.74	382,569	84,701	297,795	—59,703
Louisiana & Arkansas	302	325,540	46,893	381,453	96,137	54,014	6,086	131,736	12,772	300,455	78.77	80,998	18,969	62,029	74,937
Louisiana Ry. & Navigation Co	343	257,422	42,705	331,956	72,567	52,631	9,121	166,369	11,812	312,500	94.14	19,456	14,000	5,456	—3,841
Louisiana Western	207	322,216	121,961	468,242	122,500	106,424	8,938	119,212	15,391	372,713	79.60	95,529	28,180	67,208	9,933
Louisville & Nashville	5,040	8,562,504	2,723,838	11,946,336	2,173,635	2,896,412	173,556	5,024,835	261,702	10,578,050	88.55	1,368,286	302,611	1,065,540	151,189
Louisville, Henderson & St. Louis	199	198,212	82,175	293,562	67,625	46,060	6,314	105,167	9,077	234,243	79.79	59,319	7,215	52,054	—35,934
Maine Central	1,216	1,427,138	643,832	2,187,831	330,094	379,200	17,241	1,143,507	56,013	1,934,803	88.43	253,029	95,943	157,085	179,602
Maryland, Delaware & Virginia	83	90,810	64,340	159,155	12,029	10,138	1,410	86,664	3,572	113,813	71.51	45,342	.....	45,342	11,746
Michigan Central	1,862	6,135,612	2,206,398	9,025,501	1,166,804	2,054,171	103,152	3,307,297	153,154	6,884,290	76.28	2,141,211	213,700	1,925,918	—379,336
Midland Valley	388	396,251	114,897	529,459	101,433	73,183	3,445	157,181	16,007	351,250	66.34	178,209	7,183	171,007	170,604
Minneapolis & St. Louis	1,646	1,436,530	254,961	1,768,563	275,527	329,552	25,132	725,309	45,938	1,401,857	79.27	366,706	60,860	305,825	153,945
Mineral Range	101	59,931	258	62,532	14,173	20,256	309	38,133	1,082	73,953	118.27	—11,421	4,300	—15,721	—5,820
Minneapolis, St. Paul & Sault Ste. Marie	4,243	3,688,883	927,429	4,979,771	898,157	972,378	47,667	2,009,244	110,739	4,072,424	81.78	907,347	311,409	595,773	—297,983
Minnesota & International	194	76,688	34,615	118,187	29,132	21,747	620	55,932	4,004	111,434	94.29	6,753	8,438	—1,687	15,601
Mississippi Central	164	89,120	23,416	119,086	27,451	26,381	2,849	42,539	8,417	107,636	90.39	11,450	5,439	6,012	29,748
Missouri & North Arkansas	364	128,091	59,475	199,747	46,289	34,558	4,033	77,139	9,214	170,716	85.47	29,032	3,614	25,417	33,679
Missouri, Kansas & Texas	1,715	2,491,011	1,020,493	3,757,974	592,103	860,765	40,958	1,301,896	118,875	2,929,978	77.97	827,997	151,954	675,740	44,690
Missouri, Kansas & Texas of Texas	1,739	1,604,833	924,111	2,725,908	556,240	461,016	40,970	1,064,496	88,323	2,226,971	81.70	498,938	42,083	456,477	446,346
Missouri Pacific	7,299	7,956,676	2,121,908	10,806,048	2,052,917	2,519,408	155,403	4,657,417	286,699	9,710,723	88.86	1,095,325	346,465	746,387	—449,517
Mobile & Ohio	1,165	1,481,041	236,995	1,809,336	260,933	513,863	37,978	813,872	52,960	1,680,954	92.90	128,382	51,152	77,230	159,061
Monongahela	107	460,041	35,226	507,659	145,955	54,799	1,695	141,388	8,163	352,000	69.34	155,659	6,293	149,366	46,166
Monongahela Connecting	7	.....	.....	290,757	34,292	56,480	595	203,273	7,196	301,836	103.81	—11,079	3,370	—14,450	—13,191
Nashville, Chattanooga & St. Louis	1,247	1,559,275	544,705	2,313,253	525,416	490,216	64,051	1,012,786	57,614	2,155,946	93.20	157,308	55,000	102,247	—163,541
Nevada Northern	165	61,941	11,152	80,760	26,995	8,991	654	23,893	4,246	64,780	80.21	15,980	10,299	5,681	—5,678
New Jersey & New York	48	18,043	111,203	133,742	13,232	5,568	2,773	74,089	4,222	99,879	74.68	33,863	1,927	31,936	7,474
New Orleans Great Northern	284	197,510	55,982	263,708	35,103	55,763	5,425	120,814	11,544	229,157	86.90	34,551	12,500	22,050	5,668
New York Central	6,069	24,266,867	10,608,130	38,194,830	4,930,687	8,440,318	287,466	17,623,370	835,023	31,978,995	83.73	6,215,834	1,013,600	5,201,710	—225,900
New York, Chicago & St. Louis	5 4	2,826,291	135,192	3,033,078	438,853	581,379	63,389	1,429,877	89,7 6	2,610,308	86,06	422,776	135,000	283,210	—253,991
New York, New Haven & Hartford	2,007	5,895,969	5,490,669	12,426,629	1,903,438	2,781,375	44,212	5,676,858	350,327	10,948,420	88.10	1,478,207	435,000	1,041,287	—372,490
New York, Ontario & Western	569	747,641	324,897	1,229,224	145,846	323,438	14,402	548,923	31,704	1,064,312	86.58	164,912	35,500	129,412	100,281
New York, Phildelphia & Norfolk	121	563,865	120,670	745,548	84,849	188,578	10,565	399,909	19,140	723,056	96.98	22,492	30,670	—8,197	—92,574
New York, Susquehanna & Western	135	314,046	77,863	434,734	131,189	66,329	5,048	354,984	15,124	572,675	131.73	—137,941	18,674	—156,626	—116,117
Newburgh & South Shore	7	.....	.....	190,189	18,112	32,568	.....	102,072	4,671	157,423	82.77	32,767	9,863	22,904	53,486
Norfolk & Western	2,198	7,577,907	1,064,419	8,959,982	1,139,136	2,540,322	85,841	3,744,041	127,720	7,635,788	85.22	1,324,194	350,000	974,149	10,183
Norfolk Southern	944	453,627	204,830	700,662	145,207	136,737	20,645	395,944	31,092	730,126	104.21	—29,463	21,000	—50,467	—99,416
Northern Pacific	6,655	8,310,912	2,261,170	11,567,703	2,156,960	2,114,803	95,068	4,143,454	279,617	8,965,297	77.50	2,602,405	791,702	1,810,202	—42,713
Northwestern Pacific	536	504,196	276,714	863,121	141,518	88,467	6,147	317,736	15,180	572,199	66.29	290,922	37,071	253,838	111,159
Oahu Ry. & Land Co	114	166,033	41,787	225,656	26,975	19,094	798	60,008	12,825	119,174	52.81	106,482	14,203	92,279	68,103

REVENUES AND EXPENSES OF RAILWAYS.

NINE MONTHS OF CALENDAR YEAR 1920—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Galveston, Harrisburg & San Antonio	1,383	$12,645,102	$4,196,415	$18,277,168	$3,901,352	$4,865,626	$327,639	$7,289,629	$628,057	$17,224,759	94.24	$1,052,409	$704,056	$328,798	—$2,229,772
Georgia	328	3,175,594	1,323,806	4,872,202	790,979	1,072,927	130,983	2,708,031	179,215	4,884,067	100.24	—11,864	53,550	—65,436	—859,404
Georgia & Florida	405	746,080	240,694	1,088,158	569,699	239,797	51,037	780,837	81,177	1,722,547	158.30	—634,389	57,162	—692,672	—408,363
Grand Trunk Railway Co. of Canada	166	1,612,334	380,468	2,152,241	671,021	597,955	26,190	1,473,565	116,838	2,894,037	134.47	—741,797	146,350	—888,203	—163,074
Grand Trunk Western	350	9,596,995	2,080,036	12,631,135	1,797,282	3,180,772	188,326	5,828,790	409,625	11,481,561	90.90	1,149,574	437,882	711,770	—1,517,254
Great Northern	8,175	61,809,921	15,266,254	88,787,113	20,794,405	18,715,123	848,492	38,536,548	2,049,217	82,187,322	92.57	6,599,791	7,263,252	—680,585	—11,107,859
Gulf & Ship Island	307	1,538,908	464,773	2,199,051	673,028	565,348	55,378	954,671	119,961	2,372,498	107.84	—173,447	176,642	—350,429	—282,304
Gulf, Colorado & Santa Fe	1,914	12,729,005	4,734,257	18,958,988	5,478,850	4,268,624	246,782	9,134,209	519,117	19,615,107	103.46	—656,119	780,945	—1,438,645	—2,687,187
Gulf, Mobile & Northern	470	2,088,394	526,422	2,815,147	1,120,602	729,899	100,498	1,350,491	141,609	3,443,099	122.28	—627,953	122,227	—750,626	—662,990
Houston & Texas Central	895	5,300,158	2,201,372	8,246,685	2,001,000	1,856,479	138,090	3,578,967	247,799	8,021,433	97.27	225,252	445,422	—228,245	—957,319
Houston East & West Texas	190	1,463,514	500,279	2,117,493	776,977	363,349	28,789	992,214	59,568	2,220,908	104.88	—103,416	78,812	—185,288	—489,852
Illinois Central	4,799	74,733,137	19,936,186	104,035,566	20,244,109	27,830,755	943,326	46,615,656	2,547,585	98,996,996	95.16	5,038,570	5,860,227	—778,197	—4,623,978
Illinois Terminal	14,053	734,713	.....	772,353	46,457	89,890	7,055	194,934	46,289	384,625	49.80	387,728	10,215	377,503	1,963
Indiana Harbor Belt	120	.....	.....	6,353,891	1,013,995	2,273,208	24,943	4,814,641	196,392	8,324,125	131.09	—1,970,234	96,300	—2,066,692	—1,718,780
International & Great Northern	1,159	9,428,624	2,662,722	13,314,966	2,803,162	3,503,067	185,324	7,137,333	453,067	14,138,128	106.18	—823,162	274,834	—1,102,316	—175,958
International Ry. Co. of Maine	233	1,524,525	454,319	2,091,768	563,800	523,507	27,731	1,325,440	31,797	2,472,276	118.19	—380,508	109,800	—490,308	—169,000
Kanawha & Michigan	176	3,094,644	490,590	3,747,688	773,270	1,445,341	30,052	1,507,656	124,992	3,881,311	103.57	—133,622	275,998	—409,665	—467,863
Kansas City, Mexico & Orient	272	943,201	172,683	1,199,222	441,744	444,438	34,576	743,443	113,343	1,777,544	148.23	—578,321	69,315	—647,685	—175,915
Kansas City, Mexico & Orient of Texas	465	1,028,334	210,388	1,336,684	678,971	424,979	34,355	833,587	78,687	2,050,580	153.41	—713,896	57,094	—771,318	—224,664
Kansas City Southern	779	10,689,598	2,247,706	14,064,144	2,044,475	2,985,569	305,249	5,886,336	575,681	11,790,046	83.83	2,274,098	616,917	1,655,157	511,398
Kansas, Oklahoma & Gulf	329	1,537,596	221,280	1,854,117	452,030	506,620	22,016	965,171	85,309	2,032,898	109.64	—178,781	93,566	—272,536	412,317
Lake Erie & Western	741	7,371,883	613,615	8,477,993	1,158,206	2,925,536	140,171	3,807,345	243,859	8,270,370	97.55	207,624	365,269	—158,021	—196,972
Lake Terminal	12	.....	1,852	991,461	157,079	232,066	.....	786,555	741	1,116,441	112.61	—124,980	52,632	—177,611	—88,692
Lehigh & Hudson River	96	1,974,621	36,815	2,095,888	275,225	433,068	16,665	1,168,323	71,273	1,964,554	93.73	131,335	77,751	53,554	—295,715
Lehigh & New England	229	3,080,843	18,010	3,229,689	578,334	734,885	52,108	1,282,772	121,929	2,767,736	85.70	461,953	127,291	334,662	—253,388
Lehigh Valley	1,435	41,691,559	5,785,499	51,716,966	9,371,809	16,315,458	625,190	30,058,406	1,205,047	57,823,589	111.88	—6,106,623	1,811,000	—7,922,310	—10,766,568
Long Island	398	5,002,101	12,482,302	19,479,329	2,974,339	3,974,339	156,941	10,790,362	531,411	18,571,957	95.34	907,371	929,066	—25,094	—3,148,913
Los Angeles & Salt Lake	1,168	9,169,138	4,379,168	14,941,340	2,033,438	2,858,586	258,733	5,393,181	342,868	11,386,055	76.21	3,555,285	757,236	2,797,072	441,531
Louisiana & Arkansas	302	2,479,320	453,819	3,062,944	689,648	449,089	43,254	1,065,761	77,390	2,324,751	75.90	738,193	157,642	580,431	738,733
Louisiana Ry. & Navigation	343	2,467,009	390,441	3,047,394	747,621	500,971	58,110	1,376,933	101,746	2,785,381	91.40	262,012	126,000	135,891	162,027
Louisiana Western	207	2,610,871	993,135	3,870,363	944,976	707,062	64,307	1,031,880	133,801	2,904,196	75.04	966,167	315,557	648,424	—222,311
Louisville & Nashville	5,040	65,445,832	19,578,267	92,043,833	17,170,623	25,592,535	1,516,076	42,815,771	2,212,665	89,759,511	95.52	2,284,322	2,666,716	—385,675	—8,153,476
Louisville, Henderson & St. Louis	199	1,550,325	569,852	2,297,845	582,217	329,897	49,536	841,403	80,326	1,883,380	81.96	414,465	37,358	377,046	—58,006
Maine Central	1,216	9,696,869	4,024,715	14,980,682	2,959,273	3,675,538	124,662	9,141,473	433,089	16,369,779	109.27	—1,389,097	841,166	—2,232,056	—1,403,557
Maryland, Delaware & Virginia	83	578,011	362,678	987,316	97,603	363,228	8,520	693,985	24,357	1,187,693	190.11	—200,378	16,000	—216,432	203,307
Michigan Central	1,862	39,603,683	16,971,256	63,584,316	9,119,718	17,042,539	732,468	28,018,879	1,251,983	57,178,082	89.92	6,406,234	1,981,065	4,418,843	—8,923,369
Midland Valley	388	2,468,831	915,878	3,549,589	915,722	653,411	31,848	1,352,655	155,398	3,109,034	87.59	440,555	64,651	375,470	—77,816
Mineral Range	101	474,857	2,715	96,576	147,043	180,853	2,704	293,360	10,751	634,710	127.82	—138,134	34,800	—172,957	—83,067
Minneapolis & St. Louis	1,646	9,220,107	2,046,194	12,082,375	2,539,350	3,192,837	176,527	6,550,123	360,437	12,820,563	106.11	—738,187	528,719	—1,268,639	—1,317,050
Minneapolis, St. Paul & Sault Ste. Marie	4,243	23,899,324	6,770,655	33,974,903	6,732,294	6,994,258	369,117	15,641,790	915,017	30,932,148	91.04	3,042,755	2,557,777	482,244	—3,614,620
Minnesota & International	194	610,257	274,461	950,910	258,412	184,287	5,245	479,632	35,452	963,025	101.27	—12,114	50,056	—62,169	—10,546
Mississippi Central	164	519,357	202,581	777,163	344,653	299,342	21,816	392,664	77,898	1,136,374	175.48	—359,211	40,054	—399,427	—268,053
Missouri & North Arkansas	364	914,370	438,227	1,488,539	557,496	334,831	30,919	684,840	77,822	1,685,187	113.21	—196,648	43,034	—239,716	231,999
Missouri, Kansas & Texas	1,715	19,838,637	6,561,393	28,980,943	5,632,674	8,085,672	349,762	10,501,041	1,019,130	25,738,511	87.01	3,242,432	1,046,345	2,192,472	853,771
Missouri, Kansas & Texas of Texas	1,752	11,796,026	6,837,723	20,620,665	5,828,474	4,273,853	296,137	11,173,893	817,301	22,594,545	109.57	—1,973,880	501,144	—2,479,746	2,834,988
Missouri Pacific	7,299	59,759,399	16,213,652	83,944,497	19,365,604	21,944,010	1,314,127	37,309,642	2,384,606	82,767,763	98.60	1,176,734	3,300,406	—2,143,192	—7,241,560
Mobile & Ohio	1,115	10,760,960	1,790,636	13,566,041	2,905,218	4,380,101	295,476	6,656,747	450,820	14,697,368	108.34	—1,131,327	532,570	—1,664,216	—831,415
Monongahela	107	2,596,714	214,380	2,914,504	1,059,169	530,965	8,746	1,095,793	71,771	2,766,443	94.92	148,061	54,051	94,010	—718,578
Monongahela Connecting	7	.....	.....	2,330,650	264,778	339,432	5,079	1,144,040	58,472	1,811,801	77.74	518,848	139,445	379,403	505,691
Nashville, Chattanooga & St. Louis	1,247	12,417,802	4,094,462	18,108,594	3,826,993	4,894,619	509,408	8,252,735	502,215	18,048,761	99.67	59,832	414,500	—356,370	—895,873
Nevada Northern	165	1,202,617	93,038	1,351,611	265,556	226,171	7,777	352,418	43,975	896,806	66.35	454,805	91,197	363,608	184,594
New Jersey & New York	47	123,086	779,365	969,082	111,155	165,118	13,396	601,203	23,185	914,050	94.32	55,032	19,218	35,802	—8,365
New Orleans Great Northern	284	1,411,562	465,327	1,967,063	487,415	439,960	41,406	842,282	93,373	1,908,632	97.03	58,431	107,612	—49,242	—125,575
New York Central	6,069	153,619,379	72,082,092	264,025,826	40,181,046	73,569,265	2,587,366	129,892,870	6,989,124	257,505,311	97.53	6,520,515	9,500,268	—3,003,115	—39,207,831
New York, Chicago & St. Louis	574	18,796,087	961,608	20,486,720	2,459,927	3,613,301	400,979	8,750,142	628,037	15,904,256	77.63	4,582,465	735,000	3,840,829	71,198
New York, New Haven & Hartford	1,980	39,917,377	38,273,263	90,700,127	15,560,752	22,323,364	510,723	48,464,134	3,202,591	91,792,672	101.20	—1,092,546	3,365,535	—4,470,893	—11,094,546
New York, Ontario & Western	569	5,304,819	2,670,742	9,443,674	1,835,471	2,412,948	102,530	4,660,924	248,412	9,260,284	98.06	183,390	288,483	105,095	—1,133,337
New York, Philadelphia & Norfolk	121	4,465,088	961,442	5,952,582	624,330	1,710,918	89,167	3,620,013	137,733	6,331,266	106.36	378,683	277,272	656,187	—1,447,967
New York, Susquehanna & Western	135	2,277,508	582,118	3,250,806	556,350	715,456	27,515	2,443,849	93,433	3,836,598	118.00	585,792	189,474	—778,440	—775,136
Newburgh & South Shore	7	.....	.....	1,258,412	149,879	297,828	.....	826,277	40,122	1,314,105	104.43	—55,693	77,348	—133,041	104,832
Norfolk & Western	2,200	48,956,241	7,359,762	59,683,436	9,731,710	21,631,599	545,449	27,308,583	1,369,128	60,761,969	101.81	—1,078,533	3,470,000	—4,551,337	—12,436,710
Norfolk Southern	922	3,875,298	1,533,711	5,844,635	1,417,772	1,262,595	133,419	3,115,647	273,984	6,205,327	106.17	—360,692	173,416	—534,835	—497,494
Northern Pacific	6,652	55,296,544	16,099,730	79,616,516	16,838,628	16,411,697	755,248	32,935,646	2,154,523	70,275,795	88.27	9,340,721	6,952,979	2,377,860	—8,866,877
Northwestern Pacific	537	3,069,056	2,148,069	5,919,357	1,088,892	729,285	53,936	2,482,196	142,272	4,520,197	76.36	1,399,160	251,762	1,146,881	334,932

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF SEPTEMBER, 1920—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio	Net from railway operation	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Panhandle & Santa Fe	857	$724,805	$196,523	$960,659	$247,384	$336,268	$4,742	$310,748	$18,281	$917,386	95.50	$43,273	$25,454	$17,819	—$47,950
Pennsylvania R. R. Co.	7,259	40,024,384	13,889,096	58,521,090	8,598,840	15,108,025	506,367	25,923,901	1,158,158	52,200,942	89.20	6,320,148	1,664,512	4,641,513	931,692
Peoria & Pekin Union	19	29,156	4,647	133,345	23,020	38,675	60	92,517	5,807	160,079	120.05	—26,734	9,500	—36,234	41,364
Pere Marquette	2,239	3,380,364	726,043	4,423,026	652,164	907,848	45,680	1,812,849	134,964	3,557,729	80.44	865,297	66,103	799,194	—149,896
Philadelphia, Bethlehem & New England	10	.....	.....	146,577	14,184	14,569	453	89,405	1,331	119,942	81.49	26,635	1,335	25,300	29,968
Perkiomen	41	116,117	15,030	134,249	11,335	5,198	76	42,458	312	59,394	44.24	74,855	—1,277	76,132	28,075
Philadelphia & Reading	1,126	7,076,076	921,930	8,512,293	1,039,005	2,113,107	64,823	3,886,143	174,105	7,303,917	85.80	1,208,376	244,005	964,985	—1,488
Pittsburgh & Lake Erie	224	3,405,573	338,155	4,245,041	765,927	1,229,926	19,794	1,339,147	71,548	3,428,429	80.76	816,612	182,860	633,751	74,345
Pittsburgh & Shawmut	103	186,875	5,946	194,493	38,931	40,979	2,223	58,885	11,078	152,096	78.41	42,397	174	42,223	37,063
Pittsburgh & West Virginia	63	270,165	11,454	318,466	95,724	46,256	2,075	88,914	8,981	253,005	79.45	65,461	13,274	52,187	96,509
Pittsburgh, Cincinnati, Chic. & St. Louis	2,383	6,954,575	2,063,928	9,750,228	1,559,838	2,985,457	92,133	4,692,653	253,425	9,635,224	98.82	115,004	321,127	—206,123	844,683
Pittsburgh, Shawmut & Northern	209	174,375	7,445	184,308	36,690	55,722	1,404	71,699	5,756	171,274	92.89	13,034	1,957	11,077	38,415
Port Reading	21	187,138	.....	221,634	19,965	8,411	18	92,988	2,975	124,357	56.11	97,276	9,868	87,408	2,903
Richmond, Fredericksburg & Potomac	117	477,495	376,179	952,723	159,793	193,336	9,078	499,900	37,560	912,519	95.78	40,204	31,918	8,285	—300,131
Rutland	415	356,590	196,931	649,389	104,750	143,564	7,881	248,294	15,256	522,094	80.40	127,296	22,888	104,398	62,492
St. Louis Merchants Bridge Terminal	9	.....	3	481,970	71,197	73,952	978	252,817	8,743	407,687	84.59	74,283	11,949	62,335	28,048
St. Louis-San Francisco	4,757	6,442,308	2,589,544	9,470,292	1,392,657	1,908,964	63,638	3,329,242	236,347	6,919,922	73.07	2,550,370	257,043	2,292,083	231,995
South Buffalo	11	100,595	.....	161,117	8,155	22,559	461	152,353	1,796	185,323	115.32	—24,206	3,750	—27,956	—19,202
St. Louis Southwestern	968	1,779,209	241,009	2,116,064	318,600	325,483	50,895	551,200	58,982	1,318,120	62.30	797,944	77,415	720,511	357,556
St. Louis Transfer Co.	6	.....	.....	135,645	10,227	17,323	230	55,693	2,801	86,273	63.60	49,371	273	49,099	—11,876
San Antonio & Aransas Pass	736	589,265	181,609	809,728	99,937	118,781	9,228	246,722	21,136	495,402	61.18	314,325	13,750	300,572	339,095
San Antonio, Uvalde & Gulf	317	89,489	56,777	153,695	25,953	27,840	2,243	67,588	6,084	129,738	84.41	23,957	2,294	21,663	37,617
Seaboard Air Line	3,563	2,762,849	1,007,672	4,177,702	482,039	766,283	100,891	1,936,696	167,226	3,484,575	83.41	693,127	135,600	557,920	597,105
Southern Railway	6,971	8,583,185	3,700,528	13,467,505	2,336,409	2,748,574	211,095	6,255,205	365,329	12,039,332	89.40	1,428,174	531,991	894,421	—21,850
Alabama Great Southern	313	777,461	250,922	1,082,064	144,585	202,668	21,803	445,249	27,860	851,741	78.71	230,323	71,418	158,905	54,515
Cinn., New Orleans & Texas Pacific	338	1,584,538	423,517	2,099,726	206,829	507,961	29,149	733,517	43,482	1,531,243	72.93	568,483	107,122	461,360	720,661
Georgia Southern & Florida	402	274,044	114,253	429,530	126,968	102,099	9,704	254,223	13,526	508,396	118.36	—78,867	22,086	—100,953	—87,819
New Orleans & Northeastern	207	541,767	127,825	752,871	145,237	152,009	12,293	329,316	18,779	664,469	88.24	88,402	41,416	46,981	132,146
Northern Alabama	110	88,533	18,331	109,646	35,650	5,584	1,933	52,835	4,669	100,672	91.82	8,973	5,363	3,611	—6,954
Southern Ry. in Mississippi	278	990,568	51,681	154,461	59,533	32,943	2,603	86,691	6,544	188,314	121.92	—33,854	9,800	—43,654	—44,980
Southern Pacific Co. Pacific System	7,105	13,706,429	5,202,888	20,427,391	2,338,250	3,125,000	221,030	7,611,039	439,474	14,106,529	69.06	6,320,862	916,944	5,400,495	733,429
Southern Pacific S. S. Lines	...	623,639	62,620	718,025	10,575	177,871	15,650	676,056	24,663	904,815	126.01	—186,790	11,523	—198,313	—52,827
Spokane International	165	110,764	24,416	139,752	28,906	11,538	3,675	43,173	6,226	93,422	66.85	46,329	5,261	41,068	—9,260
Spokane, Portland & Seattle	549	590,838	235,683	892,722	130,039	114,487	7,603	283,388	25,616	574,126	64.31	318,596	96,995	221,547	33,457
Staten Island Rapid Transit	23	84,753	115,224	229,312	79,011	27,719	1,679	136,659	13,007	258,076	112.54	—28,764	15,000	—43,858	—44,256
Tennessee Central	292	184,979	72,542	271,148	63,304	37,874	4,705	156,202	11,142	273,185	100.75	—2,037	5,714	—7,842	27,525
Terminal R. R. Assn. of St. Louis	36	.....	.....	475,773	89,863	71,718	1,029	176,229	9,267	352,821	74.16	122,951	40,747	82,107	395
Texarkana & Ft. Smith	93	165,804	24,819	206,097	18,122	32,567	3,595	66,310	7,074	127,481	61.86	78,616	8,798	69,818	26,978
Texas & New Orleans	469	616,962	189,214	891,619	290,000	291,692	9,446	325,681	25,455	988,252	110.96	—96,633	26,032	—123,881	—168,878
Texas & Pacific	1,946	2,371,889	1,056,266	3,666,696	656,258	742,552	43,508	1,607,761	106,707	3,198,287	87.22	468,409	89,150	379,128	—278,211
Toledo & Ohio Central	503	1,284,608	87,649	1,441,711	143,267	334,860	12,123	544,316	26,199	1,064,414	73.83	377,297	45,179	332,118	199,437
Toledo, Peoria & Western	247	92,328	47,240	156,664	32,472	28,113	2,212	92,268	8,053	163,118	104.12	—6,453	8,500	—14,953	—3,435
Toledo, St. Louis & Western	454	1,029,280	42,667	1,108,740	332,348	197,510	17,210	412,482	15,939	975,404	87.97	133,336	31,000	102,335	—4,705
Trinity & Brazos Valley	368	170,566	28,849	212,328	54,726	47,633	3,387	70,180	22,333	198,407	93.44	13,922	7,236	6,686	35,589
Ulster & Delaware	128	70,979	82,746	176,277	29,502	22,785	2,748	102,431	9,276	167,423	94.98	8,854	5,006	3,849	—29,856
Union R. R. (of Pa.)	45	.....	.....	1,271,196	106,410	267,864	282	632,001	8,888	1,015,445	79.88	255,751	12,918	242,833	187,595
Union Pacific	3,614	11,264,475	2,241,552	14,455,946	1,753,098	2,370,171	95,885	3,913,427	337,234	8,752,950	60.46	5,702,997	868,838	4,834,161	179,808
Utah	98	182,948	732	184,020	26,490	33,322	337	38,150	4,234	102,533	55.72	81,487	10,693	70,546	22,570
Vicksburg, Shreveport & Pacific	171	339,692	101,064	467,899	105,531	101,402	9,128	177,725	13,342	410,916	87.82	56,983	14,036	42,934	—20,002
Virginian	523	1,782,977	83,784	2,009,718	203,583	325,963	11,704	560,824	31,475	1,131,835	56.32	877,882	63,467	814,416	343,217
Wabash	2,472	4,787,652	1,152,976	6,328,898	988,477	1,277,998	123,240	2,749,506	187,154	5,373,410	84.90	955,488	132,181	823,069	337,599
West Jersey & Seashore	361	419,215	961,500	1,482,741	305,350	292,111	14,355	713,295	23,388	1,361,170	91.80	121,571	37,097	84,391	—26,232
Western Maryland	797	1,952,067	132,939	2,189,230	278,331	481,206	34,950	872,615	55,002	1,742,820	79.61	446,411	55,000	381,411	258,625
Western Pacific	1,011	1,493,831	285,375	1,851,647	332,659	261,147	33,307	660,401	41,373	1,367,548	73.86	484,099	66,815	417,036	—135,513
Western Ry. of Alabama	133	142,777	92,213	256,282	47,147	49,485	6,754	86,397	9,329	203,022	79.22	53,260	7,175	46,085	7,699
Wheeling & Lake Erie	511	1,764,713	87,755	2,019,172	312,976	397,535	14,701	750,072	39,417	1,519,670	75.26	499,502	80,913	418,589	317,668
Wichita Falls & Northwestern	328	149,295	58,933	230,737	68,747	28,904	874	98,266	9,221	206,011	89.28	24,726	13,967	10,739	3,878
Yazoo & Mississippi Valley	1,381	1,541,123	316,963	2,162,055	456,075	581,346	27,203	892,019	66,750	2,028,542	93.82	133,513	91,880	41,402	—611,709

REVENUES AND EXPENSES OF RAILWAYS.

NINE MONTHS OF CALENDAR YEAR 1920—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Oahu Railway & Land	114	$1,128,904	$368,695	$1,620,369	$210,348	$55,819	$8,448	$479,706	$86,311	$936,745	57.81	$683,624	$125,636	$557,988	$112,648
Panhandle & Santa Fe	801	4,804,391	1,469,209	6,709,893	1,767,507	2,308,084	43,045	2,947,187	162,436	7,221,262	107.62	—511,369	216,958	—729,496	—361,787
Pennsylvania R. R. Co.	7,259	259,713,593	98,110,412	395,552,443	70,750,391	130,921,464	3,614,747	211,534,097	10,531,670	434,589,627	109.87	—39,037,184	13,980,386	—53,069,642	—77,904,592
Peoria & Pekin Union	19	242,690	37,039	1,140,298	166,712	335,028	2,038	813,077	44,540	1,361,396	119.39	—221,097	85,500	—306,597	158,897
Pere Marquette	2,233	21,050,231	5,371,993	29,555,822	4,316,398	6,992,010	377,222	13,899,802	986,886	26,653,430	90.18	2,902,392	576,128	2,324,823	—3,498,923
Philadelphia, Bethlehem & New England	10	.....	.....	988,181	141,039	143,521	4,056	695,945	13,767	998,328	101.03	—10,147	10,185	—20,332	—34,181
Perkiomen	41	755,705	100,948	905,279	85,873	40,999	186	371,367	2,622	501,223	55.37	404,056	19,415	384,641	7,359
Philadelphia & Reading	1,126	52,030,737	8,202,712	64,285,930	8,359,881	18,830,069	512,745	34,055,766	1,534,536	63,503,522	98.78	782,409	1,657,623	—878,585	—5,840,952
Pittsburgh & Lake Erie	224	18,598,453	2,380,217	22,975,723	4,972,746	9,549,757	168,736	9,201,654	557,610	24,466,214	106.49	—1,490,491	1,251,618	—2,742,586	—5,596,791
Pittsburgh & Shawmut	103	1,175,501	46,912	1,233,874	274,695	320,731	13,566	475,961	62,695	1,147,648	93.01	86,226	8,251	77,975	234,722
Pittsburgh & West Virginia	63	1,446,798	88,963	1,718,601	575,757	472,801	14,808	663,486	84,070	1,910,229	111.15	—191,628	126,036	—319,253	244,017
Pittsburgh, Cincinnati, Chic. & St. Louis	2,383	48,726,650	16,957,789	75,475,122	12,992,080	26,890,958	860,700	40,407,951	2,144,182	84,028,243	111.33	—8,553,121	2,835,128	11,389,640	14,690,143
Pittsburgh, Shawmut & Northern	209	1,018,957	58,623	1,103,816	282,440	512,306	16,103	563,509	72,171	1,446,571	131.05	—342,755	17,041	—360,313	—92,755
Port Reading	21	1,043,408	.....	1,333,509	174,073	87,613	170	785,429	15,126	1,062,411	79.67	271,098	73,496	197,602	—422,596
Richmond, Fredericksburg & Potomac	117	3,951,971	2,802,722	8,286,823	837,727	1,374,815	65,824	3,479,991	244,536	6,107,342	73.70	2,179,481	272,487	1,906,504	—2,076,817
Rutland	415	1,896,385	995,706	3,480,388	730,297	1,007,899	39,920	1,698,532	101,874	3,592,709	103.23	—112,320	135,529	—247,863	—314,350
St. Louis, Brownsville & Mexico	548	3,399,310	1,740,911	5,540,616	1,262,743	1,025,005	116,773	1,992,984	228,341	4,618,872	83.36	921,744	105,700	814,309	—352,164
St. Louis Merchants Bridge Terminal	9	.....	2,889	3,014,210	487,657	584,782	7,936	2,291,751	79,650	3,451,776	114.52	—437,567	114,920	—552,628	—144,761
St. Louis-San Francisco	4,757	44,800,951	18,764,317	67,498,809	12,219,069	15,915,189	616,673	28,393,421	2,090,227	59,083,660	87.53	8,415,150	2,237,041	6,168,776	—4,949,776
South Buffalo	11	530,812	.....	1,084,767	62,957	141,471	4,502	775,829	18,579	1,003,339	92.49	81,428	35,750	45,678	—22,681
St. Louis Southwestern	962	12,958,028	1,726,189	15,460,998	2,186,397	2,622,983	381,124	4,230,679	443,489	9,918,439	64.15	5,542,560	550,443	4,991,957	3,045,669
St. Louis Transfer	6	.....	.....	1,011,627	84,483	158,361	1,865	533,095	23,291	801,095	79.19	210,532	2,468	208,064	5,414
San Antonio & Aransas Pass	736	2,647,895	1,033,647	4,039,807	999,824	961,446	67,476	2,093,102	180,316	4,299,679	106.43	—259,872	130,000	—390,178	377,344
San Antonio, Uvalde & Gulf	317	706,795	373,437	1,145,779	312,108	214,500	20,403	638,683	53,786	1,239,480	108.18	—93,701	20,304	—114,136	—41,235
Seaboard Air Line	3,563	23,744,862	7,878,635	36,094,624	6,911,405	9,342,879	928,424	18,871,749	1,481,089	37,907,993	105.02	—1,813,369	1,305,000	—3,124,744	—4,971,980
Southern Ry.	6,973	73,056,069	27,472,420	112,411,915	15,211,058	21,501,229	1,516,526	50,972,246	2,932,283	93,232,120	82.94	19,179,796	3,779,886	15,371,220	7,313,676
Alabama Great Southern	313	5,979,635	1,843,479	8,446,324	896,697	1,832,615	167,501	3,205,767	214,342	6,384,131	75.58	2,062,193	328,777	1,732,397	793,016
Cinn., New Orleans & Texas Pacific	338	11,137,964	3,090,628	15,331,455	1,668,102	3,847,508	239,144	5,610,901	351,001	11,815,762	77.07	3,515,693	544,355	2,970,081	2,272,338
Georgia Southern & Florida	402	2,387,991	1,120,203	3,917,979	637,143	930,261	68,310	2,032,569	111,475	3,801,706	97.03	116,273	172,759	—58,138	—162,040
New Orleans & Northeastern	207	4,173,477	978,986	5,772,236	912,412	1,126,926	97,386	2,399,108	160,072	4,740,041	82.12	1,032,195	370,128	661,620	500,330
Northern Alabama	110	915,668	138,230	1,105,093	280,017	66,571	14,535	528,069	25,944	915,136	82.81	189,957	39,716	150,189	133,599
Southern in Mississippi	278	744,111	450,264	1,327,865	560,120	237,672	26,327	804,448	55,169	1,683,737	126.80	—355,871	88,200	—444,088	—858,183
Southern Pacific Co. Pacific System	7,097	89,245,125	40,492,432	145,540,367	23,293,908	30,339,496	1,591,590	58,681,456	3,711,891	120,916,849	83.08	24,623,518	8,400,580	16,171,123	—4,778,903
Southern Pacific Steamship Lines	...	3,734,759	287,373	4,209,024	103,029	2,844,026	129,289	5,722,977	252,488	9,051,810	215.06	—4,842,786	100,726	—4,944,513	—4,253,594
Spokane International	161	930,935	174,317	1,140,196	201,363	92,890	22,350	352,863	47,694	720,058	63.15	420,138	46,153	373,659	156,131
Spokane, Portland & Seattle	549	4,377,496	1,753,345	6,666,525	1,505,567	898,156	69,427	2,280,139	222,789	5,063,664	75.96	1,602,861	838,902	761,765	—392,084
Staten Island Rapid Transit	23	699,984	885,374	1,765,448	418,338	305,662	13,021	1,057,789	98,952	1,893,761	107.27	—128,313	135,000	—264,036	—403,612
Tennessee Central	292	1,516,514	481,910	2,157,598	417,562	445,706	42,805	1,092,327	94,649	2,092,869	97.00	64,729	50,115	13,874	318,412
Terminal R. R. Association of St. Louis	36	.....	8,480	3,383,618	714,628	616,977	9,202	1,627,120	79,939	3,088,066	91.27	295,552	337,358	—41,959	—133,543
Texarkana & Fort Smith	93	1,166,692	207,150	1,507,309	201,991	167,756	22,874	539,363	56,265	989,565	65.65	517,743	96,878	420,810	270,439
Texas & New Orleans	469	4,770,805	1,530,851	7,118,741	1,979,732	2,031,222	82,267	2,667,414	198,178	7,337,249	103.07	—218,507	250,148	—478,947	—976,892
Texas & Pacific	1,946	18,117,237	8,944,554	29,549,765	5,794,966	6,553,016	350,500	13,309,398	892,845	27,282,518	92.33	2,267,247	974,850	1,286,828	—2,018,362
Toledo & Ohio Central	488	7,899,892	635,495	9,046,745	1,397,978	2,782,185	93,304	4,255,477	205,013	8,763,752	96.87	282,993	374,752	—91,789	—351,974
Toledo, Peoria & Western	247	882,609	458,962	1,476,664	256,564	394,720	24,835	876,941	64,747	1,617,746	109.55	—141,082	76,500	—217,582	—67,274
Toledo, St. Louis & Western	454	7,553,212	327,825	8,286,256	1,832,177	1,682,337	114,711	3,398,922	138,035	7,165,694	86.48	1,120,562	279,000	841,267	197,467
Trinity & Brazos Valley	368	1,094,647	207,049	1,386,476	586,246	482,677	21,199	701,501	111,227	1,902,669	137.23	—516,194	70,055	—586,357	—104,123
Ulster & Delaware	128	509,066	347,964	1,096,153	186,138	204,164	25,035	783,855	65,625	1,270,317	115.89	—174,164	45,006	—219,167	—98,196
Union R. R. (of Pennsylvania)	45	.....	.....	7,504,111	815,622	1,958,518	3,277	4,777,218	75,213	7,629,849	101.68	—125,738	84,500	—210,238	—482,634
Union Pacific	3,614	66,064,717	16,712,976	93,490,064	15,603,746	18,281,637	768,431	28,495,218	2,817,490	68,312,479	73.07	25,177,585	5,190,389	19,983,351	—5,734,836
Utah	98	1,389,145	6,989	1,400,044	180,246	272,441	1,895	320,882	26,642	802,105	57.29	597,939	62,439	535,252	243,824
Vicksburg, Shreveport & Pacific	171	2,104,597	891,373	3,264,873	626,712	639,786	69,246	1,296,238	109,570	2,775,792	85.20	489,081	120,704	368,174	7,273
Virginian	523	10,687,694	629,818	12,497,071	1,534,991	2,547,156	73,568	4,651,740	269,350	9,061,193	72.51	3,435,877	533,416	2,902,442	1,138,984
Wabash	2,472	29,986,742	8,266,193	42,273,795	7,759,765	11,315,360	812,774	21,877,895	1,421,258	43,476,737	102.85	—1,202,943	1,162,092	—2,367,653	—4,669,790
West Jersey & Seashore	361	2,864,872	6,996,297	10,636,196	2,411,068	2,249,691	98,597	5,501,747	234,381	10,571,573	99.39	64,622	439,817	—375,438	—1,391,240
Western Maryland	775	11,940,805	930,156	13,798,075	3,015,332	4,722,776	362,564	5,966,214	460,317	14,679,679	106.39	—881,604	441,400	—1,323,004	—1,345,269
Western Pacific	1,017	9,039,578	1,985,445	11,653,471	2,003,643	1,798,111	247,389	4,121,301	332,116	8,745,571	75.05	2,907,899	550,478	2,356,634	568,496
Western Railway of Alabama	133	1,157,433	705,996	2,083,187	318,090	456,344	53,536	779,349	73,746	1,714,096	82.28	309,091	60,375	308,708	—3,642
Wheeling & Lake Erie	511	10,707,711	631,403	12,459,190	2,097,130	3,135,537	129,345	5,452,124	292,838	11,140,322	89.41	1,318,868	605,644	709,787	—117,151
Wichita Falls & Northwestern	328	1,386,462	455,995	1,977,832	573,558	288,225	9,862	1,032,354	103,219	2,007,103	102.18	—29,272	100,775	—130,360	—53,997
Yazoo & Mississippi Valley	1,381	16,109,939	4,410,907	21,792,654	5,145,782	5,315,608	234,519	8,881,864	589,152	20,209,139	92.73	1,583,515	789,639	789,177	2,916,191

A. S. C. E. Votes "No" on Federated Societies

With a vote of 3,278 against and 2,330 for, the American Society of Civil Engineers, through a popular vote of its members, has decided against becoming a charter member of the Federated American Engineering Societies. This in a way reaffirms the attitude of the members of the society as expressed in the results of the questionnaire of April 14, 1920. At that time the society expressed its desire to co-operate with other engineering and technical associations in promoting the welfare of the engineering profession, but voted against any participation in the federation plan which was proposed at that time and which has since culminated in the Federated American Engineering Societies.

New York Railroad Club Meeting

The meeting of the New York Railroad Club in the Engineering Societies building, New York, on Friday evening, November 19, will be the annual meeting, including the annual reports and the installation of the new president. The topic for discussion will be "Loss and Damage to Freight." The following viewpoints will be presented: "The Operating Officer," H. H. Shepard, general superintendent, Delaware, Lackawanna & Western; "The Freight Claim Agent," Thomas C. Smith, freight claim agent, Central Railroad of New Jersey; "Pilfering and Robbery," Alexander S. Lyman, general attorney, New York Central; "Defective Freight Cars and Their Relation to Loss and Damage," F. S. Gallagher, engineer of rolling stock, New York Central; "Packages and Containers and Their Relation to Loss and Damage," W. J. Edwards, manager, Trunk Line Inspection Bureau.

Average Haul of Freight Increasing

The distance over which the average ton of freight is transported by railroad has been steadily increasing for several years, according to Interstate Commerce Commission statistics. Its detailed figures for 1918 just issued show that the typical haul on the average railway in that year was 175.81 miles, as compared with 173.77 in 1917, 166.28 in 1916 and 162.59 in 1915. The report for 1919 has not yet been compiled but the commission has been issuing monthly statements this year which show that in July the average haul per railroad was 181.16 miles, as compared with 173.68 in July, 1919. Considering the Class I railroads as a single system, the average ton of freight in 1918 was hauled 301.47 miles as against 292.57 in 1917, 282.99 in 1916 and 275.80 in 1915.

The average journey per passenger has also been increasing although a slight decrease is shown in July this year as compared with July, 1919. In 1918 it was 39.33 miles; in 1917, 37.01 miles; in 1916, 34.38 miles, and in 1915, 33.95 miles. In July this year it was 41.80 as against 42.02 in July, 1919.

Meeting of Automatic Train Control Committee

The committee on automatic train control appointed by the American Railway Association to co-operate with the Interstate Commerce Commission held a meeting at Washington on November 5 and conferred with Commissioner C. C. McChord and W. P. Borland, director of the commission's Bureau of Safety. The committee devoted most of the meeting to a discussion of questions of policy and an exchange of ideas. G. E. Ellis, who was executive secretary of the Committee on Automatic Train Control of the Railroad Administration, has been appointed secretary, with office at the committee's headquarters in Chicago. Mr. Ellis was formerly connected with the Bureau of Safety and his office will be the point of contact with Mr. Borland. President R. H. Aishton, of the American Railway Association, also attended the meeting. In the morning the sub-committee met with Mr. Borland and was addressed by Commissioner McChord and in the afternoon the full membership of the committee held a meeting at which Mr. Borland was present. Commissioner McChord at this meeting emphasized the fact that the commission desires to work in co-operation with the railroads in this matter, as it has been doing in other matters, such as car service, since the passage of the transportation act. Mr. Borland also addressed the committee. He declared that the Interstate Commerce Commission, during the 14 years in which it has been studying the automatic train control question has made enough tests of train stop devices to satisfy it that the theory of automatic train control is practical and that such devices, if developed properly, would have an important influence in increasing safety; that there has been a public demand for such a safety device which Congress has recognized in the provision of the law which places a definite responsibility upon the commission for its further development. The present problem is to determine whether automatic train control can be satisfactorily co-ordinated with practical railroad operating conditions, and it is the purpose to take for investigation one or more devices which are available, for installation on a railroad already equipped with automatic block signals and subject the device or devices to actual service conditions over a sufficient length of road to form a basis for definite conclusions.

How to Use Fusees

The Bureau of Explosives in its last circular gives the following suggestions to promote the maximum of efficiency in the use of fusees:

The composition of a fusee is contained in a pasteboard tube crimped at the top end, so as to leave only a small opening in the top. The priming composition is placed in this opening. During the early stage of burning, before the crimped head of the tube is burned away, and before the priming is entirely consumed, the fusee is very difficult to extinguish, as the crimped end holds the burning composition in the tubes. When the crimped head is burned away, hard jolts frequently cause the burning upper layer of the composition in the tube to completely fall out of the fusee, leaving the body of the fusee entirely without fire.

Fusees should not be thrown from a moving train, but should be dropped, spike end down, at an angle of about 45 degrees.

These should be dropped about five seconds after the priming is ignited, as at this period they are most resistant to rough handling and to being extinguished. It will be found that lighted fusees dropped in this manner from moving trains will almost invariably continue burning until entirely consumed. The proper time of dropping the lighted fusee is the most important point in avoiding failures in service.

New England Roads Ask Help

The need of the New England railroads for a much larger increase in revenues than they can expect from the increase of 40 per cent in freight rates and 20 per cent in passenger fares allowed to the Eastern railroads generally by the Interstate Commerce Commission, was explained by officers of the New England roads at a conference with New England shippers and state railroad commissioners, held in the Interstate Commerce Commission building at Washington on November 10. J. H. Hustis, president of the Boston & Maine, and Vice-Presidents E. J. Buckland and Benjamin Campbell, of the New Haven, told the shippers that September returns and estimates for October under the new rates indicate that the New England roads as a group will still be short of a 6 per cent return for the year by approximately $36,000,000.

The subject was presented by the railroad officers as one on which they desire the co-operation and suggestions of the shippers, but they declared that there were only two alternatives. As the first they mentioned an early decision by the Interstate Commerce Commission on the application of the New England roads for larger divisions out of the joint through rates into and out of New England which has been filed with the commission. The commission itself in the rate decision suggested the possibility of larger divisions for the New England roads. Unless this can be arranged, they said, a large increase in rates would be necessary. Particular emphasis was placed on the question of divisions and the exact amount of a rate increase that would be necessary was not mentioned at the conference, although it is understood that a further increase of 35 per cent in freight rates and an increase in passenger fares to 4 cents a mile has been discussed as representing the amount necessary. A number of the shippers also spoke and expressed a willingness to help the roads. It was decided to arrange for a further conference between the New England shippers and representatives of the trunk line railroads, to be held under the auspices of the commission, to see what could be done toward increasing the divisions of the New England roads.

Traffic News

The Boston & Maine has opened a freight and passenger office in Chicago, 327 La Salle street, in charge of James M. Gall, general western agent.

The coal delivered to vessels by the Baltimore & Ohio in October at its piers at Curtis Bay and Locust Point, Baltimore, totaled 734,055 tons, the largest October movement on record.

The New York, New Haven & Hartford announces that beginning December 13, a sleeping car will be run daily each way between Boston, Mass., and Miami, Fla. Southbound the car leaves Boston on the Federal express at 7:30 p. m. The car will run over the Atlantic Coast Line.

Coal loaded into vessels at Port Richmond, Philadelphia, by the Philadelphia & Reading Railway, in the month of October amounted to 529,213 tons. This is 133,345 tons more than the movement in October, 1919, and is the largest monthly record in the history of the Port Richmond terminal. This record of 529,213 tons is made up of 100,972 tons of anthracite and 428,241 tons of bituminous.

The various organizations of commercial travelers are said to be preparing a joint complaint to be filed with the Interstate Commerce Commission against the railroads, protesting against the 50 per cent surcharge for Pullman passengers which was recently authorized by the commission. A complaint against the 20 per cent increase in Pullman rates has already been filed and a hearing was to have been held at Washington this week, but it was postponed. The commercial travelers are also said to be preparing to ask the railroads for a conference on an interchangeable mileage book ticket.

The Supreme Court of New York, Apellate Division, on November 10, denied the right of the New York Central to continue charging fare of three cents a mile (or higher) for passengers over that part of the company's lines which are subject to the two-cent limitation imposed by the charter of 1853. The company's suit to annul the order of the Public Service Commission, requiring a return to the two-cent rate, will now be taken to the Court of Appeals. The opinion by Judge Woodward holds that the question for the court to decide is whether the federal transportation act of 1920 has operated to fix a three-cent-a-mile rate until the legislature should take action. Judge Woodward's interpretation is that it was not the intent to continue the rate fixed by the Director General during the period of government control past September 1, 1920.

Traffic Club of Chicago

The monthly meeting of the Traffic Club of Chicago was held on November 9. C. R. Gray, president of the Union Pacific, addressed the meeting on "The New Railroad Era." A resolution was adopted that a national guard company be formed from members of the club, their families and friends.

The Cost of Three Holidays in Coal

The anthracite mines of Pennsylvania were idle on Mitchell Day, October 29; All Saints Day, November 1, and Election Day, November 2, and the amount of coal lost by this suspension of work, according to preliminary figures based on returns from 15 leading producers, and calculated on the regular daily averages of production, was 714,128 tons, including probably 540,409 tons of household coal, or sufficient to have cared for a city of more than 200,000 inhabitants for a year. New York, Washington and other cities have complained that they have not received to date as much anthracite as was received to corresponding dates in former years. The amount of production lost in the three holidays mentioned would have been sufficient to have made up the entire reported shortage in New York and Washington and for several thousand additional families.

Commission and Court News

Interstate Commerce Commission

The Interstate Commerce Commission has announced proceedings of investigation as to the failure of the state commissions of Nevada and Georgia to put into effect increases in rates for intrastate traffic corresponding to those authorized by the commission for interstate traffic.

The commission has suspended until March 10 the operation of the proposed elimination of the routing of grain and grain products to trunk line territory via the C. C. C. & St. L., through Indianapolis, from points on the Toledo, St. Louis & Western in Indiana, provided in Supplement No. 16 to Agent W. J. Kelly's tariff, I. C. C. No. 839, resulting in the application of combination rates.

Kansas Petition Denied

The commission has announced that it has denied the petition of the Court of Industrial Relations of the State of Kansas for a rehearing of the general rate advance case, Ex Parte 74. The Kansas court had asked for the rehearing on the ground that the commission had made an error in its calculation of the needs of the western railroads amounting to $192,000,000 and that the commission had allowed the western railroads, except those in the Mountain-Pacific group, an increase of 35 per cent in freight rates and the roads of the Mountain-Pacific group an increase of 25 per cent, whereas the Kansas court figured that 25 per cent would have been enough for all the western roads.

Minimum Weights on Grain

Existing minimum weights on grain and grain products upon interstate traffic are in effect by virtue of Special Permission 50450 of the Interstate Commerce Commission, and expire December 31, 1920. Similar minimum weights apply upon intrastate traffic in many states by action of state commissions. Applications have been received from the carriers, some seeking authority to continue the present minimum weights and others to reestablish a minimum weight of 60,000 lb. on grain and otherwise continue the present minima.

Considering the desirability of uniformity, the commission has decided to call a conference of state commissions, shippers, carriers and others to discuss the situation at the Jefferson hotel, St. Louis, Mo., November 15, at which the commission will be represented by W. V. Hardie, director of traffic.

State Commissions

The Public Service Commission of Alabama has authorized the railroads of that state to make a general increase of 20 per cent in passenger fares and of 25 per cent in freight rates, but only for six months, from November 1. The petition of the railroads for authority to impose a surcharge of 50 per cent on fares of passengers traveling in Pullman cars was denied, as was that for authority to increase by 25 per cent the freight rates on iron ore and limestone for industrial plants.

Court News

Penalties Incurred During Federal Control Not Recoverable

Since the government, when it took control of the railroads, provided by order for ordinary suits delict, but announced that it could not be sued for a penalty, fine, or forfeiture at the hands of a citizen, the South Carolina Supreme Court holds that a railroad company is not liable for any misfeasance while its road was being operated by the government or its agents, and a service of summons against the company for such a misfeasance should be set aside.—Harmon v. Southern (S. Car.), 101 S. E. 926.

Duties to Trespassers in Open Country

In the open country a railroad backing its engine with the tender in front, on which was a lighted headlight, does not owe the duty, even to a licensee, to station a man on the tender to maintain a lookout; and as the company's liability to a trespasser in such circumstances does not depend on the company's rules, a rule requiring a lookout is not admissible in behalf of plaintiff in an action for death.—Louisville & Nashville v. Stidham (Ky.), 218 S. W. 460.

Railroad's Books as Evidence of Delivery of Cotton

In an action against a railroad company for the value of cotton destroyed by fire while in its possession as carrier, the Mississippi Supreme Court holds that the railroad company's books, tending to show that the cotton was delivered to a compress company according to custom, and a bill of lading constituting the compress company agent of the shippers to receive the shipment, were improperly excluded, and a peremptory instruction to find for the plaintiff was error.—Illinois Central v. Threefoot Bros. (Miss.), 83 So. 635.

Limitation of Liability Applies to Embezzlement and Theft by Employees

Following decisions of the federal courts, the Texas Court of Civil Appeals holds that a limitation of liability in an interstate contract of shipment to the declared value of the goods applies to a case of embezzlement or theft by an employee of the carrier, without the consent or connivance of the carrier itself, and this although gross negligence of the carrier is shown, making the embezzlement or theft by an employee easy of accomplishment and difficult of detection.—Henderson v. Wells Fargo & Co., Express (Tex.), 217 S. W. 962.

Releases of Liability Under Federal Employers' Liability Act

The Georgia Court of Appeals holds that the well established principle of law that, before a party to a contract is entitled to have it rescinded for fraud in its procurement, he must pay back or tender any valuable consideration received under the terms of the contract, applies to an action for personal injuries brought under the Federal Employers' Liability Act, where the plaintiff, after the infliction of the injury which was sued for, signed, for a valuable consideration, a contract releasing the defendant from all liability therefor.—Central of Georgia v. Hoban (Ga.), 102 S. E. 46.

Contract Releasing Railroad from Fires on Private Sidetracks

The West Virginia Court of Appeals holds that a contract between a railroad company and a private corporation, whereby in consideration of the latter's release of the railroad company from all damages caused by fire that may be set by it, the railroad company agrees to build and maintain a private sidetrack over its right of way and adjoining land, for the private use of such corporation, its successors and assigns, is not invalidated by a statute imposing certain duties on railroad companies as to removing dry grass and other inflammable materials from their rights of way, and putting out fires thereon and on adjoining lands. An assignee, lessee or under tenant operating the sidetrack is bound by the contract releasing the railroad, whether they have actual notice of it or not. Such a contract applies to lumber set out by an assignee or sublessee on an extension to the sidetrack built by him and operated jointly by him and the railroad company.—Keystone Mfg. Co. v. Hines (W. Va.), 102 S. E. 106.

Personnel of Commissions

Alfred M. Barrett, hitherto deputy commissioner, has been appointed Public Service Commissioner, First District, State of New York, office New York City, in place of Lewis Nixon, resigned.

Foreign Railway News

Exports of Steam Locomotives in September

The exports of steam locomotives in September totaled 154, valued at $4,105,405. Of these 36, valued at $1,080,000, were destined for France, and 28, valued at $182,000, for Italy. Cuba was the purchaser of 21, valued at $491,604. China likewise had 21, of a value of $816,070. The detailed figures by countries, as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Number	Dollars
France	36	1,080,000
Italy	28	182,000
Roumania	10	650,000
Spain	15	621,000
Canada	6	96,711
Mexico	8	45,405
Newfoundland and Labrador	1	20,445
Cuba	21	491,604
Dominican Republic	2	26,500
Colombia	2	45,020
China	21	816,070
Philippine Islands	2	15,900
British South Africa	2	14,750
Total	154	4,105,405

Exports of Car Wheels and Axles in September

The exports of car wheels and axles in September had a total value of $846,198. By far the largest shipments, valued at $350,701, were to France. Japan came next with consignments valued at $185,556. The detailed figures by countries, as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Dollars
France	350,701
Italy	27,051
Canada	44,989
Gautemala	973
Honduras	1,396
Panama	76
Salvador	142
Mexico	10,644
Newfoundland and Labrador	13
Cuba	60,546
Dominican Republic	643
Argentina	11,762
Brazil	47,935
Chile	4,416
Colombia	2,245
Ecuador	905
Venezuela	468
China	52,890
British India	21,252
Dutch East Indies	18,781
Japan	185,556
Australia	763
French Oceania	41
Philippine Islands	2,010
Total	846,198

Railroad Accidents in Great Britain, 1919

The number of train accidents on the railroads of Great Britain and Ireland in the year 1919 was 1,278, consisting of 292 collisions, 527 derailments and 459 other accidents. In these accidents three passengers, seven employees and eight other persons were killed and 513 passengers, 114 employees and 30 other persons were killed; a total of 18 killed and 657 injured; this on a railroad mileage of 26,724 miles.

In "train service" accidents 83 passengers, 318 employees and 426 other persons were killed, and 1,835 passengers, 3,845 employees and 217 other persons were injured. In "non-train" accidents 12 passengers, 52 employees and 23 other persons were killed, and 429 passengers, 16,489 employees and 445 other persons were injured. The totals of the three classes aggregate 932 persons killed and 23,983 injured. The number of passengers killed in train accidents in 1918 was eight; comparisons of other items with the preceding year are not striking. The annual accident report, formerly made in the office of the secretary of the railway department of the Board of Trade, is now made by the chief inspecting officer, Colonel J. W. Pringle, reporting to the Director General, Public Safety and General Purposes Department of the Ministry of Transport.

Exports of Railway Cars in September

The exports of passenger cars in September amounted to 3, of a total value of $5,900; of freight cars 1,838, of a total value of $3,061,817; of cars for other than steam railways, 257, of a value of $224,176; and exports of car parts were valued at $470,735. The largest exports of freight cars were to France, Poland, Mexico, Italy and Cuba in the order named. The detailed figures by countries, as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Passenger (Steam) Number	Passenger (Steam) Dollars	Freight and other (Steam) Number	Freight and other (Steam) Dollars	For other railways Number	For other railways Dollars	Parts of cars. Dollars
Belgium	..	....	....	.....	...	.....	1,567
Denmark	..	....	....	.....	...	.....	22,362
France	..	....	438	936,853	...	.....	.....
Italy	..	....	250	457,500	...	.....	780
Poland and Danzig	..	....	400	320,000	...	.....	.....
Spain	..	....	....	.....	...	.....	2,406
England	..	....	....	.....	...	.....	14,711
Canada	1	2,700	22	34,923	31	35,527	66,249
Guatemala	..	....	....	.....	...	.....	217
Salvador	..	....	....	.....	5	27,200	.....
Mexico	2	3,200	327	555,561	46	4,769	22,657
Newfoundland and Labrador	..	....	....	.....	...	.....	139
Trinidad and Tobago	..	....	....	.....	...	.....	428
Cuba	..	....	283	453,432	78	85,407	95,043
Haiti	..	....	....	.....	1	625	.....
Dominican Republic	..	....	4	4,314	62	54,808	5,902
Argentina	..	....	....	.....	10	1,100	8,595
Brazil	..	....	....	.....	20	10,275	40,570
Chile	..	....	50	166,016	...	.....	7,742
Colombia	..	....	....	.....	...	.....	4,155
China	..	....	....	.....	...	.....	58,488
Chosen	..	....	....	.....	..	.....	2,340
British India	..	....	14	23,850	...	.....	3,200
Straits Settlements	..	....	....	.....	2	3,531	2,232
Dutch East Indies	..	....	....	.....	...	.....	1,274
Japan	..	....	....	.....	2	934	79,615
Philippine Islands	..	....	....	.....	...	.....	27,231
British South Africa	..	....	50	109,368	...	.....	.....
Portuguese Africa	..	....	....	.....	...	.....	2,832
Total	3	5,900	1,838	3,061,817	257	224,176	470,735

Exports of Railway Track Material in September

The exports of rails in September totaled 31,170 tons, valued at $2,008,699, setting a new low mark for the year. Exports of spikes totaled 1,874,136 lb., valued at $85,297, and switches, frogs, splice bars, etc., were valued at $366,724. The detailed figures by countries, as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Spikes Pounds		Steel rails Tons		Switches, frogs, splice bars, etc.
Denmark	.....	.....	.....	.....	$8,944
Netherlands	.....	.....	.....	.....	216
Norway	.....	.....	.....	.....	77
Sweden	.....	.....	3,030	$225,000	916
England	448	$159	339	23,617	7,932
British Honduras	7,000	420	4,765	257,719	216
Canada	144,324	6,601	.....	.....	30,268
Costa Rica	.....	.....	.....	.....	672
Guatemala	2,000	158	6	479	.....
Honduras	200	20	235	10,739	4,993
Panama	.....	.....	.....	.....	1,493
Salvador	25,000	1,972	.....	.....	.....
Mexico	136,989	9,086	551	34,582	33,496
Jamaica	.....	.....	.....	.....	150
Trinidad and Tobago	.....	.....	.....	.....	1,740
Cuba	744,639	31,378	6,135	334,281	145,386
Haiti	10,000	575	.....	.....	.....
Dominican Republic	1,000	85	148	10,264	10,827
Argentina	.....	.....	357	22,539	17,860
Bolivia	.....	.....	.....	.....	67
Brazil	193,600	9,149	4,670	307,870	13,221
Chile	.....	.....	56	4,579	.....
Colombia	398,115	13,764	1,047	96,373	2,305
Ecuador	40,000	2,700	.....	.....	.....
Dutch Guiana	.....	.....	.....	.....	153
Paraguay	.....	.....	96	4,557	1,151
Peru	17,600	1,159	8	627	9,010
Uruguay	.....	.....	50	2,977	.....
Venezuela	.....	.....	150	10,057	.....
China	3,968	115	248	15,875	5,169
Kwantung	.....	.....	.....	.....	305
British India	.....	.....	113	6,137	150
Dutch East Indies	.....	.....	324	22,409	4,519
Hongkong	10,800	800	392	40,967	2,923
Japan	66,036	2,475	2,015	177,774	3,916
Australia	.....	.....	.....	.....	562
Philippine Islands	72,417	4,681	1,643	139,838	31,520
Belgian Kongo	.....	.....	.....	.....	6,846
British South Africa	.....	.....	54	3,270	.....
French Africa	.....	.....	4,437	239,598	.....
Portuguese Africa	.....	.....	301	16,571	19,721
Total	1,874,136	$85,297	31,170	$2,008,699	$366,724

Equipment and Supplies

Locomotives

THE MISSISSIPPI CENTRAL is inquiring for some 4-6-0 type locomotives.

THE MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE is inquiring for some 4-6-2 type locomotives.

THE LOS ANGELES & SALT LAKE has ordered four locomotives from the Baldwin Locomotive Works.

THE CENTRAL SANTO TOMAS, Cuba, has ordered one locomotive from the Baldwin Locomotive Works.

THE NATIONAL RAILWAYS OF MEXICO have ordered 5 locomotives from the Baldwin Locomotive Works.

THE UNITED FRUIT COMPANY, Cifuentes, Cuba, has ordered one locomotive from the Baldwin Locomotive Works.

THE FORESTRY BUREAU, Hokkaido, Japan, has ordered four 0-4-2 type locomotives from the Baldwin Locomotive Works.

THE CUBA SUGAR MILLS CORPORATION, Havana, Cuba, has ordered two locomotives from the Baldwin Locomotive Works.

THE MISSOURI PACIFIC is inquiring for 25 Mikado type locomotives, 5 Mountain type, 5 Pacific type and 15 switching locomotives.

WHITEHEAD BROTHERS COMPANY, 537 West Twenty-seventh street, New York, has ordered one four-wheel switching locomotive from the American Locomotive Company.

THE TEMISKAMING & NORTHERN ONTARIO, reported in the *Railway Age* of November 5, as inquiring for 4 Pacific type locomotives, has ordered this equipment from the Canadian Locomotive Company, Ltd.

THE HYDRO ELECTRIC POWER COMMISSION, Niagara Falls, Ontario, has ordered two four-wheel switching locomotives from the American Locomotive Company. These locomotives will have 16 by 24 in. cylinders and a total weight in working order of 99,000 lb.

Freight Cars

THE ATLANTIC COAST LINE is inquiring for 30 caboose cars.

THE LOUISVILLE & NASHVILLE is inquiring for 2,000 steel hopper cars of 55 tons capacity.

THE BANGOR & AROOSTOOK is inquiring for 100, 40-ton, single-sheathed, standard A. R. A. box cars.

THE CINCINNATI, INDIANAPOLIS & WESTERN is inquiring for 300 composite gondola cars of 50 tons capacity.

THE CANNELTON COAL & COKE COMPANY, Cannelton, Pa., is inquiring for from 500 to 1,000 50-ton hopper cars.

THE UNION COAL & COKE COMPANY, Philadelphia, W. Va., has ordered 250 coal cars from the Cambria Steel Company.

THE PHILADELPHIA & READING is having 500 steel cars repaired at the shops of the American Car & Foundry Company.

Passenger Cars

THE NEW YORK, NEW HAVEN & HARTFORD is inquiring for 124 steel underframes for passenger coaches.

Iron and Steel

THE CHESAPEAKE & OHIO has ordered 15,000 tons of rails from the United States Steel Corporation.

Supply Trade News

The Cement Gun Company, Inc., has removed its main office from Allentown, Pa., to Cornwells, Bucks County, Pa., a suburb of Philadelphia.

F. E. Symons, vice-president of the **Ralston Steel Car Company,** Columbus, Ohio, has been elected president to succeed Joseph S. Ralston, deceased.

G. Schirmer has resigned as sales engineer in the Detroit office of the Whiting Foundry Equipment Company, Whiting, Ill., and is now associated with **W. C. Bennett,** industrial engineer, Chicago.

The Manufacturers' Sales Company has been organized, with offices in the Leader-News building, Cleveland, Ohio, to represent in Cleveland and surrounding territory, one or possibly two large reliable manufacturers for the sale of their products. C. C. Bradford, for a number of years sales manager of the U. S. Light & Heat Corporation and more recently sales manager of the Marlin Rockwell Corporation, is manager of the new enterprise.

Donald S. Barrows, chief engineer and works manager of **The T. H. Symington Company,** New York, since 1917, with headquarters at Rochester, N. Y., has been elected vice-president in charge of operations. He was born at New Haven, Conn., in 1877, and graduated from the New York Law School in 1898 and was admitted to the bar in New York State in 1899. Following his entry into the engineering field and previous to his association with the Symington organization Mr. Barrows held the following positions: Chief engineer of the North Penn Iron Company, Philadelphia, Pa.; chief engineer of the Insley Iron Works,. Indianapolis, Ind.; mechanical engineer of the Wonham-Magor Car & Manufacturing Company, and mechanical engineer with the American Car & Foundry Company, at New York. Mr. Barrows entered the service of The T. H. Symington Company in 1915, and as chief engineer had charge of all engineering matters in connection with the Symington railway products as well as the planning, enlargement and execution of extensive plant improvements. In 1917 he was promoted from the position of chief engineer to chief engineer and works manager, and now becomes vice-president in charge of operations. In the development of the Symington company's extensive railway business at Rochester to its present state of efficiency in quality and quantity production Mr. Barrows has been largely responsible.



D. S. Barrows

Bruce Hartman, of Bloomsburg, Pa., a director of the **Bell Locomotive Works,** was appointed receiver of the company, on November 9, by Federal Judge Witmer at Sunbury, Pa. The company's office is at 23 Water street, New York, and its works are at Bloomsburg. **J. S. McCormack,** sales manager, and **William Stevenson,** chief engineer, in the New York office, will probably remain with the company under the receiver.

Fairbanks, Morse & Co., Chicago, have bought the entire business consisting of all stock on hand, good-will and liabilities of the Luster Machine Shop & Railway Equipment Company, 917 Arch street, Philadelphia, Pa. Fairbanks-Morse have opened a new branch at this address under the management of **D. W. Dunn,** and will sell its complete line of engines, motors, pumps, etc. The entire personnel of the Luster Machinery Co. has been retained. **E. J. Luster,** former president, will be manager of the machine tool division of the Fairbanks-Morse Philadelphia branch.

An unusual tribute to an employee is a booklet recently published by the **Watson-Stillman Company,** Aldene, N. J., in commemoration of the fifty years of service of Walter Watson, with the Watson-Stillman Company. Mr. Watson had been in the service of the company as a machinist continuously since first entering the service on November 1, 1870. The directors of the Watson-Stillman Company recently conferred upon Mr. Watson and nine other employees who have been in the service more than 20 years, appropriate souvenirs in recognition of their service.

Hugh Pattison has joined the staff of the heavy traction railway department of the **Westinghouse Electric & Manufacturing Company** to make special engineering studies under the direction of F. H. Shepard, director of heavy traction. Mr. Pattison was graduated from the Johns Hopkins University, electrical engineering course, in 1892. His first position was that of foreman electrician of the Norfolk, Va., Navy Yards, wiring and installing electric apparatus on naval vessels. In 1893 he became assistant engineer with Sprague, Duncan & Hutchinson, consulting engineers at Baltimore. From 1894 to 1903 he was associated as engineering assistant to Frank J. Sprague, vice-president and technical director of the Sprague Electric Company in New York and assisted in equipping and operating multiple unit control on the Boston Elevated and in Brooklyn. In 1905 Mr. Pattison joined Westinghouse, Church, Kerr & Company as an engineer. From 1905 to 1911, during the electrification of the Pennsylvania tunnel into New York, Mr. Pattison was assistant engineer of electric traction for George Gibbs, consulting engineer. Later Mr. Pattison had charge of the electrification of the West Jersey & Seashore Railroad from Camden to Atlantic City. He also built an experimental single-phase electric railway on the Long Island Railroad and had charge of the conduct of locomotive tests on the West Jersey & Seashore Railroad to determine the effect on track. In 1911 he was appointed engineer in charge of the Chicago Association of Commerce Committee in the study of smoke abatement and the electrification of terminal railways in Chicago. During the war Mr. Pattison was appointed assistant to general manager of the Remington Arms Company.

Obituary

Arthur E. Hauck, president of the **Hauck Manufacturing Company,** makers of oil burning appliances, kerosene torches, furnaces and forges, Brooklyn, N. Y., died at his home in that city on October 30, at the age of 41. He was born in Germany, where he learned the trade of coppersmith. At the age of 20 he came to American and in 1902 began business in Brooklyn. He was the inventor of a number of appliances for burning oil, one of which was the method of vaporizing kerosene in a torch with proportioned heat-resisting nozzle, the form of vaporization which is used to reduce carbonization to a minimum.

Henry C. King, president of the **American Mason Safety Tread Company,** Boston, Mass., died on October 28, 1920, after over 50 years of active business life. He was born in Tunbridge, Vt., in 1852, where he lived as a young man and received his education. At an early age he went to Lawrence, Mass., where for several years he was merchant and manufacturer. In company with William S. Lamson, he introduced the Mason Safety Tread in America, early in the year 1895, and thus became one of the pioneers of the safety first movement. He was treasurer of the American Mason Safety Tread Company for 18 years, and succeeded to the presidency after the death of Mr. Lamson in 1912.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company contemplates the enlargement of its Harvey house (hotel and restaurant) at San Bernardino, Cal., at an approximate cost of $90,000. The company also plans the construction of a new passenger and freight station, and an extension to its yard facilities at White Deer, Tex., to cost about $43,000, and the building of a water-treating plant at Dodge City, Kan., which will cost approximately $23,000. This company contemplates the construction of a machine shop at San Bernardino, Cal., to cost approximately $200,000.

BALTIMORE & OHIO.—This road, in co-operation with the city of Youngstown, Ohio, contemplates the elevation of Division street, Youngstown, by means of a viaduct to carry the roadway over the railroad tracks and across the Mahoning river.

CENTRAL OF NEW JERSEY.—This company has awarded a contract to the Phenix Bridge Co., for the construction of a bridge, near Maurer, N. J., to replace the present structure. The new bridge will consist of a 78 ft. bascule draw span and one 65 ft. approach span and will carry two tracks.

CHICAGO & ALTON.—This company has awarded a contract to Mulvile Bros., Auburn, Ill., for the grading in connection with the construction of a second track between Manchester, Ill., and Roadhouse.

DAYTON & TROY ELECTRIC.—This company has under construction a freight terminal at Dayton, O., which will cost approximately $150,000.

DULUTH & IRON RANGE.—This company is constructing a highway viaduct over its tracks, a 75,000 gal. concrete water tank and a new track scale at Biwabik, Minn.

GRAND TRUNK.—This company has under construction a wooden freight shed and wharf at Portland, Me. The new structure will be 100 ft. by 390 ft., and will cost approximately $169,000. The work is being done by the company's forces.

GULF, MOBILE & NORTHERN.—The Interstate Commerce Commission has ordered a hearing at Washington on November 22, on the application of this company for a certificate authorizing the abandonment of a branch line from Ellisville Junction to Ellisville, Miss.

ILLINOIS CENTRAL.—This company has awarded contracts to Joseph E. Nelson & Sons, Chicago, for the construction of two transformer houses at East St. Louis, Ill., and one transformer house at Mounds, Ill.

MISSOURI PACIFIC.—This company has awarded a contract to Joseph E. Nelson & Sons, Chicago, for the construction of a power plant at Dupo, Ill., to cost approximately $15,000.

SOUTHERN.—This company is building a brass foundry at its Lenoir Car Works, Lenoir City, Tenn., which will cost approximately $30,000. The building will be one story, 62 ft. by 120 ft., of brick and concrete construction. This addition to the plant will involve the purchase of 5 revolving furnaces, a metal separator and a journal bearing boring machine.

SOUTHERN PACIFIC.—This company will construct the following buildings at Sacramento, Cal.: A reinforced concrete oil and paint house, 65 ft. by 100 ft.; a store building of mill construction with corrugated iron sides, and concrete foundation, 500 ft long and 60 ft. wide, and a planing mill of mill construction, with corrugated iron sides and roof, to be 126 ft. wide and 360 ft. long.

UNION PACIFIC.—This company contemplates additions to its terminal facilities at Kansas City, Kan., and Marysville, Kan.

UNION STATION.—This company is accepting bids for the construction of a concrete tunnel 5 ft. 6 in. by 7 ft., in section under Harrison street, Chicago. The tunnel will extend for a distance of 246 ft. between Canal street and the Chicago river.

Railway Financial News

CHICAGO, BURLINGTON & QUINCY.—See article entitled "Burlington Asks Authority to Capitalize Surplus" on another page of this issue.

CHICAGO, ROCK ISLAND & PACIFIC.—The Interstate Commerce Commission on November 9, approved a loan to this company of $1,425,000 to aid the carrier in making additions and betterments to equipment and $6,437,000 for additions and betterments other than to equipment.

FORT SMITH & WESTERN.—The receiver has applied to the Interstate Commerce Commission for authority to issue a promissory note for $156,000 and a receiver's certificate as collateral thereto, to be used as security for a loan from the revolving fund.

INDIANA HARBOR BELT.—The Interstate Commerce Commission has authorized this company to issue, within 60 days, $2,200,000 of demand promissory notes, with interest at a rate not exceeding 7 per cent, for the payment of current expenses, pending the settlement of its government guaranty under which the company estimates that it is entitled to about $3,000,000. The company is required by the order to pay the demand notes out of earnings within two years or out of the proceeds of the settlement of the guaranty.

LEHIGH & HUDSON RIVER.—This company has applied to the Interstate Commerce Commission for authority to issue additional capital stock to the amount of $2,987,000, to pay its mortgage debt of $2,587,000, which matured July 1, and also its debenture bonds, $400,000, which matured on July 1.

NEW YORK CENTRAL.—This company has applied to the Interstate Commerce Commission for authority to issue $7,000,000 refunding and improvement mortgage bonds, series B, under the mortgage of 1913, payable October 1, 2013, at 6 per cent, to be pledged with the director general of railroads as security for a promissory note dated October 25, 1920, for $7,000,000 at 6 per cent, payable on demand for the indebtedness of the company to the government for additions and betterments.

NEW YORK, NEW HAVEN & HARTFORD.—This company has filed an application with the Interstate Commerce Commission for authority to issue not exceeding $80,000,000 of first and refunding mortgage gold bonds at 6 per cent, maturing in 10 years, with permission to pledge part or all as security for notes to be given to the United States to fund the indebtedness of the company to the government incurred during the period of federal control, estimated at $60,000,000. This includes the demand note for $43,026,500 for a loan to the company during federal control, and also about $17,000,000 for additions and betterments made to the company's property during federal control. The company also asks authority to issue not exceeding $15,000,000 of the bonds maturing in 15 years, with permission to pledge them as collateral for a loan from the revolving fund. The company had applied for a loan of $8,130,000.

NORFOLK & WESTERN.—This company has applied to the Interstate Commerce Commission for a certificate authorizing it to operate under lease three lines, including a part of three bridges over the Tug River between West Virginia and Kentucky, the property of the Tug River & Kentucky Railroad, and also the line of the Williamson & Pond Creek Railroad, the entire stock of which is owned by the Norfolk & Western. These lines were operated in connection with its system during federal control.

NORTHERN PACIFIC.—This company has applied to the Interstate Commerce Commission for a certificate authorizing it to abandon the operation of a branch line from Keystone Junction to Bayne, N. D., a distance of 1.87 miles and a spur track, 1.75 miles, over which only five cars of grain have been shipped in five years.

PENNSYLVANIA.—This company announced on November 9 that it has been decided to reopen and extend until December 31,

1920, the offer to purchase the remaining outstanding stock of the Pittsburgh, Cincinnati, Chicago & St. Louis, as all but a very small percentage of the minority stockholders of that road have accepted the offer made by the Pennsylvania company on March 15 to buy their shares. The question of leasing the property to the Pennsylvania company will be submitted to the Panhandle stockholders at a special meeting. Stockholders desiring to take advantage of the reopened offer are requested to deposit their stock, assigned in blank, with the treasurer of the Pennsylvania Railroad Company, Philadelphia, or the assistant treasurer at the company's office, 85 Cedar street, New York. Proper adjustment of the dividends on the stock and the accrued interest due on the bonds will be made with stockholders depositing their stock after December 1 and before December 31.

PITTSBURGH, CINCINNATI, CHICAGO & ST. LOUIS.—See Pennsylvania.

RICHMOND TERMINAL RAILWAY.—This company has applied to the Interstate Commerce Commission for authority to issue six notes of $500,000 each at 6 per cent, maturing serially from January 1, 1921, to January 1, 1924, to be given to holders of present outstanding demand notes amounting to $3,000,235. The $235 is to be paid in cash. The company also asked authority to issue two notes for $50,000 each, payable on or before January 1, 1924, at 6 per cent, one to the Atlantic Coast Line and the other to the Richmond, Fredericksburg & Potomac, in evidence of cash loans.

SHEARWOOD RAILWAY.—The Interstate Commerce Commission on November 9, approved a loan of $29,000 to this company to enable the company to meet maturing indebtedness and to provide itself with additions and betterments.

SOUTHERN PACIFIC.—The Interstate Commerce Commission has denied this company's application for a loan of $5,028,000 from the revolving fund provided for in the transportation act to aid the company in providing itself with new equipment, on the ground that the showing which the company has made in respect of its inability to secure the necessary funds from other sources is not convincing. The act requires a finding by the commission that the applicants are unable to provide themselves with the necessary funds from other sources. The commission says that the only money borrowed by this applicant since the termination of federal control is $15,000,000 by the sale of equipment trust certificates, which is characterized as "relatively unimportant, considering the value of the applicant's property, its available assets and its prospective earning power." The company had proposed to use the amount of the loan in connection with the purchase of cars and locomotives costing $17,232,600, of which $12,204,600 was to be financed by the company.

TEXAS & PACIFIC.—The Interstate Commerce Commission has authorized this company to issue $477,000 of six per cent receivers' equipment notes in part payment for 200 100,000-pounds' capacity, steel underframe, Rodger ballast cars, contracted for in February, 1920, at a unit price of $3,178.68.

TRANS-MISSISSIPPI TERMINAL RAILROAD.—This company, joined by the Texas & Pacific and its receivers, and the Missouri Pacific, has asked the Interstate Commerce Commission for authority to extend for three years and to guarantee three-year, 6 per cent gold notes of the Trans-Mississippi Terminal Company to the amount of $3,653,000. The notes have been once extended for the three years ending November 1, 1920, at 7 per cent and it is proposed to extend them until November, 1923, at 7½ per cent.

UNION PACIFIC.—This company has submitted to the judgment of the Interstate Commerce Commission the question as to whether its authority is required by Section 20-a of the transportation act for the issuance under the company's first lien and refunding mortgage of June 1, 1908, of bonds payable in United States money upon conversion of bonds issued prior to June 27, 1920, payable in sterling, to the extent that such conversion results in an increase of the funded debt of the company. If the commission considers that such authority is required, the company makes application therefor. A similar application has been filed by the Oregon-Washington Railroad & Navigation Company.

Railway Officers

Executive

B. H. Hagerman, president of the Kansas, Oklahoma & Gulf, with headquarters at Kansas City, Mo., has resigned, effective November 1.

E. H. Coapman, vice-president in charge of operation of the Southern, with headquarters at Washington, D. C., has been granted a leave of absence to recover his health. During his absence the officers of the operating department will report to **H. W. Miller,** vice-president.

W. F. Turner, vice-president of the Spokane, Portland & Seattle, with headquarters at Portland, Ore., has been elected president, succeeding **L. C. Gilman,** whose resignation to be vice-president of the Great Northern was announced in the *Railway Age* of October 22 (page 728). Mr. Turner's appointment is effective November 15.

James M. Gruber, whose election as vice-president of the Cuba Railroad and the Camaguey & Neuvitas, with headquarters at Camaguey, Cuba, was announced in the *Railway Age* of October 15 (page 678), was born at Iowa City, Iowa, March 22, 1868. He was graduated from the Iowa City High School and first entered railway service with the St. Paul, Minneapolis & Manitoba (now the Great Northern), in September, 1885, as a stenographer and clerk in the general freight office at St. Paul, Minn. In 1889 he became private secretary to the president of the Atchison, Topeka & Santa Fe. Subsequently he served with that company as chief clerk, first, to the division superintendent, next to the superintendent of transportation, and, finally, to the general manager. He then became train master of the Gulf, Colorado & Santa Fe. In January, 1895, he was appointed assistant superintendent of the Great Northern, and, in June of the same year, general superintendent of the Montana Central (now part of the Great Northern). In 1897 he became general superintendent of the Great Northern. Later he served the Chicago, Rock Island & Pacific and the Union Pacific in the same capacity. In February, 1905, he was appointed general manager of the Chicago, Burlington & Quincy. In 1907 he became general manager of the Great Northern and in 1912 was appointed vice-president in charge of the operating department. During federal control his duties remained the same, but he was given the title of general manager. In April, 1920, Mr. Gruber went to Southern Russia on a special mission for S. M. Vauclain, president of the Baldwin Locomotive Works. Upon his return he was elected to his present position.



J. M. Gruber

Russell H. Snead, whose appointment as assistant to the president of the Chesapeake & Ohio, with headquarters at Richmond, Va., was announced in the *Railway Age* of November 5 (page 819), was born in Virginia, but while he was still young his parents moved to the West and Mr. Snead spent his boyhood days in the Rocky Mountain country. Educated in public and private schools, he first entered railway service in 1887 as a clerk in the auditing office of the express department of the Denver & Rio Grande, and re-

mained in the service of that company for 20 years, occupying in turn almost every position in the express department. In 1907 he resigned to accept the position of special examiner for the Interstate Commerce Commission, at Washington, D. C., and was active in drafting a system of accounts and reports prescribed for express companies by the commission. While still in the service of the commission, Mr. Snead compiled a special report on the express business for the Census Bureau, which was published in 1909. In 1912 he left the service of the commission to become manager of express traffic of the Chesapeake & Ohio and Hocking Valley, with headquarters at Richmond, Va. Later he was placed in charge of publicity matters, in addition to his other duties. As assistant to the president he will perform the same services as heretofore.

Financial, Legal and Accounting

O. Maxey has been appointed general supervisor of claim prevention of the Chicago, Rock Island & Pacific, with headquarters at Chicago, effective November 1. In addition to his new duties, Mr. Maxey will continue to have jurisdiction over scales, weighing, explosives and the reclamation, conservation and distribution of grain doors and other cooperage material. **W. H. King** and **A. L. Dewey** have been appointed district supervisors of claim prevention, with headquarters at Des Moines, Iowa, and El Reno, Okla., respectively, effective the same date.

Operating

A. L. Johnson has been appointed assistant to the general superintendent of the Denver & Salt Lake, with headquarters at Denver, Colo., effective November 1.

B. D. Richart, trainmaster of the Southern Pacific, with headquarters at Mina, Nev., has been transferred to a similar position with headquarters at Carlin, Nev., succeeding **F. F. Small,** who has been appointed chief despatcher at Sparks, Nev. Mr. Small succeeds H. G. Vallean, assigned to other duties. **T. L. Williams,** road master, with headquarters at Mina, Nev., has had his jurisdiction extended to include the duties of trainmaster, succeeding Mr. Richart.

N. B. Walton, whose appointment as assistant general superintendent of the Grand Trunk Pacific, with headquarters at Prince Rupert, B. C., was announced in the *Railway Age* of September 24 (page 551), was born at Palmerston, Ont., on July 27, 1884, and entered railroad service in August, 1900, with the Grand Trunk. During the first seven years of his service, Mr. Walton served as clerk, operator and as secretary to the vice-president of the Grand Trunk. He was promoted then to trainmaster, but left in April, 1907, to go to the Great Northern, with headquarters at St. Paul, Minn. In January, 1908, he returned to the Grand Trunk as claim agent, a position which he held until October of that year, when he was made secretary to the general superintendent of the Grand Trunk Pacific. In August, 1910, he was promoted to trainmaster on the Grand Trunk Pacific and served both in that position and as assistant to the general superintendent, with headquarters at Winnipeg, Man., until July, 1911, when he was promoted to superintendent of the Edmonton division, with headquarters at Edmonton, Alta., the position which he held at the time of his recent promotion.

John E. Roberts, whose promotion to superintendent of transportation of the Delaware & Hudson was announced in the *Railway Age* of September 24 (page 550), was born at Bainbridge, N. Y., September 23, 1879. He studied at Williston Seminary, Easthampton, Mass., and was graduated from Albany Business College, Albany, N. Y., in 1899, having begun his railway career in 1892 as a station clerk for the Delaware & Hudson at Bainbridge during a school vacation. Upon leaving school, Mr. Roberts entered the employ of the Census Bureau at Washington, where he remained until 1902, when he returned to Bainbridge and worked as a station helper for the Delaware & Hudson until 1904, when he became a special agent on the staff of the superintendent of the Susquehanna division. Later he served as chief clerk in the yard office at Oneonta, N. Y. In 1907 he went to Albany as a clerk in the office of the superintendent of transportation. In 1908 he was made chief clerk in the same office. He resigned this position in 1912 to become division superintendent of the Quebec, Montreal & Southern at Sorel, Que. He remained in that position until April, 1914, when he came to Greenwich, N. Y., as general superintendent of the Greenwich & Johnsonville. In July of the same year he was appointed superintendent of car service of the Delaware & Hudson at Albany, which position he held until his recent promotion.

Traffic

E. Emery has been appointed district passenger agent of the Union Pacific, with headquarters at Pittsburgh, Pa., effective October 16.

W. T. Price has been appointed general agent, freight department, of the Union Pacific, with headquarters at Kansas City, Mo., effective November 1.

G. R. Wright has been appointed commercial agent of the Central of Georgia, with headquarters at Birmingham, Ala., succeeding E. B. Lewis, resigned, effective November 1.

Edward Entelman, whose appointment as superintendent of telegraph on the Southern Pacific, with headquarters at San Francisco, Cal., was announced in the *Railway Age* of October 15 (page 679), was born in San Francisco on July 7, 1877, and entered railway service in September, 1895, with the Southern Pacific, as an agent and operator. In January, 1902, he became an operator and despatcher on the same road and served in this position until April 15, 1906, when he was appointed chief night despatcher with headquarters at San Francisco, a position which he held until June, 1917, when he was promoted to trainmaster of the Los Angeles division. At the time of his recent appointment Mr. Entelman was assistant superintendent of the Western division, with headquarters at Oakland Pier, a position to which he had been promoted in December, 1918.



Edward Entelman

P. R. Harris, chief clerk in the local office of the Chicago Great Western at St. Joseph, Mo., has been promoted to commercial agent, with headquarters at Des Moines, Iowa, effective November 1.

E. R. Oliver, general freight agent of the Southern, with headquarters at Cincinnati, O., has been appointed freight traffic manager, Lines West, with the same headquarters, effective November 1, succeeding G. P. Biles, deceased.

H. M. Morgan, general agent, passenger department of the Grand Trunk, with headquarters at Buffalo, N. Y., has had his jurisdiction extended to include a similar office of the Canadian National, with the same headquarters, effective October 20.

Thomas G. Montgomery, whose promotion to assistant freight traffic manager of the Northern Pacific, with headquarters at St. Paul, Minn., was announced in the *Railway Age* of October 1 (page 593), was born at Aylmer, Ont., and was educated at Upper Canada College, Toronto. He entered railroad service in May, 1900, as a traveling freight agent on the Wisconsin Central, with headquarters at Chicago. During the next twelve years, Mr. Montgomery served continuously

with the Wisconsin Central, and with its successor, the Minneapolis, St. Paul & Sault Ste. Marie, as New England agent at Boston, Mass., and as general agent at Milwaukee, Wis., Pittsburgh, Pa., and Chicago. In March, 1912, he was appointed general agent of the Chicago, Milwaukee & St. Paul, with headquarters at Pittsburgh, Pa., where he served until April, 1915, when he was promoted to assistant general freight agent, with headquarters at Minneapolis, Minn. In December, 1916, he was appointed general agent, with headquarters at New York. When off-line offices were closed in June, 1918, Mr. Montgomery entered commercial work, where he remained until February, 1920, when he was appointed general eastern agent of the Northern Pacific, with headquarters at New York, the position which he held at the time of his recent promotion.

F. D. Hammer, whose appointment as assistant general passenger agent of the Wabash, with headquarters at St. Louis, Mo., was announced in the *Railway Age* of October 22 (page 728), was born at Hubbard, Iowa, on August 8, 1878, and entered railway service in June, 1894, in the freight department of the Chicago, Burlington & Quincy. After being employed for three years in various departments of the Burlington, he was appointed ticket agent on the Chicago Great Western and served on this road until 1901, when he returned to the Burlington as a clerk in the general offices at Chicago. In 1904 he was employed by the Des Moines Union Railway but left that road in July, 1907, to enter the service of the Wabash, as a passenger agent, with headquarters at Kansas City, Mo. During the next eight years he served successively as city passenger agent and as traveling passenger agent. In 1915 Mr. Hammer was appointed district passenger agent, with headquarters at Houston, Tex., and was promoted to division passenger agent at St. Louis in February, 1916, the position he held at the time of his recent appointment.



F. D. Hammer

D. M. Crawford, general agent of the Canadian National, with headquarters at Cleveland, Ohio, has been transferred to Pittsburgh, Pa., succeeding **F. G. Wood,** who has been appointed Ontario freight agent of the Canadian Government Merchant Marine. **F. A. Shaw,** general agent, with headquarters at Detroit, Mich., succeeds Mr. Crawford.

F. L. McNally, traveling passenger agent on the Wabash, with headquarters at Kansas City, Mo., has been appointed division passenger agent, with headquarters at St. Louis, succeeding F. D. Hammer, whose promotion was announced in the *Railway Age* of October 22 (page 728), effective October 15. **F. C. Baird** succeeds Mr. McNally.

Mechanical

C. E. Bingham has been appointed supervisor of mechanical examinations of the Michigan Central, with headquarters at Detroit, Mich., effective October 1.

C. W. Adams, general foreman of locomotives on the Michigan Central, with headquarters at St. Thomas, Ont., has been promoted to superintendent of shops, with jurisdiction over the locomotive department, and with headquarters at Jackson, Mich., effective October 1, succeeding **W. C. Bell,** who has been transferred to Bay City, Mich.

A. H. Eager, whose appointment as general superintendent of rolling stock on the Canadian National and the Grand Trunk Pacific, with headquarters at Winnipeg, Man., was announced in the *Railway Age* of October 8 (page 637), was born on July 15, 1868, at Waterloo, Que., and entered railroad service in June, 1885, as a machinist apprentice in the shops of the Southeastern, at Farnham, Que. After a short time he left the service of this road to enter the shops of the Canadian Pacific, at Farnham, and was made a machinist in 1893. After serving as machinist for six years, he was made locomotive shop foreman and served in this capacity until 1901, when he was promoted to locomotive foreman, at Megantic, Que. In 1903, he was transferred to Cranbrook, B. C., where he was employed until May, 1906, when he was promoted to general foreman, with headquarters at Calgary, Alta. From 1907 to 1910, Mr. Eager served successively as district master mechanic, with headquarters at Kenora, Ont., and as locomotive foreman at Calgary, Alta. In 1910, he entered the service of the Canadian National, as superintendent of shops, with headquarters at Winnipeg, Man., a position which he held until August, 1916, when he was promoted to assistant superintendent of rolling stock of the Western lines of the Canadian National. At the time of his recent appointment, Mr. Eager was mechanical superintendent on the Canadian National, with headquarters at Winnipeg, a position to which he had been promoted in December, 1918.

Engineering, Maintenance of Way and Signaling

H. S. Jones, valuation engineer of the Gulf. Mobile & Northern, with headquarters at Mobile, Ala., has been appointed chief engineer, with the same headquarters, succeeding L. W. Duffee, who has been appointed assistant chief engineer, effective October 15.

Obituary

J. D. Andrews, assistant chief surgeon of the Chicago & North Western, with headquarters at Chicago, died suddenly at his home on November 6.

Charles C. Higgins, superintendent of motive power of the St. Louis-San Francisco, whose death was announced in the *Railway Age* of November 5 (page 820), was born at Aurora, Ill. He graduated from the mechanical engineering department of the University of Minnesota in 1900, and immediately entered railroad work as a special apprentice in the service of the Chicago, Burlington & Quincy. After five years with that road, during which he served successively as assistant in the laboratory, roundhouse foreman and general roundhouse foreman at various points on the line, he left to become associated with the American Brake Shoe & Foundry Co., in its Chicago office. During the next four years he served as sales engineer and salesman with this company. In 1909, however, he returned to railroad service, accepting an appointment with the Atchison, Topeka & Santa Fe, with headquarters at Topeka, Kas., where he was assigned to special work in connection with the motor schedules of the mechanical department. In 1912 he was engaged by J. W. Kendrick, consulting railway engineer, Chicago, to make reports on various railroads in connection with the valuation and rehabilitation of their properties. When the position of assistant to the vice-president of the St. Louis-San Francisco was created on March 15, 1918, Mr. Higgins was appointed to that position. He was made superintendent of motive power on March 1, 1920, the position he held at the time of his death.



C. C. Higgins

EDITORIAL
Railway Age
EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Time to Take the Lead

At the moment when every business man is hesitating, does it not afford the railroads an unparalleled opportunity to assume the leading role, not only as an institution for providing transportation, but as the nation's most progressive business enterprise? The railroads must realize that they have come into a new estate, that public mistrust has changed to confidence. It is of the utmost importance that the constructive legislation and liberal rate advances be in no sense abused. That the railroads must eventually put their equipment and organization in condition to deal efficiently with the most exacting public requirements is obvious. Railroad executives should have the foresight to comprehend a broad plan for physical and organic rehabilitation and the courage to pursue this policy without faltering. It may be that a concerted pause in active development will result in lower costs for the basic materials on which this development is dependent but the need for new rail, for better locomotives and for improved terminal facilities is so evident that it would be fatal to postpone a constructive program until every other business enterprise is again expanding. On what grounds can the railroads explain their failure to have sufficient cars, efficient locomotives and adequate terminals if in the course of a few years it appears that they failed to persevere in a comprehensive program for these improvements? Business will not hesitate forever on the verge of readjustment. Now is the time for the railroads to plan and to build for the future.

Choosing Office Equipment

The opinion has been expressed in these columns that machinery for railroad offices has proved itself as desirable and as necessary as machinery in the railway shop. Office machinery saves labor, it promotes accuracy, it assists speed, and in many departments it facilitates matters to such an extent that work is now being done that it was almost impossible to do satisfactorily under the old methods. It must be borne in mind, however, that so much progress has been made in office machine equipment that these mechanical aids should not be purchased indiscriminately any more than machine tools for the shops can be bought in that way. There are now available for use a wide variety of adding, calculating, tabulating machines, etc. Some of them will be found most valuable for the accounting departments while others will be found less useful for these departments but almost indispensable for the operating, engineering and mechanical departments. This thought is suggested for the reason that it may not be apparent to the prospective user, or possibly even to the seller of the equipment. It is evident that a device to be used by employees whose principal work is figuring, as is typified by the work in the auditor's office, is not so likely to do equally efficient work in the hands of an employee with whom figuring is incidental, as possibly in the mechanical department. On the other hand, a device which has more aids to the operator is likely to prove quite satisfactory in the latter department, whereas the presence of these aids would be a handicap to speed in the hands of a thoroughly trained worker in the auditor's office. Mechanical equipment for offices has developed so rapidly and the devices are now so varied in character that these things must be kept in mind so that the best devices will be secured and their use will be properly systematized to secure the large results that are obtainable under the right conditions, as compared to the "old" and, in some railway offices, "present" methods.

Railway Financial Officers

The caring for a railway's cash is a most responsible function. On another page of this issue we report the meeting of the Society of Railway Financial Officers held at Richmond, Va., last week. This organization is composed of those railway officers who bear in the main the title of treasurer. As befits the duties of these officers, their organization has a place among the many railway associations considerably beyond what might be expected from the comparatively small membership of 215. The association this year, as in former years, did not confine its discussions merely to the questions arising out of the handling of cash or credits. The program evidenced the fact that the treasurer has many duties to perform over and above that work. The treasury department on the one hand deals with the employee through the pay car and the collection of funds taken by the agents, and on the other hand with the public, because of the necessity of making rules as to proper payment of freight bills, etc. That the treasurers are looking at the broad aspects of their functions is shown possibly in no better way than in the paper and discussion on selling stock to employees. The meeting was as much interested in the usefulness of the plan from the standpoint of its securing the interest and loyalty of the man who purchased stock as it was in the actual details of working out the plan once it may be put into effect. The interest in the ways in which the treasurer may make friends for the railways on the part of the public was also equally noteworthy.

The Weakest Link

A leading authority on railroad operation recently declared that a single locomotive terminal on a certain important railroad is the factor which limits the operating capacity of that railroad. It will be conceded that the locomotive terminal constitutes the weakest link in the chain of operations on many railroads and on more than one railroad the facilities for maintaining and expediting the movement of locomotives in and out of the terminals are so totally inadequate that they might be more aptly referred to as the "missing link." It may not be fair to say that the railroads have permitted the development of locomotive terminals to drag behind almost every other facility, but it is certain that in no other direction will a relatively small amount of money go as far toward improving the operation of the railroad as in the improvement of locomotive terminals. But locomotive terminals cannot be built over night, nor is terminal development so simple a matter as a contract for additional cars or even a new order of locomotives. Once the site is selected, the railroad is forever committed to a location where it may soon become cramped for room. If a ninety-foot turntable is decided upon, the terminal will become inadequate the moment it is necessary to turn a longer locomotive. Every railroad should have outlined a comprehensive plan for the rehabilitation

of every locomotive terminal that will anticipate so far as possible the maximum requirements for at least fifty years to come. A committee representing the transportation, the mechanical and the engineering departments might well be appointed to study the situation on each railroad and develop such a plan. When this is accomplished, all construction should proceed in accordance with the plan, leaving the more ambitious features for later development. Where the projected terminal represents a departure from the former site and involves entirely new equipment it would not appear impractical to borrow the funds for this investment under a locomotive terminal equipment loan.

Save the Surface and You Save All

Some years ago there was an article in one of the architectural publications dealing with the beautiful passenger stations on one of the eastern railroads. The architectural beauties of the stations were lauded to the skies with the reservation in the case of one of them to the effect that its beauties were entirely spoiled by its proximity to a freight yard full of dirty red box cars. If the writer were writing today and could see the color of most of the cars that are now in that yard, what would he say? Speaking in similar vein, it would seem a safe observation that a railway trip today must stir conflicting emotions in the heart of any paint manufacturer or paint salesman. The paint concerns have united in the use in their advertising of the slogan "Save the surface and you save all." It must seem discouraging to these men to see what little apparent effect their campaign has had on the railroads as evidenced to the traveler, at least, by the predominance of a brown rusty shade as the ruling color for steel freight cars. It stands to reason that these cars are deteriorating much faster than they would if properly painted. From the standpoint of the traveling public, they are spoiling the scenery as much or more than the unartistic signboards that adorn the right of way in many places and to the railway passenger these cars look like the embodiment of inefficiency. The reason for the lack of paint on these cars is the same as the reason for the lack of all kinds of car repairs, principally the difficulty of returning cars to their owning roads where they may be put in proper condition, although probably the public does not know that. It is to be hoped that the proposed increase in the per diem will be adopted, for it will no doubt help considerably in getting the cars on their home lines. It is worth bearing in mind that a decrepit looking rusty car is certainly of little advertising value to the road whose initials it bears.

Lost—Three Millions in Two Weeks

The ideal train movement—the salient feature in ideal railroad operation—is one wherein the train delivers its passengers or freight at destination on time, without damage to person or property and without waste of fuel or labor, or injury to any person or interest. We must keep this ideal constantly in mind. The other side of this picture is the fact that the final record of the train movements of the United States shows losses and damages of a million and a half dollars a week—$78,000,000 a year. It is regrettable that it is necessary so often to look at the dark side of the picture; but such exercise is salutary if taken in the right spirit. Even the poet, who cultivates roses, has to spend a good deal of his time in exterminating weeds and in fighting other enemies. This average of 1½ millions a week is not precise, *but it is truthful;* and it is easy to keep in mind. Each officer or employee can readily compute an average for his own road or division. The second item in our estimate* is taken from a recent address by Harry J. Bell, noticed in another column. Our deduction for payments not due to train operation is liberal; many would not deduct so much. Our third item also is inexact, but it is well within a reasonable limit. The Congress on Claim Prevention which is being held in Chicago as this is being written will deal with this item; and may, indeed, compel us to increase our memory-figure. The total freight losses this year are expected to aggregate 110 millions; but that figure includes losses from thefts and other causes not connected with train movement. The purpose of this paragraph is to warn against underestimating the losses when reading the annual train-accident record. The record for 1919, just published, shows gratifying diminution in the totals of killed and injured; a fact which every one will be glad to note. But we must note this other fact also. The time has at length arrived, however, when the railroad man does not have to bear *all* of the public criticism; automobile accidents are now killing people in this country at the rate of about eleven thousand a year; or one man, woman or child every half hour, for 16 hours each and every day!

Are We Getting the Right Kind of Engineers?

A CONFERENCE of engineers, educators and vocational experts was held in Chicago on November 12 to determine whether engineering education and the selection of engineering graduates for employment are being conducted in a manner designed to secure the best results. This is an important subject not only for the engineer himself but for the employer and grave questions have been raised as to the adequacy and correctness of present educational methods. While the railroads played only a minor part in this conference the problems considered are of vital importance to them and a close study of engineering education in relation to the employment of engineers on railroads may be fruitful in disclosing some of the reasons why the railroads have not found the engineer as useful as has been the case in many of the other industries.

The railroads have been employers of engineering graduates chiefly because they supplied a definite need for men trained to do certain things—to run a transit, figure stresses in a bridge or calculate earthwork quantities. Eventually, many men selected with these qualifications have developed executive ability to a degree that made them likely candidates for official positions, but too often they have been tried and found wanting. Similar experience has led some of the other employers to look for basic causes and question whether technical education has been conducted along proper lines. Some have contended that the education should be broader with the idea of training the mind to analytical thought rather than to developing skill in certain special lines. Others have pointed to a seeming lack of personnel activity designed to direct the student in a line suited to his possibilities and to provide the prospective employer with data upon which to base his selections.

In the absence of any specific personnel organization on the part of the universities some of the employers have taken the initiative by sending representatives to the schools with a view to the selection of the most promising graduates. Individual railroad officers through their affiliation with certain institutions have followed much the same procedure, but

*Our compariosns are for 1918, the latest year for which complete figures are available. For 1919 the train accident bulletin shows total losses of $22,675,820 (see Bulletin 74). Item 3 (below) for 1919 is $104,244,000, and for 1920 it is estimated at 110 millions, or higher. For 1918 the available data can be tabulated as follows:

1—Train accidents; damage to cars, engines and roadway.....		$20,954,350
2—Personal injury and death claims.....	$33,369,199	
	11,123,067	
Two-thirds (estimated) due to train accidents..	$22,246,132	22,246,132
3 Damage to freight, estimated.....		34,799,518
		$78,000,000

the policy has been that of the individual rather than the organization and the results have been in proportion.

With an increasing realization of the extreme importance of personnel work, particularly as applied to the selection of officers, there is every reason for increased attention on the part of the railroads toward their relations to the technical schools, and there should be careful study of this subject by such organizations as the American Railway Engineering Association. It has concluded to study also the problems of labor; is not the present a fitting time for extending this subject to include the problems of the employment of brains as well as brawn?

Real Versus Actual Railway Retrenchments

ALL SIGNS INDICATE that the railways have entered a period of declining traffic and earnings. Their principal problem for many months has been that of increasing the efficiency with which they used the available facilities in order that they might handle a constantly increasing traffic. In a period of declining business the most important and difficult problem is to reduce operating expenses.

The difficulty of reducing expenses enough to offset a substantial decline of business and gross earnings, without doing it in ways that cause deterioration of the physical property, is probably greater in the railroad than in any other industry. When the business of a manufacturing company declines it can temporarily close its plant. A railway cannot do this. Once the manufacturer has closed his plant he can usually reduce wages before he reopens it. The conditions which make it impracticable for a railway to shut down its plant render it extremely difficult for it to reduce wages. An additional obstacle to reductions of railway operating expenses is created by the fact that railway wages are now subject to public regulation.

While a railway cannot suspend operation it often can make large reductions of expenses by sharply curtailing the amount of maintenance work done on its tracks, locomotives and cars. This policy has been adopted by most railways in periods of declining business. It is, however, a fact clearly recognized by all railway executive, operating, mechanical and engineering officers that reductions in either maintenance of way or maintenance of equipment which result in the deferring of work which really needs to be done always result later in making necessary expenditures largely exceeding the nominal savings effected. It is a generally accepted principle that in the long run the cost of making up deferred maintenance is at least twice as great as the amount nominally saved by deferring it.

Owing to the well recognized extravagance of deferring maintenance, the most careful consideration should be given at the present time by railway managements to proposed programs of retrenchment. The management of a railway whose net operating income is inadequate even when business is good and which, consequently, is brought to the verge of bankruptcy as soon as business declines, can hardly be blamed in periods of declining business for cutting its maintenance to the bone, although experience shows that this policy often only postpones bankruptcy and makes it more sure. There can be no good reason for the adoption, under present conditions, of a similar policy by railways whose earnings are practically certain, even though the greatest conceivable decline of business should occur, to be sufficient to pay the amounts of interest and dividends which they ordinarily have paid.

The railway managements, since the roads were returned to private operation, have been making heroic efforts to do enough maintenance work to restore the properties to a good operating condition. While much progress in this direction has been made, much remains to be done. Most railways are still far from the goal of reducing the number of bad order freight cars to 4 per cent. Most of them have not laid anywhere near enough new ties and rail to offset past years of deferred maintenance of track. If there had continued to be sufficient business to tax their capacity no one would have questioned the wisdom of continuing vigorously the rehabilitation of the properties.

As a matter of fact, however, the reasons for continuing the work of rehabilitation are as forceful now as they were before the decline of business began. The experience of the last five years has demonstrated that in periods of active production the industries of the country can offer the railways more traffic than they can handle with their present facilities. There are many reasons for believing that the present decline of traffic will be short, as was that in the spring of 1919. There will doubtless continue to be all the coal traffic the roads can handle. There are vast amounts of grain, cotton and other agricultural products in the country whose shipment is being delayed by recent declines of prices, but which in the near future must be shipped. The recent reduction of business activity is largely due to a revolt of consumers against the high prices of manufactured and other commodities, which has made it necessary for concerns of many classes to reduce their output.

These declines in prices temporarily have increased the strain upon many financial institutions. But after the present process of liquidation has gone on for a while the declines of prices and the reductions of wages which are taking place in many industries probably will ease the entire credit situation by reducing the amount of credit which the banks will have to extend to concerns to handle any given amount of business. Prices in general seem likely soon to reach a new level where they will stay for a while. With a shortage of almost everything resulting from the world war still prevalent, there seems no good reason for believing that prices will long continue to decline. When they become more stable consumers undoubtedly will begin to buy things in larger amounts. Improvement in the credit situation will tend to enable production in general to be resumed on a large scale. There is an enormous shortage of buildings for both business and residential purposes in this country and it seems only a matter of time until, as a result of readjustments now taking place, there will be a large revival of construction activities.

It would be hazardous to predict how long it will be before there will be a large and extensive revival of business activity, but it is bound to come, and for the reasons mentioned and others that might be mentioned, it seems probable that it will not be long postponed. When it comes, are the railways again going to be caught unprepared for it? This will depend largely upon the policy regarding rehabilitation and improvements followed in the period immediately ahead of us. In some respects this period will be favorable for actively prosecuting railroad maintenance and improvement work. Railway labor will be more efficient than it is in a period when every employee knows if he is laid off he can immediately get a job elsewhere. Manufacturers of materials will be better able to fill orders, and will perhaps be able to make better prices than they have been in the recent past or will be after business activity revives. If the railways do not now go on doing all the rehabilitation and betterment work they can, they will not be able satisfactorily to handle traffic when business revives, and it will cost them more to handle it.

The question will naturally be raised as to where the railways are to get the money with which to do extensive maintenance and improvement work. Nobody can answer that question until more is known as to the effect of the new passenger and freight rates upon earnings, and as to how heavy the decline in business is going to be. The one point we

one thing to emphasize is the expediency, from a railroad standpoint, of going forward with as large maintenance and improvement programs as the earnings will permit.

There is another point of no little importance to be considered besides the effects which the doing of a reasonable amount of maintenance and improvement work at the present time will have upon the handling of future business. The Transportation Act requires the Interstate Commerce Commission to so fix the rates as to enable the railways to earn an average return of 5½ to 6 per cent. If railways which are financially able to continue adequate expenditures for maintenance do not do so, they will, by making merely nominal reductions of their operating expenses, make the nominal net return earned by the railways as a whole larger than it otherwise would be. The net return earned under both favorable and unfavorable business conditions must be taken by the Interstate Commerce Commission in future as the principal measure of the rates it should allow the railways to charge. Therefore, for the railways to so reduce maintenance expenses as arbitrarily and nominally to increase the net return earned by them would indicate that they do not need as high rates as they actually do. It would tend in the long run to increase operating expenses more than they otherwise would be increased, and thereby in the long run to reduce the net return actually earned or make it necessary for the Commission to fix higher rates than otherwise would be necessary. In other words, unwise reductions of maintenance to make an artificial showing would, in the long run, be bad both for the railways and for the public that pays the rates.

The conditions demand that no effort shall be spared to make every real and legitimate reduction in expenses that is possible. Railway officers must, in the period immediately ahead, devote the same ability and energy to reducing expenses that they have put forth in recent months to increasing the amount of traffic handled. But the welfare of both the railways and the public demands that economies shall be effected by making real savings in the use of labor, materials and fuel, by increasing the average load per car and per train, by reductions in loss and damage of freight, and so on, and not merely nominal savings which will leave the roads crippled when traffic revives and which, therefore, in the long run will cost more than they are worth.

Railroads Handle a Month's Traffic Without Return

STATISTICS which have just been made public of the operations of the railroads for the first six months after their return to private management on March 1 show that during this period they have performed 23 per cent more freight service and 37 per cent more passenger service than the average for the corresponding six months of the pre-war test period on which their guaranty was based.

There have been some attempts to make the public believe that the railroads were being accorded unusually generous treatment by the provision in the transportation act for a guaranty, based on what the railroads actually earned before the war, to allow the Interstate Commerce Commission time to make the necessary adjustment of rates so that they could get along after September 1 without further expense to the taxpayer.

The statistics, however, show that during this six-months' period the freight service performed by the railroads amounted to 225,688,000,000 net ton miles, as compared with 183,515,000,000 in the average six months of the test period, and the passenger service to 24,500,000,000 passenger miles, as compared with 17,845,000,000. In other words, the roads transported the equivalent of 42,173,000,000 tons of freight a distance of one mile, and 6,655,000,000 passengers a distance of one mile, or more than a full month's business, for which the companies received not a cent of return.

During the three years ending June 30, 1917, which by the federal control act was made the test period on which was based the "standard return" guaranteed to the railroads as compensation for the use of their property by the government, the railroads earned an average net operating income of about $900,000,000, which was about 5.2 per cent on their property investment. This has been frequently referred to as representing the results of the "three biggest years in railroad history," but from the standpoint of the amount of traffic handled the average of the test period has been exceeded each year for three years since. Nevertheless, the net income from railroad operation received by the railroad *companies* has been limited to that amount ever since January 1, 1918, and a large part of it has not even yet been collected because some of it was withheld by the Railroad Administration in part payment for capital improvements and most of the guaranty for the six months after the termination of federal control has been held up by the recent decision of the comptroller of the treasury.

Rates were increased, so that the shippers and passengers paid more for their service than before, just as they paid an even greater increase for practically every service they received or article they bought, but because the advance in rates was less than the increase in expenses, a large part of the guaranty was paid out of the public treasury. Yet, during a period when there was much complaint of profiteering in almost every other business, there was no increase in the return received by the railroad companies or their stock and bond holders as compared with the pre-war period.

During the six months from March 1 to August 31 of the pre-war test period the railroads earned an average net railway operating income of $459,000,000, and for the corresponding six months of 1920 they will ultimately receive an approximately similar amount. The net loss to the government for six months was approximately $650,000,000 because the roads had an actual deficit of some $210,000,000, but most of this represents the increase in wages for May, June, July and August under the retroactive award of the Railroad Labor Board, and the amount to be received by the companies is not affected by it.

The total operating revenues of the railroads in the six-months' guaranty period of 1920 were $2,894,853,000, an increase of $1,182,550,000 as compared with the average of the corresponding six months of the test period, or 69 per cent. The operating expenses for the six-months' guaranty period were $2,935,690,000, an increase of $1,777,000,000 or 153 per cent. Taxes were nearly doubled, amounting to $144,910,000, an increase of $69,540,000, or 92 per cent, and other items resulted in a decrease in net operating income of 146 per cent. In the test period operating expenses were 67.66 per cent of the total operating revenues, but in 1920 they amounted to 101.41 per cent of the revenues.

Of the total increase in revenues of $1,182,550,000 in the guaranty period as compared with the test period, an estimate based on the increase in ton miles and passenger miles indicates that about $274,000,000 was due to increased freight traffic and $133,000,000 to increased passenger traffic, in addition to the increase in rates made by the Railroad Administration in 1918, but the companies received no benefit from this. The increase in ton miles of freight handled in the six months of 1920 as compared with the average six months of the test period is nearly equivalent to the amount of freight business handled by the railroads in August this year, which was the heaviest freight month in their history and the increase in passenger traffic was more than the average business for a month and a half.

Whatever else may be said of the results of the experiment in government operation it was a 100 per cent success in preventing any profiteering by the railroad companies for a period of two years and eight months.



The Old Structure, Showing Work of Encasing the Old Piers and the Building of New Intermediate Piers

Philadelphia & Reading to Build 46-Arch Bridge

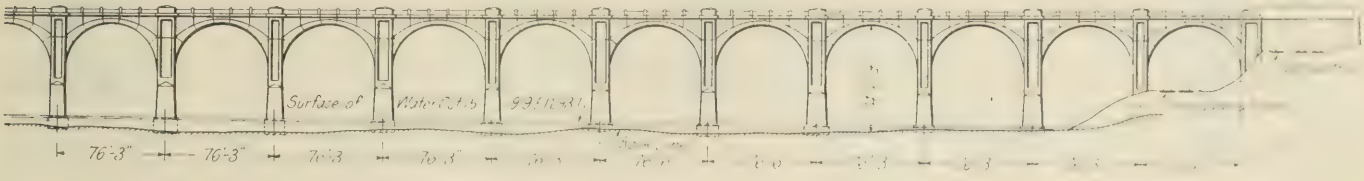
Work Begun on Double-Track Concrete Structure Crossing Susquehanna River at Harrisburg, Pa.

By E. Chamberlain
Assistant Engineer, Philadelphia & Reading, Philadelphia, Pa.

The Philadelphia & Reading has recently commenced the replacement of its bridge crossing the Susquehanna river at Harrisburg, Pa. This work will be augmented by considerable work on several of the land bridges or viaducts located at various points in the approaches through the city proper. As a result the movement of trains will be greatly facilitated at this point. The existing double track superstructures of the bridges through Harrisburg will be replaced with new and heavier steel structures while the long single-track crossing of the Susquehanna will be dismantled, the old piers strengthened, new intermediate piers built and a double-track reinforced concrete bridge erected, having 46 arches measuring approximately 76 ft. from center to center of piers.

The new structure is on the line of the Philadelphia, Harrisburg & Pittsburgh branch which connects with the Lebanon Valley branch, passing over the streets of Harrisburg and the tracks of the Pennsylvania by means of the double-track bridges and approach viaduct mentioned above. After crossing the Susquehanna the line extends to Shippensburg where it connects with the Western Maryland. The new river bridge will replace a wrought-iron deck-truss structure having 23 spans, 149 ft. 4 in. center to center of end pins and 24 ft. 9 in. from center to center of upper and lower chords, and one 69-ft. through plate girder bridge spanning the tracks of the Northern Central.

The river piers were built originally for double track, and the superstructure for single track, though it was so designed that a third truss could be added whenever two tracks were required. The masonry for this old bridge, which was completed in 1890, including the approach work through the city, contained approximately 6,258 cu. yd. of masonry on land, and 9,773 cu. yd. in the river piers, the latter being built in range-work from bed-rock to copings and composed of Clearfield county sand stone, laid with cement.



Part Elevation of the Bridge Being Built

Originally the completed single track occupied its double-track position, or about 1 ft. 7½ in. off center of the bridge trusses, each of which was designed to carry two-thirds of a single track load. With the increasing engine and train loads, it was found that the masonry in the tops of many of the piers was being displaced, necessitating the reconstruction of the tops of these piers. It was also ascertained that

a number of the eye-bars of the trusses were loose, increasing the load carried by the other bars to an unknown extent. The trusses were apparently deficient in rigidity and swung considerably during the passage of trains. To relieve this condition, the track was shifted so as to bring two-thirds of the single track load on the heavier truss, and the speed of trains was reduced to 10 miles per hour as a temporary expedient. In fact, all the land bridges and the river bridge were stressed to their limit, and required rebuilding in order to carry the very heavy traffic at this point. This movement consists almost entirely of solid through trains of the Philadelphia & Reading, the Baltimore & Ohio, the Norfolk & Western, the Western Maryland and the Cumberland Valley. The number of trains using this bridge in completed movements daily is 75, without counting switching movements, and the daily revenue tonnage averages about 140,000.

The new structure, which will be built on the same alinement and on practically the same grade as the present bridge, will have 46 arches having an average clear span of 66 ft. It will be built entirely of concrete and for two tracks with a total length of 3,507 ft. 9 in. center to center of end piers. The base of rail at the eastern pier is about 54 ft. above normal water in the river, and at the western pier about 79 ft., the grade on the bridge being 0.7 per cent. The depth of water in the river ranges from about 2 ft. as a minimum to 8 ft. 6 in. as a maximum.

The old piers, which are supported on a rock bottom, are to be encased in concrete and new intermediate piers built. The concrete encasement around the old piers will have a minimum thickness of 18 in., reinforced with 5/8-in. rods, spaced 3 ft. center to center both ways, and with expansion bolts 6 ft. apart, anchored 12 in. into the old piers. Each of the reconstructed piers will have a thickness at the springing line of 11 ft. 6 in., while the new intermediate piers will have a thickness of 9 ft. All foundations will be approximately 51 ft. 9 in. long at the base and 35 ft. long above the nosing and up to the parapet.

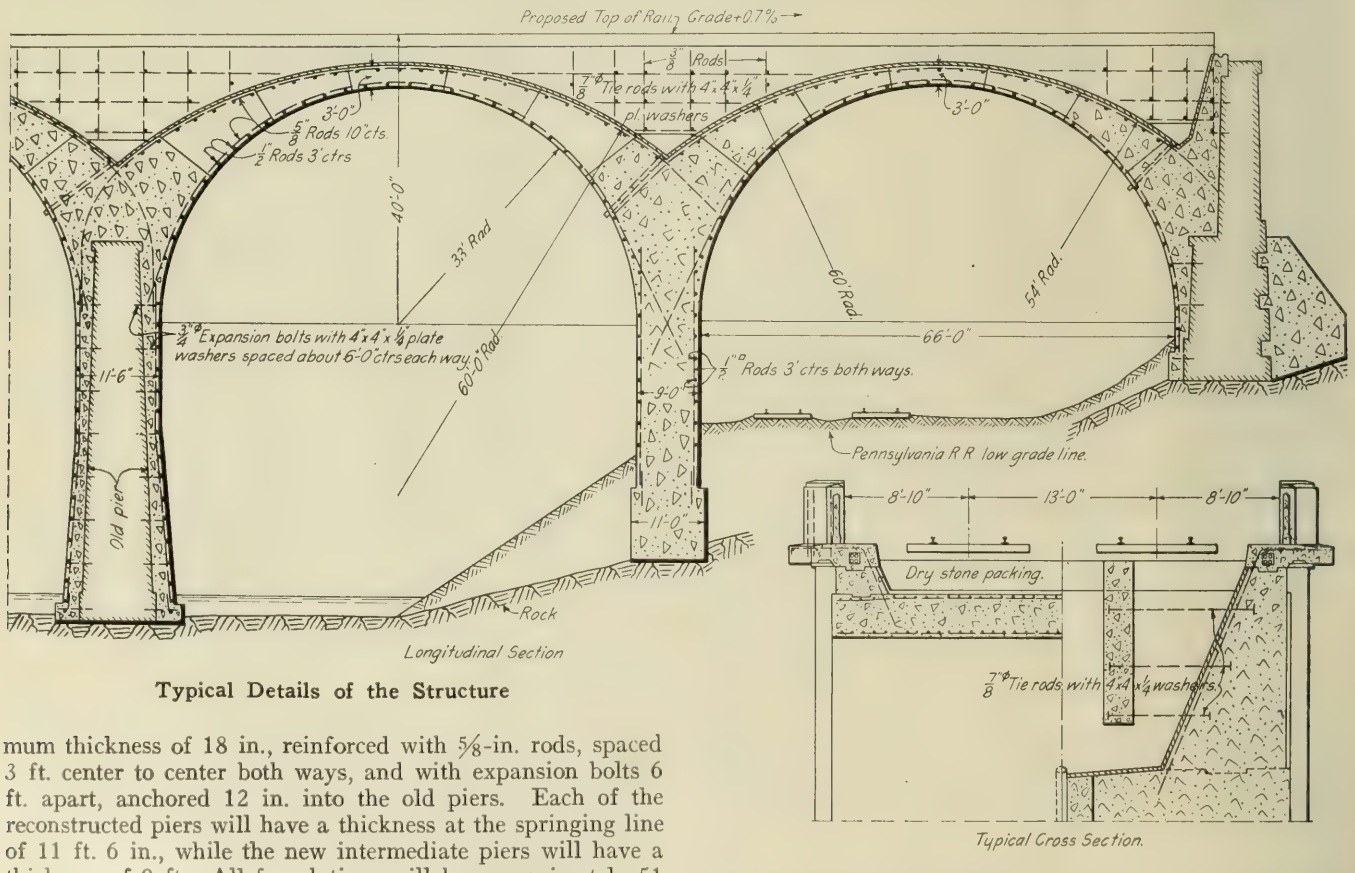
The arch ring is of semi-circular design with radii of 33 ft. and 60 ft., giving a crown thickness of 3 ft., and a radial width at the haunch where it joins the pier section, of about 11 ft. The ring is thoroughly reinforced for temperature changes and will be poured in sections in the usual manner for this type of construction. A clearance of 28 ft. 6 in. has been provided for, figuring on a basis of the maximum high water in the past.

The spandrel walls are reinforced and have a batter on the back faces of 5 in. in 12 in. They are surmounted by a concrete coping of simple design in which a four-way vitrified clay duct is placed on each side of the bridge to carry the necessary present and future wiring, terminating in hand holes spaced 250 ft. apart on both sides. The reinforced concrete railing, 4 ft. in height, will consist of ornamental posts and intermediate solid panels, built up on the copings, and having a clear width between inside faces of 30 ft. 8 in. The over-all width of the bridge between faces of rings is 32 ft. and the clear width between copings 26 ft.

The faces of the arch rings and spandrels will be plain except for V-grooves at the construction joints. The tops of



Narrow Gage Track Carried on Cantilever Extension at Left



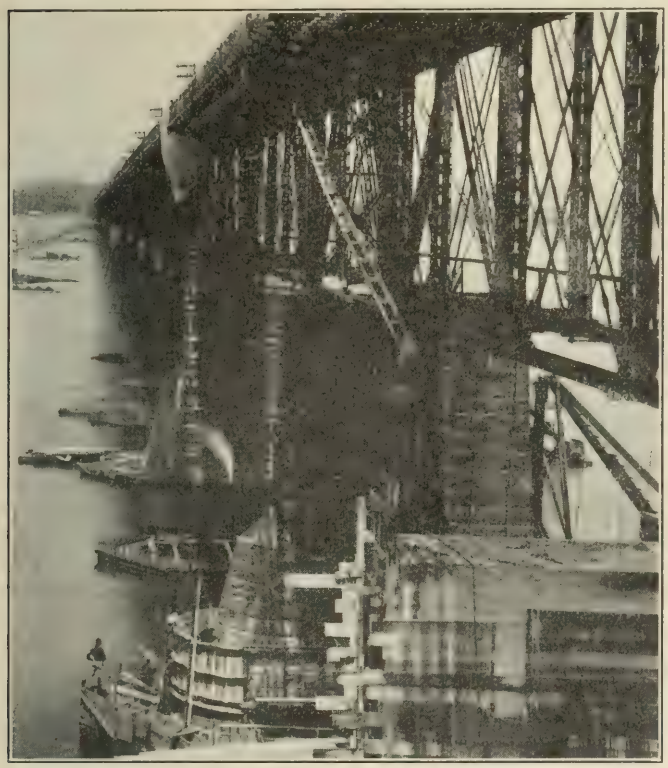
Typical Details of the Structure

the arches and the inside faces of the spandrel walls are to be waterproofed with two layers of cotton fabric saturated and cemented together with asphalt. This membrane will have a 2½-in. concrete protection course of a 1-2-4 mix with ⅜-in. stone, all reinforced by No. 12 electrically welded wire cloth, with a 4-in. by 4-in. mesh.

Drainage at each pier will be secured by means of cast-iron pipes 8-in. in diameter carried through the arch ring. The space between the spandrel walls and over the arch rings will be built up and filled with dry stone packing, of what is commonly known as one and two-man size, to about 1 ft. 9 in. below the top of the rail.

The coffer-dams now being used for the river piers are generally of the Blaw-Knox type of steel framework, with two lines of Lackawanna steel sheet piling, about 18 in. apart, enclosing the puddle wall. Four and eight-inch pumps are being used for unwatering these dams.

Work is proceeding from both shores, separate concrete mixing plants having been installed at each end of the bridge. On the east bank of the river the mixing plant has been located at ground level and the concrete is being elevated to the top of the bridge, where it is discharged into side dump cars. These are conveyed to the work on a 24-in. gage railway by 3-ton gasoline locomotives, and the concrete is distributed to the different foundations through separate steel chutes. At the western end, the concrete is dumped from the mixer to the cars direct and then conveyed to the work in a similar manner.



Encasing the Old Piers with Concrete

In order to continue traffic over the present bridge during construction it was necessary that the arch rings be built in two longitudinal sections. On the completion of the foundations the first section, 13 ft. 6 in. wide, will be built on the down-stream side of the present bridge. In order to retain the stone fill supporting the track a middle wall will be built up of reinforced concrete 2 ft. wide and anchored to the spandrel walls by ⅞ in. tie rods. When completed traffic will be transferred to this section, after which the old superstructure will be dismantled and the remaining section of arch rings completed.

Steel centering will be used for the arch rings. These will be supported upon steel brackets inserted in pockets formed in the face of the piers below the springing line. All concrete will be of a 1-2-4 mixture, using a 1½-in. crushed stone throughout except in the railing which will be of ⅜-in. size. The approximate quantity of concrete in the new structure is 88,000 cu. yd.

The new structure, as well as the other secondary structures, which are to be renewed was designed by and is now being constructed under the direction of the engineering department of the Philadelphia & Reading, Samuel T. Wagner, chief engineer, Clark Dillenbeck, assistant chief engineer, and P. S. Baker, engineer of bridges and buildings. The field work is in charge of C. H. Hitchcock, assistant engineer, and the writer. The contractors on the work are the James McGraw Company, Philadelphia, Pa., and T. L. Eyre, Philadelphia, to whom the foundation work was sub-let.

I. C. C. Reports on Coal Conditions

An abnormal domestic situation, intensified by a foreign demand, has been the primary cause for the exacting during the first nine months of this year of prices for coal "not justified by the cost of production" and has forced railroads entering the spot market at ports along the Atlantic seaboard to pay "exorbitant prices," the Interstate Commerce Commission says in a report of an investigation of certain phases of the coal situation which it has made in response to a Senate resolution.

In reply to a question as to how many cars were used in March and April to carry the coal which went offshore for foreign bunkers and cargoes the Commission says that the total tonnage thus shipped was 3,572,619 long tons in March and April, 1920, combined. In the first quarter of 1920 the average carload of bituminous coal on the Pennsylvania, the Baltimore & Ohio, the Reading, the New York Central, the Erie, the Norfolk & Western, the Chesapeake & Ohio, the Virginian, the Western Maryland, and the Southern was 51.56 net tons, equivalent to 46.04 long tons. The 3,572,619 tons above mentioned are thus equivalent to 77,598 carloads. There are no exact figures of the average length of time that a car consumes in making a turn-around between the coal fields in question and the ports specified. An investigation by the Tidewater Coal Exchange covering the eighteen months ending December, 1917, indicated 12.1 days as the time required. G. N. Snider, coal traffic manager of the New York Central Lines, estimates that the time is more nearly 16 days. We may assume that a car in two months could make approximately four trips. To haul the 77,598 carloads would on this basis require 19,399 cars in continuous service, making no allowance for repairs. If the 12 days for a turn-around be accepted, only 15,265 cars would be required.

As to how far the price of coal for locomotive use on American railroads has been raised because of the upbidding of coal prices by foreign buyers the Commission says that in normal times it is not probable that foreign purchases have a marked effect because of the relatively small amount of coal exported as compared with the total production in the United States.

"With an estimated production of 400,000,000 net tons, or 357,142,857 long tons, for the first nine months of 1920 the export and foreign bunker coal for the nine months was 8.5 per cent of the estimated total production. In particular situations, the foreign demand plays a much more important part than is indicated by the comparison of total production and export for the United States as a whole. In the first nine months of 1920, the export and bunker coal through the five ports named, amounted to more than one-half of the shipments to those ports. Those railroads which were

forced to buy spot coal at the exorbitant prices quoted at these ports in 1920 were directly affected by the upbidding of prices by foreign buyers. At Baltimore, sales were said to be made in July, 1920, f.o.b. piers as high at $17 and $18 a long ton (Coal Age, July 29, p. 263). But railroads outside of New England did not generally buy coal at such prices. The following table shows the result of an inquiry by the Commission on this subject for the month of July, 1920:

Quantity and Average Mine Price of Bituminous Coal Purchased by Large Steam Roads in the Months of July, 1919, and July, 1920

Geographical district	Number of roads reporting	Quantity purchased Net tons: On contract July, 1920	On contract July, 1919	Spot July, 1920	Spot July, 1919
New England	7	458,824	443,387	366,399	33,182
Other Eastern	49	4,099,458	3,678,806	403,808	224,213
Southern	30	1,504,435	1,353,955	319,741	92,813
Western	73	3,564,774	3,403,873	428,496	126,560
Total, all districts	159	9,627,491	8,880,021	1,518,444	476,768

Geographical district	Cost at mine: On contract July, 1920	On contract July, 1919	Spot July, 1920	Spot July, 1919
New England, total cost	$1,717,165	$1,026,232	$3,624,199	$60,323
Average price at mine per net ton	3.74	2.31	9.89	1.82
Other Eastern, total cost	13,249,226	8,332,044	1,994,717	520,430
Average price at mine per net ton	3.23	2.26	4.94	2.32
Southern, total cost	4,819,341	3,219,521	1,708,132	233,925
Average price at mine per net ton	3.20	2,38	5.34	2.52
Western, total cost	11,477,632	9,369,204	1,795,475	319,516
Average price at mine per net ton	3.22	2.75	4.19	2.52
Total, all districts, total cost	$31,263,364	$21,947,001	$9,122,523	$1,134,194
Average price at mine per net ton	3.25	2.47	6.01	2.38

"The prices shown in the table are the average prices at the mine. The average delivered prices on spot bituminous coal purchased during July, 1920, for seven New England roads, ranged from $11.64 to $14.46 per net ton.

"It would be an error to assume that fundamentally the high prices paid for spot coal are to be ascribed mainly to the large exports. There also has been an abnormal domestic situation. At the time of the armistice, in 1918, there was an abundance of coal. Following the armistice, consumers drew upon their stocks instead of placing orders for coal. After the bituminous coal miners' strike in November, 1919, the reserves were very low. Progress in restoring them was halted by various factors, such as sporadic strikes at mines, a partial paralysis of transportation, especially in the eastern region, caused largely by the switchmen's strike in April, 1920. The foreign demand intensified the abnormal domestic demand and the several factors together afforded an opportunity for the exacting of prices not justified by the cost of production. For the country as a whole, the foreign demand was a minor factor, but in that part of the eastern coast section which was dependent on shipments by tidewater lines the foreign demand was a very important factor."

No Reason to Complain.—The freight increase in the United States between 1914 and 1920 is officially estimated at 67 per cent, as against 114 per cent in Great Britain and 200 per cent in Sweden.

"Commuting" by Motor.—Statistics recently compiled show that 420,000 persons travel back and forth to New York City daily by automobile. This figure is not inclusive of those using autos within the city borders. Motor trucks to the number of 7,482, travel on 15 ferries in 24 consecutive hours. Bridge traffic is heavy, especially at certain hours, as many as 1,344 vehicles having been counted in an hour. The number of cars and trucks entering and leaving the city daily is placed at 154,700. The average number of passengers per car is 2.7, while the average load per truck is 1.14 tons.

Compensation of Chicago & Alton Limited to Standard Return

Washington, D. C.

A board of referees appointed by the Interstate Commerce Commission has submitted a report to the President, finding that the just compensation of the Chicago & Alton for the use of its property by the government during the period of federal control is $3,178,314.92 for each year, conditioned upon the observance by the government and plaintiff of the provisions of the standard contract as to upkeep. This amount is the standard return for this company based on its net operating income for the three years ending June 30, 1917. The company, which failed to reach an agreement with the Railroad Administration, claimed that its compensation should be not less than $4,592,500, or 5½ per cent on a valuation of $83,500,000. The company also claimed that if its just compensation be based upon its earning capacity, the condition, value and transportation capacity may be best judged by its railway operating income for the year ended June 30, 1917, which amounted to $4,105,000, but which the company asserted should be increased by amounts of $111,720 and $375,780, respectively, because of excessive and abnormal charges during that year for depreciation and equipment and for deferred maintenance. By so readjusting its income, the company had reached the conclusion that its just compensation, when measured by its earnings, would also be $4,592,500. Counsel for the Railroad Administration insisted that the compensation should not exceed the standard return. The referees failed to perceive any support for the contention that the value of the use of the property when taken was in excess of the standard return.

The company contended that during a substantial portion of the test period its system of transportation was in an undeveloped, abnormal and exceptional condition and that its earnings for that period did not reflect the benefit of a large amount of deferred maintenance work and extensive improvements to the property. Its figure for the value of the property was taken from the Interstate Commerce Commission's report in 1907 in the matter of consolidations and combinations of carriers, in which were discussed the financial transactions of the Chicago & Alton, and which stated the value of the property, as it appeared on its books on December 31, 1898, as $39,935,887. To this the company added expenditures since that time and $11,000,000 for capital expenditures charged to operating expenses prior to 1899. The referees say the report does not show that the commission at that time undertook to value the properties of the road or made any inquiry as to the correctness of the entries in its books and that they are unable upon the evidence submitted to fix the value of the property. The board, therefore, devotes its consideration largely to the earning capacity, but expresses the opinion that the company has not proved that its expenditures for additions, betterments or improvements are not fully reflected in its revenues of the test period or that the alleged undeveloped or abnormal conditions were exceptional during the test period. The facts show, the report says, that the property was in such condition of repair and that such facilities were provided as the normal demands of a constantly increasing traffic required. It also says there is no evidence that the charge for depreciation was more than the actual depreciation during the period and the amount of the claim for deferred maintenance is disallowed because of insufficiency of evidence. The report says that the amount of this claim is apparently reached by taking a sum sufficient to produce the amount of the claim, $4,592,500, which was arrived at by taking 5½ per cent of the claimed value. The report also says that the evidence has not convinced the referees that they should find that the income of this system would probably have been increased or even maintained after December 27, 1917, had it not been taken under federal control.

Getting Greater Mileage Out of Freight Cars

Second Series of Discussions of This Problem Point Out Ways to Improve Performance

THE TWO PRIZE WINNING PAPERS received in the contest on Means of Increasing Car Mileage and three others which received special mention were published in the *Railway Age* of November 12. Several other papers received in this contest are abstracted below and still others will appear in later issues.

Know Every Car

By F. M. Barker

Division Superintendent, Lehigh Valley, Wilkesbarre, Pa.

"KNOW EVERY CAR ON EVERY SIDE TRACK EVERY DAY," epigrammatically tells the whole story. To accomplish this (1) assign a member of the superintendent's staff (a train master or assistant) for outside work as a car efficiency expert to analyze every phase of the situation and supervise movement, check and surprise-check yards and stations, and waybills for cars in movement through yards, he to be given ample authority and held responsible for car performance and (2) assign a man in the superintendent's office (an assistant chief despatcher or car distributor) to receive daily reports of all cars standing on the division, except those in active tracks passing through yards; follow up delayed cars through agents and yard masters, furnishing full information to the train master and freight traffic representative; the few outstanding bad cases developing each day to be handled by the superintendent personally by telephone, letter or interview.

Present day influences have a tendency to cause men to lose their old time spirit and interest and as this car job must be put over by the men in the ranks, it can be accomplished only as we arouse in them an appreciation of the seriousness of the present car shortage, and the fact that conditions today are far different than they ever have been. Therefore, wherever a few are gathered, whether in the rest house, caboose, or sunning themselves on a pile of ties during lunch hour, start a discussion on cars, so that everybody on the division will be talking and arguing cars. Never let a staff, safety, agents', fuel or any other meeting of railroad men pass without discussing cars.

Agents and yard masters should be required to know personally of all cars standing on tracks under their jurisdiction and give particular attention to those over 24 hours old. Issue comparative statements showing records made at different stations and yards and where the performance at one point has been particularly good, cause a news item to appear in the local newspapers commending the railroad forces, or the public, or both.

Be at least doubly as prompt in loading and unloading carload railroad company material as we expect the public to handle their business. The latter will not enthuse when they see cars lying around and being abused by us. The public will co-operate to exactly the extent that we do our part and the best argument we can use is prompt and dependable switching service. Even though a car has made splendid time from originating point to destination, if it is delayed excessively in placement, or, in the case of an outbound car, is permitted to stand 10 to 20 hours before being moved, the receiver or shipper will see only the immediate delay and usually consider all the talk about car efficiency as pure bunk.

Cars made empty on industrial tracks should not be permitted to remain there over-night, except when required for reloading, for if the shipper has made a special effort to get the car unloaded and the following day finds it lying at his plant, he will feel that we are insincere and have caused him additional expense and effort that we are not willing to match ourselves.

Do not give shippers an opportunity to point to delays on the part of the railroad company, even though costs are increased considerably in providing supervision and yard engines, as the expense, if incurred conservatively and thoughtfully, will be more than offset by the increased efficiency of the car, and in addition, bring large returns through the effect it will have in securing the sincere co-operation of the public.

While 99 per cent of shippers are imbued with the spirit and are with us wholeheartedly in our efforts to make the car do a 24 hour job every day, in spite of all we can do there are those who consider their own interests solely, and the most effective means of bringing this element to time is the prompt and rigid use of the embargo. The public will accept almost any workable rule if its application is fair and uniform. If for no other reason, fairness to those who willingly abide by the rules makes it necessary that we compel the indifferent shipper to comply. Otherwise the whole structure will fall.

Watch the Terminals

By C. O. Jenks

Vice-president, Great Northern, St. Paul, Minn.

A speeding up of cars through terminals would aid materially in increasing their average daily mileage. Avoidance of congestion, prompt disposition, prompt loading and unloading, a reduction in rehandling from arrival to placement for loading, unloading or delivery to connecting line, more prompt switching out and forwarding after loading or unloading, prompt and regular acceptance by receiving line, are all important factors. Cars in transit make more than the goal of 30 miles per day, but terminal delays go far in reducing the average below that figure. At large industrial terminals the very large number of cars making a slow turn mount rapidly into car days with no addition to mileage totals.

It is of utmost importance that carriers at all times keep on top of their bad order cars, for they pile up car days to the detriment of mileage performance. On the basis of five per cent of the equipment on a line being in bad order, it is necessary to increase by 1.5 miles per car per day those in active service in order to attain an average of 30 miles per day. Adding only five per cent more for cars in terminals requires a further 1.5 miles per car per day increased performance of active cars. The two together detract by 10 per cent from the 30 miles per car per day goal urged by the Railroad Executives Advisory Committee. And yet railway systems, operating large terminals in important industrial centers, have considerably more than 10 per cent of the equipment on their lines tied up between bad order cars and cars awaiting completion of terminal handling.

Carriers are loath to place embargoes, particularly on competitive business, under competitive conditions. While competition is admittedly the life of trade, it hardly seems good business to continue to accept traffic beyond ability and facilities to handle remuneratively, for this results in con-

gestion, consequent slow handling, tying up and loss of use of equipment. It would seem a better policy to restrict the traffic to the capacity of the facilities, thereby affording a quicker delivery and a quicker release of equipment, making it available for other loading. And this additional loading would, no doubt, make up in net result, seeming losses sustained through use of the embargo. Of course, embargoes must be intelligently placed and as intelligently released, but during their life, rigidly enforced.

The Spirit of Car Conservation

By O. C. Castle

Superintendent Transportation, Southern Pacific Lines, Houston, Tex.

It is essential that the entire force be imbued with the spirit of car conservation. Without a sustained interest, no amount of supervision will secure the live, snappy handling that is indispensable. This condition can be obtained by systematic campaigns designed to stimulate interest. Periodical circulars, phrased in language that will appeal to those responsible for car handling, should be issued. These may contain facts or arguments on the subject in general, chatty talks of an encouraging nature, and by all means, data showing what has been accomplished from month to month and explanatory figures showing what the results mean in per diem saving or increased earnings.

The use of simple graphic charts in connection with the explanatory printed matter can be made very effective. Officers should ask employees to comment on the data given them, to bring out suggestions for improvements and to give specific instances of good handling. The publication of these comments in subsequent circulars helps to keep the interest alive.

Interest in car handling may also be stimulated and sustained through periodical "efficiency meetings." Car efficiency should hold an important place on the docket of all staff meetings called by the general manager. If such meetings are not held with sufficient frequency, the superintendent of transportation should arrange for meetings during periods of car shortage, as the situations may warrant. Such meetings should be attended by general officers whose duties touch upon car handling, by chief despatchers, etc.

Superintendents should call meetings of agents and yardmasters as frequently as conditions warrant, at which all matters touching on car movement should be discussed. These meetings should also be attended by the division staff and by mechanical department representatives.

Organizations should be effected at all junction or interchange points. At the larger points, regular efficiency committees are generally in existence. At the smaller points, the local agents and car inspection forces should meet informally as often as once each week for conference and co-operation in matters relating to the handling and movement of cars.

The Elimination of Needless Switching

By F. Lincoln Hutchins

Baltimore, Md.

One of the greatest wastes in car movement, and one of the greatest causes of a low average rate of miles per car per day, is in the needless reswitching of cars enroute. The great effort of all divisions is to get the largest possible movement as regards each division, with no thought or effort to make the work of other divisions more expeditious; no concert of effort to eliminate waste of time in handling cars by connections. A line 1,000 miles long will have something like ten divisions, at the terminals of which through cars are switched and reswitched, resulting in delay, costly handling, damage, and yard congestion. The first and most important element in increasing the miles per car day lies in efficient marshaling of cars into trains. The ideal is a continuous, uninterrupted movement of cars from the originating to the delivery terminal without leaving the main line. This ideal may be rarely obtainable, but a nearer approach to it may be secured than is now usual.

Objection is made that the originating points do not have the necessary accumulations for such a through movement, or if they do have, that there is not sufficient room in which to marshal them. Whatever handicaps of this kind exist may be remedied in part, if not wholly, by determined effort with the goal in view. In some cases the adoption of regular forwarding days will induce the necessary accumulation; in other cases a territory may be grouped around a central point where through trains may be made up; but aside from such exceptional cases there is room for great improvement over present methods.

Take the 1,000 mile road, or a combination of roads between important terminals, divided into divisions of 100 miles each. The originating terminal has, let us say, a regular business of 10 cars for the other extreme terminal. Is there any good reason why those ten cars could not go through without leaving the main line, provided they were marshaled together in one place in the train? At each division point these cars could be supplemented by cars for the same destination and continue their journey without being reswitched. It is imaginable that with efficient co-ordination they could be kept rolling with only slight delay at the several division points. It is also apparent that, like a snowball, the train would become a solid through train, requiring finally only the changing of locomotive and crew at the divisional terminals.

Many Economies Possible Through Pooling Arrangements

By E. J. Tice

Chief Clerk to Superintendent of Transportation, Norfolk & Western, Roanoke, Va.

Nearly every railroad has some particular commodity or commodities running in such volume as to constitute a special problem. On one road it may be tidewater coal, and on another ore for furnaces. The tidewater coal on one road amounts to about 8,000,000 tons yearly. It has been found that pooling of the coal and the use of the permit system is necessary to secure car efficiency in the handling of this traffic. The pool or exchange has the unique features of requiring each shipper to bear his individual delay in the release of cars, and of holding each shipper responsible for furnishing vessels for the coal to his credit, regardless of whether he may have sold the coal to other shippers. In other words, a shipper must deliver his coal to vessels and actually release the equipment—the fact that he may have loaned the coal or sold it to another shipper does not release him from the obligation to the carrier to see that the vessels are forthcoming for prompt loading.

The working of this plan of handling tidewater coal has made it unnecessary for the road referred to to place a general embargo, due to accumulation, on tidewater coal for more than a year. At times it has been necessary to restrict all permits on account of a greater volume of tonnage being offered than it was possible to handle, but here again the permit system saved car delay. Cars in tidewater coal trade have made as high as 80 miles per car day.

The tidewater shipper is required to furnish information as to his vessel arrangements as soon as possible to the transportation department, with the actual names of vessels, tonnage, and dates due in the harbor, together with a statement showing the names of the mines from which shipments will

be made, and the amount of tonnage to be shipped daily. Based upon these advices, which are corrected and supplemented so as to be current information, permits are issued for the required tonnage. In some quarters the impression seems to prevail that once a permit has been issued no further action on the part of the railroad is necessary. This is a mistaken idea, for the issuance of the permit is only the beginning of the regulation. Checks must be established in the transportation department which will show the number of cars billed from each point of shipment, or received from a connection and charged against the permit. When the allotted tonnage has been shipped it must be seen that no further shipments are allowed to come forward. It is also necessary that a record be kept of the vessels reported to see that they arrive according to schedule, or others are promptly substituted.

The permit system may be applied with equal success in regulating ore and furnace material. Due to local conditions the permit system is sometimes necessary to control the flow of any or all traffic to any or all industries at a particular station.

Car Conservation

By J. W. James
St. Louis Southwestern, St. Louis, Mo.

The traffic department and the agent can render a real service by being more specific in the placing of car orders, indicating first, second, and if possible, a third choice. A shipper may order a box car for sewer pipe when it could be loaded in a stock car and frequently the same thing applies in other classes of equipment.

We should guard against wasting equipment. Frequently stock cars are on sidings awaiting repairs, not fit for live stock, but serviceable for rough freight at a time when box cars are furnished for sewer pipe, brick, etc., and when these cars could be used for freight of another character. The good salesman or merchant will do his utmost to first get rid of the product which is most difficult to move. By fitting the available equipment to the commodity, regardless of its condition, it is possible to serve a greater number of shippers, even under the present conditions.

An order for a car to load "pipe" is received. A good car distributor will find out whether it is galvanized pipe, sewer pipe or cast iron pipe before he delays cars and shipment by furnishing a leaky roof on assuming instead of knowing the commodity. If the car distributor gets an order for a car to load oats, he will ascertain whether in bulk or in sacks, for if in sacks, he can make a good grain car by saving the one that a careless car distributor would apply on the sacked oats, which did not require a first class grain car, but a fairly good car. Attention properly directed to such details will apply also to the order for a flat car where a drop end or low side gondola will be satisfactory, or where a 40 ft. 10 ft. high will answer the purpose of a 50 ft. box car of the usual dimensions.

The increase in car miles is not to come from any material change in loading or in speed of trains. It will come through the elimination of a division of responsibility in connection with car reports which should be designated in the future as daily car delay reports. We should begin without further delay to deal in car hours instead of car days, and analyze car movement with practically the same detail as is present practice in the movement of the locomotive.

To obtain satisfactory information as to the delays generally in the train or transportation yards arrangement should be made to take one train in each direction daily (not including preferred freight runs) and with the list of cars in these trains, run the car record and it will give an average delay per car for ordinary freight in that particular yard. A weekly review of the daily station performance furnished to all stations on the division will stimulate interest, especially in view of the similarity of conditions and the numerous classifications arranged in connection with delays. A review prepared each month by division will bring forth additional interest and co-operation from officers. Comparison for all terminals of the performance of car repair departments will be equally beneficial and will enable the officers to determine quickly whether the cost of per diem is offsetting an economy effected in reduction of forces or not planning sufficiently in advance for material required.

Three Sub-Divisions

By M. M. Eidson
General Car Accountant, Wabash Railway, St. Louis, Mo.

Plans designed to increase miles per car per day may be subdivided under three headings:

1. Reduction in per diem expense: Remedy: (a) Properly carding cars on arrival at terminals. (b) Supervision in handling through business in classification yards. (c) Checking bad order tracks, arranging for transfers and repairs. (d) Checking hold and industrial tracks, analyzing conditions contributing to delays. (e) Delivering all business, including empties, to connections before midnight. (f) Insist on patrons loading and unloading cars promptly.

2. Distribution efficiency: Remedy: (a) Reload cars, when possible, on tracks where made empty, equalizing periodically. (b) Prevent backhauls or crosshauls. (c) Secure accurate check daily as to requirements, also check cars divided by classes and properly inspect and card those available for loading.

3. Inspection and repairs: Remedy: (a) Inspect cars and prevent setouts between terminals account of hot boxes, etc. (b) Hurry inspection of both loaded and empty cars going to connections. (c) Maintain a supply of material necessary to properly repair cars.

Attention to Many Details

By T. W. Blake
Secretary to Vice-President, Pennsylvania Railroad, Pittsburgh, Pa.

The delay to loaded and empty freight cars may occur at origin, in yards, on the road and at destination. At the point of origin a road may require mines and loading points to finish up their loading daily wherever possible. Switch industrial and mine tracks as soon as possible after the day's loading and despatch the cars. Move cars in solid trains or solid blocks from originating point to destination, or to yard nearest destination, whenever possible. Inaugurate the sailing day plan for freight stations which eliminates the handling of l. c. l. freight at transfers. Urge shippers to load direct to one destination or to combine two or more shippers in a district to make a solid car or solid train for one destination. There should also be close co-operation with shippers using trap and ferry-car service to encourage loading to destination direct.

A number of large railroad yards are equipped with air lines by which the air is pumped up on trains on advance tracks, initials and numbers of cars are taken by yard clerks and necessary information compiled for conductors to prepare reports for car record purposes, so that it is only necessary for the road engine to couple on the train and proceed. This reduces the initial terminal time in getting out of yards as well as the time required for cars to pass through yards. In some yards not equipped with air lines, it has been found economical to place make-up crews at work who assemble trains, and

do all the necessary shifting and yard work in order that the trains are ready for movement when the road crews report.

Review should be made of the classifications now required in various yards to determine whether cars are being held an undue length of time to accumulate tonnage for destinations. Make prompt repairs to shop cars and secure close co-operation between yardmasters and car shop foremen to insure shop cars being placed on shop tracks promptly after being marked bad order and pulled from shop tracks after being repaired. In a number of cases, cars are marked for shop tracks when defects are of a minor character which can be repaired while the cars are in the classification yards, without the necessity of moving to and from shop tracks with attending delay. Where space permits, tracks in repair yards should be set aside for light repair cars and where facilities do not permit of this being done, light repair cars should be set on the head end of repair tracks so that they can be removed promptly when repairs are completed, without being kept waiting for a shift of the entire shop yard of track to be made.

Stimulate competition between individual car droppers in yards, between various shifts in one yard and between different yards to increase the average number of cars handled per hour as well as to reduce the number of cars damaged in C. T. yards. Provide methods for the quick return of car droppers to the "hump" after riding out of cars. Load engines to tonnage capacity, due regard to weather conditions being observed at all times.

To insure minimum delays at destination make a close check on cars loaded with material for company use to see that they are loaded and released promptly by the officers involved. Encourage the loading and unloading of cars on Saturday afternoons and Sundays at plants having forces at work at that time.

Essentials of Safety Work*

By Harry J. Bell

IT IS PECULIARLY NECESSARY in the railroad business to organize for constructive and continuous accident prevention because you are required to contend with fast moving and very heavy machines; because the bulk of the hazardous operations are carried on out of doors, under all conditions of weather; and because the working force, being distributed over a wide range of territory, is not amenable to intensive supervision as in most other industries. The report of the Interstate Commerce Commission for 1918 shows a total of 24,695 train accidents with a resultant damage to railway property alone amounting to $20,954,350. The expenditure of railways that year for personal injury and death claims amounted to $33,369,199. These stupendous totals demand that every man in railroad service manifest an earnest interest in accident prevention; for these items represent a direct economic waste, a large proportion of which is unnecessary and wholly preventable.

Destruction by fire in the United States last year reached the enormous total whereby it cost 20,000 lives and $325,000,000. Fire prevention is definitely related to accident prevention, for you cannot possibly educate a man to think and act along safe lines without educating him in fire prevention as well.

Before the advent of federal control many of the railroads had done little or no safety work, and, if they had any organization at all, it was for the most part a purely paper organization. At the conclusion of federal control there were functioning approximately 1,800 safety committees, with a membership of 32,000; and their work resulted in a reduction in the year 1919, as compared to the preceding year, of 1,231 fewer employees killed and 26,962 fewer employees injured. These safety committees made during 1919 a total of 237,728 recommendations as to dangerous conditions and 84,963 as to dangerous practices, nearly all of which were corrected at a nominal cost or no cost at all. The impetus given this work by the federal government will be felt for many years, though some of the roads have not seen fit to continue this important work with the same degree of intensity as before.

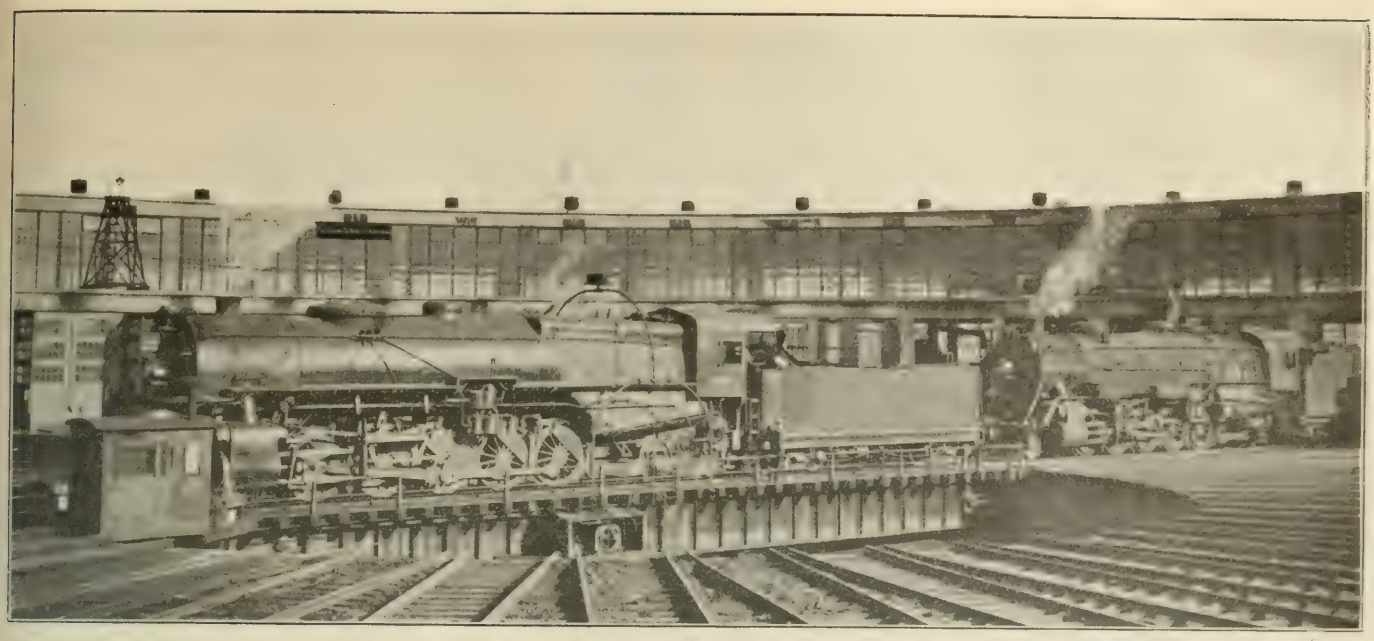
The safety committee meetings provide a point of contact between officers and employees, the value of which is inestimable; it makes the one group of men understand the problems of the other, promotes loyalty and brings about better feelings on all sides. The cost of the work by comparison with the saving effected is insignificant. It is my earnest belief that a really energetic safety organization pays larger returns on the investment than any other undertaking in which a railroad might engage.

In the Northwestern Region, 53,000 miles of railroad employing 290,000 men in 1919, there was a decrease of 253 persons killed and 4,040 injured, including all persons, as compared to the 1918 record. Based on what was regarded as a fair average cost of adjusting personal injury and death claims, this saving in casualties was estimated to represent a money saving in excess of $1,000,000.

The railroad which makes a success of this work must do so by appealing to its employees from a strictly humanitarian standpoint; and also must make manifest that the management literally intends that it shall not be a matter of Safety First when it is convenient but Safety First under all circumstances. No man who does not have a proper regard for safety, no matter whether he is general manager or track laborer, is fair and right with himself, with his dependents, with his fellow employees or with his employer. The management, of course, must demonstrate its own interest in the work by complying with all reasonable and proper recommendations made by the members of the safety committees or, when that is not practicable, explaining to the men why the recommendations cannot be carried out. It must recognize that men are always infinitely more important than machines.

An intelligently conducted safety plan is bound to accomplish all that is claimed for it, thus making railroading not only a safer but a more desirable occupation and one that will attract to its service the highest grade of men. You must, however, from the very nature of the work consistently and continuously devise new plans and methods for developing and sustaining the interest of the entire official staff and working force. It will not suffice to merely beseech the men to stop deaths and injuries,—it is essential that they be kept constantly informed as to the number of casualties which occur and what causes them. Healthy rivalry between shops, terminals and divisions, developed by sundry competitive arrangements, is highly desirable. . . . Some of us are inclined to take for granted that nothing can be done to avoid trespasser and grade crossing accidents, but I believe that gratifying results in this direction are attainable by intensified effort. An instructive test of the efficacy of accident prevention work was made during the last two weeks in October, 1919, when the Railroad Administration conducted what was known as the national railroad accident prevention drive on all railroads under federal control, employing over two million men; in which 42 fewer employees were killed than during the same two weeks of the preceding year, and 2,731 fewer employees were injured. A comparable result over a longer period of time is altogether possible. . . .

* Extracts from an address by Harry J. Bell, secretary of the Chicago Safety Council, before the St. Louis Railway Exposition, October 27. Mr. Bell was formerly supervisor of safety, Northwestern Region, United States Railroad Administration.



Terminal Movements Constitute an Unwritten Page on Every Timetable

The Locomotive Terminal as an Operating Factor*

Any Broad Plan for Improvement in Operating Conditions Must Include Terminal Development

By L. G. Plant
Associate Editor of the *Railway Age*

THE IMPORTANCE of the locomotive terminal as an operating factor lies clearly in the fact that both the quantity and the quality of work performed by every locomotive depends wholly upon the character of the attention which it receives at the end of the run. The most efficient locomotive may become wasteful or the most powerful locomotive be incapacitated by careless handling or neglected maintenance at the locomotive terminal. When we stop to consider that the average locomotive spends the better part of each day in the terminal and that its ability to render useful service during the remaining hours depends upon the care which it has received at the terminal, it must be evident that the locomotive terminal is a very live factor in the operation of any railroad.

The effect which a terminal can have upon the performance of every locomotive is so very obvious that any broad plan for the betterment of operating conditions must take into consideration the question as to whether a further expenditure in terminal equipment or improvement in terminal methods will not enable us to get more useful work out of our locomotives without a corresponding increase in operating expenses.

There has never been a time when the railroads have devoted more earnest consideration than they are now giving towards means for securing better operating results. It is well understood that the purpose of recent legislation and of advancing freight and passenger rates is primarily to enable the railroads to build up their operating organization and equipment to a point where they can easily handle the peak load at maximum efficiency. That is, plainly stated, the railroads will in the future be expected to do more than "get by" with a difficult situation.

Locomotive Terminal Improvement Is Imperative

The public will have little patience with the managements of our railroads if in the course of a few years it develops that a serious freight blockade or threatened coal shortage can be attributed to insufficient cars and locomotives or inadequate freight and locomotive terminals. Locomotive terminal equipment exclusive of the value of the real estate upon which it is situated cannot represent more than one per cent of the capital investment in the railroads. Yet upon the character of this equipment and the manner in which it is managed depends in a large measure the success with which all locomotives are operated. Locomotives represent about eight per cent of the capital investment, yet the service rendered to the public is directly dependent on their operation. Plainly, therefore, the railroads must be held strictly accountable if it becomes apparent that the service is impaired because of inadequate terminal equipment or lax terminal management.

We are today operating bigger locomotives than were thought practical 20 years ago and some of them are equipped with devices designed to increase the efficiency and capacity of the locomotive beyond what was considered possible ten years ago. But we are handling many of these locomotives through terminal lay-outs and in enginehouses that were designed over 30 years ago with small margin for subsequent development. Thirty or 40 years ago the locomotive terminal was hardly regarded as an operating factor; other causes determined the hours that a locomotive was available for service and there were fewer repairs required in the roundhouse because the locomotives were subject to less intensive operation, because all of their parts were much lighter and because of the willingness with which the engineers co-operated in those days in the maintenance of their locomotives.

This brings us to a consideration of what is now the func-

*The first part of a paper delivered before the New England Railroad Club on November 9, 1920. The remainder will appear in succeeding issues of the *Railway Age*.

tion of a locomotive terminal. It must, in the first place, afford adequate current maintenance. It may be possible and economical to concentrate the larger share of this burden at one of two adjacent terminals but there are few terminals at which locomotives can be regularly turned without requiring the attention of mechanics. It may also be anticipated that the inspection required by the government will grow more insistent, so that there are practically no locomotive terminals today in which adequate maintenance is not regarded as the foremost problem.

Function of the Locomotive Terminal

Generally speaking, terminal maintenance should be of such a character that the locomotives will continue to operate at full capacity and maximum efficiency between shoppings. Not only this, but the organization and facilities at every terminal should be adequate to keep all locomotive fuel and labor saving devices in working condition. Inability to maintain such devices properly with the terminal facilities on many railroads has been one of the most serious conditions tending to limit their full field usefulness. It is inevitable that locomotive terminals will be called upon to execute an increasing variety of heavy repair work and it is imperative that they be so equipped that this work can be done without infringing on what may be described as the routine functions of the enginehouse.

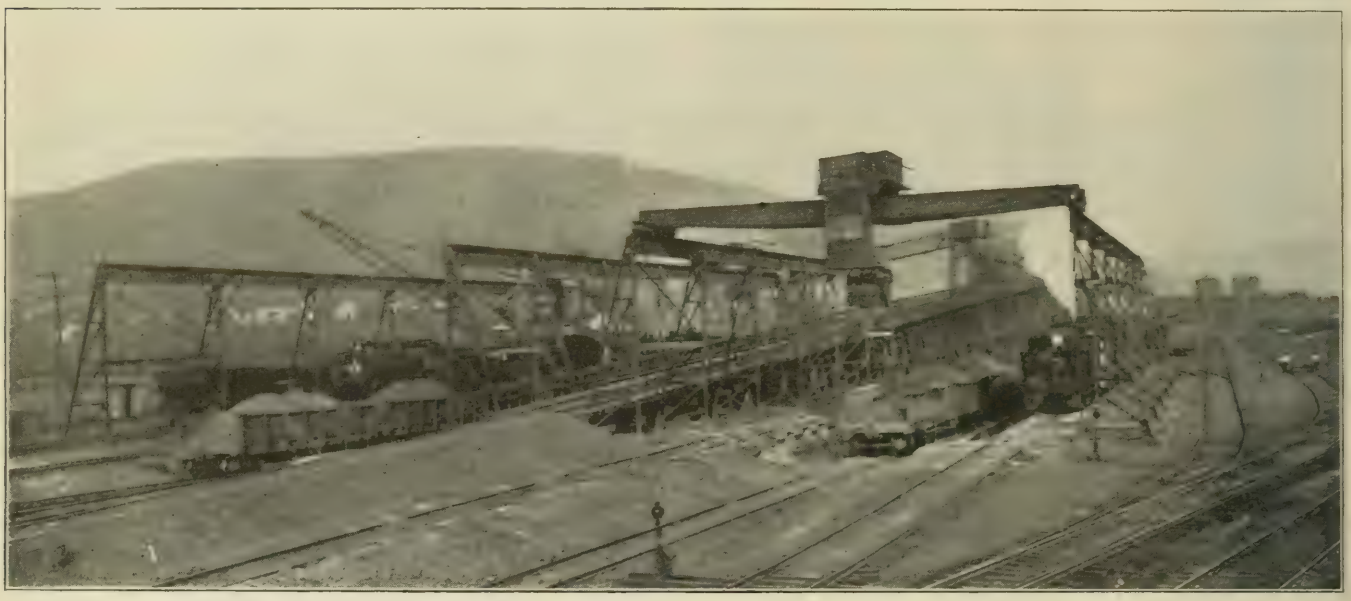
The assignment of one or more stalls in a busy roundhouse to locomotives undergoing heavy repairs where the facilities are inadequate and the work consequently allowed to drag indicates a failure to comprehend the true function of a locomotive terminal. But, on the other hand, if the facilities are such that this work can be done expeditiously and economically this will do more than any other factor to prolong the useful service of locomotives between shoppings as well as lessen the ultimate maintenance cost.

The Value of a Locomotive

A locomotive is of value only when it is performing useful work and as it can only perform useful work when it is in service, it is startling to note how small a percentage of time locomotives on many railroads are in actual service even when traffic demands are very heavy. This is not necessarily a situation for which the mechanical department is responsible as the manner in which the power is despatched by the operating department may cause much lost time. But terminal management and the terminal facilities at the disposal of the mechanical department are in most cases the controlling factors.

The cost of a locomotive is no index to what its actual value to the railroad company may be. If it is not a modern locomotive and the demands for power are such that it can be spared from active service it is valueless for the time being and should be stored for some future emergency. If on the other hand it is an efficient unit and the demands for power are pressing, it may easily be worth one hundred dollars for every hour that it is in active service. The value of locomotives will inevitably increase and with an era of intensive railroad operation before us, we are unquestionably facing the ultimate pooling of all locomotives.

One of the strongest arguments advanced in favor of electric traction lies in the capacity of the electric locomotive for long periods of uninterrupted service in the hands of a number of engineers and the steam locomotive must in some measure meet this condition if it is to survive among the fittest. These facts only serve to emphasize the tremendous importance of speed in terminal operation. The function of the locomotive terminal is not only a matter of maintenance,



Adequate Fire Cleaning Facilities Will Convert Idle Locomotive Hours Into Service-Hours

but the execution of repairs and the routine operations of fire cleaning, coaling, sanding, washing and so on, within the shortest possible time.

Significance of Prompt Terminal Movement

The significance of the prompt execution of these functions will be more fully appreciated when applied in principle to any railroad on which the demands for power are particularly heavy. Assuming that 1,000 locomotives are in service on an average of ten hours each day; if the terminal detention could then be reduced an average of one hour per day, this would be equivalent to an immediate increase of 100 locomotives in the number available for service of the road effecting the economy.

There are many railroads that may well pause before placing the next order for locomotives to make sure that the same expenditure if invested in terminal facilities would not actually be equivalent to adding a greater number of locomotives. This should not be construed as an argument against the purchase of new locomotives with greater capacity and increased efficiency any more than it could be regarded as an argument against the modernization of existing power for the sake of improved efficiency and capacity. It is contended,

however, that terminal improvement should precede rather than lag behind locomotive development.

It is the physical equipment, the organization and management of the terminal that determine its capacity to fulfill these important operating functions. Each new terminal development presents a unique problem which can best be solved by engineers acquainted with local conditions. There are, however, certain salient features in the make-up of any locomotive terminal that are so vital to successful operation that some discussion as to the character of the facilities which should be required for new terminal development may properly be incorporated in this paper.

Essentials of Terminal Equipment

The essential features of locomotive terminal equipment may be roughly divided into outside equipment including the track lay-out, fire cleaning facilities, coal chutes and sanding apparatus; and the equipment which is distinctly a part of the enginehouse and adjacent shops. Where lack of foresight has not set a limit to the space available for expansion, trackage should be expanded to the fullest extent possible. A single track lead over which locomotives move to and from the roundhouse is inexcusable. Where trackage is ample, a well-defined routine for the movement of every locomotive can be strictly adhered to. With three or more tracks available, a majority should ordinarily be assigned to in-coming locomotives. As a general rule a number of short leads are preferable to a single long lead as this enables one locomotive to move independently of other locomotives. Where the number of leads is restricted, frequent cross-over switches should be placed so as to reduce the liability of blocking the movement of any locomotive.

From an operating standpoint, the relative merits of various means for coaling and sanding locomotives may be gaged principally on the basis of reliability and capacity. Since the operation of these facilities reflects an operating charge, it may be well to consider the relative cost of operation but this is not a circumstance to the necessity for reliability in operation and capacity, not only for the total daily quantities of coal and sand, but for the number of tracks served. While there may be some advantage in locating these facilities so that coal and sand may be taken together, there is apparently no real necessity for this as it is not usually practical to deliver both coal and sand without moving the locomotives during the operation.

The arrangement of fire cleaning facilities and ash handling apparatus is undoubtedly the most vital feature exterior to the enginehouse. Whereas the time consumed in taking coal and sand can hardly be in excess of ten minutes, the time over the ash pit may easily consume one or two hours unless this movement is subject to the strictest supervision and the facilities are reasonably adequate. And yet these facilities at a very large number of so-called locomotive terminals are of the most meagre and primitive character.

Important Details in Terminal Equipment

No single feature about the terminal shows a greater variety in design than the locomotive ash pit. While we are accustomed to everything from an ordinary stretch of track on which the ashes are unceremoniously dumped, to extensive subterrannean vaults from which the ashes are removed by mechanical conveyors, I am inclined to think that the water pit with a single gantry crane spanning three or four locomotive tracks and a single cinder loading track will prove to be the ultimate type best suited to meet the demands of intensive terminal operation. The transverse pit serving several tracks is preferable on general principles to the longitudinal pit serving but one or two long tracks. It may be stated that in the most recent terminal projects where space could not be regarded as a limiting factor, short transverse water pits serving three and four locomotive tracks are decidedly in vogue. In any event, the locomotive ash pan should be accessible to fire cleaners working on either side of the locomotive. This may be accomplished on water pits by spacing the locomotive tracks close enough together so that light movable platforms may be used between them or by providing an individual water pit with each locomotive track that is spanned by the crane.

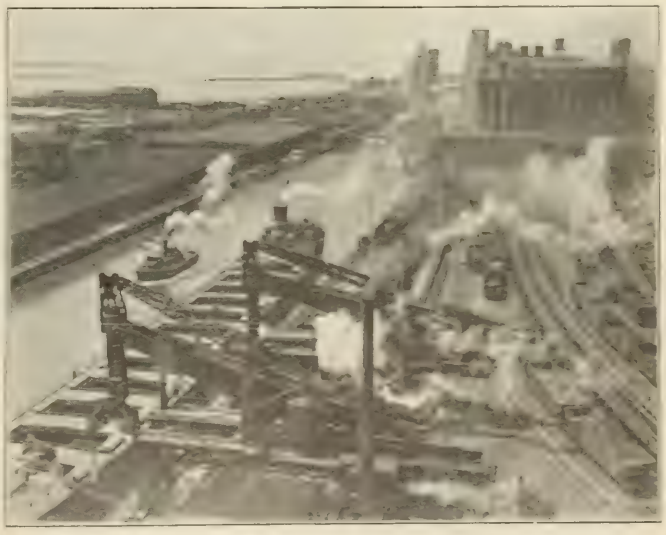
Against the possibility of a break down on the part of the ash pit crane, a locomotive crane should always be available. In fact, the locomotive crane, ready for any emergency and capable of doing many things must be regarded as indispensable to the operation of any real locomotive terminal.

The washing of locomotives with oil, water and compressed air appears to be an accepted time and labor saving practice. Some of the best results observed in cleaning locomotives by this process, are noted at terminals where during the day shift every incoming locomotive is washed off en route from the ash pit to the enginehouse. Two men were engaged in the operation which ordinarily does not delay the locomotive to exceed five minutes. This method would seem to have advantages over the practice of washing locomotives periodically and doing this in the enginehouse.

Charring Does Not Preserve Wood

ACCORDING to the United States Forest Products Laboratory, Madison, Wis., charring is of little value in protecting the butts of fence posts and telephone poles from decay. This is shown by service tests made by the laboratory on fences of charred and untreated posts of various species. The charred posts proved in these tests to be less durable than the untreated ones.

Theoretically, an area of charred wood around a post should prevent decay, because charcoal does not decay or encourage the growth of fungi, but the charred area around a post is not usually a solid covering, for it is checked through in many places. If posts are seasoned before they are charred, the charring does not reach to the bottom of the season checks which are always present. If green unchecked posts are charred, checks will open through the charred part as the wood seasons. In either case the uncharred center of the post is exposed to fungus infection and will decay as rapidly as any untreated wood. Charring deep enough to resist decay would undoubtedly weaken a post of ordinary size.



Docks, Elevators and Railway Yards at Buffalo Harbor

Annual Convention of State Railroad Commissioners

Resolutions Adopted on Co-operation with I. C. C.—Valuation Law Amendment Urged—Committee Reports

THE ANNUAL CONVENTION of the National Association of Railway and Utilities Commissioners adjourned after a four-day session at Washington, D. C., on November 12, deciding to hold the next annual convention at Atlanta, Ga., on October 11, 1921. The addresses made during the first day's session were reported in last week's issue. The succeeding days were devoted to the presentation of committee reports, and to round-table conferences on subjects of interest to the commissioners. Representatives of 28 states were in attendance.

Following the election of officers President-Elect Perry of Georgia spoke at some length upon the present crisis in state regulation. He criticised the tendency towards centralization of control over railroad rates in the Interstate Commerce Commission and declared that the public, and the railroads as well, would benefit greatly by a restoration of complete state regulation as it existed prior to 1914. He also expressed the belief that if the new transportation act is interpreted as destroying state control over rates the people of the country will see to it that Congress changes the law so as to recognize fully the rights of the states. A large part of the discussion was devoted to questions as to how far the state commissions may go in the exercise of their various functions in view of the enlarged authority of the Interstate Commerce Commission and a large part of the time of the meetings was devoted to the consideration of public utility matters as distinguished from those pertaining to railroads; more than at previous conventions.

Resolutions

The executive committee, to which was referred several recommendations contained in the annual address of President W. A. Shaw, reported several resolutions based thereon, which were adopted. One provided for the appointment of a committee of three to consider the possibility of preparing a digest of the laws of the several states governing public service and railroad commissions. Another provided for the appointment of a committee of seven on litigation, with F. W. Putnam, of Minnesota, as chairman, to represent the association in regulation matters that come before the courts, particularly the expected litigation involving the question of discrimination in intrastate state rates against interstate commerce.

Another resolution declared that the association is desirous of doing all that can be done by it to promote genuine co-operation between the state and federal authorities exercising regulatory jurisdiction over common carriers and expressing the judgment of the association that in order that the maximum benefit may be derived from the co-operative provisions of the act it is desirable that it should be understood in what classes of cases co-operation between state and federal authorities is deemed feasible by the Interstate Commerce Commission and, with respect to each such class of cases, whether by conference or by joint hearing. The president, vice-president, executive committee and general solicitor were authorized to represent the association at a conference with the I. C. C. and to make recommendations to the several commissions and to the next convention of the association.

Another resolution recommended the continuance of the office of general solicitor at Washington and generous financial support thereof by the several state commissions.

A resolution was adopted endorsing the amendment to the valuation act proposed in bills which have been introduced in Congress, by Senator Cummins and Representative Esch, to strike out the words in the act which were involved in the Kansas City Southern case in the Supreme Court, requiring the Interstate Commerce Commission to report separately the original and the present cost of condemnation and damages or purchase in excess of original cost or present value of railroad land. The resolution urged upon Congress the prompt passage of the amendment. It declared that the effect of this requirement of the act will be to require the commission to retrace its steps, at the cost of much money and long delay, and to make investigations and gather data to enable it to make the required estimate as to the lands of carriers.

Car Service

Commissioner Aitchison's address on car service, reported in last week's issue, aroused a lively discussion, in which F. H. Funk of the Illinois commission, Judge Reed of the Kansas Court of Industrial Relations, and Charles Webster of the Iowa commission, took issue with some of the views expressed as to the respective functions of the state and federal commissions.

Judge Reed criticised the rules for the distribution of grain cars as between shippers, which he said the railroads claimed had been approved by the Interstate Commerce Commission. Commissioner Aitchison said the commission had not approved the rules except that they were based upon rules prescribed by the commission in an order in the South Dakota case (which had expired), made to meet a particular case involving discrimination by state rules against interstate commerce, and that in the later Tanner case the commission had merely laid down general principles. It refrained from prescribing rules, in order to allow the shippers, carriers and state commissioners an opportunity to agree on suitable rules. He said there should be no difficulty about getting uniform rules for both state and interstate traffic.

Commissioners Lewis, of Indiana, and Funk, of Illinois, expressed a desire to work in harmony with the Interstate Commerce Commission but wanted to know how far the federal commissioners intended to go in regulating local car service matters and how far they intended to let the state commissions go. Chairman Clark suggested that the commission could be judged by its past record, which has been along the line of encouraging local determination of matters on which it was possible to reach an agreement; the commission has enough work to do without looking for trouble. When Mr. Lewis suggested that if a state adopted reasonable rules for car distribution it would probably have no trouble with the Interstate Commerce Commission, Mr. Clark said that would depend upon how the rules worked and whether its jurisdiction was invoked by a complaint. Both he and Mr. Aitchison made it plain that if it became necessary for the federal commission to enter the field of regulating car distribution as between shippers, as distinguished from general car distribution, as between sections of the country, its regulations would be paramount. They offered little encouragement to the state commissions to prescribe rules of their own; but the federal commission has no idea that it alone can suggest the best set of rules; it would much prefer to have the railroads and the shippers agree locally on a fair plan of car distribution; and this has been done in many instances in the past. They also intimated that the Interstate Commerce Commission would probably not attempt to act unless on a complaint involving discrimination.

Commissioner Funk, of Illinois, said that his commission was in some doubt as to what to do because the attorney general of Illinois had given an opinion that the I. C. C. has jurisdiction over car service matters which is paramount if it enters the field, and he asked if the commission could not issue an official statement of its position.

Car Service Agents to Be Appointed

Chairman Clark said the commission does not need to apologize for what it has done or has not done; emergency conditions confronted it before it had time to organize its Bureau of Service. The commission plans to establish car service agents in various sections throughout the country with which it hopes to affiliate the local committees that were created to deal with the congestion conditions. It is now awaiting the results of civil service examinations for these positions. The local committees had performed a splendid work and it was desired to continue their functions.

Mr. Funk suggested that these committees be given a jurisdiction wider than the terminal districts of large cities in order that they may pay some attention to conditions at the country stations. Mr. Aitchison said this was a good suggestion and would be followed as far as practicable; but when A. E. Helm, of Kansas, suggested that the state commissions instead of local committees be used as the local agents of the Interstate Commerce Commission there was no response. Mr. Helm said that the state commissions are fully qualified and that the shippers would be better satisfied if car distribution and such questions were handled by the state commissions than by committees.

O. H. P. Jacobsen, of Minnesota, said that during the grain season the western roads ought to have considerably more than 100 per cent of their cars. Commissioner Aitchison asked if the time has not passed when the railroads should be expected to move the entire grain crop as fast as it is produced and if the remedy does not consist in better local storage facilities. Mr. Jacobsen agreed heartily with the idea of storage facilities but thought they ought to be built by the eastern railroads and said he had been trying to get a bill through Congress for that purpose. Judge Reed said the railroads have not been able to move the Kansas grain fast enough to fill up the storage capacity in Kansas City.

Coal Car Supply

The discussion then turned to the coal situation. In reply to a question regarding the assigned-car rule for railroad fuel Mr. Clark said that railroads could not be compelled to distribute cars for railroad fuel equally among their mines because all mines do not produce coal suitable for railroad fuel; and those having no obligation to sell to a railroad cannot be forced to do so. The commission had permitted public utilities to use the assigned-car privilege so that they might get coal for their current needs, but not to increase their stores of coal; but many had used it to increase their storage supply and others had dishonestly diverted their priority coal to other uses. For that reason the order was withdrawn.

Commissioner Ainey, of Pennsylvania, asked that consideration be given to a letter from G. W. Elliott, chairman of a committee representing the public utilities, saying that the rescinding of the priority order had threatened the utilities with a calamitous situation because they cannot get their contract coal. Mr. Aitchison said the commission had not received a single complaint from a utility setting forth a case calling for the commission's help, since the order was withdrawn. The withdrawal was made necessary because the order had been prostituted. For 60 days the public utilities had been permitted to draw sight drafts on the car supply, for any mine with which they had contracts and to take the cars away from some other mine; and during that time they had received all the coal they needed for their daily use as well as some for storage from the ordinary allotment of cars. As indicating the abuse of the privilege, Mr. Aitchison said that the daily average of cars loaded with coal for utilities in three districts had exceeded the average daily consumption of all the utilities in the United States.

The commission is ready now, he said, to see that coal moves to the necessitous public utility, even if it has to be moved on passenger trains, but it is unwilling longer to bribe the greedy coal operator (who has refused to live up to his contracts and has preferred to sell his coal elsewhere at a higher price) by giving him an extra supply of cars. If any utility cannot get its coal, he said, let it bring its mine operator to the commission, which will see that the railroad man also comes before it and that the mine gets its fair share of cars; but the operator must show what he has done with the coal he had already had the cars for and whether he is now entitled to more than his share. Most of these cases resolve themselves into a question of price, Mr. Aitchison said, because the coal has been and is being produced. Price is not a transportation emergency in the meaning of the provisions of the law that authorize the commission to exercise its emergency powers. The commission has no power to force a coal operator to ship his coal to those with whom he has contracts and the time is past for bribing him to do so by giving him a full car supply at others' expense.

H. M. Aylesworth, representing the National Electric Light Association, urged the commission to revise its priority order for utilities and make it mandatory, saying that the utilities are in a dangerous condition and not one in a hundred has received a car of contract coal since the order was withdrawn. He said they could get coal at high prices but that they had been urged by the federal bituminous coal commission to contract for their reserve supplies in advance, and have done so. Mr. Elliott, however, said that the utilities are not asking the commission to enforce the delivery of contract coal, but only that the provisions of Service Order No. 21 for issuing permits for utilities in serious need of coal be made to function. He said the order had not yet been used in any case to get coal for public utility. He said it was impossible to get the operators to come to Washington, as Mr. Aitchison had suggested.

Commissioner Smith, of Michigan, offered a resolution urging the Interstate Commerce Commission to take action to insure the public utilities the supply of coal needed to carry out their obligations, but several speakers opposed it and it was referred to the executive committee, which took no action.

Committee Reports

The Committee on Safety of Railroad Operation, C. C. McChord, chairman, presented a report devoted mainly to a discussion of the properties of steel rails.

The Valuation Committee presented a special report on a resolution proposed at the 1919 convention by Commissioner Haynes, of Indiana, declaring that more weight should be given in valuation to the "honest and prudent investment" and less weight to the cost of reproduction. This resolution had been sent to each state commission for expressions of opinion. Twenty-one of the commissions replying favored the resolution, two were unfavorable, four were non-committal and seven gave no expression of their attitudes. A summary of the replies was given in the report of the committee which was of the opinion that no formal action is necessary or desirable. After discussion the matter was referred to the valuation committee with instructions to report at the next convention.

The Committee on Express and Other Contract Carriers by Rail discussed the recent history of the express business, but said it was greatly handicapped in making intelligent observations because the Interstate Commerce Commission has not yet either approved or disapproved the express consolida-

tion; the shippers and state commissions "will await with bated breath" the decisions of the commission on this important matter. The committee did not hesitate to say that it would be an outrage for a consolidation to be approved before such arrangements are made as will insure to any person having a claim against any predecessor company an opportunity to bring suit thereon in the courts of the state where the claim arose.

The report of the Committee on Rates was a long discussion by J. F. Shaughnessy of the Nevada Commission.

Valuation

The report of the Committee on Valuation consisted largely of a review of the progress of the valuation work of the Interstate Commerce Commission. Prior to November 6, 1919, the Interstate Commerce Commission had served 55 tentative valuations. During the past year it has taken evidence upon carriers' protests in 20 other cases, of which 19 have been argued, or submitted without argument, and are now under consideration. No final valuation has been reported in any of these cases and no tentative valuation has been served since November 9, 1919. The reason for the failure to serve additional tentative valuations is said to be found in the Kansas City Southern litigation. The report states that, according to Director Prouty, the field engineering work will be completed by June 1, 1921; the field land appraisal work, not including estimates of cost of condemnation and damages in excess of present cost or present value, will be completed in all districts except the Southern by July 1, 1921, and in the Southern some time within the year following; and the accounting work in all districts will be completed by January 1, 1922. The report reviews the history of the Kansas City Southern case, saying that while the case was pending in the lower courts the commission appeared to have paid no attention to it, but after the argument of the case before the Supreme Court no further valuations were promulgated. What influenced the commission in advance of the decision of the court to suspend the promulgation of valuations, the report says, is not known, but it was commonly remarked at the time of the argument that questions from the bench foreshadowed the opinion of the court which was later handed down. It became necessary, the report says, for the commission to retrace its steps and gather the necessary data to enable it to comply with the law as interpreted by the court. It is understood that thus far the investigation made by the commission has been confined to two cases, the San Pedro, Los Angeles & Salt Lake, and the Kansas City Southern. The estimate which the commission will make on this point, the report says, will be wholly useless, or worse than useless, because if it is used to increase the value for rate purposes it will, to the extent of such use, be destructive of rights of the public which existed before the valuation act was passed. Following the Supreme Court's decision members of the legislative and valuation committees of the asso-tion held a conference, at which it was determined to make requests of the appropriate committee chairmen in Congress to bring about an amendment of the valuation act by eliminating the requirement that the commission report an estimate of the cost of condemnation and damages. Upon consideration, Senator Cummins and Congressman Esch promptly introduced bills to effect the desired amendment; but, owing to the adjournment of Congress shortly thereafter, no action was taken.

From the beginning of valuation work the association has taken the position that the valuation act does not require or authorize the finding of a single sum stated as the value of the property, but the committee says that the question as to the intent of the original act has now become a matter of academic interest merely, because language was included in the transportation act evidently designed to confirm the commission's decision to report a finding of the final value. The act also makes it the duty of the commission to find the value of carriers' properties proposed to be consolidated and, the committee says, it is now beyond question the duty of the commission to find a final value. It is understood that the commission, when it amends valuations, heretofore served, by adding its estimate of cost of condemnation and damages, will also amend the same by a finding of final value.

The report also includes a discussion of the rate-case proceedings relating to the temporary valuation of the roads. It says it is proper to assume that the Interstate Commerce Commission, confronted with a situation where substantial rate increases were obviously immediately necessary, applied the statute as well as it could and determined the aggregate value of property in each district somewhat summarily. Of this procedure, the committee says, no criticism should be made because, confronted with a great task, the commission did all that time permitted, but it is assumed that the aggregate value thus announced will not be permitted to affect the future findings of the commission as to the value of particular properties. When the Bureau of Valuation has completed its field work and put into shape all completed engineering, lands and accounting reports, the committee says, "we shall still be far from having a valuation of the railroads of the country, and how many years it will require to prepare tentative valuations and litigate the countless questions of law and fact that will be raised by carriers, nobody can predict." The carriers, it says, are endeavoring to secure a valuation made upon principles, which, if applied, will produce valuations so largely in excess not only of the actual investment, but in excess of the economic worth of the properties, that earnings thereon cannot be made. If they succeed, even under constitutional rules, the power of regulatory authorities, both state and federal, to regulate the quantum of rates collected will have been destroyed.

The Committee on Grade Crossings and Trespassing on Railroads expressed the opinion that now that the railroads have been turned back to their owners and have been given rates "sufficient to enable them to properly function," the time has arrived when all the state commissions should again take up the plan of grade crossing protection approved by the association in 1917 and cary it into execution.

The committee made an additional recommendation that the state commissions secure, in all the states, the passage of laws requiring every automobile which goes over a railroad crossing which is not protected by gates or a flagman to come to a full stop before crossing the track. It also recommended that the commissions secure the passage, in all states, of laws making it a misdemeanor for any person to trespass upon railway tracks; and that all commissions undertake a campaign for the enforcement of such laws when they are enacted.



Photo by International

Hospital Train Sent by the Belgians to Poland, in Station at Brussels Just Before Leaving

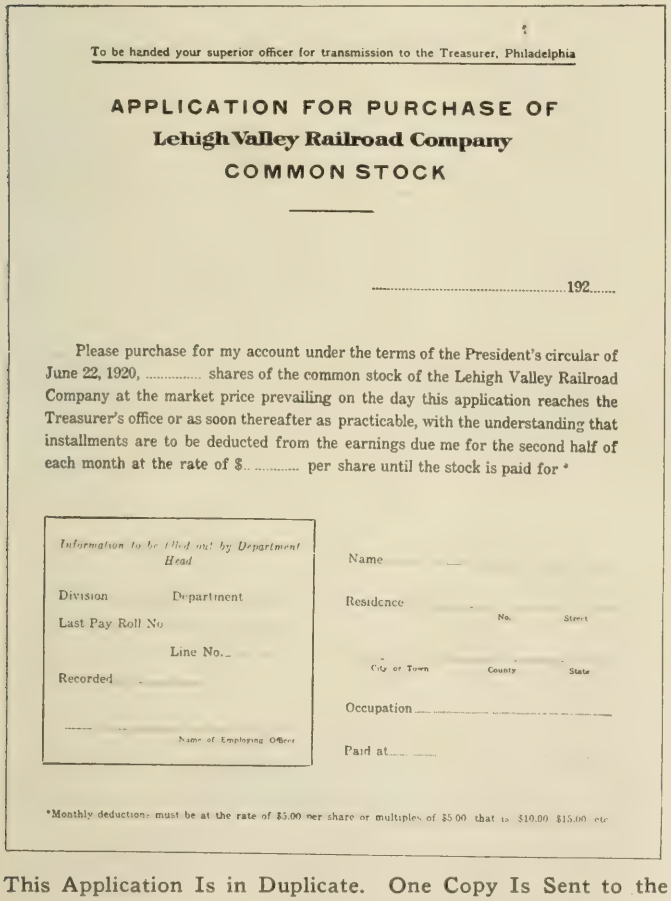
Lehigh Valley Plan for Selling Stock to Employees

Reason for the Plan—Methods Used in Deducting Installments from Payroll—The Results

By A. F. Bayfield
Treasurer, Lehigh Valley

IN THE EARLY PART of June of this year, E. E. Loomis, president of the Lehigh Valley, addressed to the employees a pamphlet containing various interesting facts relating to the operation and finances of the Lehigh Valley Railroad, with a view to restoring the co-operation of the employees and getting back to the former relation of officers and men which in the old days had been somewhat of the nature of a happy family. Incidentally, he suggested the possibilities of the railroad stock from an investment standpoint in the following language:

"On June 1 a $50 share of Lehigh Valley stock was selling for $43. The dividend on this share is $3.50 a year,



To be handed your superior officer for transmission to the Treasurer, Philadelphia

APPLICATION FOR PURCHASE OF
Lehigh Valley Railroad Company
COMMON STOCK

.....192.....

Please purchase for my account under the terms of the President's circular of June 22, 1920, ... shares of the common stock of the Lehigh Valley Railroad Company at the market price prevailing on the day this application reaches the Treasurer's office or as soon thereafter as practicable, with the understanding that installments are to be deducted from the earnings due me for the second half of each month at the rate of $..... per share until the stock is paid for *

Information to be filled out by Department Head

Division Department
Last Pay Roll No
Line No.
Recorded
Name of Employing Officer

Name
Residence
No. Street
City or Town County State
Occupation
Paid at

*Monthly deductions must be at the rate of $5.00 per share or multiples of $5.00 that is $10.00 $15.00 etc

This Application Is in Duplicate. One Copy Is Sent to the Treasurer and the Other Kept by the Subscriber

or 7 per cent, but at the present price of the stock the return on money invested in the stock is more than 8 per cent. You know the property and its possibilities. Many of you may see in this an opportunity for an investment of your savings which will not only return good interest, but furnish a new incentive for your work."

This paragraph created widespread interest among the employees and numerous inquiries were received as to whether the company could not assist the employees to purchase the stock on an installment plan along similar lines to those which had obtained during the Liberty Loan campaign. Accordingly, the following plan was outlined and submitted to the employees:

The Plan

First—Employees may purchase one, two, three, four, five, ten or twenty shares of the common stock of the company.

We have a blank form of application which the employee fills out showing the number of shares desired, his full name, address, division, and nature of work performed. This blank after being filled in by the applicant is handed to his superior officer, who arranges to fill in the payroll references, etc., to complete the identification of the applicant.

Second—The company will buy the stock at the market price on the day the subscription reaches the treasurer's office at Philadelphia, or as soon thereafter as possible.

The form of application previously referred to is forwarded to the treasurer's office and as soon as the order is received an acknowledgment of the order quoting the price and stating the deductions to be made on the payroll is mailed to the employee, a copy going to the division payroll office.

You will note that this stock is purchased on the open market and is, therefore, the ordinary common stock of the company, having with it all the privileges, such as voting powers, dividends, etc., which are common to all holders of the stock. It is not treasury stock, or stock which has restricted rights, such as is sold to employees of some industrial concerns. Those of us who are aware of the formalities required by the Interstate Commerce Commission and the various state authorities for the issuance of stock whether it be new stock or so-called treasury stock (which is not recognized as issued stock by the Interstate Commerce Commission) know how impossible would be the selling of such stock piecemeal.

Third—Deductions will be made monthly from the payroll for the second half of the month at the rate of $5 for each share subscribed for.

As stated above, the treasurer reports to the payroll accountant on the division, the names of employees subscribing and the amount to be deducted monthly. After these deductions are made on the payroll they are abstracted and the abstracts forwarded to the general office, where the record of stock subscriptions is kept. The account with the subscriber is kept on the back of the application blank, which is ruled to record payments, interest calculations, date stock certificate is issued, certificate number, and this record is bound in a loose leaf binder. Several binders are used, one for each division, one for the general office, one for officers, etc.

Fourth—Stock will be held by the company and remain its property until the final installment is paid. Stock bought at $43 a share is paid for at $5 per month, would be delivered in about nine months.

You will note that this stock remains the property of the company until the final installment is paid and, therefore, any dividends paid on said stock belongs to the company. Interest, however, is allowed to the employees on their payments, as stated in the plan further on.

Fifth—Each installment paid by an employee will be

* Abstract of paper read before the meeting of the Society of Railway Financial Officers at Richmond Va., November 10 to 12.

regarded as an investment and he will be credited with interest thereon at the dividend rate paid by the company on its common stock.

The method of computing interest is to allow the employee 7 per cent interest from the date of the payroll until the date on which he completes his payments. It so happens that the final payment generally is made between dividend dates. As stated above, the company absorbs all dividends received on the stock prior to the completion of the payments. After the employee has completed his payments he becomes the registered stockholder and when the next dividend is declared he will receive that dividend. Inasmuch as he has been allowed interest on his installments up to the date of the final payment, the company claims an equity in the first dividend received by the employee, and collects this equity by charging interest at 7 per cent on the par value of the stock from the date of the last dividend to the date of his final payment.

Sixth—The total amount due on the stock may be paid up at any time.

Seventh—Stock issued in the name of an employee will be delivered promptly upon completion of the final payment.

The stock is forwarded to the employee by registered U. S. mail.

Eighth—Once stock is paid for dividend checks will be mailed quarterly when declared. At the present 7 per cent rate dividends on each $50 share amounts to $3.50 per share annually.

If an employee leaves the service he can have his money refunded with interest or may pay in full and take his stock. Employees are not allowed to transfer their subscriptions, but, of course, can do what they like with the stock after they have paid for it. In this respect we differ somewhat, from the methods of industrial concerns which require employees to return their stock holdings when leaving the service permanently.

Employees will understand that there is no intention on the part of the management to urge them unduly to become stockholders of the company. The plan here offered is merely to afford those who desire to become part owners, as well as employees of the company, a chance to do so in an easy and convenient manner.

The Results

The results up to date have been as follows:

Total number of subscriptions—1,116, which is approximately 4½ per cent of the total number of employees.

Total number of shares subscribed for 4,716. Of this number 134 employees who subscribed for 850 shares have completed their payments and so far only 14 of these 850 shares have been sold by them.

The subscriptions divided by classified employees are as follows:

Officers & gen'l. office employees, 549 or 19 per cent of this class.
Agents and station employees, 160 or 8 per cent of this class.
Engi'n, firemen, conductors, etc 67 or 1 per cent of this class.
Maintenance of equipment dept., 201 or 4 per cent of this class.
Maintenance of way department, 90 or 1½ per cent of this class.
Miscellaneous, 47.

The results as above shown indicate that the men on the road who are strongly organized have not yet responded to the same extent as the officers and general office employees, but when the idea gets home to them we are sanguine that they will get in on this, which is a better method of gaining a proprietary interest in the road than by the strong-arm method advocated by Plumb propagandists.

It has been suggested that should the market drop the subscribers may become disgruntled, and while there is probably some merit to this suggestion (as nobody likes to lose money), nevertheless it would seem that any seasoned dividend paying railroad stock under present conditions can be considered well out of the speculative list, and more what is usually termed "a gilt edged investment."

As an indication of the general interest taken in this subject, I have received messages from several newspapers asking me for copies of this paper. I will refer particularly to one communication from a New York financial paper, in which the editors say in referring to our plan that they feel that the time has come when such a plan should generally be adopted by leading corporations, one important reason being that those who so desire to invest may otherwise become the victims of salesmen who distribute questionable securities, and furthermore, they might also be led to patronize bucket shops, which make a practice of fleecing unsophisticated investors.

Selling of stock to employees on the installment plan is not a new one even with railroads, as this method has been in existence on the Illinois Central since 1893. The only fundamental difference in that company's plan and the Lehigh Valley plan is that employees on the Illinois Central are only allowed to buy one share at a time on the installment plan. An employee desiring to purchase more than one share may do so by paying cash in full for the number of shares that he desires and the Illinois Central has an arrangement to purchase such stock on the open market in order to assist the employees, who usually do not understand stock exchange methods and are rather shy of approaching a broker. I am indebted to M. P. Blauvelt, vice-president of the Illinois Central, for the following information:

During the month of October, 1920, that company received 92 applications, of which 40 were from men out on the line or in the shops, 36 were made by clerks in the general office and 16 were made by general officers. Inasmuch as the plan has been in use on the Illinois Central for so many years, its present results can be considered as normal and the showing is approximately 40 per cent from men out on the line, which I consider very favorable indeed. The Illinois Central keeps this plan in front of its employees continually through the medium of the monthly magazine.

We are rather enthusiastic on the matter and believe that if other roads adopt some such plan, it would be of benefit to all the railroads and their employees, and whatever benefits the morale of the railroad employee must be of benefit to the country as a whole.



Photo from Ewing Galloway, N. Y.

One of the Large Railway Piers at New Orleans

Decline in Business Activity Shown in Loadings

Report Shows Decrease Due Principally to Reduced Loadings of Miscellaneous Freight

WASHINGTON, D. C.

THE FALLING OFF in business activity, which has been reported from several sections of the country for several weeks, has at last reached such proportions as to affect the total freight car loading figures. After exceeding the million mark for three consecutive weeks in October the number of cars loaded with revenue freight dropped to 973,120 cars during the week ending October 30, according to the weekly reports compiled by the Car Service Division of the American Railway Association, while for the week ending November 6 it was 910,592. There had been some reductions in miscellaneous freight during the previous weeks and the grain and livestock loading had been less than for the corresponding weeks of the previous year. There had also been decreases in some districts but the total loading for three weeks in October was greater than for any preceding weeks this year. Despite the reduction in the week of October 30 the total number of cars loaded was 21,810 more than for the corresponding week in 1919, and 80,728 more than were loaded during the same week in 1918.

The decrease, the reports show, was principally due to a falling off, as compared with the preceding week, in the loading of miscellaneous freight, especially in the eastern district, which reported a reduction of 11,000 cars in this class of freight, the Northwestern district, which showed a reduction of 12,000 and the Southwestern district, which had a reduction of 3,000 cars. Decreases in the number of cars loaded with grain, livestock, coal, coke, forest products and ore were also shown as compared with reports for the previous week, but there were increases as compared with 1919 in coal, coke, forest products, ore and miscellaneous.

The report follows:

shortage, was 55,412 cars, as compared with 65,965 cars for the preceding week, or a reduction of 10,553 cars. The freight car accumulations also show a further reduction to 32,665 for the week ended November 5.

For the week ending November 5 the shortage was only 39,688, of which 12,511 were box cars and 17,886 coal cars, while surpluses were reported amounting to 12,033.

The box car shortage in the west has virtually been relieved, reports received by the Car Service Division show. There has been a noticeable lessening in the demand for box cars in that part of the country, which would indicate that requirements are quite generally being met. An actual surplus was first reported by railroads in Texas but since then the same conditions have gradually spread to the extent that it may now be said there is available box car equipment under present conditions to meet transportation requirements. Surplus cars, however, continue to be sent to spots still showing a shortage.

Under orders issued by the Car Service Division and the Interstate Commerce Commission empty cars were sent west for the purpose of increasing the car supply in the grain loading districts. Some of the western roads to which these cars were being sent, however, have now indicated that conditions are much improved and that further general relocation of equipment to that territory can be stopped except to return their own cars to them.

In view of this situation, the present time offers a favorable opportunity for such industries as require raw material which moves seasonally under usual conditions to advance such movement somewhat while there is available transportation.

Continued progress is also being made in the "unscrambling" of freight cars, which from the standpoint of ownership as well as of traffic were widely distributed during the period of federal control. On November 1 the total of all cars on home lines was 31.3 per cent, a gain of 1 3/10, or about 30,000 cars as compared with October 1. The principal gain for the month was in the number of box cars returned, which showed an improvement of 2 1/10 per cent over the previous month. When the government turned the

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS: COMPARISON OF TOTALS, THIS YEAR, LAST YEAR, TWO YEARS AGO, FOR WEEK ENDED SATURDAY, OCTOBER 30, 1920

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.*	Miscellaneous	Total revenue freight loaded: This year, 1920	Total revenue freight loaded: Corresponding year, 1919	Total revenue freight loaded: Corresponding year, 1918	Received from connections: This year 1920	Received from connections: Corresponding year, 1919	Received from connections: Corresponding year, 1918
Eastern	1920	5,830	2,803	57,407	3,504	8,052	10,631	50,661	94,660	233,548	.....	.....	255,224	.....	.....
	1919	6,641	3,787	51,137	3,324	7,257	5,991	27,552	117,151	.....	222,840	218,917	.....	246,959	240,598
Allegheny	1920	2,131	3,536	69,777	7,203	4,074	12,191	39,286	73,328	211,526	.....	.....	143,174	.....	.....
	1919	2,743	3,452	65,179	4,024	4,220	9,513	42,476	69,891	.....	201,498	198,653	.....	143,452	174,258
Pocahontas	1920	96	275	24,468	733	2,036	257	2,689	7,192	37,746	.....	.....	19,091	.....	.....
	1919	221	326	27,014	646	2,002	330	156	9,742	.....	40,437	35,059	.....	21,138	24,855
Southern	1920	2,606	2,213	28,537	1,600	18,796	2,963	38,026	36,990	131,731	.....	.....	75,167	.....	.....
	1919	3,036	2,854	26,976	318	17,225	2,563	19,761	58,793	.....	131,526	113,728	.....	75,174	72,109
Northwestern	1920	13,102	9,359	11,014	1,802	15,799	39,280	30,867	35,640	156,863	.....	.....	59,001	.....	.....
	1919	12,691	10,819	15,638	702	14,785	20,415	21,783	43,682	.....	140,515	147,970	.....	62,453	76,234
Central Western	1920	9,464	11,564	25,555	472	5,565	2,718	31,138	49,869	136,345	.....	.....	68,759	.....	.....
	1919	10,646	16,562	23,715	424	5,971	2,477	25,274	54,131	.....	139,200	122,578	.....	66,886	64,925
Southwestern	1920	3,438	2,347	7,945	137	6,815	176	16,663	27,840	65,361	.....	.....	49,815	.....	.....
	1919	3,806	3,396	7,366	118	5,512	353	12,709	26,203	.....	59,463	55,487	.....	50,897	45,293
Total all roads	1920	36,667	32,097	224,703	15,451	61,137	68,216	209,330	325,519	973,120	.....	.....	670,231	.....	.....
	1919	39,784	41,196	217,025	9,556	56,972	41,642	149,711	379,593	.....	935,479	.....	.....	666,959	.....
	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	892,392	.....	.....	698,272
Increase compared	1919	.....	.....	7,678	5,895	4,165	26,574	59,619	.....	37,141	.....	.....	3,272	.....	.....
Decrease compared	1919	3,117	9,099	.....	.....	.....	.....	.....	54,074	.....	.....	.....	.....	.....	.....
Increase compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	80,728	.....	.....	.....	.....	.....
Decrease compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28,041	.....	.....

*L. C. L. merchandise loading figures for 1920 and 1919 are not comparable as some roads are not able to separate their L. C. L. freight and miscellaneous of 1919. Add merchandise and miscellaneous columns to get a fair comparison.

For the week ending November 6 there was an even greater reduction in the loading, to 910,592 cars, but this figure still represented a large increase as compared with 826,724 cars loaded in the corresponding week of 1919 and 873,854 in the corresponding week of 1918, and there was an increase in every district as compared with 1919.

A further decrease in the car shortage was also shown for the week which ended on October 30. The average daily

roads back on March 1 the number of cars on home lines was only 2.19 per cent as compared with 44 per cent when federal control began on January 1, 1918. Under normal conditions the number should be about 50 per cent.

Coal Production

The total ouput of soft coal during the first week of November is estimated by the Geological Survey at 11,355,000 net tons. Preliminary reports, the bureau says, indicate a heavy production during the week of November 13. Production during the first 264 working days of the year has been 464,331,000 net tons, a little more than 40 2/3 million tons behind 1918 but 59 million tons ahead of 1919. The production for the last week of October was 12,418,000 tons, according to the revised figure. The loss ascribed to transportation declined slightly, to 20.6 per cent of full time. There was a further decrease in the dumpings of bituminous coal at Lake Erie ports during the week ended November 6 and the cumulative lake movement from the opening of the season now stands at 20,893,000 net tons, which is about 4¼ million tons behind the record of 1917, 7¼ million behind 1918, but little more than a million tons behind the record of 1919.

For the first time in a month the railroads during the first week in November reported a production of less than 12,000,000 tons of bituminous coal. This, however, was not due to any shortage in the car supply but to election day on November 2 and the celebration of religious holidays in the coal fields. As a result, bituminous coal production for the week which ended on November 6 was estimated at 11,300,000 tons, a decrease of 1,038,000 tons or 8 per cent as compared with that for the previous week. Including railroad fuel coal, 202,564 cars were loaded with bituminous coal during the week, a decrease of 20,453 cars as compared with the previous week. Reports show, however, that except for the first two days of the week, the number of cars loaded daily with coal was greater for the remainder of the week than for the corresponding days of the previous week when a new record for the year was made and, had it not been for the holidays, another new record would undoubtedly have resulted.

For the season of navigation 1920 up to the end of October 20,163,015 tons of bituminous coal were loaded into vessels at Lake Erie ports against the program for the movement of coal to the northwest via the Lakes. This figure compares with 21,743,824 tons for the corresponding period in the previous year. While this movement is slightly less this year there has been an increased flow of coal into the northwestern dock territory by all-rail routes which has undoubtedly compensated sufficiently to insure that transportation requirements have been satisfactorily met in providing coal supply for the northwest and in fact the northwestern interests asked that the lake priority order be lifted.

The total number of cars of coal of all kinds loaded during the week ended October 30 fell slightly short of the 1920 record established during the previous week, the total being 256,773 cars for October 30 against 258,404 for October 23. There was a gain over the previous week for bituminous loading of approximately 3,000 cars, the figure being 218,770 for the week of the 30th as compared with 215,875 for the week of the 23d. The principal loss, which was in anthracite loading, of about 4,000 cars, was due to the observance of Mitchell Day, a holiday generally observed in the anthracite region. As compared with the previous year the total number of cars of coal loaded increased 7,318.

Reports of the Car Service Division show that during the first 10 months of this year the railroads transported 36,296 cars more coal into New England than during the corresponding period in 1919. Total all-rail coal movements into New England up to October 30 were 186,178 cars, or approximately 10,239,790 tons as compared with 149,882 cars last year or about 8,243,510 tons. Bituminous coal transported by water to New England ports, the reports show, totaled 7,124,314 tons during the first nine months this year as compared to 5,670,849 tons during the corresponding period in 1919.

The National Coal Association in a statement on the improved coal situation, said:

"The clearing up of the soft coal situation has been due to the aggressive co-operation of the Interstate Commerce Commission and the railroad executives in the efforts of bituminous coal operators to attain an ouput sufficient to meet all the demands of the country. Through the priority orders issued by the commission during the summer and fall and carried into effect by the railroads, the operators have been able to get the open top cars needed to transport the volume of coal required to overcome the shortages."

President Wentz of the Coal Association said:

"The country has been saved from the disastrous possibility of a soft coal shortage this winter. For that it has the Interstate Commerce Commission and the railroads to thank for wholehearted co-operation with the operators in what has been a tremendous task.

"It is gratifying, at the same time, to remark the steady drop in prices of soft coal at the mines, wherever prices have been high."

As indicating the further improvement of the coal situation the Interstate Commerce Commission on November 15 issued a further amendment to Service Order No. 20, effective at midnight of Tuesday, November 16, which has the effect of releasing the territory west of the Mississippi river from the use of open top cars preferentially for loading of coal. It also permits carriers east of the Mississippi river to use all flat bottom gondola cars for loading of commodities generally as well as coal. Order No. 20 had extended the territory within which open-top cars were to be used preferentially for coal to the Rocky Mountains.

Inasmuch as recent reports indicate continued reduction in car shortage and consequent easier condition with respect to car supply, increased opportunity is presented for a selection to be made of cars which are moving on Car Service Division Orders, or under equalization arrangements, says a circular issued in the Car Service Division.

"Railroads handling cars under equalization arrangements will not force cross movements upon others, or attempt to forward cars obviously out of route, merely for the purpose of disposing of individual cars but in disposing of excess cars will forward them strictly in accordance with the provisions of the Car Service Rules. It is essential that particular attention be paid to the handling of cars in accordance with Car Service Rule 3 E. All roads are expected to accept cars under the provisions of this rule in a broad and liberal manner in the interests of getting equipment relocated as has been directed by resolutions of the executives.

"Equalization indebtedness as between individual roads may be considered automatically cancelled as of the date when roads refuse to accept such cars by types or classes except under the Car Service Rules. When, however, assistance in car supply is necessary and will result from requiring equalization, such arrangements will be automatically restored as provided in Circular CSD-85, the count to begin as of date of request."

IT IS UP TO THE PUBLIC.—Nothing would more quickly start the movement for better distribution facilities than that business, manufacture, industry, commerce, finance, in all their several branches make and encourage investment in railroad securities of money that is looking for safe, permanent earning position—of course, after having in all cases satisfied one's self of the soundness of that particular railroad fundamentally.—*Cincinnati Commercial Tribune.*

A. R. A. Institutes Claim Prevention Campaign

Available Means of Reducing Freight Loss and Damage Payments Considered at Chicago Meeting

THE FIRST Freight Claim Prevention Congress, called by R. H. Aishton, president of the American Railway Association to: first, promote freight claim prevention efforts on inactive lines; second, increase the effectiveness of freight claim prevention efforts on active lines; and third, co-ordinate efforts of individual lines into a general claim prevention movement, was held at the Hotel LaSalle, Chicago, on November 15 and 16.

Increased co-operation as the best means of reducing freight claims was the keynote of the meeting. Increased co-operation between the carriers, between the various departments of each railroad, between the shippers and the carriers and even between the manufacturers of railroad equipment and shipping containers and the railroads was advocated in many of the papers presented and in practically all of the discussion.

The need for educational work among the employees handling freight with a view to re-establishing their morale, broken as a result of the World War, and the necessity for improving the type of worker employed for stowing and trucking in railroad terminals were also emphasized by many of those participating in the discussions.

The interest displayed in this expansion of claim prevention work was manifested by the fact that the attendance totaled 284, the meeting rooms being filled throughout the sessions with representatives of the operating, traffic and claim departments of a large number of lines.

President Aishton's Address

In opening the congress, R. H. Aishton, president of the American Railway Association, told how the freight loss and damage liabilities of the railways were seriously depleting their revenues, saying in part:

"I have here some figures that were published in the *Railway Age* which should receive the most careful consideration of all of you gentlemen. What the figures show—and I have checked up these statistics and as usual the *Railway Age* is dead right on them—in the year 1914, there were $32,376,000 paid out by railroads for loss and damage; in 1917—three years later, there were $35,000,000 paid out for loss and damage with a very slight increase in the number of tons handled, but with practically the same freight earnings in 1918—that was the first year of Government control of railroads and while that possibly may not be responsible for this large amount, it is rather significant—the freight handled was about the same as that of 1917, but the payments for loss and damage to freight jumped up to $55,000,000—an increase of 58 per cent over 1917 and 71 per cent over 1914. But, continuing further, when you come to 1919, the freight movement was less than in 1918 and less than it was in 1917, yet the freight loss and damage payments increased in that year to $104,244,000, and that's the reason you are here. That's the reason the railway executives and the Executive Committee got behind this movement.

"Take out of every dollar the railroads receive for freight—in other words, their earnings for handling freight and for the year 1914 they paid back to the shipper for loss and damage to freight, 1.63 cents and in 1919 out of every dollar that was taken in—and a depreciated dollar, at that—there were 3.67 cents paid back to the shipper. Now, the shipper didn't want to sell those goods to you, but what he is interested in is getting his freight moved expeditiously and as economically as possible and in as first-class condition as possible from the point delivered to destination. After a legitimate claim has been presented, he wants you to remove as much red tape as possible and pay him as promptly as possible. When you do that, you will have every shipper in the country on your side and he will help you in every way possible.

"While you are doing this work, take the shipper into your confidence, call him into your committee meetings and consult with him about anything that affects him. Let him have full knowledge of what you are doing and anything that affects shippers in particular. Let him know what you are doing—take him into your confidence and reach an agreement with him if you can before action is taken, and if you will do that, you will find the shipper will come three-fourths of the way.

"The shipper is vitally interested in freight rates, and the duty of the Interstate Commerce Commission is to fix certain net earnings in certain territories and amongst certain groups of railroads. In fixing these earnings loss and damage enters into that computation, and therefore, shippers are just as much interested, if not more interested, than the railroads are in the elimination of all the expense we may call useless and avoidable. So, just keep that in your mind and also keep in mind this, that the Government of the United States, by the Transportation Act, today is responsible for the revenues of these railroads, and being responsible for the revenues, they are also going to be very much more inquisitive as to the expenses that enter into this, because if they have to provide the means, it is reasonable to assume that they are going to be quite inquisitive as to the various disbursements made by the railroads."

H. C. Barlow's Address

Mr. Aishton was followed on the program by H. C. Barlow, traffic director of the Chicago Association of Commerce, who said in part:

"A large proportion of the damage occurring in transit can and should be avoided. It is the duty of the shipper to deliver goods to the carrier properly marked and in such containers as will carry the goods with reasonable safety to the point of destination. To this end the carriers have promulgated certain rules and regulations which are intended to, and do, in large measure, surround the transaction with reasonable precaution. Where shippers fail to reasonably conform to regulations of this nature it is the opinion of a large number of shippers that the carriers should refuse the goods, rather than accept them and take the chance of damage which may follow. If this does not seem to be a desirable method to pursue then the carriers might profitably pursue a system of education among shipping clerks, that is to say, where any house persistently delivers goods in improper containers or improperly marked, the shipping clerk of that house should be visited in a friendly spirit in an effort to bring about that active co-operation which must exist to get satisfactory results.

"It should be borne in mind that locomotive power is now perhaps four times greater than that used 20 years ago. Again the introduction of the automatic coupler has made possible rough handling of cars in switching service, which was not possible when the coupling had to be made by hand and, in my opinion, the rough handling of cars in yards is account-

able in no small measure for much of the damage to property in transit.

"We all know that a general cause of freight losses has been the falling down of the moral fibre of the people during the great war—when life becomes cheap, property, of course, becomes of very little value. The war is over and the railroads are in the hands of their owners, and we earnestly hope that, with a little of the old-time discipline, downright stealing will be reduced to the minimum.

"One of the great elements which has made pilferage possible is the slow movement of freight in transit, and the leaving of cars of merchandise in outside yards awaiting unloading at inbound freight houses or transfer stations. In this connection it is interesting to note that the freight service time from Philadelphia, Pa., and Baltimore, Md., say to Cincinnati, Ohio, is no faster today and perhaps slower than in 1866, about the close of the Civil War. By this I mean the schedule time. I am firmly convinced that if we could have our merchandise trains speeded up and kept in continuous movement it would eliminate a large portion of the stealing.

"Let the carriers effect a plan for the loading of freight in such manner as will keep it from being crushed, route the same in such manner as will avoid needless transfers, eliminate leaky roofs, keep the merchandise trains moving, avoid setting out cars subject to pilferage in outside yards or at division points, mend broken doors, improper hangings and lockings, and in my opinion claims for loss and damage will be greatly reduced."

The Duty of Carriers in Claim Prevention Work

The discussion at the first day's session of the conference was directed to the carriers' duty to the public to minimize transportation failures, the carriers' duty to themselves and to each other to conserve their resources by safe and economical operation to the end that the properties, the service and the personnel may share the benefits, and the economic waste involved in so much loss and damage of freight.

J. B. Baskerville, chairman of the Cause and Prevention Committee of the American Railway Association, in speaking at the first session, referred to the losses consequent upon transportation failures which cannot be reckoned in dollars and cents, such as loss of labor and material which have gone into the article diverted from its intended use and the disruption of the business routine frequently requiring substitutions and makeshifts for which loss a money payment does not compensate and which the claimant cannot recover.

"The freight claim situation in the past," Mr. Baskerville said, "has been the point of most acute contact between the public and the carriers, and this contact can be softened and made mutually helpful by an understanding of each other's problems, a frank recognition of each other's rights and the fair and square acceptance by each of his own burdens and responsibilities. While the carriers are operated individually, their duty to the public is collective, and the shortcomings of one of course reflects upon the whole. Hence, claim prevention while prosecuted on the individual line should be so carried on as to have its proportionate weight and effect upon the whole transportation problem."

Duty of Carriers to the Shipping Public

J. F. Horrigan
Freight Claim Agent, Southern Pacific

The following are abstracts of several of the papers presented at the four sessions of the congress and show in general the trend of the discussion:

The duty of the carrier to the shipper in connection with handling his freight is not fulfilled by the prompt payment of a freight claim presented for any loss or damage to the shipment in the course of transportation. There is a further obligation on the part of the carrier to transport such freight safely so that it will reach the consignee in the same good condition that it was in when delivered by shipper to carrier. Failure in this respect results in an indirect loss to the shipper over and above the amount of money covered by the claim for reimbursement in that a dissatisfied customer often attributes the condition of the freight to the fault of the shipper and as a result will make future purchases from other concerns.

In the conduct of a business as large as a railroad where freight passes through so many hands and grades of employees, even with all of the safeguards surrounding it, there will still be a certain amount of loss and damage, but, as a majority of freight loss and damage is due to the man failure, that is, failure of railway employees to carry out existing instructions covering handling of freight, the carriers should not dismiss the subject on the theory that if the freight is damaged in transit and a claim is presented and paid, the shippers should be satisfied. They should go further and supervise the handling in such a way that the major part of the loss and damage which is in the hands of the carriers themselves to correct will be corrected. In other words, we must take some decided action to reduce this annoyance and not feel that it is cheaper to pay claims than to prevent them.

The obligations of railroads as common carriers to the public are such that even a partial fulfillment of them would seem to make it improper for any road to be wholly classed as "inactive" with respect to the subject before this congress. We know that some have made special efforts to increase their efficiency by intensifying their supervision and enforcing rules that have been promulgated. It is hoped that all lines will join in a combined effort to put into effect such reforms as may be necessary, not only to check freight losses, but to reduce them to the lowest possible minimum consistent with practical operation.

Duty of the Carriers to Themselves and to Each Other

A. R. McNitt
Freight Claim Agent, Union Pacific

Loss of, and damage to, freight, resulting from negligence or failure to provide reasonable means to prevent, represents nothing less than deliberate waste. Such disregard for means to protect property entrusted to the care of railroads cannot be too severely condemned and if not remedied will result in magnifying actual or fancied grievances to a degree where it will become a serious factor to contend with in any efforts that are made to strengthen public confidence.

The monetary consideration alone should be sufficient to attract the attention of the railroad management and emphasize the importance of immediate action to arrest freight losses due to causes of a preventable nature and especially where that is now possible of accomplishment by utilizing the means afforded through their regular organization.

Duty of Each Carrier to Itself

It is the duty of a carrier to serve the public with the utmost degree of efficiency and thereby fulfill its obligations in the handling of business so earnestly solicited. To do this it is not only necessary to furnish adequate facilities for the receiving, transporting and delivering of freight but proper protection of it as well. To be assured of reasonable efficiency in the matter of protecting freight, it is necessary to analyze claims, exception reports and all other sources of information reflecting causes of loss or damage and then apply the necessary corrective measures. To a

very great extent this is possible of accomplishment through the regular organization of an operating department but a systematic method must be devised by which causes can be located, responsibility fixed and corrective or disciplinary action applied in all cases consistent with the offence. This will assist in establishing not only a low minimum of preventable causes but to a large extent reduces those now classified as "unknown" or "unlocated." A prevention organization should be provided that will afford all employees an opportunity for a free and restricted interchange of ideas. This will create and maintain interest in prevention work, develop new ideas and methods and also serve as an advisory cabinet to supervising officials from which the latter can obtain first-hand knowledge of existing conditions that would be impossible to secure in as prompt, complete and reliable a manner by any other means.

Inter-Related Duty of Each Carrier to Other Carriers

Considering the large proportion of revenue derived from inter-road traffic, it follows that the individual carrier must be concerned in any assistance it can render other carriers in the protection of freight during its transportation to the ultimate destination and cannot consider itself as aloof or standing alone in rendering all possible assistance to perfect the service on the through movement. Therefore, all lines should consider themselves as in duty-bound to report known irregularities to another carrier at fault and give the same consideration to such reports when received as they would to their own, thus working towards the establishment and maintenance of uniform practices and rules.

Financial Loss Incurred by Carriers and Shippers

C. C. Glessner,
General Freight Claim Agent, Baltimore & Ohio.

Reports compiled by the Bureau of Railway Economics are our authority for the statement that in the adjustment of loss and damage claims the cost of loss and damage to freight for "Class 1" railroads increased from $23,346,000 in 1916, to $55,700,000 in 1918, and to $106,800,000 in 1919. The percentage of increase of the average of 1918 and 1919 over the average of the four years 1914 to 1917 is 168.1 per cent. The percentage of loss and damage to freight revenue increased from 9/10 of one per cent in 1916 to a fraction over 3 per cent in 1919, and the railroads' loss and damage expenditures per ton of freight carried rose from 1.07 cents per ton in 1916 to 5.37 cents per ton in 1919.

The loss and damage expenditures in 1919 equalled a cash dividend of 4 per cent on two and a half billions of dollars, or in other words the causes which result in loss and damage claims cost the carriers in one year as much as the Baltimore fire of 1904, which wiped out the entire business district of that city, or in the last three years they equalled the amount paid for such a calamity as the San Francisco earthquake and fire in 1906. Loss and damage to freight in 1919 equalled a rental of $45 per car annually on all freight cars in service on all railroads today (2,350,000 freight cars).

The force and meaning of the foregoing remarks cannot be weakened by alleging that a considerable portion of the great increase of 358 per cent in 1919 over 1916 is due to the higher prices of 1919; a part of this increase is due to that cause, but when it comes to the increase of nearly 100 per cent in loss and damage claim payments in 1919 compared with 1918, increased commodity prices can hardly be used in any measure as an explanation, since the United States Department of Labor figures show an increase in prices in 1919 as compared with 1918 of no more than 8 per cent.

It is the desire of the Cause and Prevention Committee that every line member of the American Railway Association will organize an active campaign for claim prevention, and we would suggest that we adopt as our slogan, *"Cut loss and damage in half. It can be done."*

Effectiveness of Carriers' Existing Organizations

F. W. H. O'Meara,
Freight Claim Agent, Chesapeake & Ohio.

The measure of success of the organizations now in existence for the purpose of prevention of freight loss and damage may be said to depend upon:

1. The thoroughness and promptness with which the Freight Claim Departments analyze and bring to light the causes of freight loss or damage and the degree of care used in making specific those causes to enable the application of proper preventive measures. The more a responsibility is definitely fixed for these causes by the data furnished by the Freight Claim Departments, the greater will be the result.

2. The adoption of the needed remedies by the railroad departments involved, including such expenditures as are shown to be required and as would at the same time be justified.

3. The concentration by the organizations now in existence for the prevention of freight loss and damage upon the conditions that may change from time to time that contribute most largely to this expense. Take, for example, at the present time the item of defective equipment, mostly leaky cars. If the Chesapeake & Ohio can be used as a fair average in this respect, the carriers at the present time are paying out at least 20 per cent of the total loss and damage due to this cause. Another item is the damage, whether located or unlocated, which is largely due to the rough handling of the cars, particularly in hump yards. Approximately, according to the Chesapeake & Ohio record, 25 per cent of the total loss and damage expense each month is attributable to this cause. Concentration by the machinery set up by the claim prevention organizations upon such cases as mentioned and which are contributing so largely to this expense cannot fail of the desired results. Another item that may be mentioned in this connection is that at the present time, due to the almost general decline in market values, the importance of a reasonable and prompt handling of traffic, subject to these changes, should be stressed by these organizations of all carriers.

4. The full co-operation of the shipping public to be fostered by the recognition by the carriers of their responsibility for the proper and prompt handling of freight that is delivered to them for transportation. If co-operation is desired it must be full and complete upon the part of all those concerned, and if the carriers are to realize the benefits from a full co-operation on the part of the shippers, they must handle their traffic efficiently.

5. The expansion of direct investigation and supervision on the ground of conditions that cause freight loss or damage, and the employment of sufficient and capable men for the purpose. The advantage of the employment by carriers of capable outside men to study and locate causes of freight loss and damage is not only in the obtaining of better information than can be done otherwise, but the contact of these men with the shipping public and the carriers' employees concerned, has or should have a far reaching effect.

6. The maintenance of interest to the maximum by the different units of the organization and employees generally in the prevention of freight loss or damage by publicity and exchange of information pertinent to this situation. I have in mind such publicity as the minutes of prevention meetings, the use of employees' magazines and other similar pub-

lications, the regular issuance of claim prevention bulletins by the Freight Claim Departments, and furthermore the issuance of letters of commendation where deserved.

7. The publication by the Freight Claim Departments of claim statistics in such a manner as to show as nearly as possible in comparative form the records of operating divisions or individual stations in matters pertaining to freight loss or damage.

Fundamentally it might be said that there are only two requisites to the degree of success of the existing organizations to prevent freight loss and damage. One devolves upon the Freight Claim Departments and the organizations in connection therewith to systematically and promptly bring to the attention of those who have in charge the correction of conditions that cause this loss or damage. The other is the application by the carriers' departments concerned of the measures that are needed to correct these conditions, and in this connection it is my opinion that the larger contributing causes, and which may be termed as applying generally in the movement of traffic, should be brought directly by the Freight Claim Departments to the attention of the chief operating officer of the railroad.

Methods of Utilizing Established Organizations

F. W. H. O'Meara
Freight Claim Agent, Chesapeake & Ohio

There cannot be too much co-operation between bureaus or other organizations for the purpose of preventing freight loss and damage, if we hope to get the maximum results in the control of freight loss or damage. Speaking specifically, first, to the Weighing Bureaus. There should be full use of the experience and data in possession of these bureaus. Accuracy of scales and weighing methods, particularly of such bulk freight as coal, is very essential in the prevention of claims and loss. The Inspection Bureaus can also be made a big factor in the control of this situation. They can be of particular assistance in the policing of marking and packing, adequacy of containers, inspection of fruits and vegetables, etc., locating methods of carload shipments with respect to the application of the M. C. B. Loading Rules, and inspection of damaged shipments at large terminals for all carriers.

Other Papers and Discussions

J. D. Shields, freight claim agent of the Chicago, Burlington & Quincy, in discussing the economic waste in the country's products resulting from freight loss and damage, called attention to the fact that these losses in 1919, amounting to $107,000,000, do not represent the whole value of the commodities lost or damaged nor the entire loss to the public, since there must also be considered the wasted efforts of the army of men that produced this great volume of goods. In directing this reform the railroads should not measure their activities by the amount of their loss and damage expenditures alone, but should give due consideration to the tremendous economic waste, he said.

Joe Marshall, freight claim agent of the Missouri, Kansas & Texas of Texas, presented a paper on employees' co-operation, offering several plans by means of which the employees might be interested in claim prevention work. One plan, Mr. Marshall said, was to create a general claim prevention committee composed of the heads of each of the departments handling freight, to which committee district and divisional committees, made up of the representatives of each branch of service on each division, would report. Mr. Marshall also outlined several methods of educating employees, among which are the following:

Special articles in railroad magazines by employees, where possible.

Monthly letters to particular classes of employees on claim prevention, and letters by agents showing what was done during the previous month in the interest of claim prevention.

Periodical meetings of station forces to discuss handling of the business of their station to save claims, as well as to suggest subjects for the district meetings or develop subjects received from them—publishing these findings.

Preparation of papers on special subjects for discussion at meetings.

Illustrated circulars taken from photographs distributed with the Freight claim department's mail or by the superintendents.

Suggestion cards filled out by employees and mailed to headquarters.

Information circulars to the men in each class of service. Such circulars provide talking points for the men.

Sending form letters to new men entering the service to start them right from a prevention standpoint.

Annual passes for committeemen, who are men selected for their interest and who will do missionary work among their co-workers.

H. M. Moore, freight claim agent of the Southern Pacific, Louisiana Lines, discussed the best methods for the exchange of information and the establishment of practices between interested lines to correct conditions creating claims.

Mr. Baskerville closed the meeting with a paper on the means of utilizing the Committee on Cause and Prevention of the Freight Claim Division of the American Railway Association for the exchange of information and for the co ordination of claim prevention activities.

Departmental Co-ordination on Each Line

C. H. Dietrich
Freight Claim Agent, Chicago, Milwaukee & St. Paul.

Departmental co-ordination so far as it applies to the work of our claim prevention organizations represents the harmonious or reciprocal relationship between various departments of our transportation organizations, which will affect in any way the loss and damage situation. My personal observation has been that the greater proportion of our claim prevention bureaus, as they are organized at present, throw the bulk of the responsibility and a considerable part of the actual work on to the Freight Claim Department, and there seems to have been a tendency heretofore to give too little consideration to the suggestions and recommendations made by claim prevention bodies looking toward the elimination of claim causes that our investigations and studies have convinced us are responsible for many of our principal troubles. I believe it is a well settled question that has been fully demonstrated by some of the most efficient prevention organizations actively functioning today, that in order to secure the best results in this work, not one or two but all departments of a transportation company must lend their efforts and maintain an all year around interest in prevention work, and to do this they must all be represented on and take an active part in the claim prevention organization maintained on the various lines. The Freight Claim Agent and his staff must always remain the moving spirit in this work, for it is from his department that practically all information and freight claim statistics emanate on which the prevention bureau depends to guide it in its efforts. Furthermore, the Freight Claim Agent's close contact with all claims received, quite naturally provides him with valuable material with which he may feed the prevention bureau that they would perhaps be unable to secure otherwise. With sufficient information, properly classified and analyzed, your claim prevention organization should be in a position to determine the principal causes, together with the more important commodities that are responsible for the bulk of their claim payments, for when this is correctly ascertained, the co-ordination of the various departments can be intelligently directed toward the actual elimination of your most fruitful causes.

The Society of Railway Financial Officers

Report of Interesting Fourteenth Annual Meeting Held at Richmond, Va., November 10 to 12

DISCUSSION of the handling of the detailed problems of the railway financial officers' work and consideration of the broad aspects of the financial officers' function were combined in a somewhat unusual fashion in the fourteenth annual meeting of the Society of Railway Financial Officers at the Hotel Jefferson, Richmond, Va., on November 10 to 12. The meeting of the railway treasurers and other financial officers was characterized by a large attendance, by the calibre of the papers read and by a lively and fruitful discussion of these papers. The sessions were presided over by the president of the society, H. R. Wheeler, treasurer of the Boston & Maine.

The meeting was welcomed to Richmond by the mayor of that city, George Ainslie.

The morning session on Wednesday was addressed also by Governor Davis of Virginia. Mr. Davis spoke on the deflation policy of the Federal Reserve Board and criticized it severely.

"The farmers are dissatisfied with the present trend of affairs, manufacturing is at a stand-still and bread lines may result from this disastrous plan of deflation," he said.

"Our ideas of government must expand," he also declared. "The best way to remedy conditions would be by instructions from the Federal Reserve Board to member banks that they lend money only for uses in the legitimate channels of business and not for speculation, such as has advanced the 'call money' rates on Wall Street."

In his speech the governor declared that the railroads were a fundamental factor in the nation's life, and that they have recently received consideration in legislation by Congress in the way of increased rates and should now exert their influence on behalf of other fundamental factors, agriculture and industry. In conclusion he asked the support of the convention in the alleviation of conditions which threaten disaster, for, he said, one branch of activity cannot prosper unless others do.

The afternoon session was addressed by John M. Miller, president of the First National Bank of Richmond. Mr. Miller spoke on the "Attitude of the Public Toward the Railroad." On the following morning he again spoke for a few minutes and answered Governor Davis' criticisms relative to the deflation policy of the Federal Reserve Board. The afternoon session was also addressed by T. H. B. McKnight, treasurer of the Pennsylvania at Pittsburgh, who spoke on "Personality in Business." A paper read by John T. Reid, treasurer of the Atlantic Coast Line at this session entitled "Surrender of Claim for Order Notify Shipments Delivered Without Surrender of Bill of Lading" is briefly abstracted below.

Thursday's session was addressed by F. H. Hamilton, treasurer of the St. Louis-San Francisco, who read a paper entitled "Practices Under Federal Order No. 30." Following the reading of his paper, Mr. Hamilton introduced the following resolution which was adopted by the convention:

"The Society of Railway Financial Officers, in annual meeting assembled at Richmond, hereby recommends to the Association of Railway Executives that it take action in some way to the following effect:

WHEREAS, The present method of settling adjusted balances by separate draft for the balance of each class of traffic as ascertained involves a great deal of unnecessary collecting through banks, in many cases the balance on one account being a debit and the balance on another account being a credit, and causes in many instances the payment of money between carriers when it is not really due and makes it necessary to carry a larger working balance than would otherwise be necessary.

THEREFORE, be it resolved, that until a general clearing house for settling all inter-company accounts is established, all adjusted (agreed) balances between any two roads, including debits arising under the "Denver Plan" and under rule 255, should be consolidated into one account to be settled at a certain time each month by draft of the creditor company for the resulting net balance.

A paper was read at this session by T. W. Mathews, assistant treasurer of the Seaboard Air Line on the "Preparation of Checks and Payment of Wages by Division Paymasters." Mr. Mathews' paper will appear in fairly complete form in an early issue of the *Railway Age*.

The afternoon session was addressed by Eppa Hunton, Jr., president of the Richmond, Fredericksburg & Potomac. Mr. Hunton discussed the relations between the railways and the public. He pointed out that the good-will of the public is in a large measure in the hands of the employee who comes in contact with the shipper or passenger. He also commented at some length on the Transportation Act and expressed his opinion that it was second only to the Federal Reserve Act in being the most constructive piece of legislation passed for several years.

This session was also addressed by A. B. Jones, local treasurer of the Chicago & North Western, who spoke on the "Safeguarding and Transmitting of Railway Collections." An abstract of Mr. Jones' paper is given below. James Y. Yates, assistant treasurer of the Grand Trunk, also read a paper on the "Railways of Canada," which gave a historical study of the transportation systems of that country.

The Friday morning session was addressed by A. F. Bayfield, treasurer of the Lehigh Valley. Mr. Bayfield's paper entitled "Selling Stock to Employees on the Installment Payment Plan" is given on another page of this issue.

The annual dinner on Thursday evening was addressed by Douglas S. Freeman, editor of the News Leader of Richmond.

Abstracts of two of the papers follow. As noted above, one of the other papers appears elsewhere in this issue and a fourth will be published later.

Settlement of Claims for Order Notify Shipments Delivered Without Surrender of Bill of Lading

The paper on this subject, by John T. Reid, treasurer of the Atlantic Coast Line, said in part:

The ownership of an "order notify" shipment is in the holder in due course of the original bill of lading. The delivery of an "order notify" shipment by a carrier without requiring the surrender of the original bill of lading properly indorsed is made only at its peril, and for such deliveries, the carrier should protect itself. The rules now generally in force, which were recommended by a committee of the Society of Railway Financial Officers, and which are substantially a continuation of the rules in effect during federal control, provide for such protection by requiring the deposit of a certified check for an amount equivalent to 125 per cent of the invoice value, or the filing of a surety bond, with surety acceptable to the treasurer of the carrier, in an amount twice the amount of the invoice value, or under a blanket surety bond. If delivery is made without surrender of the bill of lading, the carrier incurs a liability to the holder in due course of the original bill of lading. Claims for payment for an order notify shipment delivered without surrender of bill of lading should be accompanied by the bill of lading properly en-

dorsed, or by evidence satisfactory to the carrier that the original bill of lading has been lost or destroyed, and that the claimant is the owner thereof; in the event that the bill of lading has been lost or destroyed, the carrier, before paying claim, should require protection by an indemnity bond, with acceptable surety in an amount twice the amount of the invoice value, the same amount of the surety which is required for the delivery without surrender of the bill of lading. Loss and damage claims are usually filed with the freight claim agent and a claim for a shipment delivered without surrender of the bill of lading should likewise be filed with him as he has the machinery for investigating claims and such claim is in the nature of a loss and damage claim; the bond, however, should be submitted to and approved by the treasurer of the carrier in the same manner as a bond for delivery without surrender of the bill of lading.

Consignors making order notify shipments usually attach the original bill of lading, endorsed, to a draft drawn on the notify party, depositing the draft for collection and the loss or miscarriage thereafter in the mails is the most prolific cause for the bills of lading being lost or delayed. Every reasonable facility consistent with sound business principles should be extended by the carrier to the owner of the bill of lading for remedying its loss. A practical method is for an acceptable surety bond to be filed with and in favor of the destination carrier providing for the delivery of the shipment to the order of the owner of the bill of lading, who can make a draft, with the order attached on the person to whom he desires the delivery made, and the agent of the carrier after receiving authority from the treasurer can make the delivery on surrender of the order properly endorsed. If there is any doubt in the mind of the agent as to the genuineness of the order he can require the exhibit of the paid draft or other satisfactory evidence. This method will enable the owner of the bill of lading to obtain settlement for the shipment more properly than by claim. If the shipment has already been delivered proper adjustment can generally be made and the transaction terminated.

Safeguarding and Transmitting of Railway Collections

Arthur B. Jones local treasurer of the Chicago & North Western, in his paper on this subject said in part:

To best accomplish the safeguarding and transmitting of railway collections, and to make them quickly available for use by the railway company, treasurers should put into the hands of agents definite and complete rules of procedure, for it is almost as important that rules regarding the money of the company be governed by such instructions as it is that operation of trains be so governed.

As we cannot force compliance through the various forms of discipline available to the operating officer we must hit upon the best manner of issuing instructions. Circulars of the ordinary sort are often hastily read, if at all, and rarely preserved. First, a book of instructions covering all financial affairs at stations should be issued by the treasurer and, for additional force and effect, bear the approval of the president. Thereafter, additions and changes should be printed upon paper of the same size as the pages in the book and be issued to agents with instructions to insert them in their proper place in the book. This provides complete instructions at all times and is available to all concerned, including the new or ambitious subordinate.

And this reminds me that I have sometimes wished that we in the financial department might have the further and automatic means for safety which obtains in the operation of trains—such as the interlocking devices, particularly the derail—so that even though a rule might be disregarded, disaster would be avoided. We frequently, however, find those handling money running past the caution signal and the home signal, and on through open switches, leaving us to repair the damage as best we can. Much honor awaits the financial officer who will invent a financial derail!

Up to a few years ago, comparatively, payment of all charges, including freight, was required to be made in cash and the cash itself sent directly to the treasurer. Gradually, of course, the use of checks and drafts grew to the point where practically all freight charges are now thus paid, and it would be impracticable and undesirable, both for the carrier and the shipper, that currency be used. Under some conditions, too, it is well that checks, money orders and drafts be accepted for passenger service. When checks were taken at all, it was long the custom for the agent to present them to the local banks upon which they were drawn and receive cash over the counter remitting it with his other cash collections. The custom is now quite general of turning the station's collections over to a local bank daily, accepting in lieu thereof the bank's draft drawn on its correspondent, preferably in the city to which the remittances went. This method of doing business is beneficial to both the railway company and the bank.

Mr. Jones then described various other means of effecting satisfactory co-operation between the railway companies and the banks down the line of road. He discussed also the making of remittances by agents and conductors and concluded with a reference to the proper safeguarding of frauds while they were in the hands of the agent.

Due to increased passenger travel, he said, the increase in passenger fares and the increased activity of the "hold up man," the amount of risk, particularly at large passenger stations, has of course greatly increased and correspondingly greater precautions should be taken than formerly, including more secure safes, windows, gratings and locks and the providing of fire arms in some cases.

Election of Officers

At the election of officers, E. L. Copeland, treasurer of the Atchison, Topeka & Santa Fe, was elected president; E. L. Rossiter, treasurer of the New York Central, first vice-president, and J. S. Sneyd, assistant treasurer of the Philadelphia & Reading, second vice-president. E. L. Copeland was elected to the executive committee for one year and the following four for the regular two year term: E. L. Rossiter, J. P. Reeves, treasurer, Chicago & Eastern Illinois; D. K. Kellogg, treasurer, Richmond, Fredericksburg & Potomac, and G. K. Warner, treasurer and assistant secretary of the St. Louis Southwestern. The society now has 215 members.

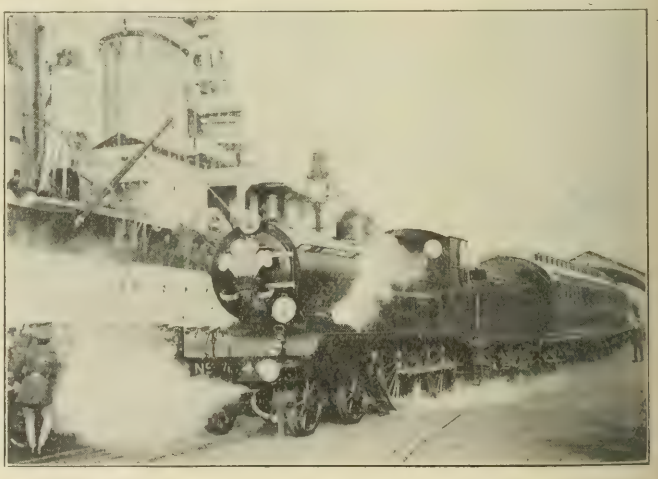


Photo by Keystone View Co.

The Royal Train Meeting the Prince of Wales at Portsmouth on His Recent Return to England

American Railway Association Holds Annual Meeting

THE Annual Session of the American Railway Association was held at the Blackstone, Chicago, on Wednesday, November 17, 1920, with R. H. Aishton, president of the Association in the chair. Announcement was made that the following were elected members of the board of directors by letter ballot:

E. W. Beatty, President, Canadian Pacific.
B. F. Bush, President, Missouri Pacific.
W. R. Scott, President, Southern Pacific, Texas-La. Lines.
A. H. Smith, President, New York Central Lines.
W. G. Besler, President and General Manager, Central of New Jersey.
W. H. Truesdale, President, D. L. & W.
E. J. Pearson, President, N. Y., N. H. & H.
J. H. Hustis, President, Boston & Maine.
W. W. Atterbury, Vice-president, Pennsylvania System.
Daniel Willard, President, Baltimore & Ohio.
Hale Holden, President, Chicago, Burlington & Quincy.
W. B. Storey, President, Atchison, Topeka & Santa Fe.
H. E. Byram, President, Chicago, Milwaukee & St. Paul.
C. H. Markham, President, Illinois Central.
C. R. Gray, President, Union Pacific System.
N. D. Maher, President, Norfolk & Western.
W. L. Mapother, Executive Vice-president, Louisville & Nashville.
H. G. Kelley, President,, Grand Trunk.

The Executive Committee reported that the membership of the Association at the present time consists of 716 railroads, operating 308,012 miles of road.

On the recommendation of the Executive Committee, the Association passed a resolution deprecating efforts to make the use of the metric system in weights and measures compulsory and ratifying the action taken by the Engineering and Mechanical Divisions to the same effect.

The Executive Committee also reported that arrangements have been made to include the American Association of Local Freight Agents and the several associations of Railway Surgeons throughout the country, as sections of the American Railway Association.

The general committees of the various divisions reported on the activities of the divisions during the year and with few exceptions the actions taken and their recommendations were adopted by the association.

Interesting addresses on the transportation problem, which has been presented to the railways since they were returned to private operation, were made by President Aishton, Colonel F. G. Robbins, director of the Bureau of Service of the Interstate Commerce Commission, and W. L. Barnes, executive manager of the association.

Mr. Aishton pointed out that ever since the transportation act was passed, giving the Interstate Commerce Commission authority to regulate service, the commission had made clear its desire that the railways themselves as far as possible should co-operatively handle all matters pertaining to service. The railways have brought about the needed co-operation between themselves in the rendering of freight service through the Car Service Division of the association, which has at all times benefited in its work by the counsel and support of the commission and its Division of Service. He praised the individual railways for the loyal support they have given through the Car Service Division within recent months, and emphasized the fact that only by working together as they have can they render unnecessary the direct exercise by the commission of the great powers over service given it by the transportation act. Mr. Aishton gave detailed statistics showing the great increases in efficiency of transportation which have been attained since the railways were returned to private operation and said that the record made by the railways in August in rendering an average of 557 ton miles of freight services per freight car daily was the best record ever made.

Colonel Robbins expressed the appreciation of the Interstate Commerce Commission and of himself regarding the successful efforts which have been made by railway officers within recent months to improve transportation conditions. He said it was generally conceded that never were the railways of the country confronted with such a complex and difficult transportation problem as that by which they were confronted immediately after the termination of government control. He referred to the bad effects produced by the "outlaw" strikes and said that the improvements in the transportation situation effected since then were the results of wonderful work. He believed it had been definitely proved that the movement of freight cars in fleets from one part of the country to another to meet seasonal demands for freight transportation in periods of emergency was a good thing when properly supervised. Proper supervision required adequate machinery, and he believed that the Car Service Division of the association furnished the needed machinery and that the Division of Service of the commission would be glad at all times to co-operate with it. He urged that when individual railways felt that there had been injustice by orders of the commission or the Car Service Division they should send representatives to Washington to present the facts regarding their local conditions. The commission's Division of Service, he stated, intends to establish agencies in various parts of the country to keep in touch with transportation conditions and to co-operate with the shippers and the railways in dealing with congestions and car shortages. He made four recommendations regarding the future policy of the railways: First, maintain the Car Service Division; second, standardize reports regarding shippers' unfilled orders for cars; third, standardize methods of distributing cars as between the various railways; fourth, specialize on organizations to improve the handling of cars at division points and stations. Since 1908, he said, the car carrying capacity of the country had increased only 33 per cent, while the freight to be handled has increased 94 per cent. These figures show why it is so necessary to have better handling of cars. He believed that station agents if properly trained could do more than any other class of railway men to help the car situation by getting local shippers to load cars heavily, to load and unload them promptly, to route shipments intelligently and in other ways to make more efficient use of the cars available.

Mr. Barnes said that the Car Service Division was not unmindful of the difficulties met by the individual railways in satisfying their patrons and at the same time obeying the orders of the Car Service Division. The question presented to the railways, however, was whether they would through their own machinery handle the distribution of cars or fail to do so, and thereby make it necessary for the Interstate Commission to exercise fully the powers given it by the transportation act. The time had come when it was impossible for the railways individually to handle car service matters, and if as a whole they were to handle these matters themselves they must do so in constant contact with the regulating authorities. He expressed the opinion that railway equipment never again would exceed the requirements as it did before 1916, and that for this reason the closest co-operation by the railways in handling it would always be more important than it had been heretofore.

The position of the Transportation division that the present Car Service Rules shall not be revised or any new rules promulgated for adoption until after the present rules shall have been given a fair trial by the railroads, subscribers to the Car Service and Per Diem Agreement, and the results from such a trial indicate that a revision of the rules is necessary, was approved by the Association.

The next session of the Association will be held in November 1921, at a place to be decided upon by the Board of Directors.

Accident Bulletin 74

The Interstate Commerce Commission has issued Accident Bulletin No. 74 containing the record of collisions, derailments and other accidents on the railroads of the United States for the last quarter of 1919 and also the tabular statements for the twelve months ending with December.

Remarkable decreases are shown in many items, as compared with 1918. In the twelve months of the year now reported, 110 passengers, 366 employees and 41 other persons were killed in train accidents, and 4,549 passengers, 3,202 employees and 124 other persons were injured; as compared with a record in the preceding year of 286 passengers, 554 employees and 156 other persons killed and 4,655 passengers, 4,250 employees and 500 other persons injured.

The comparisons of the principal items appear more fully in the table given below. Both in the table and in the figures which we have just given several items need explanation. The aggregate of the persons killed in train accidents (given above), 517, is 48 per cent less than the total in 1918; but the total for the earlier year was swelled by the inclusion of "other persons, not trespassers" killed at highway grade crossings, as occurring in train accidents. Those thus classed in 1919 number only nine, whereas in 1918 the number was 117. Taking only the passengers and employees (including employees not on duty) the decrease was 43 per cent. The number of employees on duty killed in train accidents (359) is 34 per cent less than in 1918.

The decrease in the number of passengers killed in train accidents calls to mind the fact that the record for 1918 included two of the worst disasters on record; at Ivanhoe, Ind., on June 22, killing 68 persons, and Nashville, Tenn., on July 9, killing 101.

The combined total in our table, 6,978 killed plus 149,053 injured (=156,031) is the smallest since 1910; and the total of killed is the smallest since 1898. The most notable change contributing to this diminution is the falling off in the number of trespassers killed by being struck or run over by trains. The total under this head is less than half the total in 1914. For the ten years 1905-14 the average annual number of trespassers killed (including those killed in train accidents) was 5,290, as compared with 2,553 in this report. In an appendix the Bulletin gives these and other totals for each year back to 1888. The largest annual death roll of trespassers, 5,612, was that for the year ending June 30, 1907.

Casualties to Persons in Train Accidents and Train Service Accidents; Three Years.

	1919		1918		1917	
	Killed	Injured	Killed	Injured	Killed	Injured
Passengers—						
In train accidents	110	4,549	286	4,655	131	4,460
In train service accidents	191	3,598	233	3,427	212	3,914
Total	301	8,147	519	8,082	343	8,374
Employees on Duty—						
In train accidents	359	2,955	547	4,179	439	4,214
In train service accidents	1,334	33,325	2,212	42,782	2,177	48,022
Total	1,693	36,280	2,759	46,961	2,616	52,236
Total passengers and Employees on duty	1,994	44,427	3,278	55,043	2,959	60,610
Employees not on duty	66	321	169	595	165	544
Other Persons, not Trespassing—						
In train accidents	9	61	117	433	109	473
In train service accidents*	1,873	5,134	1,878	5,268	2,091	5,514
Total	1,882	5,195	1,995	5,701	2,200	5,987
Trespassers†—						
In train accidents	32	63	39	67	68	76
In train service accidents	2,521	2,595	3,216	2,738	4,175	3,753
Total	2,553	2,658	3,255	2,805	4,243	3,829
Total of the above‡	6,495	52,601	8,697	64,144	9,567	70,970
Non train accidents	483	96,452	589	110,431	520	123,835
Grand total	6,978	149,053	9,286	174,575	10,087	194,805

* Includes persons struck by trains at highway crossings.
† A small persentage of the persons classed as trespassers represents employees.
‡ Of the 52,601 persons here recorded as injured, 502 were reported by the railroads as having subsequently died.

This report is a pamphlet of 69 large pages (7 in. x 9 in.) and, like No. 70, for the last preceding year, contains a great mass of details, useful and other. Twenty or more pages (pages 25-46) are filled with details and classifications not before published. For example, table No. 82—about 10 in. x 14 in.—separates miscellaneous train-service accidents into 75 classes of accidents and 19 classes of persons. Here we find persons injured by coach trap doors entered under three causes. Adjusting car windows and adjusting caboose windows are lumped together; and of the 60 passengers injured by such windows it is impossible to tell how many were in cabooses and how many were on passenger (sleeping, chair or common) cars. Class No. 66 is "Handling dishes, utensils, etc., in dining or official cars." Of the 97 persons thus injured only one (a brakeman) apparently had no business in the culinary department. Whether he was in an official car (and thus presumably had been ordered by the general manager to assist in carving, so that his cut finger was a legitimate accident) or had merely borrowed a hot poker from a dining car cook, does not appear. The tabular statement of the causes of train accidents fills eight pages. Under this head defects of roadway are divided into 92 subclasses and miscellaneous causes into 72.

In the following table the reader may make a rough comparison of the money losses by train accidents in the two years, 1918 and 1919. The damage due to collisions was less in 1919 than in 1918, but that due to derailments was greater. The total, $22,675,820 is about eight per cent greater than in the preceding year. These figures, it will be remembered, do not include damage to freight or sums paid or payable on account of bodily injury to persons.

Train Accidents, Twelve Months

	1919				1918			
			Persons*				Persons*	
	No.	Damage†	Killed	Injured	No.	Damage†	Killed	Injured
Collision	6,904	$5,697	238	3,931	8,715	$6,811	499	4,431
Derailments	15,897	15,572	175	2,979	13,568	12,923	290	3,978
Locomotive accidents	674	495	43	261	514	346	42	363
Miscellaneous	2,121	912	29	441	1,898	874	126	566
Total	25,596	$22,676	485	7,612	24,695	$20,954	957	9,338

* Excluding trespassers.
† In thousands.

The appendix to the Bulletin contains a number of tables showing various interesting facts. While the number of trespassers killed and injured, as before noted, shows a large reduction, the number of persons killed or injured at highway grade crossings is more than double the number in 1910; and since 1911 the number of persons killed has been more than 1,000 each year; and the totals for 1919 are 1,784 killed, and 4,616 injured.

In 1918, the latest year for which figures are available, one trainman in every six was injured, and one in every 160 was killed. There are some notable changes in this column. For many years down to 1903 the number injured, annually, was one in about ten or twelve. This apparent doubling of the ratio of danger would seem to have been due to some change in the basis of reporting, or in the care with which statistics are gathered. In the statements of the number of trainmen killed, there is an improvement, as was to be expected. In the ten years 1890-1899 the average annual number was one in 137, while in the ten years last reported the average was one in 229.

The railroad tax levy in New Jersey for 1921 is to be the largest in the history of the state. The total tax for 1921, as certified by the Board of Taxes and Assessments to the various companies, is $12,644,801.54, an increase of $1,875,445.98 over the tax paid for the current year. The tax is based upon an aggregate valuation of $391,166,449, which is an increased valuation of $18,917,468 over 1920.

General News Department

The Canadian Pacific has voted to contribute $50,000 to a fund which is being raised for the University of Montreal.

Engineering Council in a recent study states that of 170 commissioners on State, public service or other regulatory commissions, only 6, or 3.5 per cent, of the total number are members of such societies as the American Society of Civil Engineers, the American Institute of Mining and Metallurgical Engineers, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers or the Society of Automotive Engineers.

Robbers looted a registered transcontinental mail car on a Chicago, Burlington & Quincy train on the night of November 14 between the Union Pacific and Burlington stations, Council Bluffs, Iowa. The thief smashed the glass in the mail car door as the train pulled out of the Union Pacific station. Transfer clerks who were at the time in the working mail cars were locked out by the thief, who threw ten sacks of mail out to a confederate and escaped. The check on contents of the sacks is not yet completed.

Members of the San Francisco section of the American Society of Mechanical Engineers were the guests of the Pacific Railway Club at its monthly meeting on November 18, at Oakland, Cal. Charles Green, assistant superintendent of steamers, of the Southern Pacific Company, presented a paper on the water transportation of American railroads, while J. J. Wosser, assistant superintendent of steamers, Northwestern Pacific, presented a paper on ferry transportation on San Francisco Bay. These papers, together with others on the program, were illustrated with stereopticon slides.

The Railway Ticket Protective Bureau was reorganized on November 10 by the various territorial passenger associations. C. A. Fox, chairman of the Central Passenger Association, was elected chairman of the Bureau, and E. E. MacLeod, chairman of the Western Passenger Association, was elected secretary. H. A. Koach was reappointed to the position of Bureau field agent. The policy of the Bureau to make determined efforts to eliminate all ticket scalpers and such other abuses as affect passenger revenues, will be vigorously resumed.

A landslide at 26th street, Pittsburgh, Pa., last week, buried several tracks of the Pennsylvania Railroad at that point, and endangered main-track train movement; and eight steam-shovels, at last accounts, were having a strenuous task in keeping the road open. The trouble started in a street on the top of the high bluff which borders the railroad, on the south side, at that point, necessitating the construction of a bridge 100 ft. long to keep street traffic moving. A considerable section of the railroad's roadbed moved northward, like a glacier, at the rate of 10 ft. a day. Twenty-sixth street is about a mile east of the Union station, and preparations were made for detouring all main line trains by way of the Brilliant cut off and the line on the north side of the Allegheny river.

The American Red Cross, through a special endowment, known as the "William Howard Taft Fund," awards for the best first aid work among railroad men during each calendar year, four prizes, ranging from $25 to $100. Competition for these prizes is open to all holders of Red Cross first aid certificates, and in special cases, to others who have been instructed in first aid, life saving or accident prevention, and yet may not hold certificates. In order that these prizes be wisely awarded for the year 1920, the Red Cross desires that any meritorious instance where first aid, life saving or worthy accident prevention has been performed, be reported to the Bureau of First Aid, American Red Cross, Washington, D. C., before December 1, 1920.

Southern in Mississippi Changes Name

Official announcement was made last week that the name of the Southern Railway Company in Mississippi has been changed to the Columbus & Greenville Railroad Company. Hereafter the operations of the company will be carried on under the new name, but under the supervision of the same officers as heretofore.

Annual Dinner of Central Railway Club

The Central Railway Club introduced an innovation at its thirty-first annual dinner by dispensing entirely with speeches and holding a dinner dance. This function was held on November 11 at the Hotel Iroquois, Buffalo, N. Y. It was preceded by the regular business meeting at 2 p. m., at which a paper on Enginehouse Organization, prepared by E. R. Webb, master mechanic of the Michigan Central, was read and discussed.

September Earnings

Virtually complete returns of the railroads for the month of September show that 207 roads, operating 237,000 miles, had a net railway operating income of $79,876,655, an increase of only 2.8 per cent as compared with September, 1919. This represents a shortage of approximately $29,000,000 as compared with what the roads should earn in September to have a net return of 6 per cent for the year. Operating revenues show an increase of 23.7 per cent as compared with 1919, while expenses increased 27.2 per cent.

Western Railway Club

The November meeting of the Western Railway Club, held at the Hotel Sherman, Chicago, on November 15, was devoted to the subject of Claim Prevention. A paper was presented by C. H. Dietrich, freight claim agent of the Chicago, Milwaukee & St. Paul, outlining the causes of loss and damage which result in the presentation of claims and setting forth the purposes of the Freight Claim Prevention Congress called by the American Railway Association, in session on that and the following day at the Hotel La Salle, Chicago.

Annual Meeting of the Taylor Society

The Long Day in the Steel Industry, will be the most important subject for discussion at the annual meeting of the Taylor Society, which will be held in the Engineering Societies' building, 29 West Thirty-ninth street, New York, on December 3 and 4. A joint session of the American Society of Mechanical Engineers and the American Institute of Electrical Engineers to discuss this problem, will be held on Friday evening. Horace B. Drury, recently with the Industrial Relations Division of the U. S. Shipping Board, will present a report of a recent survey of labor conditions in the steel mills, and William B. Dickson, vice-president of the Midvale Steel & Ordnance Company, will present the point of view of the manufacturer. The sessions on Friday morning and afternoon will be devoted to the subject of scientific management in the sales department and on Saturday, Standardization of Products will be the topic.

Reductions of Forces

Reductions of railroad forces by the dismissal of considerable numbers of men on short notice, particularly in shops, has been reported during the past week from many places. The Pennsylvania Railroad, in dismissing 1,350 men at the Altoona shops, about 15 per cent of the total force, giving

the men five days' notice, announced that this was to be deemed a permanent reduction in force, not a temporary lay-off. This move was made necessary by a reduction in the volume of repair work and affected all departments except the iron and brass foundries. About 1,500 employees were dismissed from shops on the Central Pennsylvania division of the road and 1,000 on the Philadelphia division. The New York Central dismissed 500 men at West Albany, four-fifths of these being shop men. The Boston & Albany has dismissed about ten per cent of the forces in its principal shops. The New York, New Haven & Hartford has dismissed considerable numbers of men in various departments. Certain shops of the Baltimore & Ohio report dismissals of ten per cent of the employees.

American Railway Development Association

The American Railway Development Association held its semi-annual meeting at Chicago on November 11 and 12. The general sessions were marked by the commissioning of the president to make formal application for membership in the American Railway Association and by the general discussion and recommendations regarding publicity matters to combat misinformation about the railroads.

The association recommended the following policy of publicity regarding rural relations work:

1. Give the farmer facts and statistics regarding railroad operation, showing the amount of freight handled, improvement of equipment, service, etc., need for increased freight rates to maintain proper service and the relatively small effect on cost of shipping agricultural products.
2. Work within all railroad organizations to give all railroad officials and employees facts regarding farm problems, and interpret farm sentiment accurately for them to aid them in solving farm problems relating to railroad service.
3. Give close personal co-operation to reliable farm organizations and all other agencies interested in agricultural development.

The general sessions were followed by the meetings of the two separate sections, agricultural and marketing—industrial, at which special subjects were discussed.

Varied Freight Thefts

In the yard of the Pennsylvania Railroad at Newark, N. J., on the morning of Sunday, November 14, a gang of thieves, with automobile trucks, emptied two or three cars of whiskey (in cases) and alcohol (in barrels). The robbers had first overpowered and kidnapped the single yard watchman and carried him off in an automobile, blindfolded, many miles. Evidently they worked at the cars an hour or two, or longer, without molestation; but finally were driven off, after a pistol fight, by railroad and city police. To the engineman of a switching engine they posed as legitimate truckmen, and asked him to favor them by moving a car, putting on the engine at the same time a case of liquor; but he scented their purpose and called the police.

At Pittsburgh, Pa., on November 12, twelve men, most of them railroad employees, were brought into court on charges of thefts of freight at the Pitcairn yard of the Pennsylvania Railroad. Most of them were released on bail.

At Buffalo, N. Y., on November 3, six masked robbers, armed, got several thousand dollars' worth of goods from a freight train of the New York Central.

At Macon, Ga., on November 12, nine employees of the American Railway Express Company were indicted on charges of thefts of goods in transit.

Operating Statistics for August

The net ton miles of freight handled by the railroads during August were 17.1 per cent greater than for the month of August, 1919, according to the monthly report of operating statistics issued by the Interstate Commerce Commission. The total as reported by the commission was 42,656,000,000, including non-revenue freight and excluding mixed and special trains. The net ton miles per freight train mile were 788 as compared with 777 in August, 1919. The percentage of loaded to total freight car miles was 68.1 as compared with 69.2 and the percentage of serviceable cars was 92.9 as compared with 90.9. The car miles per car day averaged 27.5 as compared with 24.6 and the net ton miles per car day 561 as compared with 479, while the net ton miles per loaded car mile averaged 30.1 as compared with 28.2. This figure exceeds the standard of 30 tons set by the railway executives at their meeting in July.

The statistics showing the cost per freight train mile in selected accounts are made abnormal by the fact that some roads included back pay and other adjustments applying to prior months in the August figures, the exact amount of which, the report says, is not available. The total is given as $2.46 as compared with $1.53 in August, 1919. The cost per passenger train mile is given as $1.33 as compared with 86 cents. For the eight months ending with August the average cost per freight train mile is reported as $1.94 as compared with $1.62 in 1919 and the cost per passenger mile as $1.04 as compared with 88 cents.

The average train load of 788 tons exceeds the trainload in any month during federal control.

Highest Elevations on Principal Western Railroads

The United States Geological Survey, Department of the Interior, has published the following information regarding the highest altitudes on transcontinental railroad lines, supplemented with like data for the Canadian roads:

Highest Points on Principal Western Railroads of the United States and Canada

Route*	Between—	Elevation (feet)	Nearest station
A. T. S. F.	Kansas City, Mo., and San Francisco, Cal.	7,625	Lynn, N. M.
C. M. & St. P.	Chicago, Ill., and Seattle, Wash.	6,322	Donald, Mont.
C. B. & Q.	Omaha, Neb., and Billings, Mont.	4,747	Sparta, Wyo.
D. & R. G.	Denver, Colo., and Salt Lake City, Utah:		
	Via Leadville, Colo.	10,219	Tennessee Pass, Colo.
	Via Gunnison, Colo.	10,846	Marshall Pass, Colo.
	Via Durango, Colo.	10,238	Lizzard Head.
E. P. & S. W.	Santa Rosa, N. Mex., and El Paso, Tex.	5,040	Los Tamos, N. M.
	El Paso, Tex., and Tucson, Ariz.	4,746	Continental Divide, near Hachita, N. M.
G. N.	St. Paul, Minn., and Seattle, Wash.	5,215	Summit, Mont.
	St. Paul, Minn., and Butte, Mont.	6,380	Elk Park Pass, Mont.
L. A. & S. L.	Los Angeles, Cal., and Salt Lake City, Utah:		
	Via Tintic, Utah.	6,033	Boulter, Utah.
	Via Provo, Utah.	5,225	Sharp, Utah.
N. P.	St. Paul, Minn., and Seattle, Wash.:		
	Via Helena, Mont.	5,573	Blossburg, Mont.
	Via Butte, Mont.	6,334	Homestake, Mont.
O. S. L.	Granger, Wyo., and Butte, Mont.	6,908	Kemmerer, Mont.
	Granger, Wyo., and Portland, Oreg.	6,908	Kemmerer, Mont.
R. I.	Chicago, Ill., and Colorado Springs, Colo.	6,899	Tiptop, Colo.
[redacted]	Chicago, Ill., and Santa Rosa, N. Mex.	4,190	Bravo, Tex.
S. D. & A.	San Diego and Calexico, Cal.	3,660	Hipass, Cal.
S. P.	Ogden, Utah, and Sacramento, Cal.	7,012	Donner Pass, Cal.
	New Orleans, La., and San Francisco.	5,100	Alpine, Tex.
T. & P.	Fort Worth and El Paso, Tex.	4,550	Allamore, Tex.
U. P.	Omaha, Neb., and Ogden, Utah	8,006	Sherman, Wyo.
W. P.	Salt Lake City, Utah, and San Francisco, Cal.	5,907	Flower Lake Tunnel, Nev.
C. P.	Lake Louise and Stephen.	5,339	Stephen, B. C.
C. N.	Geikie, Alta., and Lucerne, B. C.	3,713	Mt. Cavell, Alberta.

*The full names of the railroads are as follows: Atchison, Topeka & Santa Fe; Chicago, Milwaukee & St. Paul; Chicago, Burlington & Quincy; Denver & Rio Grande; El Paso & Southwestern; Great Northern; Los Angeles & Salt Lake; Northern Pacific; Oregon Short Line; Chicago, Rock Island & Pacific; San Diego & Arizona; Southern Pacific; Texas & Pacific; Union Pacific; Western Pacific; Canadian Pacific; Canadian National.

Transportation to Be Keynote Topic at A. S. M. E. Meeting

The importance of the transportation problem to the industries of the country has led the American Society of Mechanical Engineers to give this subject first place on the program of the forty-first annual meeting which will be held at 29 West Thirty-ninth street, New York, December 7 to 10. The keynote session will be held on Thursday and will be opened with a discussion of the railroad situation by Daniel Willard, president of Baltimore & Ohio. C. A. Morse, chief engineer of the Chicago, Rock Island & Pacific, will discuss the need for the proper development of railroad feeders. General F. T. Hines will speak on waterways, and Francis W. Davis, of the Pierce-Arrow Motor Car Company, on motor truck transportation.

At the afternoon meeting, the arrangement of terminals and facilities for handling freight will be discussed by Col.

William Barclay Parsons. Gustav Lindenthal will present the result of his studies of the New York terminal problem.

On Tuesday afternoon, simultaneous sessions of the fuel section, the forest products section, the management section, and the machine shop section, will be held. On Wednesday afternoon, the management section, the railroad section, the design section and the research section will meet. On Friday morning, there will be a general session and meetings of the sections on design, textiles and power development.

Of particular interest to railroad officers are the papers on The Use of Wood in Freight Car Construction, by H. S. Sackett (C. M. & St. P.), and on Machining Railroad Cross-Ties, by D. W. Edwards, to be presented at the forest products session on Monday. The papers to be presented at the railroad session are as follows: Static Adjustment of Trucks on Curves, by R. K. Eksergian; Increasing Capacity of Old Locomotives, by C. B. Smith (B. & M.); and Modernizing Locomotive Terminals, by G. W. Rink (C. of N. J.).

Oil Transportation

A. M. Schoyer, through freight traffic manager of the Pennsylvania, discussed some of the problems relating to the transportation of petroleum and its products at a meeting of the transportation group of the American Petroleum Institute at its annual meeting at Washington, D. C., on November 17. The group meeting was presided over by M. J. Gormley. Mr. Schoyer urged the importance of thorough co-operation between the oil industry and the railroads and pointed to the excellent results which have already been obtained this year from co-operation. He referred particularly to the plan which has been developed to considerable extent by the petroleum industry of giving the railroads shipments in solid train lots. This practice was developed by the Northwestern region under the Railroad Administration, and Mr. Schoyer said the other regions were very glad to follow it. He pointed out, however, that better results could be obtained if solid trains were made up of more than 25 cars. He said that if they are made up of 40 to 50 cars they would be more apt to move over the initial division as a solid train without delay for filling up with other cars. He also urged the importance of notifying the railroads in advance of their requirements. As illustrating the importance of the petroleum traffic, he said that last year the Pennsylvania System had handled 3½ million tons of petroleum and its products, constituting 1¼ per cent of the road's tonnage. This, he said, makes a traffic worth cultivating and the railroads want to do their best to solve the problem. He asked that the shippers criticize the railroads freely, but to their faces and not behind their backs, and said that some of the bad service of the past year has been due to the large number of inexperienced men in the employ of the railroads. This condition, he said, is improving and the fact that the railroads have gone back to a period of competition will tend to better service. Also, he said, the slight letting up in the amount of business will tend to better handling on the part of the railroads.

Union Pacific Develops New Safety Organization

As a means of spreading the gospel of safe practice to all of its employees most effectively, the Union Pacific has reorganized its safety department. Heretofore this has consisted of a general safety agent, with three assistants, all of whom had concurrent jurisdiction, and also three mechanical safety inspectors located in the large shops. In place of this organization there is now a general safety agent with five division safety agents and two shop safety inspectors. One division safety agent is assigned to each of the larger divisions with one agent covering two divisions of lighter traffic. The two safety inspectors are assigned to the two larger shops respectively, where they will supervise all operations with a view to promoting safety and also give safety lectures to each employee taken into the force before he is permitted to go on duty. The personnel of this organization will be found in the personal news columns.

Another innovation covering the entire Union Pacific System, including the Union Pacific Railroad, the Oregon Short Line and the Oregon-Washington Railroad & Navigation Company, is a safety banner contest to be carried on for a period of one year, at the end of which time banners will be awarded on the basis of safety records made under the following conditions: (1) A banner to the system unit making the lowest record in casualties per one million locomotive miles. (2) A banner to one division on each system unit making the lowest casualty record per one million locomotive miles. (3) A banner to the one of the six large shops on the system, i.e., Omaha, Kansas City, Denver, Cheyenne, Pocatello and Portland, making the lowest casualty record per 100 employees. Employees of the St. Joseph & Grand Island Railroad, which is a part of the Central Division of the Union Pacific, will be included in this contest. These banners will be awarded for a period of one year and at the end of the year following if another system unit or division on a system unit or one of the large shops on the system has made a better record in safety than that holding the banner for the preceding year, it will then be entitled to the banner for the ensuing year. It is expected that keen competition will be developed to win these banners and the result of this campaign is looked forward to with interest by the officers and employees of the Union Pacific System.

National Railway Appliances Association Assigns Exhibit Space

On November 8 the directors of the National Railway Appliances Association held a meeting in the office of the secretary-treasurer, Chicago, and awarded space for the exhibit to be held in the Coliseum at Chicago on March 14-17, 1921. This award provided space for the 159 firms that had made application up to that time and leaves only eight per cent of the total space available still unassigned. The list of firms assigned space to date is as follows:

A. G. A. Railway Light & Signal Company, Elizabeth, N. J.
Adams & Westlake Company, Chicago.
Adams Motor & Manufacturing Company, Chicago.
Air Reduction Sales Company, New York City.
Ajax Forge Company, Chicago.
American Association of Engineers, Chicago.
American Abrasive Metals Company, New York City.
American Car & Foundry Company, New York City.
American Chain Company, Inc., Bridgeport, Conn.
American Hoist & Derrick Company, St. Paul, Minn.
American Kron Scale Company, New York City.
American Manganese Steel Company, Chicago Heights, Ill.
American Spike Company, New York City.
American Steel & Wire Company, New York City.
American Valve & Meter Company, Cincinnati, Ohio.
American Vulcanized Fibre Company, Pittsburgh, Pa.
Anchor Company, New York City.
Armco Iron Culvert & Flume Manufacturers' Ass'n, Middletown, Ohio.
Austin Company, Cleveland, Ohio.
Balkwill Manganese Crossing Company, Cleveland, Ohio.
Barrett Company, New York City.
Benjamin Electric Manufacturing Company, Chicago.
Bethlehem Steel Company, Bethlehem, Pa.
Blaw-Knox Company, Pittsburgh, Pa.
Boss Nut Company, Chicago.
Bryant Zinc Company, Chicago.
Bucyrus Company, South Milwaukee, Wis.
Buda Company, Chicago.
H. M. Byers Company, Pittsburgh, Pa.
Carbic Manufacturing Company, Duluth, Minn.
Carter Bloxonend Flooring Company, Kansas City, Mo.
Central Electric Company, Chicago.
Chicago Bridge & Iron Works, Chicago.
Chicago Flag & Decorating Company, Chicago.
Chicago Malleable Castings Company, Chicago.
Chicago Pneumatic Tool Company, Chicago.
Chicago Railway Signal & Supply Company, Chicago.
Chipman Chemical Engineering Company, Inc., New York City.
Clark Car Company, Pittsburgh, Pa.
Cleveland Railway Supply Company, Cleveland, Ohio.
Copper Clad Steel Company, Rankin, Pa.
Crerar, Adams & Co., Chicago.
Detroit Graphite Company, Detroit, Mich.
Diamond State Fibre Company, Bridgeport, Pa.
Paul Dickinson, Inc., Chicago.
Dillworth, Porter & Co., Inc., Pittsburgh, Pa.
Joseph Dixon Crucible Company, Jersey City, N. J.
Duff Manufacturing Company, Pittsburgh, Pa.
Thomas A. Edison, Inc., Bloomfield, N. J.
Edison Storage Battery Company, Orange, N. J.
Electric Auto-Lite Company, Toledo, Ohio.
Electric Storage Battery Company, Philadelphia, Pa.
Elliott Frog & Switch Company, East St. Louis, Ill.
Eymon Crossing Company, Marion, Ohio.
Fairbanks, Morse & Co., Chicago.
Fairmont Gas Engine & Railway Motor Car Company, Fairmont, Minn.
Federal Signal Company, Albany, N. Y.

H. K. Ferguson Company, Cleveland, Ohio.
Friction Car Stop Company, Cleveland, Ohio.
Frog, Switch & Manufacturing Company, Carlisle, Pa.
General Automatic Scale Company, St. Louis, Mo.
General Electric Company, Schenectady, N. Y.
General Railway Signal Company, Rochester, N. Y.
Gilbert & Barker Manufacturing Company, Springfield, Mass.
Gould Storage Battery Company, Chicago.
Graver Corporation, East Chicago, Ind.
W. & L. E. Gurley, Troy, N. Y.
Hall Switch & Signal Company, Garwood, N. J.
Hatfield Rail Joint Manufacturing Company, Macon, Ga.
Hayes Track Appliance Company, Richmond, Ind.
Hazard Manufacturing Company, Wilkes-Barre, Pa.
W. F. Hebard & Co., Chicago.
Hubbard & Co., Pittsburgh, Pa.
Imperial Belting Company, Chicago.
Ingersoll-Rand Company, New York City.
H. W. Johns-Manville Company, New York City.
O. F. Jordan Company, East Chicago, Ind.
Kalamazoo Railway Supply Company, Kalamazoo, Mich.
Paul J. Kalman Company, Chicago.
Kaustine Company, Inc., Buffalo, N. Y.
Kelly-Derby Company, Inc., Chicago.
Kerite Insulated Wire & Cable Company, Inc., New York City.
Keuffel & Esser Company, Hoboken, N. J.
Keystone Grinder & Manufacturing Company, Pittsburgh, Pa.
Kilbourne & Jacobs Manufacturing Company, Columbus, Ohio.
Lackawanna Steel Company, Lackawanna, N. Y.
Layne & Bowler Company, Memphis, Tenn.
Lehon Company, Chicago.
Lufkin Rule Company, New York City.
Lundie Engineering Corporation, New York City.
M. W. Supply Company, Philadelphia, Pa.
MacLeod Company, Cincinnati, Ohio.
MacRae's Blue Book, Chicago.
Maintenance Equipment Company, Chicago.
Massey Concrete Products Corporation, Chicago.
Mercury Manufacturing Company, Chicago.
Metal & Thermit Corporation, New York City.
Midvale Steel & Ordnance Company-Cambria Steel Company, Philadelphia, Pa.
Miller Train Control Corporation, Danville, Ill.
Monroe Calculating Machine Company, New York City.
Morden Frog & Crossing Works, Chicago, Ill.
Mudge & Co., Chicago.
National Boiler Washing Company, Chicago.
National Carbon Company, Inc., Cleveland, Ohio.
National Indicator Company, Inc., Long Island City, N. Y.
National Lead Company, New York City.
National Lock Washer Company, Newark, N. J.
National Malleable Castings Company, Cleveland, Ohio.
National Water Main Cleaning Company, New York City.
George P. Nichols & Brother, Chicago.
North American Engine Company, Algona, Iowa.
Northwestern Motor Company, Eau Claire, Wis.
Ogle Construction Company, Chicago.
Ohio Brass Company, Mansfield, Ohio.
Okonite Company, Passaic, N. J.
O'Malley-Beare Valve Company, Chicago.
Oxweld Railroad Service Company, Chicago.
P. & M. Company, Chicago.
Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.
Pocket List of Railroad Officials, New York City.
Positive Rail Anchor Company, Marion, Ind.
Protective Signal Manufacturing Company, Denver, Colo.
Pyrene Manufacturing Company, Chicago.
Q. & C. Company, New York City.
Rail Joint Company, New York City.
Railroad Herald, Atlanta, Ga.
Railroad Supply Company, Chicago.
Railway Review, Chicago.
Ramapo Iron Works, Hillburn, N. Y.
Rawls Machine & Manufacturing Company, Chicago.
Reade Manufacturing Company, Hoboken, N. J.
Refinite Company, Omaha, Neb.
Rensselaer Valve Company, Troy, N. Y.
Richards-Wilcox Manufacturing Company, Aurora, Ill.
Roberts & Schaefer Company, Chicago.
St. Louis Frog & Switch Company, St. Louis, Mo.
Sellers Manufacturing Company, Chicago.
Sherwin-Williams Company, Cleveland, Ohio.
Signal Accessories Corporation, New York City.
Simmons-Boardman Publishing Company, New York City.
Simonds Manufacturing Company, Fitchburg, Mass.
T. W. Snow Construction Company, Chicago.
Southern Hardware & Supply Company, St. Louis, Mo.
Steel Sales Corporation, Chicago.
Templeton-Kenly Company, Inc., Chicago.
Toledo Scale Company, Toledo, Ohio.
Torchwell Equipment Company, Chicago.
Track Specialties Company, New York City.
Union Switch & Signal Company, Swissvale, Pa.
U. S. Wind Engine & Pump Company, Batavia, Ill.
Verona Tool Works, Chicago.
Volkhardt Company, Inc., Stapleton, N. Y.
Walls Frogless Switch & Manufacturing Company, Kansas City, Mo.
Waterbury Battery Company, Waterbury, Conn.
Wayne Oil Tank & Pump Company, Fort Wayne, Ind.
Western Electric Company, Inc., New York City.
Woolery Machine Company, Minneapolis, Minn.
Wyoming Shovel Works, Wyoming, Pa.
Yale & Towne Manufacturing Company, Stamford, Conn.

Traffic News

On the Pennsylvania Railroad System in October the average daily record of freight forwarded was nearly 24,000 loaded cars, or over 6,000,000 tons a week. The best previous monthly record was that of October, 1919, when the daily average of loaded cars was 23,700.

The Pennsylvania has re-established its freight and passenger agencies in ten leading traffic centers: Dallas, Tex.; Minneapolis, Minn.; Kansas City, Mo.; Los Angeles, Calif.; New Orleans, La.; Omaha, Neb.; Boston, Mass.; Seattle, Wash.; and San Francisco; and a freight agency at New Haven, Conn.

The Interstate Commerce Commission has issued a partial advance summary of traffic on Class I steam roads for the month of September covering roads operating 179,000 miles. This shows a total of 29,483,331 net ton miles of freight handled, as compared with 27,652,863 net ton miles in September, 1919. There was an increase in all districts except New England.

The Transportation Club of Peoria (Ill.), the activities of which were curtailed during the war, was re-established on November 12. C. H. Gillig was re-elected president and O. B. Eddy, assistant traffic manager of the Peoria Association of Commerce, was elected secretary-treasurer. The club is planning to hold monthly dinners, the first to take place in December.

Western roads continue to restore pre-war passenger trains, as well as to add new ones. The Chicago, Milwaukee & St. Paul resumed its "Pacific Limited" between Chicago and San Francisco on November 15. This train leaves Chicago at 10:45 a. m., arriving at San Francisco at 8:30 a. m. the third day. It connects with the 20-hour trains from New York. The Chicago, Rock Island & Pacific will restore the "Golden State Limited" on November 21. This train will leave Chicago daily at 6:30 p. m., and will arrive in Los Angeles at 1:10 p. m. the third day. It will carry through sleeping cars to San Diego and Los Angeles, and also to Santa Barbara, the latter being a new service. The Chicago & North Western has reduced the time of the "Overland Limited" three hours, 40 minutes, the train leaving Chicago at the usual time, but arriving in San Francisco at 1:30 p. m. instead of 5:10 p. m., and has put on two new trains. The "Continental Limited," a new southern California train, leaves Chicago daily at 10:30 a. m., arriving in Salt Lake City at 8:20 a. m., and in Los Angeles at 9:30 a. m., a journey of 73 hours. The other new train, the "Oregon-Washington Limited," will leave Chicago daily at 9:30 p. m. and arrive in Portland at 7:30 p. m., 72 hours. The Atchison, Topeka & Santa Fe and the Southern Pacific have put on several new trains on the Pacific coast. The "Shasta," of the Southern Pacific, is restored, leaving San Francisco at 4 p. m. daily. It arrives at Portland at 10 p. m., the second day, and at Tacoma at 4:50 a. m., and Seattle at 6:30 a. m. the third day. Through standard sleepers will be run to Seattle.

The Pennsylvania's Milk Trains

During the month of September the Pennsylvania Railroad carried to Philadelphia, New York and Baltimore 14,000,000 quarts of milk, an increase of about 1,000,000 quarts over September, 1919.

The Philadelphia delivery, 10,871,009 quarts, represents 65 per cent of the milk delivered from all sources in Philadelphia during the month. Seventy-five per cent of the milk for Philadelphia was collected within a radius of 60 miles from the city. The remaining 25 per cent was hauled from points between 400 and 500 miles distant from the city.

The Pennsylvania's delivery of milk to New York City all goes to the borough of Brooklyn, 2,316,400 quarts in September. During June, July, August and September, Atlantic

City, Asbury Park and other New Jersey coast resorts received over the Pennsylvania Railroad 40,000 quarts of milk a day, every can hauled 500 miles.

Passenger Traffic Statistics

Revenue passengers carried on railroads in the United States during the first seven months this year numbered 717,783,896, an increase of 51,398,024 over the number carried during the corresponding period last year, according to statistics compiled by the Interstate Commerce Commission. Revenues derived from passenger service totaled during that time $686,513,103, or $35,684,198 more than was received during the corresponding months last year. Passenger miles for the 1920 period were 26,307,520,000, as compared with 25,856,902,000 during the same months in 1919. The average number of miles traveled per passenger this year was 36 65 miles, a decrease of 2.1 miles.

Conference on Employment and Education

The first annual conference on employment and education conducted by the American Association of Engineers, was held at the Congress Hotel, Chicago, November 12, 1920. The conference was attended by educators, employment managers, engineers, experts on vocational and industrial education and others interested in education and employment. This meeting, which was not expected to accomplish more than to stimulate thought on the combined question and to set forth the importance of solving the problem of education and employment simultaneously, brought forth two resolutions, both of which were adopted.

The first resolution is as follows: *"Resolved,* That personnel work is necessary in engineering schools and should be provided wherever possible."

The other resolution reads: *"Resolved,* That it is the sense of the educational delegates that the best teachers in the schools training engineers, should be placed in charge of the most elementary work." These resolutions were introduced by Dean E. J. McCaustland, of the University of Missouri.

Rivers and Harbors Congress

The call has been issued for the sixteenth convention of the National Rivers and Harbors Congress at Washington, D. C., on December 8, 9 and 10. The call for the meeting says in part:

"No argument is needed to prove that the fundamental need of the country today is a radical increase of our transportation facilities. The merchant knows it—because he has to wait for weeks or months for goods he ought to have got in a few days. Manufacturers and mechanics, mine owners and mine workers, know it—when mines and factories must run on half time, or shut down entirely. The farmers know it—because they have just harvested one of the greatest grain crops ever known and 20 per cent of last year's crop is still unmarketed. Bankers know it—when hundreds of millions of dollars in credits are "frozen" because their customers cannot get the needed transportation. Railroad men know it—and, for the first time in history, not only admit it privately but publicly advertise the fact.

"In 1916 a committee of experts, after an elaborate investigation, reported that, if traffic should continue to increase during the succeeding 10 years at the same rate as it had done during the preceding 20, the railroads would be obliged to spend $1,500,000,000 a year, or $15,000,000,000 in all, to enable them to keep up with it. At the instance of a group of New York bankers another investigation was recently made by a committee of eminent engineers, who reported that, at present prices, it would take at least $18,000,000,000 to put the railroads into condition to handle the traffic of the country with reasonable promptness and efficiency.

"Can any reader of these lines suggest a source from which the railroads can secure the eighteen or twenty billions which the experts say they need? The late James J. Hill said, in October, 1914: 'To imagine the amount needed can be secured when there is such a poverty of capital as there will be for 10, 20, possibly more years to come, is absurd.'"

Commission and Court News

Interstate Commerce Commission

The Interstate Commerce Commission has reopened the case involving regulations for the payment of freight charges for further hearing.

The commission has further suspended, until December 17, the operation of Rule No. 23, of F. W. Gomph, agent, Supplement No. 9 to I. C. C. No. 378, which rule provides that rates published in the tariff are payable in United States currency or its equivalent.

The commission, acting on numerous protests against the proposed increased charges for diversion and reconsignment on fruit and vegetables, announced by various roads, to become effective December 1, announces an informal hearing November 23 at Washington.

Wisconsin Passenger Fare Case Argued

Oral arguments were heard by the Commission at Washington on November 12 in the Wisconsin passenger fare case arising from the situation caused by the Wisconsin state passenger fare law, which prohibited an increase in state fares corresponding to those allowed for interstate traffic by the Interstate Commerce Commission. In addition to counsel for the railroads of the state and representatives of the state commission, arguments were presented by Alfred P. Thom, of the Association of Railway Executives, and John E. Benton, general solicitor of the National Association of Railway and Utilities Commissioners. The arguments involved particularly the question as to whether the power of the Interstate Commerce Commission to correct discriminations in state rates was broadened by the transportation act. The question was also raised by some of the commissioners as to how long the commission should be expected to wait, before taking action, to give the state legislators an opportunity to change the state law on the subject. Mr. Benton took the position that the commission should wait until the legislature is in session, while the railroads took the position that the commission's power to act began as soon as the discrimination existed. Commissioner Aitchison pointed out that if the federal law had been passed immediately after the biennial sessions of the legislature in many states it would be necessary to wait for a year and nine months if it were necessary to await the regular session of the legislature. He also pointed out that it would have been entirely possible to have called the legislature in a special session to consider fare legislation. At the conclusion of the argument Mr. Thom asked the commission to do all in its power to expedite the proceedings in the Michigan, Iowa and Minnesota cases, which are particularly important.

State Commissions

R. C. Mulholland, representing the Amador Central and fifteen other short line roads operating in California, has applied to the California Railroad Commission for authority to put into effect, on 30 days' notice, certain changes in demurrage rules and increases in charges, in order to secure uniformity with national car demurrage rules and charges.

Personnel of Commissions

W. H. Harland, heretofore in the service of the Bureau of Valuation, of the Interstate Commerce Commission, has been appointed senior railway signal engineer for the Bureau of Safety, the position formerly occupied by George E. Ellis; headquarters Washington. In the valuation work Mr. Harland was in charge of the signal, electrical, telegraph and telephone matters in the Eastern district.

Foreign Railway News

England Buys Railway Ties From British Columbia

LONDON.

The London Times reports that an order for 20,000,000 ft. of railway ties has been placed with a firm in British Columbia for use in Great Britain.

Eight-Hour Day in Switzerland

LONDON

The London Times reports that a measure in favor of an eight-hour day for the employees of the Swiss railway, postal, telegraph and telephone services has been carried on a referendum by 360,000 votes to 271,000, 67 per cent of the electors voting.

Rate Increases in Italy

The latest increases in passenger fares on trains and trolleys in Italy bring the maximum increase to 180 per cent over the pre-war charges and the minimum increase to 100 per cent, according to reports from Rome. The increase in the trolley fares ranges from six cents to fifteen cents, or 50 per cent more than was charged by the taxi-cabs before the war.

Electrification Contemplated in Argentina

The Central North Argentine is having a study made with the view of electrifying its line from Cordoba to Cruz del Eje, a distance of 93 miles, according to reports from the American ambassador at Buenos Aires. The line is said to have a heavy passenger traffic and is favorably situated for recourse to hydro-electric power. The Bureau of Foreign and Domestic Commerce, Washington, D. C., is in possession of the details of the project and will put American concerns interested into connection with the proper officers of the company.

Death of Prominent Mechanical Engineer

LONDON.

C. J. Bowen Cooke, chief mechanical engineer of the London & North Western, died October 19. Mr. Bowen Cooke entered the Crewe works of the London & North Western as a premium apprentice in February, 1875, and in 1880 was appointed assistant to the superintendent of the running department for the southern division. In 1899, when the running departments of the London & North Western were put under one jurisdiction, he became assistant superintendent for the southern division, which position he held until June, 1909, when he was appointed chief mechanical engineer.

London's "Safety First" Council

LONDON.

England is making great efforts to stimulate interest in the "Safety First" movement, and has devised an essay competition for children of railway employees. The contest is open to boys and girls under 16 years of age either of whose parents is employed by a railway company and who resides within 20 miles of Charing Cross, London. The papers are to deal with the avoidance of accidents on railways. The prizes offered are: First £3 (approximately $12), second £2 (approximately $8), third £1 (approximately $4), 14 prizes of ten shillings each (approximately $2), and 28 prizes of 5 shillings each (approximately $1).

Extensive Construction in Dutch East Indies

Plans for improvements to the railways of the Dutch East Indies, involving the construction of 6,944 miles of new lines, have been made public recently by the general secretary of the government, according to reports from Consul J. F. Jewell at Batavia, Java. The program outlined will require ten years for completion and will embrace work in Java, Sumatra, Celebes, Borneo and other islands of the archipelago.

China on Verge of Famine

PEKING.

Political news in China has given way entirely as the extent and degree of famine conditions have become better known. Apparently the monumental work of Hoover in stricken Belgium must be surpassed in China during the coming winter, or a population greater than that of all Belgium will perish. By the few people who knew, the situation has been viewed with anxiety all summer. First the spring crop withered just before it should have filled, due to lack of moisture. Then the summer crop either could not be planted, or else soon shrivelled from the drought and hot winds. Locusts in some localities even took the little green that was left. Still the proverbial luck of China was depended upon to bring late rains which would mature sweet potatoes and buckwheat enough to get over the winter. In the last three weeks, however, this hope has faded, and a region roughly 300 miles north of the Yellow river and 100 miles south of it, and extending from close to the east coast westward, no one quite knows how far, is without food for man or beast and without seed for next year's planting. Approximately 40,000,000 people are known to be affected. Twenty-five million are in straits, and at least 10,500,000 will perish if relief measures of heroic proportions are not forthcoming before cold weather sets in. Lack of communication has prevented knowledge of conditions in other regions, and whole villages have started migratory movements which merely lead them to another stricken district and back to the home soil to die.

What this means to the business of north China is vaguely felt, but probably is not widely realized. The price of food is now double that during normal conditions in every town of North China. What it will be next year, with no farmers to plant a crop may be imagined. If rural China perishes this year, urban China perishes next year. The vast population of craftsmen, merchants, porters, etc., who live upon the commerce of the country, depend upon the purchases by the rural community as a foundation. With no rural buyers of their wares, the industrial and commercial interests of north China will have scant means for purchasing food supplies abroad, and still less for buying the usual articles of imported luxury. Unless the famine can be effectively countered, north China as a factor in the world's commerce drops to the vanishing point.

Railways Will Suffer, Too

International finance also comes in for its jolt. Some $300,000,000 of mortgage bonds on Chinese government railways are held abroad. The man who got blood from a turnip will have to be brought to China to get the interest on these bonds out of the earnings of the railways. Nor will likin or maritime customs securities be of much avail, if trade stops. The ravages of the Taiping rebellion were not more appalling than will be the effects of this famine, if nothing be done to meet it.

In 1918 gross operating revenues of the Chinese government railways were in round numbers $77,650,000. When revenues derived from government service, and similar items are subtracted, the actual commercial revenue is left at about $70,000,000. Of this $25,000,000 was passenger revenue and $40,000,000 freight revenue, leaving $5,000,000 to come from several miscellaneous sources. Out of this $40,000,000 of freight revenue nearly $20,000,000 came from agricultural and animal products. What will happen both to passenger revenue and to revenue from agricultural products next year is plain to be seen. What effect this will have upon the ability of the railways to meet their interest obligations follows as night the day. To be sure, the traffic in agricultural products on lines like the Peking-Mukden and the Shanghai-Nanking, which run from regions of plenty to regions of want, will be heavy, for there is still a considerable purchasing power in these districts. The traffic in live animals is heavy now. In a few weeks practically every animal in the stricken districts will have been sold—for a tenth of its normal value—and shipped out. Traffic in 1920 will hold up—but what about 1921?

Relief Measures

The Peking government is alarmed. It has ordered reduction in grain rates from the food-producing points to famine points and increases in the opposite direction. It has shipped consider-

able amounts free. Government officials, in their private capacity, are organizing vast relief committees to which they are contributing liberally. Action in this private way will be more swift and efficient than by government agents as such. Red tape will be eliminated, and a degree of co-operation with foreigners, even of foreign supervision, will be possible, which the government, as such, would not consider safe. Almost over night, the minds of all people have turned to the subject of public works as a means of alleviating the distress and at the same time achieving something substantial. Though not formally decided upon, there is little doubt that the method of operation will be the division of the population into two classes—able-bodied and helpless. The able-bodied, of both sexes, will be assembled upon jobs of public work, such as river dikes, highway construction, railway building, irrigation projects. Grain will be purchased by a centralized agency, financed by the combined funds of all relief organizations. Food kitchens will be established at works and in villages where the helpless will be concentrated. Each class will be put on a ration, and will have food tickets issued to them by the directors in charge, which tickets will be surrendered to the food kitchens. The able-bodied will secure their tickets only by the performance of a minimum stint of work. Food tickets will be carefully checked up against issues of grain to any kitchen, and on jobs against quantities of earth moved, rock broken, masonry in place, etc. In this way funds will be stretched to the limit in the way of relief, and at the end of the season it is thought that works worth every dollar that has been expended will stand to show as a clear gain.

The Ministry of Communication has authorized the building of two short railways, as a beginning. One of these is the line from Shih-chia-chuang to Tsangchow, which will serve to connect the province of Shansi with Tientsin more directly, and will pass through one of the worst famine districts. Another will be the line from Cheefoo to a connection on the Shantung line, probably at Weihsien. At the same time, work is to be pushed on the extension of the line now building toward Suiyuan on the Mongolian border. It is sincerely hoped that funds will shortly be available from the Dutch-Belgian loan for the continuance of work on the Lung-Hai line, for this also traverses a famine district. The Siems-Carey Grand Canal project is another upon which only the hesitation of New York financiers stands in the way. Several other railway contracts have been laying quiescent for some years, which ought to be wakened to activity in this emergency. Some of these are held by financial interests whose investments in other lines in China are in jeopardy from the famine. It is not a matter of mere friendship; it is good business to put into these constructive enterprises every dollar which is necessary to keep alive this vast rural population in north China.

Changes in Railway Practices

The use of depreciated bank notes in payment of freights and fares upon Chinese government railways has now been stopped by order of the new Minister of Communications, Yeh Kung-cho. This affected only the Peking-Hankow and Peking-Suiyuan railways, as other lines had discontinued accepting this paper some time ago. However, in Manchuria the military Tuchun has forced the Peking-Mukden railway to accept notes for the time being.

A monumental departure in railway methods in China is announced to begin January 1, when the railways will assume full responsibility for shipments. Hitherto, except on the Shanghai-Nanking line, all shipments have been at owner's risk, necessitating sending along a watchman with every consignment, or the use of a forwarding company as an agent. Through billing of goods begins on the same date, auditing of invoices to be made in the clearing house located in the Ministry of Communications.

An improved system of reports to facilitate car distribution is under consideration by the ministry and will be submitted to a conference of the traffic managers for perfection and approval in October.

The engineering conference appears to have struck a snag on the standard specifications for steel in rails and the tensile strength of bridge materials. It appears that these have characteristics which differ sharply with each principal manufacturing nation represented on the Chinese railway system. Hence it will be necessary for the ministry to decide arbitrarily upon standard specifications.

Equipment and Supplies

Government Locomotives For Sale

The War Department has again offered for sale 56 of the 200 Decapod locomotives originally built for the Russian government. Eighty-seven of these locomotives were sold to American railroads and the remaining 113 were sold earlier in the year to a Washington law firm. The sale was made, however, under a contract which provided that the locomotives should not in any way be turned over to the Russian Soviet government. The sale has apparently been cancelled, for the War Department is now negotiating for the sale of 56 locomotives now located at Tulleytown Arsenal, New Jersey, and it is understood that the price will be approximately $25,000 each, as is and where is.

Locomotives

The Union Pacific is inquiring for 1 Mikado type locomotive.

The Western Pacific is inquiring for 10 Mikado type locomotives.

The Louisville & Nashville is inquiring for 16 light Mikado type locomotives and 10 switching locomotives.

The Imperial Taiwan Railway, Japan, is inquiring, through the locomotive builders, for 1, 2-6-2 type locomotive.

The Norfolk & Western has authorized the construction of 10 Mountain type locomotives at its Roanoke shops.

The Greenbrier, Cheat & Elk has ordered 1, 120-ton Shay locomotive from the Lima Locomotive Works. This locomotive is to be equipped with a superheater.

The Solvay Process Company, Syracuse, N. Y., has ordered 1, 0-4-0 type locomotive from the American Locomotive Company. This locomotive will have 13 x 20 in. cylinders, and a total weight in working order of 65,000 lb.

Charcoal Iron Company of America, Detroit, Mich., has ordered one consolidation type locomotive from the American Locomotive Company. This locomotive will have 18 by 24 in. cylinders and a total weight in working order of 124,000 lb.

National Railways of Mexico.—Florian & Co., Ltd., importers and exporters, 52 Wall street, New York, confirm the report that they have closed a contract with the Mexican government for the delivery of $20,000,000 of railroad equipment and material. The negotiations were completed in Mexico City and the contract is signed by the Minister of Railways and the National Railways of Mexico. The contract calls for the delivery of locomotives, cars and material for section houses. Certain credits have been extended to Mexico in this connection which are properly secured; all financial arrangements in connection with this contract have been completed. Florian & Co., Ltd., further confirm the report that the purchase of the equipment will be made through their New York office. As reported in the *Railway Age* of November 5, negotiations were under way for financing the purchase of 300 locomotives and 6,000 freight cars for the National Railways of Mexico.

Freight Cars

The Long Island Railroad is inquiring for 10 caboose cars.

The Atlantic Coast Line, reported in the *Railway Age* of September 24 as being in the market for 100 phosphate cars, has withdrawn its inquiry for these cars.

The South African Railways have ordered 500 four-wheel cattle cars from the Clayton Wagon Company, England, and have also placed orders for 100 eight-wheel bogie wagons in England.

The National Railways of Mexico, reported in the *Railway Age* of August 27, as being in the market for 50 tank cars of 12,000 gallons capacity, has ordered 100 of these cars from the

American Car & Foundry Company, and is also asking the Standard Tank Car Company for bids on 60 narrow gage 6,000 gallons capacity tank cars.

The Minneapolis & St. Louis is in the market for about 1,500 freight cars.

The Northern Pacific is considering the purchase of 1,000 additional freight cars.

The Kansas City, Clay County & St. Joseph Railway is inquiring for 5 cars.

The Western Maryland is inquiring for 100 steel hopper car bodies of 55 tons capacity.

Passenger Cars

The National Railways of Mexico have bought from the Pullman Company 40 second-hand tourist cars and are negotiating with the same builders for 100 additional cars.

Iron and Steel

The Erie has ordered 20,000 tons of rails from the United States Steel Corporation.

The Baltimore & Ohio has ordered 30,000 tons of rails from the United States Steel Corporation.

Signaling

The Grand Trunk has ordered from the General Railway Signal Company, Rochester, N. Y., a model 2, unit-lever-type electric interlocking for Pontiac, Mich. The order includes two-arm, upper quadrant signals, upper quadrant, one-arm, electric-lighted solenoid dwarf signals, clockwork time releases, relays, model 4a switch machines, transformers and other apparatus. The machine will have 22 working levers and 14 spare spaces and will be installed by railroad company's forces.

Trade Publications

Preserving Wood Roof Decks.—The Barrett Company, New York, has issued two folders devoted to the preservation of wood roof decks and mine timbers by the use of carbosota. The various means of applying this preservative are discussed and include such methods as brushing, spraying and dipping or the open tank method.

The Skinner Chuck Company, Inc., New Britain, Conn., has recently adopted a new trade mark. It shows an alligator in the form of the letter S, superimposed on a solid black circular background, with the words "Skinner Chucks" around the outside. The alligator was chosen as the symbolic figure best suited to the exploitation of Skinner Chucks, because the alligator is famous for its wonderfully strong jaws and long life.

Welding and Cutting Apparatus.—A 36-page catalog has been issued by the Bastian-Blessing Company, Chicago, covering the complete line of gas welding and cutting apparatus manufactured by that company. In addition to illustrations and descriptions of the individual items of equipment manufactured, the catalog also describes 10 complete sets of apparatus, each containing the full quota of equipment for carrying out some particular class of work.

Grab Buckets.—The Blaw Knox Company, Pittsburgh, Pa., has recently issued two small folders, descriptive of its line of excavating and reclaiming buckets. One of these folders describes the Blaw bulldog bucket, which is designed for especially heavy service, such as involves the handling of broken stone and hard ore. Photographs and illustrations show the use of this bucket, and diagrams and tables give the properties and principal dimensions of the five sizes of this bucket. The smaller folder discusses the principles of lever arms as applied to the design of Blaw buckets.

Supply Trade News

A. S. Harvey has been appointed general sales manager of the **United States Graphite Company.** His new headquarters will be at Saginaw, Mich.

C. O. Poor, president and general manager of the General Railway Signal Company of Canada, Ltd., Montreal, Que., has resigned to enter the employ of **Geo. W. Goethals & Co.,** 40 Wall street, New York. Mr. Poor's headquarters are at Rockland, Me.

The Blaw-Knox Company (Blawnox), Pittsburgh, Pa., has established a new sales district in the South, with headquarters at Birmingham, Ala. **Prescott V. Kelly,** formerly connected with the executive sales department at Pittsburgh, is in charge of this office, which is located in the American Trust Bldg.

Anton Becker, assistant to president of the **Ralston Steel Car Company,** Columbus, Ohio, has been elected vice-president to succeed F. E. Symons, who has been elected president, as noted in the *Railway Age* of November 12. The other officers of the company are **F. A. Livingston,** secretary and treasurer, and **L. C. Roy,** assistant secretary and assistant treasurer.

Alfred J. Babcock, president of **Manning, Maxwell & Moore, Inc.,** New York, who retired in May, 1920, on account of ill-health, died on October 30, in London, England, after a short illness. He was born at Brookfield, N. Y., in 1850, and served in the United States Army from 1867 to 1871. He took a law course at Ann Arbor, and practiced law in Denver, Colo., from 1882 to 1884. Mr. Babcock entered the machinery business in Chicago with the Fay & Egan Company and later entered the employ of Manning, Maxwell & Moore, Inc., at Chicago, as manager of that branch. About seven years ago he came to New York as assistant to president, and later was made president. He retired from active service in May, 1920, on account of continued ill health.



A. J. Babcock

The name of the selling organization which **C. C. Bradford** recently formed, as noted in the *Railway Age* of November 12, has been changed from the **Manufacturers' Sales Company,** to the **Bradford Sales Company.** The offices of this company, which will represent not more than two manufacturers as a district sales office of each, are located at 340 Leader-News building, Cleveland, Ohio.

E. P. Williams, formerly with the McJunkin Advertising Agency, and later director of field work, Bureau of Market Analysis, Inc., has joined the staff of the **Independent Pneumatic Tool Company,** Chicago, manufacturers of Thor air and electric tools. Mr. Williams will be located in the general offices, Chicago, and will have charge of the direct by mail advertising and sales promotion department.

The Graver Corporation, East Chicago, Ind., manufacturers of steel tanks and general plate construction, oil refinery equipment, water softening and purifying equipment, announces the opening of branch offices in the following cities: New York, at 280 Broadway; Pittsburgh, Pa., 62 Conestoga building; Kansas City,

Mo., 1001 Gloyd building; Cincinnati, Ohio, 220 Gwynne building; Toledo, Ohio, 314 Nicholas building; and San Francisco, Cal., 312 Balboa building.

Godfrey Gort, general sales manager of the **L. S. Brach Manufacturing Company,** Newark, N. J., manufacturer of lightning arresters and other signaling specialties, has been elected vice-president and general manager. Mr. Gort has had a long experience in signal work on railroads, having served on the Interborough Rapid Transit Company, the Hudson & Manhattan, the Norfolk & Western and the Illinois Central. He has been with the Brach company since 1913, first serving as construction engineer at New York. He remained in that position until 1915, when he was appointed western representative at Chicago. Later he became the general sales manager at New York. On October 1 of this year he was elected vice-president and general manager.

John A. Talty, assistant superintendent of equipment and equipment inspector for the New York Public Service Commission, Second district, has taken a position as special engineer with the **Franklin Railway Supply Company,** New York. Mr. Talty began railway work in 1883 as freight brakeman on the Erie Railroad. He consecutively served as foreman and locomotive engineman on that road and then as air brake instructor on the Westinghouse air brake instruction car on the Erie. Later he took a similar position with the Scranton Correspondence School. From 1900 to 1910 he served as road foreman of engines on the Delaware, Lackawanna & Western. In the latter year he joined the force of the public service commission as assistant supervisor of equipment and equipment inspector, inspecting locomotives and cars and investigating accidents, and he now leaves that position to go to the Franklin Railway Supply Company, as above noted.

L. C. Wilson, for the past two years general sales manager of the **Chain Belt Company,** Milwaukee, Wis., has been elected secretary of the **Federal Malleable Company,** West Allis, Wis., manufacturers of malleable castings, malleable chain and the Rapid molding machine. Mr. Wilson, after graduating from Yale University, began his business career as a salesman with Harbison-Walker Refractories Company, Pittsburgh. In 1917 he became associated with the Chain Belt Company and served as assistant to the vice-president until his appointment as sales manager. **Clifford F. Messinger,** who is also a graduate of Yale University, and has been with the Chain Belt Company since 1909 in various capacities, including that of advertising manager, manager of Rex concrete mixer sales and assistant to the vice-president, has been appointed sales manager of the Chain Belt Company, to succeed Mr. Wilson.

S. T. Callaway, of the firm of Callaway, Fish & Co., New York, and his associates have acquired a substantial interest in and are financing the **Elvin Mechanical Stoker Company,** and Mr. Callaway has been elected president of the company. **A. G. Elvin,** the inventor of the Elvin mechanical stoker, who is largely interested in the company, has been elected vice-president and treasurer. Mr. Elvin is also the inventor of the Elvin driving box lubricator, the Franklin grate shaker and the Franklin fire door, and other successful economy producing devices in the steam locomotive specialty field. **S. T. Whitaker,** of the law firm of Hardy, Stancliffe & Whitaker, attorneys for the company, has been elected secretary. The directorate of the company includes the officers as mentioned above, and **E. M. Richardson,** of the Sherwin-Williams Company. A long term contract has been entered into with the American Locomotive Company, under which the stoker will be manufactured for this company by the American Locomotive Company, at its Schenectady works, thereby enabling the company to accept immediately contracts in quantity for stokers.

The Ticket Dater should be always in good condition and the die clean. In one week a certain ticket auditor received 286 foreign tickets either undated or with stamp so dim or blurred as to be undecipherable. How does your ribbon look? How does it behave?

Railway Construction

Alberta & Great Waterways Railway.—This company has awarded a contract to the Northern Construction Company, Edmonton, Alta., for the construction of a line from Lac La Biche, Alta., to the present end of the road at Mile Post 272, a distance of 159 miles. The project, which is already under way, will involve the construction of a 125 ft. wooden, Howe truss, crossing the Christina River at Mile Post 195.

Canadian Pacific.—This company is asking for bids for the grading in connection with the construction of a branch line north from Kipawa, Que., to the Quinze River. The total length of the new line will be 68 miles, including a branch, 8 miles in length, to Ville Marie on the east shore of Lake Temiskaming. The first 30 miles of the line is entirely in rock country and the remainder traverses clay, gravel and sand. When grading is completed the company proposes to complete the work with its own forces and small contracts for buildings, fences, etc. There will be few bridges of any importance, the largest being a 500-ft. steel viaduct, 50 ft. high, over the Otter River. The principal commodities which the new line will carry are pulp wood and agricultural products, the country around the northern end of the line being well populated and under cultivation.

Canadian National.—This company is advertising for bids for the clearing, fencing, grading, culverts and bridge substructures on a 12-mile connection which it proposes to construct from Rinfret Junction, Que., to Fresniere.

Colorado & Southern.—This company will construct telephone despatching circuits from Denver, Col., to Cheyenne, Wyo., 155 miles; Cheyenne to Wendover, Wyo., 120 miles; and Pueblo, Col., to Texline, Tex., 224 miles.

Fort Worth & Denver City.—This company contemplates the erection of telephone despatching circuits on its entire mileage, 453 miles, the work to be handled by company forces.

Kettle Valley.—This company has awarded a contract to P. J. Salvus, Penticton, B. C., for the construction of a line from South Penticton, B. C., to Dog Lake, a distance of approximately 2½ miles.

Michigan Central.—This company is contemplating extending its electric yard facilities on both sides of the Detroit River at Detroit, Mich.

Missouri, Kansas & Texas.—This company, in co-operation with the city of Dallas, Tex., has completed its project of grade elimination at Dallas. The improvement, which consisted of raising the railway track at five street crossings, cost approximately $800,000.

Quebec & Chibougamou.—This company will construct a 400-mile line from Quebec to Chicoutimi and thence to Lake Chibougamou. The first 120 miles of this line has already been located and contracts for grading, track laying, etc., for this section will be let shortly. The second section of 130 miles is now being surveyed. The maximum grade on the new line will be 1 per cent and the maximum curvature 6 degrees. There will be five important steel bridges. The principal commodities the new line will carry are pulp wood, paper, fish, iron ore and grain. The company has its offices at 111 Mountain Hill, Quebec. This line will be subsidized by land grants from the government.

St. Louis-San Francisco.—This company has awarded a contract to the William McDonald Company, St. Louis, Mo., for the construction of a frame and concrete passenger station at Wister, Okla., to cost about $36,000.

Western Pacific.—This company has awarded a contract to the Utah Construction Company, Ogden, Utah, for the grading in connection with a new line to be built from Niles, Cal., to San Jose, a distance of 32 miles.

Railway Financial News

ARKANSAS RAILROAD.—This company, which has recently taken over the property of the Gould Southwestern, has filed an application with the Interstate Commerce Commission for a certificate authorizing it to operate the line from Gould, Ark., to Star City, 17.8 miles, and also for permission to retain any excess earnings over 6 per cent on its value, as provided in the transportation act for new roads.

BALTIMORE & OHIO.—Governor John J. Cornwell of West Virginia has been elected a director to succeed J. G. Schmidlapp, of Cincinnati, deceased.

BANGOR & AROOSTOOK.—This company has applied to the Interstate Commerce Commission for authority to issue equipment trust certificates maturing serially to 1936, of which $140,000 are prior lien certificates at 7 per cent and $180,000 deferred lien certificates at 6 per cent, to be used to provide funds for the purchase of six Consolidation locomotives. The certificates have been underwritten by the First National Bank of Bangor, Me. The company also asked authority to give 15 promissory notes, maturing serially for 15 years, to the amount of $180,000 at 6 per cent to the United States Treasury, for a loan to assist the company in purchasing the locomotives.

CHESAPEAKE & OHIO.—This company has applied to the Interstate Commerce Commission for authority to issue $50,225,000 of capital stock from time to time up to April 1, 1936, in conversion of $40,180,000 of bonds.

COLUMBUS & GREENVILLE.—A notice, dated November 6, 1920, states that, by amendment of its charter under the laws of Mississippi, the name of Southern Railway Company in Mississippi has been changed to Columbus & Greenville Railroad Company, and that hereafter the operations of this company will be carried on in the latter name under the supervision of the same officers who have heretofore been in charge.

DENVER & RIO GRANDE.—Application by the stockholders for a 60-day postponement of the sale of this road, set for November 20, was denied by Judges W. H. Sanborn of St. Paul and R. E. Lewis of Denver in the federal court at Omaha, Neb., on November 16. An appeal will be taken, which will not, however, act as a stay to the sale.

See Denver & Rio Grande Western.

DENVER & RIO GRANDE WESTERN.—A Delaware charter was granted to this company on November 15, with an authorized capital of $150,000,000, for the purpose of taking over the Denver & Rio Grande, which is scheduled to be sold at Denver on November 20.

ELECTRIC SHORT LINE.—The Interstate Commerce Commission has denied this company's application for a loan from the government of $42,250 for equipment and additions and betterments, on the ground that, its prospective earning power being doubtful, the security offered is inadequate.

ERIE.—The Interstate Commerce Commission has approved a loan of $1,840,700 to this company to aid it in reconstructing freight train equipment, in making improvements to existing equipment and in making additions and betterments to its roadway and structures at an estimated total cost of $6,680,000. The company itself is required to finance about $4,840,000 to meet the loan of the government.

EVANSVILLE, INDIANAPOLIS & TERRE HAUTE.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the acquisition and operation of the railroad formerly known as the Evansville & Indianapolis, which was sold at foreclosure on June 3, 1920.

FEDERAL VALLEY.—This company has applied to the Interstate Commerce Commission for authority to issue $27,940 of 7 per cent notes for 18 months to the Lima Locomotive Works for one locomotive and one caboose.

GULF, MOBILE & NORTHERN.—The Interstate Commerce Commission has approved a loan of $515,000 to this company to aid in providing itself with six freight and switching locomotives at an estimated total cost of $227,400, and additions and betterments to existing equipment and to way and structures at an estimated total cost of $401,500. The company is required to finance about $114,000 to meet the loan of the government. This company has been authorized by the Interstate Commerce Commission to issue $4,000,000 of first mortgage 6 per cent gold bonds dated October 1, 1920, and maturing October 1, 1950; to pledge and repledge $816,000 thereof as security for promissory notes to be given in renewal of certain outstanding bank loans; to pledge $1,030,000 with the Secretary of the Treasury as security for a loan of $515,000 from the United States; to pledge $960,000 thereof as security for an indebtedness of $480,000 to be funded by the director general of railroads, and to hold $1,194,000 in the treasury to be pledged from time to time to secure short term notes.

MAXTON, ALMA & SOUTHBOUND.—The Interstate Commerce Commission has denied this company's application for a government loan of $63,548 for the purchase of leased rail from the Seaboard Air Line and to meet short term notes, on the ground that "the public necessity for the railroad is relatively small" and that the security offered is inadequate because of the doubtful prospective earning power of the company.

MOORE HAVEN & CLEWISTON.—This company has applied to the Interstate Commerce Commission for authority to issue $50,000 of first mortgage 40 year, 6 per cent gold bonds, the proceeds of which, in connection with the proceeds of an issue of $50,000 of stock, are to be used in the construction and equipment of its line now under construction from a point at or near Moore Haven, Fla., to Clewiston, a distance of 13 miles. A. C. Clewis has agreed to buy the bonds.

NEW YORK, NEW HAVEN & HARTFORD.—The Interstate Commerce Commission has approved a loan of $9,630,000 to this company to aid the carrier in providing itself with equipment and additions and betterments to way and structures at a total estimated cost of $13,525,000.

ORANGEBURG RAILWAY.—The receiver has applied to the Interstate Commerce Commission for a certificate authorizing the abandonment of this company's line, which extends from North, S. C., to Orangeburg, S. C.

PITTSBURGH & WEST VIRGINIA.—At a meeting in Pittsburgh on November 15 the stockholders approved the proposal for the purchase of the West Side Belt Railroad. For this purpose the stockholders also voted to increase the capital stock of the Pittsburgh & West Virginia from $39,600,000 to $47,000,000. Of the increased stock, $3,000,000 will be in preferred shares, which ultimately will be turned into the treasury of the company.

PITTSBURGH, SHAWMUT & NORTHERN.—On November 6, 1920, under court orders, Henry S. Hastings, formerly comptroller and auditor of this road, was appointed co-receiver with Franklin Sullivan Smith.

RUTLAND.—The Interstate Commerce Commission on November 4 approved a loan to this company of $61,000, to aid the carrier in making additions and betterments to way and structures at an estimated cost of approximately $89,000. The company itself is required to finance about $28,000.

SOUTHERN RAILWAY IN MISSISSIPPI.—See Columbus & Greenville.

VALDOSTA, MOULTRIE & WESTERN.—Robert Murray was appointed receiver on November 5. The road operates between Valdosta, Ga., and Moultrie, 42 miles.

WEST SIDE BELT.—See Pittsburgh & West Virginia.

THE BEDROCK OF RAILROAD EFFICIENCY does not mean merely transporting freight and passengers safely and on time; it means getting the railroad work done by the fewest possible workers, with the largest possible production at the lowest possible cost. Anywhere and everywhere bedrock efficiency begins with the man who wants to work and does work.—*N. Y. Herald.*

Railway Officers

Executive

F. S. Wynn, secretary and treasurer of the Southern, with headquarters at New York, has been elected vice-president, with headquarters at Washington, D. C., effective November 11.

H. S. Hastings, comptroller and auditor of the Pittsburgh, Shawmut & Northern, has been appointed co-receiver to act with F. S. Smith, with headquarters at St. Mary's, Pa., effective November 6.

P. C. Byrne, general superintendent of the Alabama & North Western, with headquarters at Pine Hill, Ala., has been elected vice-president and general manager, with the same headquarters, effective November 11.

R. M. Dozier, whose election as president of the Union Railway Company of Memphis, Tenn., was announced in the *Railway Age* of October 29 (page 775), was born at Columbus, Ga., on January 24, 1880. He entered railway service in September, 1896, as a clerk and stenographer on the Southern. In March, 1900, he was appointed general agent of the Southern, with headquarters at New York, but in a few months he was made secretary to the assistant freight traffic manager and served in this position, first with headquarters at Louisville, Ky., then at Washington, D. C., until October, 1903, when he became secretary to J. A. Culp, vice-president of the Southern, with headquarters at Washington. In March, 1905, Mr. Dozier left the service of the Southern to become secretary to C. S. Clarke, vice-president of the Missouri Pacific at St. Louis. In September, 1908, he was appointed commercial agent of the Missouri Pacific at Memphis, Tenn., a position which he held until January 21, 1916, when another promotion made him assistant general freight agent of the Missouri Pacific, with headquarters at Omaha, Neb. In October, 1917, Mr. Dozier was transferred to Memphis, where he remained until September, 1918, when he was appointed traffic assistant by the United States Railroad Administration and sent to Washington. When the roads were returned to private control Mr. Dozier was reappointed to his former position as assistant freight traffic manager, but was transferred to new headquarters at Chicago. He was serving in this position at the time of his recent election.

Financial, Legal and Accounting

P. B. McBride has been appointed auditor for the receivers of the Pittsburgh, Shawmut & Northern, with headquarters at St. Mary's, Pa., effective November 8.

R. H. M. Temple, general solicitor and general claim agent of the Western lines of the Canadian National, with headquarters at Winnipeg, Man., has had his jurisdiction extended over the Grand Trunk Pacific.

C. E. A. McCarthy, assistant secretary of the Southern, with headquarters at New York, has been appointed secretary, with the same headquarters. **E. F. Parham,** who was assistant treasurer before federal control, and who has since been local treasurer, with headquarters at Washington, D. C., has been appointed treasurer, with the same headquarters. **Maury Middleton,** who was cashier at Washington, D. C., before federal control, and who was assistant federal treasurer under federal control, has been appointed assistant treasurer, with headquarters at Washington, D. C.

Operating

M. J. Crotty, assistant superintendent of the Missouri Pacific, with headquarters at Osawatomie, Kan., has been appointed acting superintendent of the Joplin division, with headquarters at Nevada, Mo., effective November 9, succeeding W. C. Bevington, absent temporarily because of illness. **C. H. Dunaway** succeeds Mr. Crotty as assistant superintendent at Osawatomie.

B. H. Knapp has been appointed train master of the Missouri Pacific, with headquarters at Jefferson City, Mo., effective November 9.

Fred Grundler has been appointed assistant superintendent of the New York Central, with headquarters at Cleveland, Ohio, succeeding T. Brennan, transferred, effective October 9.

C. O. Congdon, division engineer of the Missouri Pacific, with headquarters at Osawatomie, Kan., has been appointed trainmaster, with headquarters at Council Grove, Kan., effective November 9.

J. A. Houston, trainmaster on the Dakota division of the Chicago, Rock Island & Pacific, has resigned to enter the engineering department of the Westinghouse Electric Manufacturing Company.

J. A. Caviezel, general superintendent of the Alabama, Tennessee & Northern, with headquarters at Mobile, Ala., has been appointed assistant general manager, with the same headquarters, effective November 10.

F. J. Taylor, assistant chief despatcher on the Chicago, St. Paul, Minneapolis & Omaha, has been promoted to chief despatcher, with headquarters at Omaha, Nebr., effective October 1, succeeding W. B. Fordyce, who has retired.

J. P. Leach has been appointed superintendent of the Central Zone of the Pullman Company, with jurisdiction over the Chicago, St. Paul, Minneapolis and Omaha districts, with headquarters at Chicago. The appointment is effective November 15.

P. J. Coleman, acting assistant superintendent of transportation of the Northern Pacific, with headquarters at St. Paul, Minn., has been reappointed trainmaster of the Dakota division, with headquarters at Jamestown, N. D., effective November 1.

F. G. Gurley has been appointed superintendent of the Wymore division of the Chicago, Burlington & Quincy, with headquarters at Wymore, Neb., succeeding **M. F. McLaren,** who has been transferred to the McCook division, with headquarters at McCook, Neb., succeeding E. E. Young, who has resigned.

D. R. Campbell, general superintendent of the Pacific division of the Canadian National, with headquarters at Vancouver, B. C., has been given jurisdiction over the construction department of the Western lines, with headquarters at Winnipeg, Man. The office of general superintendent of the Pacific division has been abolished.

J. C. Goodfellow, trainmaster of the Los Angeles division of the Southern Pacific, with headquarters at Indio, Cal., has been appointed terminal trainmaster at Los Angeles, succeeding **W. H. Jones,** who has been transferred as trainmaster of the Los Angeles division, with headquarters at Los Angeles. **V. S. Burnham,** trainmaster of the Los Angeles division, with headquarters at Los Angeles, has been transferred to Indio to succeed Mr. Goodfellow. These changes are effective November 1.

Coincident with the reorganization of the safety department of the Union Pacific, promotions and appointments have been announced as follows: **P. Groome,** safety agent, with headquarters at Omaha, Neb., has been promoted to general safety agent, with the same headquarters; **J. F. Kenney** has been appointed safety instructor of the Omaha shops, succeeding **C. W. Moats** and **J. Trevaskis,** who have been assigned to other duties; **J. A. Cranor** has been appointed safety inspector of the Denver shops and terminal; **Alfred Rutherglen** has been appointed division safety agent of the Western division, with headquarters at Green River, Wyo.; **L. B. Garey** has been appointed safety agent of the Wyoming division, with headquarters at Cheyenne, Wyo.; **L. A. Abercrombie** has been appointed safety agent of the

Central division in addition to his duties as division safety agent of the Kansas division, with headquarters at Kansas City, Mo.; **F. C. Hunter** has been appointed safety agent of the Colorado division, with headquarters at Denver; **J. M. Guild** has been appointed safety agent of the Nebraska division, with headquarters at Omaha. These appointments were effective October 16.

George J. Shreeve, whose promotion to general superintendent of the Belt Railway of Chicago, Chicago, was announced in the *Railway Age* of October 15 (page 678), was born at Hamilton, Ont., on May 10, 1870, and entered railroad service in 1887, as a fireman on the Wabash. He was promoted to engineman in 1892, but left the Wabash to become an engineman on the Belt Railway of Chicago in 1894. In 1901 he was promoted to traveling engineer, a position which he held until 1904, when he was promoted to general yardmaster. He was appointed trainmaster in 1910, and became superintendent in 1913. On July 1, 1918, Mr. Shreeve was appointed acting general superintendent, succeeding J. H. Brinkerhoff, who had been appointed terminal manager of the Chicago district by the United States Railroad Administration. On March 1, 1920, when the roads were returned to private control, Mr. Shreeve returned to his position as superintendent of the Belt, and was serving in this capacity at the time of his recent promotion.



G. J. Shreeve

Charles F. Martin, whose promotion to superintendent of transportation of the Western lines of the Canadian National, with headquarters at Vancouver, B. C., was announced in the *Railway Age* of September 17 (page 507), was born at Farnham, Que., on July 27, 1886. He entered railway service in October, 1900, as a messenger at the Farnham offices of the Canadian Pacific, and during the next seventeen years served continuously with that road. In October, 1903, he became car checker; he was made a clerk in the mechanical department in July, 1904, and in April, 1906, he became a stenographer. In November, 1908, another promotion brought Mr. Martin to Calgary, Alta., as secretary to the general superintendent. He was stationed at Calgary until April, 1909, when he was transferred to Winnipeg, Man., and made secretary to the general manager, a position which he held until May, 1910, when he became chief clerk to the superintendent, with headquarters at Kenora, Ont. In June, 1912, Mr. Martin was promoted to general yardmaster, with headquarters at Souris, Man., but he withdrew from railroad service in November of that year to engage in private business at Winnipeg. In August, 1915, he returned to railroad work as chief clerk in the car service department of the Canadian National at Winnipeg. At the time of his recent promotion, Mr. Martin was serving as inspector of transportation on the Canadian National, with headquarters at Winnipeg, a position to which he had been promoted in October, 1917.

Traffic

A. C. McKinley has been appointed general agent of the Lake Erie & Western, with headquarters at Chicago, effective November 1.

H. M. Spence has been appointed assistant general baggage agent, with jurisdiction over the Western lines of the Canadian National and Grand Trunk Pacific, with headquarters at Winnipeg, Man.

F. L. Veal has been appointed commercial agent of the Seaboard Air Line, with headquarters at Miami, Fla., effective November 1.

Mechanical

I. W. Hicok, erecting shop foreman on the Chicago & Alton, with headquarters at Bloomington, Ill., has been promoted to superintendent of shops, with the same headquarters, effective November 10, succeeding J. J. Carey. **William Monroe** succeeds Mr. Hicok.

Engineering, Maintenance of Way and Signaling

Paul B. Spencer, assistant engineer of structures of the New York, New Haven & Hartford, has been appointed engineer of structures, effective October 1, succeeding W. H. Moore, deceased. **Floyd J. Pitcher** succeeds Mr. Spencer as assistant engineer.

E. G. Lane, engineer maintenance of way, Western Lines of the Baltimore & Ohio, with headquarters at Cincinnati, Ohio, has been transferred to Baltimore, Md., as engineer maintenance of way, Eastern Lines, succeeding **S. A. Jordan,** who has been transferred to the Western Lines, with headquarters at Cincinnati, Ohio.

W. A. Kennon, division engineer of the Missouri Pacific, with headquarters at St. Louis, Mo., has been transferred to a similar position with headquarters at Osawatomie, Kan. **L. Winship,** assistant engineer, with headquarters at St. Louis, has been appointed division engineer, with headquarters at Nevada, Mo. **J. R. Nagle,** division engineer, with headquarters, at Nevada, Mo., has been transferred to a similar position with headquarters at St. Louis. These changes are effective November 9.

Purchasing and Stores

F. S. Hammond, general storekeeper of the Pittsburgh, Shawmut & Northern, has been appointed purchasing agent in addition to his other duties, effective November 8.

B. B. Brain, fuel agent of the Kansas City Southern, with headquarters at Kansas City, Mo., has been appointed purchasing agent, succeeding G. W. Bichlmeir, resigned to accept service with another company, effective November 15.

G. H. Walder, assistant purchasing agent of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has been promoted to purchasing agent, effective November 14, succeeding **W. A. Linn,** who has been assigned to other duties.

Obituary

John G. Shillinger, chief engineer of the Rutland, died suddenly at Burlington, Vt., on November 12. Mr. Shillinger was born in 1864 and was graduated from Cornell University in 1892. He entered railway service in 1893 with the Cleveland, Cincinnati, Chicago & St. Louis. Subsequently he served as assistant to the engineer of maintenance of way, supervisor of track and engineer of maintenance of way for the same road. In 1912 he was appointed chief engineer of the Rutland, which position he held at the time of his death.

Arthur M. Waitt, a consulting engineer and railway specialist, at one time superintendent of motive power of the New York Central, died November 11, at Sharon, Conn., at the age of sixty-two. Mr. Waitt was born in Boston and was educated at the Massachusetts Institute of Technology. He entered railway service in 1879 with the Chicago, Burlington & Quincy as a draughtsman. Subsequently he served in the same capacity with the Boston & Maine. In 1889 he became assistant manager of the Pullman car works and in 1892 master car builder of the Lake Shore & Michigan Southern. In 1899 he was appointed superintendent of motive power of the New York Central. Since 1905 Mr. Waitt had been a consulting engineer, specializing in railway work. He was a member of the American Society of Mechanical Engineers and the New York Railroad Club.

EDITORIAL
Railway Age
EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Co-operation of Railways with Merchant Marine

Admiral W. S. Benson, chairman of the United States Shipping Board, has written letters to Chairman Clark of the Interstate Commerce Commission and T. DeWitt Cuyler, chairman of the Association of Railway Executives, urging upon the railways the importance of the various railway companies promoting as much as possible the shipment of raw materials and manufactured products destined for foreign ports in American ships. The recommendation of Admiral Benson that American railways shall favor American steamships as much as possible deserves favorable action. As he points out the more American freight is shipped in American vessels the more encouragement there will be given to the development of the American merchant marine. The development of the American merchant marine will tend to increase the amount of export business that can be done by the United States via American ships, because American ships will naturally tend to favor American shipments, while foreign ships will naturally tend to favor the export business of their own countries. The larger the export business built up by the United States the larger will be the amount of export freight which our railways will be given opportunity to handle. In other words, by helping foster the development of the country's merchant marine the railways of the United States will in the long run be helping to increase their own business.

A Tip On Fuel Economy

If there is any one thing that can be taken as an index to the individual fuel efficiency of every locomotive, it is the exhaust tip. A reduction in nozzle size is invariably a symptom of any one of many diseases that attack locomotive fuel efficiency. It is in itself a severe drain upon the economical performance of any locomotive if permitted to remain after the disease, which may be anything from inferior coal to a front end air leak, has been cured. In fact there is hardly a railroad on which locomotives are not permitted to operate month in and month out with needlessly restricted nozzles. Of what good are standards relating to the size or shape of nozzle tips, or the use of bridges, if these are not adhered to? The problem is not a question of design, it is one of application. We cannot expect to control the enormous fuel loss caused by restricted nozzles or by the defects that these nozzles are intended to counteract until we know the exact size and condition of every nozzle tip in every locomotive. There is only one practical and reliable way to determine periodically the size of every nozzle in every active locomotive. Whenever the monthly boiler inspection, as required by law, is made the boilermaker making this inspection should be required to measure the nozzle tip and certify to its size and condition along with other items included in the report. This information may be endorsed on the margin of the present report card and should be abstracted from these cards and presented in the form of a monthly report to every mechanical officer responsible in any way for the economical performance of the locomotives included in the report. The procedure is so simple and would have so direct an effect on fuel waste that the railroads should take the initiative towards enforcing reasonable nozzle tip standards by this means before the advisability of including this data with other reports occurs to the Locomotive Boiler Inspection Section of the Interstate Commerce Commission.

No Time for a Slump

Best available information indicates that there has been no general improvement in the percentage of motive power and freight cars available for service since the railroads were returned to private operation. The record-breaking traffic movement which reached its climax late in October, has been followed by a decline sufficient to offer some relief in the immediate requirements, but when compared with previous records, this offers little ground for the belief that the relief is, or will be, extensive. At the opening of winter the country finds itself behind on the season's movement of coal and the marketing of the grain crop held up by artificial conditions which may at any time cease to control. To face this situation there are approximately 100,000 less freight cars than were available for service on March 1, and a total supply of motive power which has shown little increase for more than a year. During the recent peak load increased car loading and increased miles per car per day, offset the decrease in the number of cars and the motive power has stood a severe test exceedingly well. But the continuance of the improvement in efficiency that made possible the records of the past few months is dependent on the maintenance of the motive power and the rolling stock to a high standard of serviceability. With no reserve in the supply of either it is imperative that there be no slump in the output of repairs or the critical situation faced at the beginning of the summer will again be encountered, with winter conditions as an added handicap to its effective solution.

The Decline of Freight Business

Reports have been coming in from all over the country for some weeks to the effect that the freight business of the railways has been declining, but the statistics regarding car loadings down to the week ending November 6 do not indicate any larger declines of business than have occurred in past years. In the week ending November 6 the number of cars of freight loaded was 910,592. This is the highest record ever made in that week. The figure for the corresponding week of 1919 was 826,000, but car loadings in that week were reduced by the commencement of the coal strike. The number of cars loaded in the first week of November, 1918, however, was only 873,000. This was before the signing of the armistice and therefore at a time when the railways were exerting themselves to handle the maximum business possible, and yet the number of cars loaded in the first week of November, 1920, was 37,592 greater than in 1918. Evidently we shall have to await the statistics of later weeks before we shall see the effects of the decline of business reflected in car loadings. One reason, no doubt, why the car

loadings continue to hold up so long when there are general reports of declines in business is that the railways have continued up to the present time to transport all the coal they have been able to move, and coal under normal conditions constitutes about 35 per cent of their total tonnage. While there has been a large reduction in car loadings since the high water mark was reached in October there is as yet available no statistical evidence that the decline in the business moved recently has been any greater than it normally is at this time of year.

What the Public Expects

There has been a time when a slight recession in business necessitated an immediate curtailment in the purchase of materials and supplies by practically every railroad. Has the situation remained unchanged, is it still necessary for the railroads to forego every badly needed improvement during a period of falling prices and scramble for such portion of these necessities as they can procure during a period of great business activity? The railroads are the largest consumers of material and it is not too much to say that they can do more towards stabilizing the business activities of this country than any other one industry. The public expects more than the service of transportation from the railroads, it expects a broad constructive business policy that will not waver with every market fluctuation. Each railroad is confronted with a particular problem but what will be the effect if every railroad accepts the advice of its purchasing agent to defer the purchase of every possible item pending a further fall in prices? Will the much needed improvements cost less in the long run, and even if they should cost less, is that a circumstance to the importance of having the new equipment and the facilities in place, ready to function when traffic demands are again touching new high levels? This country wants its railroads equipped to move economically and expeditiously just a little more rather than just a little less business than may be anticipated. The purpose of recent legislation was clearly to enable the railroads to put their equipment in condition to do this irrespective of the current price of rail or any other item.

Selling Stock to Employees

The Lehigh Valley announced its plan for selling stock to its employees early in June of this year. To the present time advantage of the company's offer to assist the employees to purchase stock in the company on the instalment plan has been taken by 1,116 subscribers for a total number of 4,716 shares. The details concerning the plan and of the manner in which it is working out were given in a paper by A. F. Bayfield, treasurer of the company, read before the recent meeting of the Society of Railway Financial Officers and abstracted in last week's issue of the *Railway Age*. Mr. Bayfield went to some pains in his paper to emphasize that the shares which the employees secure through subscription under the plan are regular common stock; they are not treasury stock or a special stock issued to employees. Their purchase makes the employee a regular stockholder in the company. Mr. Bayfield gives some interesting figures as to the per cent of each class subscribing to date. The percentages are as follows: Officers and general office employees, 19; agents and station employees, 8; enginemen, firemen, conductors, etc., 1; maintenance of equipment department, 4; maintenance of way department, 1½. The Plumb plan advocates worked out a scheme whereby the employees could control the railroads. Their idea found most fruitful ground in the ranks of the train service employees. We have pointed out in these columns that one of the best ways in which the employees could control the railroads would be to become stockholders, or in effect buy them. The Lehigh Valley, by its plan, has offered to assist the employees to become owners. Nevertheless, the number of train service men subscribing, one per cent of the total number, has been less in proportion than for any other class of employees. This is the one pessimistic feature of the way in which the plan is working out. We feel, however, that the proportion of train service men subscribing will increase in the future as the men realize more and more the unfairness of Glenn E. Plumb's idea of getting something without a compensating obligation.

Five-Coupled vs. Mallet Locomotives

In deciding on the type of locomotive for heavy freight service, railroad officers usually find the problem narrows down to the selection of either the Santa Fe or Decapod or the Mallet type. Some roads have used Mallet locomotives consistently for many years; others with similar topography and traffic have clung to the ten-coupled simple engine. In few instances have the two designs been operated under conditions that permitted a fair comparison of their relative merits. The advocates of the Mallet claim that the tractive effort can easily be made greater than in any non-articulated engine. The divided wheelbase and better counterbalancing reduce the stresses in the track and the steam consumption is lowered by compounding. Furthermore the saving in the weight of the parts of the running gear due to division of the forces between two sets of machinery is stated to reduce the cost of maintenance. Many heavy simple locomotives give trouble due to excessive heating and wear in the driving box and rod bearings, but there is a question whether this is not offset by the reduction in the number of parts. The connection between the front and rear frames and the joints in the steam pipe prove troublesome in many designs of Mallet engines. The crux of the whole matter seems to be that the Mallet permits of hauling heavier loads while the increased cost of maintenance may or may not outweigh this advantage. A comprehensive comparative study of the cost of operation of the two types, taking into consideration the fuel consumption, crews' wages, costs of maintenance, mileage and reliability, would be of great value to roads that are confronted with the problem of choosing between the Mallet and the ten-coupled simple engine.

Extent of the Deferred Maintenance

No better evidence of the extent to which the maintenance of the physical properties of the railways has been deferred during the last few years could be desired than that presented by C. W. Gennet, Jr., in his paper on the rail situation, before the Western Society of Engineers, Chicago, which is abstracted on another page in this issue. Railway men have been aware of the fact that the properties were not maintained up to their normal standards for several years prior to the war and the accumulation of deferred maintenance mounted still more rapidly during the period of federal control. Whether or not railway men are prepared to agree with Mr. Gennet in his conclusion that rail renewals are over four years in arrears, they do realize that the accumulation of arrears is serious and that it must be taken up at the earliest possible opportunity, not only to insure safety of travel but economy of operation as well. The effects of this situation are reflected in several directions. There has been a feeling in the minds of many that the present sections of rail in use are too light for the loads imposed on them. If there is any

justification for this thought with new rail, this justification increases rapidly as the rail wears in service. With such a deficiency in renewals, the average weight of rail in service is also considerably below normal for if it had been replaced at the regular time a large part of it would have been superseded by heavier sections. One of the most serious aspects of this problem is the fact that while the rail is the most essential unit in the track structure, this accumulation of deferred maintenance has extended likewise the renewal of ties, the addition of ballast, the widening of the shoulders, and other elements entering into the construction of the roadway. The deficiency in these other elements places a still greater load upon the rail at the time when it is least able to withstand it. Coupled with the fact that shortages of labor and other deficiencies have also resulted in the rail receiving less attention in service, a gloomy picture might be painted. The fact that serious disaster has not occurred indicates the relatively large factor of safety in present day track construction. However, it is a basis of engineering design that this factor of safety is provided for emergency use only and not for day-to-day utilization. Every opportunity should therefore be taken to bring the entire track structure, including the rail, back to its normal relation to the service demanded of it at the earliest possible date.

Government Delays in Paying Railroads Injure Business

THE GENERAL BUSINESS situation is unsatisfactory, and the federal treasury department is helping to make it worse by the policy it is following in reference to government loans to the railroads and payments to the roads on account of the deficits incurred by them during the first six months of private operation.

The Transportation Act provided for loans of $300,000,000 to the railroad companies, which were to be made upon the certification of the Interstate Commerce Commission. The treasury department held that certain of the loans certified by the commission were not in technical compliance with the law, and therefore they have been held up. The deficits incurred by the companies in the first six months of private operation, during which the guaranteed standard return was continued under the provisions of the Transportation Act, aggregated about $660,000,000. The Interstate Commerce Commission was authorized by the law to certify to the treasury department the amounts which it should pay to the companies under this guarantee. Only about $234,000,000 on account of the deficits had been paid when the guarantee period expired on September 1, 1920. It was assumed that further installments could and would be paid under certificates issued by the commission before the total amounts of the deficits of the individual roads had been ascertained. The comptroller of the treasury has, however, advised the secretary of the treasury that payments on account of the deficits can now be made "only after a carrier has submitted its entire claim under the guarantee and the commission has ascertained the amount due thereon." The result is that the balance of over $400,000,000 due under the guarantees is being held up.

Because of the withholding of these funds many railway companies are unable to meet their current obligations, and are being obliged to postpone needed expenditures. Many of them owe large amounts to railway equipment and supply concerns, which, because they cannot get what is due them, are being forced to borrow large amounts at the banks. These conditions tend to continue and increase the general inflation of credit at the very time when the Federal Reserve Board and the banks are trying to reduce it. The board of directors of the Chamber of Commerce of the United States has issued a statement forcibly calling the attention of its members to the effects being produced by this situation. It certainly is a significant commentary on the way government business is transacted that differences of opinion between two branches of the government regarding the provisions of a law under which both are required by Congress to act should be allowed to create a situation which is producing such a demoralizing effect upon business.

The Interstate Commerce Commission is the body charged by the law with the duty and responsibility of saying what loans and payments should be made. Nobody has claimed that any payments it has authorized would give to the railroads anything which they will not sooner or later have to be given. The narrow technical interpretation placed on the law by the comptroller of the treasury should no longer be allowed to keep impounded in the treasury funds which the law intended should be transferred to the railroad companies, and which the business welfare of the country demands should be transferred to them.

Real Economy in Maintenance of Way

THE RESTORATION of the monthly balance sheet to a position of real importance on the railroads has served once more to make economy a matter of vital significance in all branches of railway service and no less in the maintenance of way department than elsewhere. How can you economize? is the question put up to every officer, and he should feel a keen personal responsibility to that end. Efforts to obtain economy in maintenance of way expenditures may be directed toward two distinct ends: (1) To effect an immediate reduction in expenditures; (2) to obtain permanent economy in the use of the material and labor applied. In no other department of a railway is it so easy to make a temporary, but entirely misleading, showing. The securing of purely temporary economy frequently is necessary, but unfortunately it can not be carried beyond a certain point without seriously interfering with the securing of lasting economy.

Immediate results can be obtained by a reduction in the force, which obviously carries with it a reduction in the application of material. In a certain measure this will be effective in increasing efficiency since men will work harder when they feel that their jobs are in jeopardy. On the other hand, more harm than good may be done in cases where such reductions in the force interfere with the operation of plans for permanent, all-year forces or other measures for improved personnel. The greatest danger in radical reductions in maintenance programs lies in the possibility that the neglect of some feature of the work involving relatively small outlay may result in damage to the property that can not be made good without a much greater subsequent expenditure. The axiom of maintenance of way is that "a stitch in time saves nine."

Permanent economy in maintenance of way work implies the expenditure of every dollar in a manner that will accomplish the greatest good. Analyzing this in greater detail it means the efficient utilization of all labor paid for and the intelligent selection and use of the material applied. The efficient use of labor involves two requisites: A maximum output per man and the intelligent direction of that output. The first is a matter of leadership. The second, like the use of material, is a matter of planning or, still better, engineering. As stated before, greater output may be obtained from the men by reductions in force or other means that are effective in times of labor surplus, but anxiety concerning the security of position is only one of several influences to be brought to bear in increasing the effectiveness of labor. Much may be accomplished through a more intimate human contact on the part of the supervisory forces.

The proper manifestation of sympathetic appreciation of the problems and interests of the laborers, proper housing and feeding, permanent employment, etc., are necessary if the men are to feel any real interest in the company's welfare. When the men are made to feel this interest they will use their brains as well as their muscles in the interest of the road.

The proper direction of labor and the application of materials is a matter of intelligent administration in all the supervisory ranks from roadmaster to president, and fundamentally it involves planning of the work for a considerable period in advance. It implies the making of expenditures today to avoid greater outlay tomorrow. Thus increased expenditures to use treated rather than untreated ties are not reflected in reduced tie renewals for five years or more. Consequently, it is difficult to institute a program for economy in the maintenance of way department that will immediately effect showings of a permanent character. Thus it is seen that there is danger of actual losses if reductions in maintenance of way activities are carried much beyond the point where the resultant reductions in force serve as a healthy incentive for increased effort on the part of the men retained in the gangs.

Dealing With Labor Under New Conditions

THE RELATIVE STRATEGIC POSITIONS of employer and employee in the industries of the United States, including the railroad industry, have been changing rapidly within recent months. From the time when the revival of business commenced in this country in 1915 until recently the demand for labor exceeded the supply. Most classes of labor took full advantage of this situation. The labor unions already in existence became more aggressive. Many new labor unions were formed. Extensive reductions in hours of work and advances in wages were secured. The general attitude of labor became one not merely of great independence, but of arrogance, and in most industries its efficiency declined. Many rules and methods were forced upon employers, including the railways, which reduced the output per man and greatly increased expenses.

The recent declines in general business have thrown many men out of work. In the recent national political campaign organized labor went out to "get" every member of Congress who had refused to do its bidding, with the result that most of the men it opposed were elected and most of the men it supported were defeated. These developments are, at least temporarily, transferring the control of the situation from labor to the employer. They are causing some optimism in the ranks of the employers and something approaching consternation among the leaders of the labor organizations. The American Federation of Labor recently has been giving much publicity to the information that it is driving radicals out and is considering means of co-operation between employers and employees which will reduce strikes and increase efficiency of production—information which, if correct, indicates a change of heart in the cases of many leaders of labor.

There is a natural tendency on the part of railroads and other employers to take advantage of the change in conditions to restore discipline and increase efficiency among their employees. It is right and in the public interest that this should be done. Strikes and labor inefficiency in the long run cost the workers and the public in general more than they do the employers. No effort should be spared to restore discipline and efficiency in the operation of the railroads and other industries.

There are, however, wide differences of opinion among employers as to the methods which should be used in trying to attain this result. Some believe that it is desirable for employers of all classes to adopt methods which they believe are adapted to break down the new labor organizations and cripple the old ones, and which will re-establish the dominance of the employer in the management of his business to the same extent that it prevailed before the war. Others believe that instead of employers seeking to re-establish discipline and labor efficiency by what, for lack of a better name, we may call "strong-arm" methods, they should take advantage of the present situation to try to put their relations with their employees, whether organized or unorganized, on a basis of better understanding and closer co-operation. They believe that labor organizations have come to stay, and that one of the greatest needs of modern industry and modern society is the education of the leaders and members of labor unions so that they will co-operate with employers in securing increased efficiency and economy in production, instead of so using their power when conditions are favorable as to reduce industrial efficiency and impose unfair burdens upon the public.

It is undoubtedly true that under present conditions it would be possible for many classes of employers, without in any way seeking the co-operation of labor, to make drastic changes which, at least temporarily, would greatly increase the workers' efficiency. This is less true in the railroad than in almost any other industry, but in no small measure it is true in the railroad industry.

It is always well, however, in dealing with such important matters, to take a long look ahead. It is unfortunately true that in the railroad industry there has grown up a very serious and widespread spirit of antagonism between the managements and most classes of the employees. In every class of employees, however, there are many men who are loyal to the companies, who believe it is the duty of the employee to render good service to his employer and who have no use for the philosophy of the Plumb plan and other strange doctrines. It is quite conceivable that under present conditions the managements of many railroads or the railroads as a whole might adopt methods in dealing with labor which would not only increase the bitterness of the employees who already are hostile, but which would tend to alienate the employees who still are loyal. On the other hand, it is quite conceivable that the managements of many railroads, or the managements of the railroads as a whole, might take advantage of present conditions to adopt policies which would strengthen the loyalty of employees who already are loyal and reduce the spirit of antagonism on the part of other employees.

The fact should be frankly recognized that the labor conditions and the attitude of the employees which recently have prevailed have not existed without cause, any more than the former widespread public sentiment against the railways existed without cause. The present attitude of railroad labor undoubtedly is due principally to two causes—first, to unwise and unjust policies adopted by the managements in many cases in dealing with the employees, and, second, to propaganda among the employees by labor leaders and radical agitators which the managements have not counteracted by the use of effective educational methods.

There is a strong tendency on the part of many employers to assume that practically all the fault for bad labor conditions has been due to bad labor leadership and to the unreasonableness and selfishness of working men. Even if this assumption were correct it would not follow that it was expedient for employers under present conditions to make ruthless war upon labor as a large part of the working class within recent years has made ruthless war on the employer. This would be a direct invitation for labor recklessly to strike back as soon as it again got the power to do so, and in the long run would do more harm than good. But the assumption that the past and present bad labor conditions have been entirely, or perhaps mainly, due to bad labor leadership and

the unreasonableness and selfishness of working men is wholly without foundation. Past and present bad labor conditions on the railroads and elsewhere have been largely, and perhaps mainly, due to the fact that employers and the representatives of employers have failed, when they had the opportunity, to do their duty in adopting measures which would enlighten employees regarding the true selfish interest of the workers as a factor in industry, and which would secure their co-operation instead of their opposition with respect to measures designed to promote industrial peace and efficiency.

This is a good time for the railroads to begin to try to get rid of many of the absurd rules and restrictions which recently have been adopted nominally for the protection of labor, but which have the actual effect of causing many millions of dollars to be paid out for labor which is not performed. It is also, however, a good time to attempt to adopt methods adapted to reduce the labor turn-over, to secure the interest and co-operation of labor in promoting efficiency and to educate employees regarding their true interest as individuals and as members of the working class.

There is a scriptural injunction regarding the unwisdom of putting new wine into old bottles. It behooves railroad managers to recognize the fact that pre-war conditions have passed never to return, and that the post-war labor problem, like other post-war problems, requires not pre-war, but post-war, treatment.

The Wide Variations in Increased Car Efficiency

THE RAILWAYS as a whole have made remarkable progress for some months in increasing the efficiency with which they have used freight cars. The statistics of the Interstate Commerce Commission disclose, however, that in every section some railways have greatly increased the average amount of freight service rendered with each car on their lines, while neighboring roads have shown actual reductions in the average service rendered with each car.

The freight business is now declining. Probably, however, it will not be long until it will again tax the roads to their capacity. Meantime, it will behoove the executive and operating officers of many railways to ascertain why the increases in operating efficiency gained on their roads, as indicated by the statistics, have been so much less than those gained by other railways. Nobody would criticize the management of an eastern railroad for not moving cars as many miles per day as they are moved on the transcontinental lines. Local conditions in the East make it impossible to move cars as many miles per day as in the far West. But while it is easy to explain the differences in average miles per car per day and in average tons per car in different sections, it is not easy to understand why in every section there are wide differences in the increases in car efficiency obtained.

One explanation, no doubt, is that in every part of the country some railways, because of greater foresight or financial resources, have kept the development of their power, yards and terminals more nearly abreast of the growth of traffic than others in the same territory. We believe, however, that anybody who carefully analyzes the figures will discover a relationship between the number of cars each railroad had on its lines and the increase or decrease in efficiency with which it used cars. In almost every case where a railway showed a large increase in the efficiency with which it used cars the statistics disclose that the cars it had on its lines were less than 100 per cent of those it owns. On the other hand, in almost every case where a railway showed a decrease in the efficiency with which it used cars the statistics disclose that it had on its lines substantially more than 100 per cent of the cars it owns.

One of the greatest increases in average net ton-miles per car per day made by the large railways was obtained by the Chesapeake & Ohio. In the first eight months of 1919 its net ton-miles per car per day were 584 and in the same months of 1920 they were 919, an increase of 57 per cent. This was due almost entirely to the fact that it increased its average miles per car per day from 24.3 to 36.4, or 50 per cent. As a result of this increase in car efficiency, the total tons moved one mile by it were 27 per cent greater than in the first eight months of 1919, in spite of the fact that in the first eight months of 1920 it had on its lines only from 66 to 77 per cent as many cars as it owned.

Another good record made was that of the Illinois Central. Its net ton-miles per car per day in the first eight months of 1919 were 575 and in 1920, 800, an increase of 39 per cent. This improvement was chiefly due to the fact that it increased its average miles per car per day from 31.1 to 40.4, or 30 per cent. The total number of tons hauled one mile by it were increased 33 per cent, although the number of cars on its line varied from 76 per cent to a maximum of 83.4 per cent of the number it owned.

Still another good record in increasing net ton-miles per car per day was made by the Northern Pacific. Its net ton-miles per car per day in the first eight months of 1919 were 486 and in 1920 they were 671, an increase of 38 per cent. Its total ton mileage was 12 per cent greater than in 1919, although it had only 62 to 83.4 per cent of the number of cars it owns upon its lines. This was chiefly due to an increase from 25 to 33.6, or 34 per cent, in average miles per car per day.

When we turn to the railways which had actual declines in net ton-miles per car per day we find that in most cases there were roads which almost throughout the first eight months of 1920 had upon their lines a number of cars exceeding their total ownership. One large system in seven of the eight months had from 2 to 16.5 per cent more cars than it owned. The net ton-miles per car per day on this railway decline from 438 to 435. This was due to a decline in the average load per car, since the average miles per car per day were the same in both years, 18.9.

Another important railway had upon its lines from 39 to 68 per cent more cars than it owned. Its average tons per car per day decline from 303 to 278, this being due apparently to the fact that its average miles per car per day declined about 16 per cent.

Another road had from 12 to 47 per cent more cars than it owned. Its average miles per car per day declined 47 per cent and its net ten-miles per car per day 45 per cent.

Another railway had upon its lines from 100 to 121 per cent of its total ownership of cars. Its average net ton-miles per car per day declined from 450 to 439, chiefly because its average miles per car per day declined from 26 to 24.2.

We believe these statistics have significance in relation to an important question of operating policy. This question is whether the management of each railway should not, in the interest of that railway itself as well as of the railways as a whole, strive to prevent the number of cars upon its lines from greatly exceeding the number of cars it owns. Is it not a fact that many railways persist in holding so many cars which other railways need and in accepting at the same time so many loaded cars from connections that they unnecessarily congest their own lines and thereby not only reduce the amount of service that they themselves can get out of each car, but reduce the total amount of business they are able to handle? Of course there are not a few railways which do not own as many cars as they really need to handle their own business, and their inevitable tendency when business is heavy is to keep more cars than they own regardless of the fact that this often works a hardship upon the roads whose cars they keep.

It seems a fair assumption, however, that most of the

larger and stronger systems have sought with approximate success to provide themselves with cars in proportion to the capacity of their other facilities. Do not the figures indicate that a railway which has done this both increases its expenses and reduces the amount of business it can handle if it persists in holding and accepting cars substantially in excess of the number it owns?

Comparisons of this kind always are invidious, and it is not our purpose to imply that the railways which made the greatest increases in ton-miles per car per day were the most efficiently operated, or that those which showed actual reductions in ton-miles per car per day were not efficiently operated. Local conditions often affect the results obtained on different railways and on the same railway at different times to an extent that only their own officers realize. Nevertheless, the chief executives of the railways, when they started their drive a few months ago to increase the amount of freight moved, expressly recognized the fact that one of the very best ways to increase railway efficiency was to speed up the cars. If they were right it necessarily follows that anything which tends to prevent an increase in the average miles per car per day is an obstacle to increased efficiency and if it be true that in many cases individual railways got and kept upon their lines so many cars as to interfere with increasing the average miles per car per day, it must follow that this policy was a hindrance to increasing the efficiency of those individual railroads, as well as of the railroads as a whole.

It recently has been urged with much force that the Car Service Rules should be so revised as to make more nearly certain that their enforcement will secure to each railway at all times the use of more nearly the equivalent of the cars it owns, and that after this has been done measures should be adopted to make sure the rules will be observed. We believe that past experience, and especially the experience of the last few months, strongly supports the view that in the long run strict enforcement of rules adopted to secure to each railway the use of the equivalent of the cars it owns would be beneficial not only to many railways which usually in periods of heavy business do not get the use of as many cars as they have provided, but also to many railways whose managements find it difficult to constrain themselves to adopt the measures necessary to prevent excessive numbers of cars from accumulating upon their rails.

New Books

Export Register of the Federation of British Industries. 328 *pages and catalogue section of* 312 *pages, illustrated,* 7 *in. by* 9½ *in. Bound in cloth. Published by the Federation of British Industries,* 39 *St. James street, London, S.W.*-1, *England.*

The trade organization movement in Great Britain has made great progress in recent years. One of the most notable recent developments was the inauguration of the Federation of British Industries in the summer of 1916. This body has enrolled 1,300 members including 200 trade associations. The Export Register recently published by the federation is probably the most comprehensive directory of British industrial firms yet prepared. The industries are divided into 20 groups which are in turn subdivided according to the specialized branch of the industry which the producer serves. A list of companies, firms and their agents with sufficient information to enable the buyer to get in touch with the nearest agent is given. Another section of the book is devoted to a very complete list of products with the names of the manufacturers represented in the federation. An extensive section devoted to advertising enables the individual manufacturers to give further information concerning their wares. The book might well serve as a model for American export associations in furthering their interests in the foreign field.

Bituminous Coal Storage Practice, by H. H. Stock, C. W. Hippard and W. D. Langtry. Bulletin No. 116, *Engineering Experiment Station, University of Illinois, Urbana, Ill.* 150 *pages,* 6 *in. by* 9 *in., bound in paper.*

The growing inability to maintain a steady flow of coal from the mine to the consumer to take care of the fuel demands of the country currently, especially during the winter season, has attracted wide interest to the problem of storing large quantities of coal near the points of consumption. One of the most serious handicaps to the storage of bituminous coal is the constant danger of spontaneous combustion. A study of the causes of spontaneous combustion and methods of prevention has been undertaken by the Engineering Experiment Station of the University of Illinois and has been in progress for several years. Considerable information on the subject was included in Circular No. 6, on "Storage of Bituminous Coal," issued in 1918 and Bulletin No. 116, contains much additional information which has been obtained by a study of the circumstances surrounding a considerable number of fires in stored coal as well as of methods of inspecting storage piles which have been followed with success in the prevention of fires. The results of these studies are given in detail and the bulletin is invaluable to any large user of coal who now has storage piles or contemplates the storage of coal in quantity.

Proceedings of the American Wood Preservers' Association. 1920. 6 *in. x* 9 *in.* 370 *pages, illustrated. Bound in cloth or paper. Published by the American Wood Preservers' Association, F. J. Angier, secretary, Mt. Royal Station, Baltimore, Md.*

The American Wood Preservers' Association has two distinct functions; (1) the study of the physical laws governing timber preserving processes and their application in the perfection of the work being done on a commercial basis and (2) the general education of the public in the value of timber treatment and the proper use of treated wood. These two objects were carried out in the program of the sixteenth annual meeting held in Chicago on February 10-12, inclusive, as recorded in this volume. The papers and reports presented and discussed are divided among scientific studies of preservative processes, the presentation and discussion of specifications for preservatives and processes, and the records of results secured with treated timber, such as railway ties, under actual service conditions over periods of years. Under this last head the most notable example in the 1920 proceedings is that of some creosoted piles subjected to the action of marine borers for a period of 29 years in Long Wharf, Oakland, Cal. Thirty-eight pages cataloguging the tie service records in the files of the United States Forest Service form an important part of this volume,as in preceding years. A distinctive feature of this year's volume is a treatise on the fungi which attack tie timber, by C. J. Humphrey. This constitutes a clasification of a large number of species of these fungi with an account of descriptive characteristics and destructive influences which will enable the student to distinguish between the dangerous and harmless species. This description is amplified by the inclusion of eight pages of plates, including three in colors. This feature of the proceedings is being published by the association under a separate cover with the title "The Decay of Ties in Storage." The statistics on the quantities of wood treated and the preservatives used in the United States in 1919 by R. K. Helphenstine, Jr., of the United States Forest Service, forms a characteristic and valuable feature of this volume.

I. C. C. Orders Increase in Intrastate Rates

Refusal of New York to Permit Increases Corresponding to Interstate Advances Held to Be Discriminatory

WASHINGTON, D. C.

PASSENGER, SLEEPING car and parlor car fares, baggage charges and the rates on milk and cream applicable to intrastate transportation in New York, except local commutation fares, are ordered increased in amounts corresponding to the increases recently allowed by the Interstate Commerce Commission for interstate traffic, in the commission's decision in the New York passenger fare case, announced on November 17. The commission finds that the rates required by state authority, lower than the corresponding interstate rates as increased under its decision in Ex Parte 74, are "unduly prejudicial to interstate passengers and shippers, unduly preferential of intrastate passengers and shippers, and unjustly discriminating against interstate commerce," and the carriers are ordered to remove the discrimination by making the higher rates effective on not less than five days' notice, on or before December 18.

The New York case is the first of a series of 17 involving the failure of the state authorities to allow intrastate increases corresponding to those allowed by the Interstate Commerce Commission. The commission's decision is, therefore, regarded as probably constituting a precedent for the decisions in the other cases, which are in various stages of progress. However, there are different sets of circumstances in the various cases which conceivably might affect the decisions. In New York the freight rates were not involved. The state has a passenger fare law prescribing a rate of 3 cents a mile, while the federal commission had allowed 3.6 cents, but the state commission has authority to permit fares in excess of the statutory rate upon a showing that existing rates are not compensatory. In the Illinois and Wisconsin cases, which have been argued before the commission, state fare laws are involved which allow no discretion to the state commissions and in some states the commissions have allowed increases in freight rates which, while less than the interstate increases, might be considered to present a less obvious case of discrimination than the passenger fare cases.

In the opinion, by Commissioner Ford, the commission refers to the Shreveport decision of the Supreme Court as sustaining its former position that it already possessed incidentally the power of regulating intrastate commerce so far as it affects interstate commerce and says that the general obligation resting upon it has been put in the form of a mandate by the new law.

The entire question of jurisdiction will certainly go to the Supreme Court for adjudication, as the National Association of Railway and Utilities Commissioners has taken an active part in the hearing of the various state cases before the commission and has appointed a committee on litigation to carry on the fight to preserve the jurisdiction of the state authorities through the courts.

Report of the Commission

An abstract of the opinion by Commissioner Ford follows:

In pursuance of our findings in Ex Parte 74, Increased Rates, 1920, 58 I. C. C., 220, we authorized within a region that includes the state of New York an increase of 40 per cent in the interstate freight rates; 20 per cent in the interstate passenger fares, baggage charges, and rates on milk and cream; and also a surcharge amounting to 50 per cent of the charge for space in sleeping and parlor cars, to accrue to the rail carriers.

Thereupon the steam railroad companies serving the state of New York made formal application to the Public Service Commission of the State of New York, Second District, for permission to file, effective on five days' notice, tariff supplements providing increases in the rates, fares, and charges applicable to interstate traffic in the state of New York corresponding with those authorized in our report. So far as the application related to rates and charges for the transportation of freight except milk it was granted by the Public Service Commission, by an order entered August 19, 1920, and the increases became effective August 26, 1920, contemporaneously with the increases in interstate rates. But so far as it related to passenger fares, sleeping-car and parlor-car fares, baggage charges, and rates on milk and cream, the application was denied by the Public Service Commission. Thereafter the principal steam railroads serving the state of New York filed with us a petition for relief in accordance with the provisions of section 13 of the interstate commerce act.

This case raises again the question whether in regulating interstate commerce, under authority reposed in us by Congress, we have incidentally the power of regulating intrastate commerce so far as it affects interstate commerce. In the Shreveport Case, 23 I. C. C., 31, we held that we did possess that power by act of Congress.

The position we took was sustained by the United States Supreme Court, and the principle on which we acted then continues to be our guide. But since then the general obligation resting upon us to exercise control over intrastate commerce so far as it affects interstate commerce has been put in the form of a mandate by section 13 of the interstate commerce act, as amended by the transportation act, 1920.

It has been urged in opposition to the application of this principle to the pending case that such incidental jurisdiction as we may possess over intrastate rates is contingent upon proof that discrimination exists affecting particular persons or localities. But inasmuch as the basis of our jurisdiction is our power to regulate interstate commerce, it follows that the decisive factor is whether the rates under consideration injuriously affect interstate commerce. It is no answer to this to say that if this conclusion be admitted it may have the effect of completely displacing state jurisdiction over state commerce. There may be cases in which intrastate rates affect interstate commerce injuriously in ways so manifest as to make them subject to our control. There may be cases in which the connection of intrastate rates with the movement of interstate commerce is so remote and unimportant that we may properly disregard it. But in every case which puts in question intrastate rates, the decisive factor is whether or not they affect interstate commerce injuriously to a considerable extent. If they do they are brought under our jurisdiction and made subject to our control, even although the whole rate structure of a state should be involved.

It has not happened heretofore that we have had occasion to make such an extensive exercise of our authority as is now contemplated, and we could not be moved to do so save by the most cogent reasons, Such reasons have been supplied by the situation in which the transportation interests of the country were placed and the action taken by Congress to relieve that situation.

Our findings in Increased Rates, 1920, supra, were responsive, as the report shows, to legislation enacted by the Congress as part of the transportation act, 1920, approved February 29, 1920, now incorporated in the interstate commerce act as part of section 15a thereof.

In accordance with these statutory provisions we designated four rate groups, one of which embraces the territory bounded on the west by the Mississippi river and on the south by the Ohio river and the main line of the Norfolk & Western; and we authorized increased rates, fares, and charges that were designed to enable the carriers as a whole in that rate group, "under honest, efficient, and economical management and reasonable expenditures for maintenance of way, structures, and equipment," to earn an aggregate annual net railway operating income equal, as nearly as may be, to 5½ per cent upon the aggregate value

of the railway property of such carriers in that group, plus one-half of 1 per cent of that aggregate value for improvements, betterments, or equipment, chargeable to capital account.

Congress has taken, as the basis for determining a fair return for the railroads, the aggregate value of the railway properties in each group held for and used in the service of transportation. In making a tentative finding of the value of the railway properties in each group, for the purposes of our report, we included all the railway property of each carrier held for and used in the service of transportation. This should not be construed as holding that jurisdiction over intrastate rates and fares has been taken away from the state and reposed in us. We find nothing in the law to indicate that such was the intent of Congress. But Congress has directed that we allow rates that will yield in the aggregate a return of 5½ or 6 per cent upon the value of the railway property in each of the groups. There can be no doubt of the power of Congress to devise and provide for carrying into effect a plan for assuring to the nation's interstate railroads a fair return upon the value of their property; and the full control by Congress of this matter is not to be denied on the ground that the carriers' aggregate earnings are a commingling of intrastate revenue and interstate revenue.

The record shows that the refusal of the state of New York to permit the carriers to increase the rates and fares here in controversy to the extent approved by us is costing the railroads between $11,000,000 and $12,000,000 annually. In other words, the annual earnings of the interstate carriers operating in New York are now between $11,000,000 and $12,000,000 less than they would be if the general level of rates and fares approved by us had become effective on intrastate traffic; and to that extent the declared purpose of Congress is defeated by a preferential basis of rates and fares maintained by authority of the state of New York.

This proceeding presents a practical question which we have endeavored to deal with in a practical way. The needs of these interstate carriers for revenue to enable them to provide adequate transportation service and facilities are immediate and, in the interest of the public, can not be permitted to await the consideration in detail of individual fares, charges, and rates. The record shows that the respondent carriers perform the services here in question under substantially similar circumstances and conditions, whether in respect of interstate or intrastate transportation; and that the lower basis of intrastate fares, charges, and rates results in undue prejudice against interstate passengers and shippers and unjust discrimination against interstate commerce. The present record warrants the findings hereinafter made. Those findings are without prejudice to the right of the authorities of the state of New York or of any other interested party, to apply in the proper manner for a modification of our findings and order as to any fares, charges, or rates on the ground that the latter are not related to the interstate fares, charges, or rates in such a way as to contravene the provisions of the interstate commerce act.

Passenger Fares

The record leaves no doubt as to the unduly preferential character of the intrastate fares and charges now in effect in the state of New York. Interstate passenger fares are in general on a basis of 3.6 cents per mile as maximum. Passengers traveling between points in the state of New York and points in other states may be required to pay 3.6 cents per mile, whereas passengers traveling within the state of New York pay only 3 cents per mile. The basis of 3.6 cents applies on intrastate traffic in every state bordering on the state of New York. In other words, intrastate passengers in New York enjoy a basis of fares distinctly lower than those exacted of interstate travelers in the same territory, often riding in the same trains, and also lower than the fares paid by intrastate passengers in neighboring states. The record shows beyond question that there are no transportation conditions in the state of New York that justify lower rates or fares, on the whole, than those applicable in neighboring states, or lower than the interstate rates and fares between points in New York and points in other states.

The situation is well illustrated by the fares between New York City and Buffalo. Of the several available routes connecting these points that over the New York Central is intrastate while the others are interstate. Exclusive of war taxes it appears that since August 26, 1920, the fare has been $14.27 over the interstate routes and $13.16 over the New York Central, a difference of $1.11 in favor of the passenger using the latter route. In the case of a passenger occupying a lower Pullman berth the difference is increased to $2.36. Moreover, a passenger traveling from New York City to a point west of Buffalo can, by buying a ticket to Buffalo over the New York Central and buying another ticket at Buffalo to his destination, defeat the through interstate fare. Representatives of the carriers stated that the inevitable result of this situation would be the reduction of the interstate fare from New York to Buffalo to the level of the intrastate fare, and that this would tend to disrupt the entire fabric of the interstate passenger fares in the territory involved.

Inasmuch as the excess-baggage charges are arranged upon a scale bearing a fixed relationship to passenger fares and correspondingly graded in amount, such charges are governed by the passenger fares, and any discrimination in passenger fares would necessarily involve a discrimination in excess-baggage charges. This statement concerning the manner in which the baggage charges are determined is based upon the schedule of rates and charges of the carriers now on file in the commission's office.

Rates on Milk and Cream

The expression "milk and cream" as used herein includes milk, cream, skim milk, buttermilk, condensed milk, evaporated milk, and pot cheese, and for the purpose of indicating the effect upon interstate commerce and upon the revenues of carriers, of the discrimination under consideration, we give illustrations as follows:

The New York Central operates nine milk trains daily into the New York City district, carrying 1,300,000 quarts of milk and cream, of which approximately 75 per cent is shipped over intrastate routes and approximately 25 per cent over interstate routes.

Nine or ten carloads of milk and cream per day originate on the Ulster & Delaware, which extends from Kingston, N. Y., northwesterly to Oneonta, 107 miles. The cars are delivered to the New York Central at Kingston and, together with six or seven cars originating on a branch of the latter carrier extending southwesterly from Kingston, are there formed into a milk train which moves to New York over the tracks of the West Shore line. This route runs through a part of the state of New Jersey, the West Shore terminals being at Weehawken, N. J., and is therefore an interstate route. Shipments of milk and cream also originate at points along the east side of the Hudson in territory not far distant from that served by the Ulster & Delaware and move to New York over the intrastate route of the New York Central along the east bank of the Hudson river. On shipments using the interstate route the rates charged are 20 per cent higher than those over the intrastate route, although there is no justification from a transportation viewpoint for a difference in the rates.

Again, a milk train is operated by the Delaware & Hudson from Eagle Bridge, N. Y., which is northeast of Troy, in a northerly direction, a distance of 52 miles, to Castleton, Vt., thence southwesterly to Troy, N. Y., where it is delivered to the New York Central. Between Eagle Bridge and Castleton this train crosses the state line three times and again shortly after leaving Castleton for Troy. All shipments received before the last crossing of the state line are interstate shipments, the others intrastate shipments. On milk and cream in this train which happens to cross a state line charges must be paid substantially in excess of those applying on intrastate shipments moving in the same train. There is no doubt that shipments of milk and cream originating in western Vermont and shipped to the New York City district over interstate routes are in direct competition with shipments of the same commodities originating in the eastern part of the state of New York and moving to the New York City district over intrastate routes.

Furthermore, there is a substantial portion of the state of New York, which embraces, generally speaking, the central portion of the state, from which milk and cream may move to the New York City district over either interstate routes or intrastate routes. For the purpose of illustration we may refer to the line of the New York Central extending from Albany to Syracuse with a branch line extending from Syracuse southeasterly to Earlville, and to the line of the Delaware & Hudson from Binghamton to Albany. From this whole territory shipments of milk and cream may move to the New York City district over intrastate routes. From the same general territory, however, shipments may be moved over the interstate routes of the New York, Ontario & Western, the Delaware, Lackawanna & Western, and the Lehigh Valley railroads. Each of these roads has one or more points of contact with the New York Central's main line between Utica and Syracuse and with its branches in that territory. Shipments moving over the interstate routes now pay charges 20 per cent higher than those charged for shipments from substantially the same territory moving over intrastate routes.

The rates on milk and cream to the New York City district have been considered by us at various times. In Milk and Cream Rates to New York City, 45 I. C. C., 412, we found that the interstate rates on this traffic were unreasonable and unduly prejudicial to shippers from near-by points and unduly preferential of shippers from distant points; and we prescribed a scale of mileage rates, in blocks of 10 miles each, for distances up to 630

miles. The prescribed basis was also adopted by the New York Central on intrastate traffic, resulting in a uniform scale of rates over interstate and intrastate routes. By the application of the 20 per cent increase to interstate rates without a corresponding increase in intrastate rates, this uniformity has been destroyed.

Commutation Fares

The record contains comparatively little evidence on the subject of commutation fares, but so far as it goes it discloses facts in the presence of which we can not presume that the existing rate structure is just and reasonable in its established relationships and that it should be adopted as the basis upon which a general advance should be authorized, as in the foregoing particulars. We shall therefore reserve for future consideration this branch of the case, and as to it we do not now make any finding or enter any order, but we shall keep the case open for further investigation, limited to the subject of commutation fares and commutation baggage charges in the state of New York as to the question whether they cause any undue or unreasonable advantage, preference, or prejudice as between persons or localities in intrastate commerce on the one hand, and interstate or foreign commerce on the other hand, or any undue, unreasonable, or unjust discrimination against interstate or foreign commerce.

Findings

Subject to the above reservation in the matter of commutation fares and commutation baggage charges, we are of the opinion and find that the increases made by the carriers under Ex Parte 74, relating to passenger fares and baggage charges and now in effect, result in reasonable passenger fares and baggage charges for interstate transportation within the territory involved in this proceeding, and that the failure of the carriers within the state of New York to increase the standard intrastate fares and charges correspondingly has resulted in the past and will result in the future: In intrastate fares and charges lower than the corresponding interstate fares and charges; in undue prejudice to persons traveling in interstate commerce within the state of New York and between points in the state of New York and points in other states; in undue preference and advantage to persons traveling intrastate in New York, and in unjust discrimination against interstate commerce.

We further find that said undue prejudice and unjust discrimination should be removed by making increases in said intrastate passenger fares and baggage charges which shall correspond with the increases heretofore made as aforesaid in interstate passenger fares and baggage charges.

We further find that the increases made by the carriers under Ex Parte 74, relating to space occupied by passengers in sleeping and parlor cars, result in reasonable charges for the occupancy of such space by passengers traveling in interstate commerce in the territory involved in this proceeding, and that the failure of the carriers within the state of New York to increase correspondingly the charges for like space for passengers traveling in intrastate commerce has resulted in the past and will result in the future: In intrastate charges lower than the corresponding interstate charges; in undue prejudice to persons traveling in interstate commerce within the state of New York and between points in the state of New York and points in other states; in undue preference and advantage to persons traveling intrastate in New York, and in unjust discrimination against interstate commerce.

We further find that said undue prejudice and unjust discrimination should be removed by making increases in said intrastate charges which shall correspond with the increases heretofore made as aforesaid in interstate charges.

We further find that the increases made by the carriers under Ex Parte 74, relating to rates on milk and cream, and now in effect, result in reasonable rates on milk and cream for interstate transportation within the territory involved in this proceeding, and that the failure of the carriers within the state of New York to increase the intrastate rates on milk and cream correspondingly has resulted in the past and will result in the future: In intrastate rates lower than the corresponding interstate rates; in undue prejudice to shippers of milk and cream in interstate commerce within the state of New York and between points in the state of New York and points in other states; in undue preference and advantage to shippers of milk and cream in intrastate commerce in New York, and in unjust discrimination against interstate commerce.

We further find that said undue prejudice and unjust discrimination should be removed by making increases in said intrastate rates on milk and cream which shall correspond with the increases heretofore made as aforesaid in the rates on milk and cream shipped in interstate commerce.

We further find that, whether the aforesaid passenger fares, baggage charges, surcharges, or rates on milk and cream pertain to transportation in interstate commerce or to transportation in intrastate commerce, the transportation services, in each instance, are performed by the carriers under substantially similar circumstances and conditions.

An appropriate order will be entered.

Commissioner Eastman Dissents

Commissioner Eastman gave a dissenting opinion in part as follows:

I am unable to join in the decision of the majority, because I believe it goes beyond our lawful power.

It is, I think, our duty to conclude that when the Congress expects us to exercise new powers at the expense of the states, we shall be told to do so in plain and unmistakable terms.

In defining our jurisdiction, at the very beginning of the interstate commerce act, paragraph 2 of section 1 states that the provisions of the act shall not apply—

To the transportation of passengers or property, or to the receiving, delivering, storage, or handling of property, wholly within one State and not shipped to or from a foreign country from or to any place in the United States as aforesaid.

The language is unequivocal, and there is no subsequent provision which runs counter to the limitation. It is interstate and not intrastate transportation with which the act has to do. Under paragraph 4 of section 13 it is true that we may prescribe intrastate rates, but only for the purpose of removing unjust discrimination against interstate commerce. Plainly this power springs from and is merely an incident of the duty to regulate and protect interstate traffic.

Turning to section 15(a), our duty to establish rates which will enable carriers to earn a fair return upon the aggregate value of their railway property relates and is confined to *interstate* rates. Without regard to the limitation of section 1, there is no "clearly manifested purpose" to extend our authority over intrastate rates, and certainly there is none in view of this limitation. Nor is such a conclusion inconsistent with a reasonable interpretation and practical application of this section. A rule is laid down for our guidance, but our duty is confined to interstate rates and it is a duty merely to maintain such rates at the level which will yield the return desired, assuming that the states will exercise their own power justly and taking into consideration our right to correct intrastate rates which unjustly discriminate against interstate commerce.

Following our decision applications were filed for authority to make like increases in intrastate rates, fares, and charges. With a few minor exceptions the freight increases sought were permitted at once to become effective, as was possible under the state statutes, without indication of approval or disapproval and subject to complaint or investigation in the future. The situation was different as to passenger fares. By a provision of the New York law there are limited to a maximum of 3 cents per mile, but the state commission pointed out that it could permit fares in excess of this limit upon a showing that existing fares were insufficient to afford reasonable compensation for the service rendered. Notwithstanding this intimation the carriers offered no evidence and did not assert that the fares were insufficient, but relied upon the fact that we had permitted an increase of 20 per cent in the interstate fares. Under the circumstances no course seemed open to the New York commission except to deny the application, and this it did upon the sole ground of lack of evidence.

There is no basis for a belief that the New York commission is disposed to deal other than justly with the carriers, or that it would have been unduly exacting if they had undertaken to show insufficiency of compensation. Upon the facts before us and in a spirit of comity the carriers might well be remitted to the state tribunal to exhaust their remedies before coming to us for action which will deprive the state of all authority over intrastate fares so long as our order remains in effect. In this view of the matter whatever losses in revenue the carriers may have suffered are chargeable to their own default.

If the issue before us is not essentially different from the issue which has been considered in prior "Shreveport cases," it will, I think, be conceded that while the evidence may be sufficient to justify action against certain intrastate fares and charges, it is not sufficient to justify the all-embracing action which the majority approve. This is indicated by the fact that the carriers have not seen fit to rely upon preference to persons or communities, none of which are complaining, but have rested their case chiefly upon the allegation that the intrastate rates are upon a lower level than the interstate and fail to contribute their fair share of the railway operating income to which we have found that the carriers in the eastern group are entitled.

We were there faced with the necessity of providing without delay the additional revenue needed to bring the aggregate income of the carriers to the level prescribed by the act, and we adopted the expedient of authorizing horizontal percentage increases in rates, fares, and charges within and between certain territorial groups. This expedient was necessary, for any detailed consideration of individual rates

was impracticable in the time available. Nevertheless, it should be noted that the act does not prescribe this method of increasing rates, that our duty under section 15(a) is a continuing duty, and that our finding was only that the method employed would "result in rates not unreasonable in the *aggregate*." It rested upon the assumption that extensive readjustment would probably be necessary. It is not equivalent to a finding that individual rates, fares, and charges, or classes of rates, fares, and charges, so increased and now in effect, are just and reasonable. Still less does it follow as a necessary conclusion, where state authority is involved, that the passenger fares within any particular state must be increased 20 per cent in order to produce their fair share of railway operating income. But if our decision in Increased Rates, 1920, is not evidence of that fact, certainly there is no other evidence of record upon which such a conclusion can be based.

I am unable to escape the conclusion that, even if the theory of the carriers as to our power under section thirteen be accepted, at least it should be shown, by evidence sufficient to justify a valid opinion, that the intrastate fares and charges in question are not now furnishing adequate compensation for the service rendered, judged by the standard which the Congress has set forth, and that an increase of twenty per cent is necessary to this end.

Loans From Revolving Fund

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION, Division 4, has issued a report finding that the requirement in the provisions of the transportation act relating to loans from the revolving fund that the Interstate Commerce Commission must certify that the applicant for a loan is unable to provide itself with the funds necessary from other sources, as a prerequisite to a loan, refers to a practical inability to be determined upon the facts of each case and that such facts should be furnished by the applicants. A number of loans which had been approved by the commission were held up by the Treasury Department because the commission had certified that the railroads were unable to borrow money elsewhere except at excessive rates of interest. The commission then held a hearing for the purpose of considering upon what facts it would be warranted in issuing an unqualified certificate. The report of Division 4 is as follows:

"The matter of loans from the revolving fund created by paragraph (e) of section 210 of the transportation act, 1920, to carriers by railroad subject to the interstate commerce act being under consideration, we issued, September 16, 1920, an order for a hearing on September 23, 1920, in the matter of the proper interpretation of paragraphs (a), (b) and (c) of section 210, as amended by section 5 of the sundry civil appropriations act, June 5, 1920, particularly the finding required by the concluding clause in paragraph (b) as thus amended, to wit: that the applicant, in the opinion of the commission, is unable to provide itself with the funds necessary for the aforesaid purposes from other sources.

"It was urged on behalf of the carriers and others who appeared before us that

"(1) The legislative intent of section 210 of the transportation act, 1920, was to aid the railroads of the country in increasing their equipment and other facilities as rapidly as possible and thereby enable them properly to serve the public during the transition period immediately following the termination of federal control.

"(2) The legislative intent in the requirement of a finding 'that the applicant, in the opinion of the commission, is unable to provide itself with the funds necessary for the aforesaid purposes from other sources,' was to give preference to the financially weak railroads; but if for any reason the weaker railroads can not or do not avail themselves of the preference, the fund would be available to the stronger lines, pursuant to the general purposes of section 210.

"(3) If the financially strong railroads cannot obtain funds from the general investing public without paying an excessive rate of interest or submitting to some other undly burdensome condition or taking a risk in respect of their financial structures not justifiable in the exercise of a sound business and financial discretion, it would be clear that such railroads are unable to provide themselves with the funds necessary from other sources, and in such cases, we would be justified, upon a proper showing by the applicant, in making the finding required by the concluding clause of paragraph (b) of section 210 of the transportation act, 1920, as amended—namely, 'that the applicant, in the opinion of the commission, is unable to provide itself with the funds necessary for the aforesaid purposes from other sources.'

"It was undoubtedly the legislative intent that the railroads should be enabled, through loans made under section 210 of the transportation act, 1920, as amended, expeditiously to move the commerce of the country, to meet maturing capital obligations and otherwise properly to serve the public during the transition period of two years immediately following the termination of federal control.

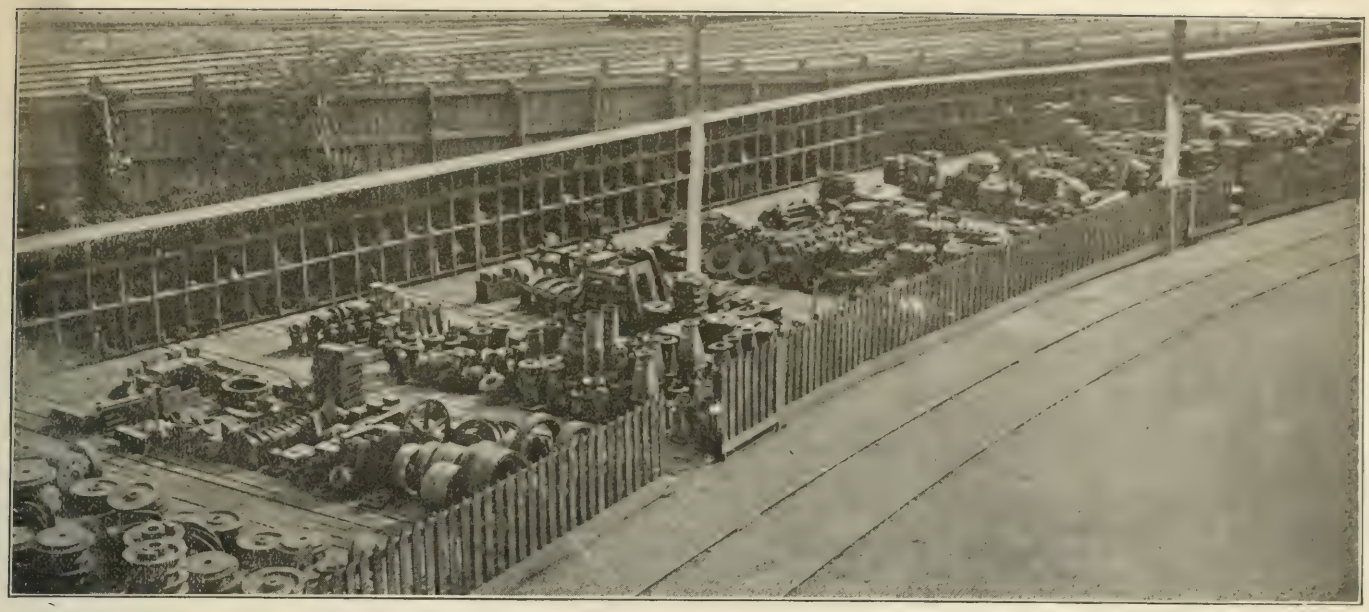
"The majority of the railroads would not be unable to obtain funds on some terms, provided they agreed to burden themselves and their patrons for a term of years with unusual and excessive rates of interest. The rate of interest which an individual railroad may be required to pay is the market for a railroad of its class.

"Under a literal interpretation of the concluding clause of paragraph (b) of section 210 of the transportation act, 1920, as amended, the majority of railroads would be unable to qualify for loans. The remainder of the railroads, while able to make the showing that they are unable to obtain funds from other sources, generally cannot make the further showing required by the statute that 'the prospective earning power and the character of the security offered are such as to furnish reasonable assurance of the applicant's ability to repay the loan within the time fixed therefor and to meet its other obligations in connection with such loan.' Under these conditions it would be practically impossible to make any loans, and section 210 of the transportation act, 1920, as amended, would be reduced to a nullity.

"In order to give force and effect to the statute, the inability to obtain funds from other sources must be construed as an inability to secure funds upon terms which the carrier with due regard for the public interest would be justified in accepting, and it must be held that an excessive rate of interest or other unduly burdensome or injurious conditions which the exercise of sound business discretion will not permit constitute inability, within the meaning of the statute, to obtain funds from other sources.

"We find that inability to obtain funds from other sources contemplated by the concluding clause of paragraph (b) of section 210 of the transportation act, 1920, as amended, is not an absolute inability, but a practical inability or inability within the exercise of sound business discretion in the public interest to be determined by the consideration of the facts of each particular case. Complete and concrete statements of such facts should be furnished by applicants showing their efforts to obtain the necessary funds from other sources and the result of such efforts and if they have already employed their credit, how a further recourse thereto would affect them."

PLUMB PLAN DEAD.—The Plumb plan of government ownership of railroads is dead—deader than a door nail. It was killed by the very men whose leaders tried to put it over. Their policies resulted in such a degree of inefficiency that railroads were a losing proposition. The government has not yet squared accounts with their owners.—*Williamsport (Pa.) Grit.*



Material Storage Facilities on the Western Maryland

The Organization of a Strong Service of Supply

Development of the Purchasing and Stores Departments as a Unit on the Western Maryland

THE VALUE of a purchasing department depends largely on the perfection of its organization. Years ago the purchase of railway materials was regarded as a minor function and was entrusted to an official usually burdened with more pressing duties. He was expected to exercise reasonably good business judgment and, above all, to make sure that the supplies furnished were ample to meet any emergency. What such a policy would result in if pursued by the railroads at the present time can only be imagined.

The growth and value of railway purchases has been stupendous. Recent valuation studies reveal the fact that in 1870 a railway coach cost about $5,000. Today a railway coach costs nearly eight times that amount. The railroads have long been recognized as the largest consumers of material; they now use over 1,200 complete units of material and nearly 50,000 different working parts or accessories. Any of this material to have an earning power must be purchased to best fit the purpose for which it is acquired.

The necessity for definite policies with respect to the purchase of supplies and for system in handling material soon became apparent in the development of modern railroading, but the growth of an organization capable of supervising all the minute details involved in the task of supplying the railroads, while at the same time shaping and executing a judicious policy with respect to the purchase of material, has been very slow. Those who have realized what could be saved to the railroads by systematizing the handling of supplies, establishing a safe policy toward the accumulation of material stocks and exercising trained judgment in the conduct of purchases, have often found it difficult to impress the value of these ideas on the management of a railroad. It has been stated that the responsibility for the purchase and distribution of materials was originally placed in the hands of departments without particular reference to the qualifications of the department for this important function. It was characteristic that these departments should resist a transfer of these functions to another department particularly where it was anticipated that this step might restrict the availability of supplies.

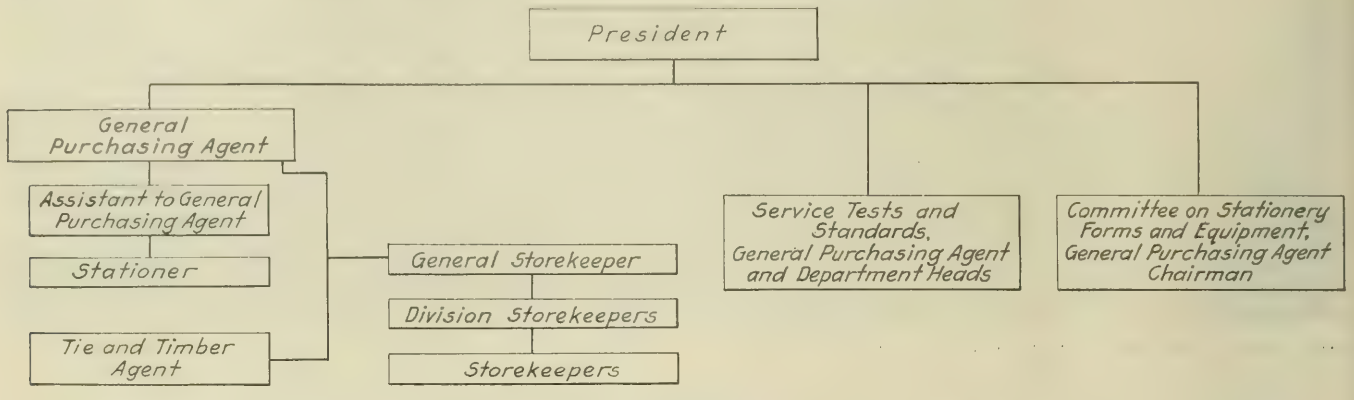
It has required persistent effort to establish the present standing of the supply department. The economies that have been realized in the purchase of railway supplies and the improvement that has been effected in the distribution of materials may broadly be credited to the better organization of these activities. What remains to be accomplished toward reducing the aggregate cost of supplies and the efficiency of their distribution will probably be effected through perfecting a strong unit organization embodying both the purchase and ultimate distribution of material. Such a unit may properly be defined as the "service of supply". What such an organization constitutes, what its duties are, its methods and its policies, have been quite clearly defined by M. E. Towner, general purchasing agent of the Western Maryland as a result of his work in establishing an effective service of supply on that railroad.

Western Maryland Unit Organization

The outstanding feature of the organization plan as it has been worked out on the Western Maryland is that the entire responsibility for the purchase and distribution of materials rests with one department and that this department is on a parity with the operating, the mechanical and other major departments of the railroad in its respective relation to the chief executive officer. This is a radical departure from the plan of organization relating to the purchase and distribution of supplies on many railroads, but it must be admitted that there can be no division of responsibility with this form of organization. There can be no question as to who is responsible for the delivery of materials in accordance with the requisitions from the mechanical and other departments, or who is responsible for maintaining the lowest investment in materials consistent with safety. It is pertinent to state in this connection that during the days of the Railroad Administration a very small proportion of the delays to equipment undergoing repairs

reported as due to shortage of material came from railroads on which the purchase and distribution of supplies was in the hands of a strong unit organization.

As will be noted on the accompanying organization chart, the general storekeeper reports directly to the general purchasing agent who, as the responsible chief of the service of supply, reports directly to the president of the railroad. Division storekeepers in turn report to the general storekeeper and the local storekeepers report to their respective



Organization of the Service of Supply on the Western Maryland

division storekeepers, as is the usual custom. The relation of the tie and timber agent to the general purchasing agent does not differ from the usual practice. The stationer, it will be observed, reports directly to the assistant to the purchasing agent.

The general purchasing agent is chairman of the Committee on Stationery Forms and Equipment whose recommendations are made direct to the president. This is apparently an admirable arrangement but one which would hardly be practical on a larger railroad. Likewise the plan relating to service tests and standards as shown in the accompanying diagram assures this subject the prestige it deserves but would evidently have to be modified if applied in principle to a larger system.

Analysis of Individual Duties

On the Western Maryland the purchasing force is designated as the Service of Supply-Purchasing Section and the stores force as the Service of Supply-Stores Section. Each position in this service, from the purchasing agent down, is classified by title and the work of each position is designated under the caption "Tour of Duties," enabling each one to familiarize himself with the accomplishments to be effected. Sufficient elasticity is allowed to inculcate individual ambition and effort, resulting in promotion on the basis of merit. This analysis of individual duties has resulted in the elimination of overlapping and of useless positions on the Western Maryland to the extent of approximately 7½ per cent of the total payroll of this department.

The "Tour of Duties" for each of the individual officers as shown on the organization diagram together with an abstract of the Tour of Duties assigned to some of the more important subordinate positions is as follows:

Purchasing Section

Duties of the General Purchasing Agent

Attends to all contract matters.
Deals with all new equipment or A. F. E. purchase matters.
Supervises all trial propositions or tests.
Supervises the check maintained on the service rendered by various materials.
Deals with changes or substitution of materials.
Arranges specifications in conjunction with various departments.
Approves all requisitions or emergency purchases.
Exercises jurisdiction over the payrolls, involving changes or additions.
Directs inspection service arrangements.
Addresses urgers to the general storekeeper anticipating the purchase of materials.
Keeps department heads notified of general market conditions, prices and shipping possibilities.
Studies price and general market conditions as noted in trade journals.
Receives representatives of supply firms.

Duties of the General Storekeeper

Attends to such local work as necessary to keep in touch with department heads in connection with their material requirements.
Maintains check on entire stock to expedite work and properly systematize same.
Supervises work of stores department and the tie and timber agent.
Purchases fuel.

Duties of the Tie and Timber Agent

Attends to all details relating to the purchase of cross-ties and lumber.
Maintains a list of all producers on the railroad, a current survey of the railroad's productive sources and annual production possibilities; also of the available timber that might be cut into cross-ties.
Supervises the tie and timber inspection force.
Checks up the lumber requirements and arranges for inspection at mill or destination.
Arranges such prices and contracts as are necessary to stimulate production.
Enforces standard specifications and grading rules.
Arranges for the proper use of the tie check to insure against improper use.
Directs the piling and handling of lumber by the general storekeeper.
Exercises jurisdiction where economies can be worked out, particularly in connection with keeping down special kinds or sizes.
Co-operates with roadmasters and supervisors in connection with cross-tie production and prospective sources of supply.
Co-operates with the chief engineer relative to the proper distribution of cross-ties.
Reports on the use of treated ties.
Advises relative to the development of timber holdings owned by the railroad, including the sale of merchantable lumber.

Duties of Assistant to General Purchasing Agent

Attends to material delivery, follow-up system, including urgers for material on order.
Handles correspondence and matters pertaining to payment of accounts overdue.
Establishes facts relative to the delivery of material that may be claimed short by the stores section.
Attends to the daily distribution of bills rendered.
Makes up monthly statement of purchases as charged to classifications, showing outstanding obligations.
Directs fuel oil, car wheel, oxygen and prest-o-lite deliveries.
Approves bills and vouchers.

Supervises operation of office in absence of general purchasing agent.
Attends to special matters as designated by the general purchasing agent.

Duties of the Stationer

Directs the purchase of stationery.
Supervises the standardization of stationery forms and office devices, also proposed changes to standard forms.
Maintains a check of the stationery stock record and quantity records, also typewriter record, etc.
Checks all bid requests before these are sent out.

Duties of the Order Clerk

Writes orders from approved requisitions (*orders average* 600 *monthly*).
Writes all orders from daily emergency requests.
Writes all bid requests applying on regular requisitions.
Checks back all orders when written and checks requisitions to see that no orders are placed without price.
Tabulates all inquiry figures.

Duties of Invoice Clerk

Checks back all bills received with regular orders to note the quantities, f. o. b. points, terms and prices.
Checks up the statements of accounts.
Keeps an alphabetical record of bills rendered.
Lists bills daily to general storekeeper.
Checks the return of bills from general storekeeper (based on vouchers received).
Reports balances overdue on orders or old orders.
Files daily all requisitions and copies of orders.

Duties of Price Book Clerk

Receives and enters all bills in price book record. The price book shows a record as to the date of order, order number, f. o. b. terms, destination of material, supply firm, price, quantity billed, classification, number and date of bill. (This record is checked to catch duplicate billing.)
Checks list prices against catalogue lists. (This applies particularly to general lists, repair part lists or contracts.)
Endorses requisitions with the prices previously paid when necessary.
Reports increase in quantity on any commodity ordered.
Maintains a comparative record of the total quantity, average price and total value of items used. (Listed alphabetically so as to cover five years upon a comparative basis.)

Duties of Chief Clerk

Receives all incoming mail and marks requisitions.
Attends to all correspondence relative to orders, giving special attention to specifications, changes on orders, prices, cancellation of orders and telephone requests for emergency orders.
Follows up material on test, material standardization and the list of standards.
Supervises material routing. (This work is especially important on account of freight terms, embargo situations, etc.).
Supervises wheel records and replacements.
Checks monthly price sheet of commodities used on maintenance of way estimates.
Maintains headlight installation records.
Keeps a comparative cost record of emergency purchases.
Supervises general office work and payrolls.

The duties of the purchasing section, it is also noted, include the execution of a daily record of emergency purchases in dollars and cents. Strict attention is paid to the elimination of purchases of this character as it is believed that one of the causes for emergency purchases is the failure to advise this department of proposed outlays sufficiently in advance. Careful attention is given to the stock of materials that should be carried, its proper maintenance and the quantity necessary to order with full consideration of the length of time required for delivery. Material covered by contract usually can be well anticipated, avoiding fill-in or emergency purchases at higher prices, or the substitution of other materials, the stores section being furnished by the purchasing department with a synopsis of such arrangements to assist them in ordering on requisition, not only for stock but before expiration of contract in sufficient time to take advantage of price before expiration of agreement. This information is considered of value whatever market conditions.

(The concluding portion of this article dealing with the duties of the Stores Section and the policies pursued by the Purchasing Section will appear in a subsequent issue of the *Railway Age*.—Editor.)

Advantages of Steam and Electric Locomotives

A. W. Gibbs, chief mechanical engineer of the Pennsylvania system, was one of the speakers at the joint meeting of the American Society of Mechanical Engineers and the American Institute of Electrical Engineers held in New York on October 22 and reported in the *Railway Age* for October 29, page 739. The discussion of the paper prepared by Mr. Gibbs was not available when the first account of the meeting was published and an abstract is therefore presented below.

Discussion by A. W. Gibbs

After reading the papers on steam versus electric operation of railroads, I cannot but feel that both Messrs. Muhlfeld and Armstrong have been a bit too enthusiastic. Both methods of operating have their advantages and both have decided limitations.

In Mr. Armstrong's case his data is largely derived from mountain electrification, where the electric locomotive is undoubtedly at its best and the steam at its worst, and he has compared with it a type of steam locomotive whose coal and water rate is more than double that of locomotives which are especially designed for such service. Then on this mountain performance he reasons from the particular to the general application of electric operation. True, he puts in a disclaimer as to the particular steam locomotives referred to representing the best modern practice, which brings up the question—Why cite them at all?

It is not at all certain that the speed advantage claimed is by any means true where the steam locomotive is designed for the work.

Mr. Armstrong gives a comparative statement of the performance of two steam and one electric locomotive to which exception can be taken because the steam locomotives do not represent the last word as to those available, and the electric locomotive is on paper.

The table shown herewith gives data for a 2-10-0 type steam locomotive of which over 100 are in regular service and of which fortunately very full information is available from the locomotive testing plant. These locomotives were expressly

2-10-0 Type Steam Locomotive	
Weight in working order	371,000 lb.
Weight on drivers	342,050 lb.
Weight on engine and tender	523,000 lb.
Drawbar effort at 14.7 miles per hour, 45 per cent cut-off	58,900 lb.
Gross tons (2 per cent grade)	1,280 lb.
Trailing tons	1,019
Coal per D. H. P. at this speed and cut-off	2.8 lb.
Tractive Effort at 22 miles per hour, 40 per cent cut-off	42,500 lb.
Gross tons	923
Trailing tons	662
Coal per D. H. P.	3.2 lb.
Tractive effort at 25.4 miles per hour, 45 per cent cut-off	43,600 lb.
Gross tons	948
Trailing tons	687
Coal per D. H. P.	3.8 lb.

designed to do all of their work within the economical range of steam distribution, the required power being obtained by increases in size of cylinders and steam pressure. While I have given the power at nearly the speed mentioned by Mr. Armstrong, the performance is excellent at double the speeds given, but the sacrifice in drawbar pull—from nearly 60,000 pounds at 14.7 miles per hour to about 43,000 pounds

at 25.5 m.p.h.—would not be justified. The figures given are within the range where stoker firing is as economical as expert hand firing, with the additional advantage that the stoker does not get tired.

This is a special design in which the advantage is that it cannot be worked at uneconomical points of cut-off. At speeds and pulls where the usual design is also worked at an economical range its performance is about the same.

The Mallet performance given in Mr. Armstrong's paper is evidently that of one of the large compound locomotives. In all of these locomotives there is a tendency to choke up with increases of speed, due to increase of back pressure.

The same arrangement of limited maximum cut-off used in the 2-10-0 locomotive already described has been embodied in a simple Mallet now running. In brief, the improvements in the steam locomotive, if properly availed of, have much narrowed the field of economical electrification.

Stand-by Losses. While these losses are actual and large it is very difficult to fix their value, as they are so much affected by the use made of the locomotive. Where the average monthly mileage is low the stand-by loss is presumably high, and it is a part of good operation to bring up the average mileage as high as possible. When all is said the electric locomotive has still an advantage with respect to stand-by losses, provided there are sufficient trains in motion to smooth out the total demand on the power plant, which is assumed to be steam operated.

Weather. The independence of the electric locomotive of severe weather is another undoubted advantage, not so much because of the performance of the motors but rather from the avoidance of losses and delays due to ash-pit work and to frozen pipes and other parts, incidental to the presence of water on the steam locomotive.

Liability to Interruption. Electric operation is dependent on uninterrupted connection with the source of power. In the event of breakage of the line, especially of the overhead construction, the trains in the section involved are dead and cannot get themselves out of the way of the repair trains. On large systems it is customary to make great changes in the assignment of locomotives to clear up congestion at any point on the system; also, to avail of diversion routes on which steam trains may be moved around obstructions on the main line. The fact that the steam locomotive is a self-contained power plant is an immense advantage in this respect. In electric operation there is not this freedom of movement.

Speeds. The question of speed is evidently treated from the freight standpoint, for there has never been any question as to the speed capacity of well designed passenger locomotives, being far beyond that permitted by the rules. As I see it, the feature of high speed of trains is of less importance than uniformity of speeds of different trains. If tonnage trains had the same speed as preference trains, and could thus avoid the great delay due to side tracking of trains of inferior rights, far more would be accomplished than the mere saving in time over the division due to the increased speed.

Extent of Electrification. Where electrification is contemplated a very serious question is: What shall be its extent? Naturally the desire would be to wipe out as many as possible of the extensive accessories to steam operation. If, however, it becomes necessary to operate steam trains over the electrified section, it will obviously be necessary to retain water stations and possibly fuel stations, provided the electrified section is sufficiently long. This operation of steam locomotives under their own power over electrified sections would be necessary in case of redistribution and possibly in case of diversions where the electrified section formed part of the diverted line. Therefore, the claim for economy in doing away with these features of steam operation would probably not be realized.

Mr. Muhlfeld's Paper. Mr. Muhlfeld ignores the fact that the modern improvements which have so added to the performance of the steam locomotives are potential only. For instance, it is very possible and common by indifference to so carry water in the boiler that the superheater becomes merely a steam dryer and its value disappears. In many cases because of neglect of damper mechanism or from dirty flues little benefit is derived from improved appliances. Modernizing of steam locomotives calls for intelligent use of the devices, which will come when the old spirit of loyalty returns.

Conclusions. The electric locomotive or electric operation has in many cases undoubted operating advantages because the power is generated in quantity at few sources and the power on any one train is not limited by the capacity of a self-contained portable power plant; sustained speeds are possible—due to independence of fuel and water stations and, as a result of both these conditions, better use can be made of a given stretch of road.

Electrification does not at all obviate the numerous class of delays due to the train itself, such as hot boxes or other of the numerous derangements which when combined so much retard the movement over the road. Electrification does not obviate that class of delay arising from necessary classification on line of the road to meet terminal requirements. Where the terminal conditions limit the capacity of the road as a whole electrification is not the remedy.

The relative cost of repairs of both classes of equipment cannot be fairly stated at the present time because maintenance conditions are so abnormal and because the most modern locomotives of both classes are too new to have reached a stable condition, this being especially true of the electric one. While the indications are that the maintenance of the electric locomotive will be less than that of the steam, it must be remembered that the electric locomotives are dead affairs without the necessary electric generating, transmitting, converting and track appliances, all of which are an added expense, due solely to electrification; hence the cost of maintenance of all of these, in addition to that of all of the locomotives, divided by the locomotive mileage, is the real treasury cost of maintenance per locomotive mile.

It is to be noted that practically all of the electrification on steam railroads so far have been based on local conditions. In the electrifications in and around cities a moving cause has been the elimination of smoke and other objectionable features incidental to steam operation, and the possibility of increasing the capacities of the passenger terminals. On the Milwaukee road it was the utilization of available water power. On the Norfolk & Western it was to secure increase in capacity on a congested mountain division with tunnel complications. It is fair to assume that other electrifications will be similarly governed by local conditions.

If, after careful consideration of the road, based on actual train sheets for the heaviest actual or probable congested operation; the capacity and number of active and available locomotives required; crediting the operation with incidental savings which may be effected, and eliminating expenses peculiar to steam operation; it appears that there would be economy in electrification, either from actual savings or better operations, or both, it still remains for the management to decide whether the money required can be spent to better advantage for electrification than for some other features of the general operation.

RAILROADS GET A BIG REVENUE from the automobile industry, according to an estimate made by the National Automobile Chamber of Commerce. It is calculated that freight bills on the finished product alone exceed $100,000,000 annually; that 500,000 freight cars are needed in a year to carry automobiles, trucks and finished parts; and that 570,730 machines have been delivered over highways in the last 21 months—business for an additional 170,000 cars, if the cars could have been found.

Some Present Day Problems of the Railway Rail*

The Question of Deferred Renewals Is No More Important Than That of Failures in Service

By C. W. Gennet, Jr.
Manager Rail Inspection, Robert W. Hunt & Co., Chicago

Some time ago I estimated that there was a shortage of 10,000,000 tons of rails in the United States as of January 1, 1917. This figure was reached by taking account of the annual consumption of rails for 24 years and the increased mileage of the roads reporting to the Interstate Commerce Commission for the same period. The shortage mentioned could be defined as the amount of rail of 85-lb. section necessary to put the roads in a prime physical condition typical of good practice necessary for handling the heavy equipment and traffic desired. No particular reason has developed for modifying the calculated shortage of 10,000,000 tons then existing, but the three years of government control requires that an addition of probably 2,000,000 tons be made to it, so that 12,000,000 tons really represents the actual shortage to-day.

Deficiency in Renewals

For six years prior to 1914 the total consumption—meaning production plus imports and minus exports—of all rails in the United States was 16,085,000 tons, or an average per year of 2,680,000 tons. For the six years 1914 to 1919 inclusive the total consumption was 12,124,000 tons, or an average of 2,020,000 tons. Thus, the total deficiency in consumption for six years is approximately 4,000,000 tons, to which must be added probably 1,000,000 tons more for the year now ending. In other words, 5,000,000 tons of rail should be provided at once to balance the rate of consumption that existed for six years prior to the war, and, needless to say, this figure takes no account of the tremendously increased volume of traffic which has worn out rails with great rapidity in the last few years.

Calculations, therefore, indicate that as an emergency measure 5,000,000 tons should be furnished the roads immediately, while in addition there is an apparent shortage of 7,000,000 tons more necessary to put the roads in the proper physical condition. These tonnages, representing deficiencies, must be supplied over and above the normal consumption which for a considerable period prior to the war averaged about 2,800,000 tons annually. A very conservative estimate then shows, after making allowance for rates of renewal which cannot be calculated accurately, and allowing 500,000 tons per year for export purposes, that the country's rail mills should be called on to produce at least 4,500,000 tons of rails per year for the next five years to insure a return to normalcy.

For many years, up to say 1906, the country's production of steel ingots and rails increased proportionately, rails then being regarded as one of the principal, if not the chief, tonnage factors of ingot production. As high as 30 per cent of the total ingot supply had been rolled into rails, and in 1906, the banner year of rail production, when 3,977,000 tons were rolled, about 18 per cent of all the ingots produced were made into rails. Ingot production has increased steadily and rapidly, and in 1917, it was practically double that of 1906. But rail production has declined almost as steadily and rapidly, and in 1917 when all ingot production records were broken the tonnage of rails rolled amounted to only 6½ per cent of the tonnage of ingots cast. The demand for miscellaneous products and the lessened demand for rails have resulted in some cases in forcing rails into the background to such an extent that it is doubtful that the rail mills of the country today have the actual capacity that they had 15 years ago.

It is very difficult to estimate the country's capacity for producing rails today. Probably with sufficient insistence the 1906 record of nearly 4,000,000 tons could be reached but, as pointed out, this could only be done by decreasing production of some other products not now easily contemplated. A conservative estimate of the country's ability to furnish rails without serious interference with other business gives 3,500,000 tons as the possible annual yield, and this is 1,000,000 tons short of what ought to be supplied annually for the next five years.

Defects a Live Subject

Rail defects serve to foster seemingly continuous discussion aiming toward their avoidance. Defects are mentioned especially, because it certainly does not appear at the present time that the wear of open hearth rails is open to serious complaint.

Ordinary figures for failures are not particularly impressive except to the technician. But interpreting published records in a certain way indicates that for open hearth steel one rail out of every 800 laid may be expected to fail and have to be replaced in the first five years of service. Although such figures may seem appalling, solace is found in the fact that only about half of the total failures are what may be termed of a dangerous type. The others consist mostly of defects occurring in the head of rails, which as a rule can be detected easily by careful surveillance and removed prior to the development of further trouble. Notwithstanding what the types of failures may be, or how prolific they may be, questions of specifications and manufacture are important and deserving of the fullest thought.

There is little use in threshing over the subject of specifications, except in a very general way. My criticism of most rail specifications is that they are too broad in certain features and too narrow in certain others, with the result that both manufacturers and consumers suffer aggravating incidents that could easily be prevented. Manufacturers frequently find it difficult to get good steel accepted quickly, and on the contrary, railroads are frequently bound to accept what unquestionably ought to be rejected outright.

Cold Straightening

Specifications lack breadth in the customary clause governing straightening. No doubt specifications used in 1844 read the same as they do now; namely, that "rails *must* be straight in line and surface." The result of this requirement is that rails may be strained beyond their elastic limit in 20 or more places by repeated blows in the cold straightening press, only then to be shipped to a five or six degree curve and spiked readily into place. Modern section rails are exceedingly flexible and providing they contain no short bends or sharp kinks, it would seem practicable to accept them within certain limits perhaps, without the damaging cold straightening now given to each and every rail. Experimental lots

*Abstract of a paper and the discussion following as presented before the Western Society of Engineers, Chicago, on November 18, 1920.

of such rails have given fair service and the subject deserves more attention.

The physical tests do not, as a rule, go far enough to protect against bad or unsound rails being accepted and laid in the tracks, only to be replaced perhaps after a short service. Testing two or three pieces of rails to represent as many as 200 made from perhaps 50 ingots, each possessing marked individuality, even though from the same heat, is incompatible with the tests prescribed for many other products on whose use hinges no important question of life. The proposed abandonment of the drop test, for years recognized as a standard test for brittleness, and the plan of covering this feature by resort to a measurement for ductility obtained under difficult and uncertain conditions, is regrettable. Granting the importance of ductility for rail steel, the imposition of arbitrarily determined limits for it, the matter of measuring it satisfactorily except in the laboratory, and finally the question of accepting or rejecting rails whose ductility varies by a hundredth part of an inch, is to my way of thinking positively dangerous. Would it not be better to waive the question of the ductility of rails entirely, as it was so long an unknown thing, and to devote more study to the definition of "interior defects" and such positive methods for detecting them as would permit of rejecting those rails whose test piece fractures show unmistakable signs of segregation?

Pertinent Questions as to Manufacture

I regard the manufacture and rolling of rail steel as of more importance than that of any other steel product, and conditions emphasize the necessity of making thorough studies of the various features of present day methods. Such studies must frequently be based not only on the manufacture itself but on the story that the rails in service may tell later. Records for many subjects are already in hand and time and work are merely required to afford definite information on questions of great value to both railroads and manufacturers. Literature is very weak on many of the subjects that ought to be investigated and discussed. And among the many questions that can be raised I suggest some of the following pertinent of modern practice and especially appropriate, therefore, for original research and study.

1. Are rails made of steel by the continuous Talbot furnace process comparable with those made by the straight open hearth method? In the continuous process the furnace is seldom emptied but 100 tons or so of steel is tapped every 2 hours, as against the 10 hours of time required to make an equivalent heat in a regular furnace. Is the steel from the rapid working Talbot furnace sufficiently free from oxides and other impurities to afford good, sound rails, and how can such a question be proven quickly?

2. What effect, if any, on rails has steel made by the duplex process, wherein highly oxidized metal is added to the open hearth furnace, sometimes very soon before tapping? How can rails rolled from steel containing excessive amounts of impurities be detected?

3. What effect on rails is produced by recarbonizing the steel in the ladle with coal or coke and then adding cold deoxidizers to the ladle? What is the real effect produced by holding a ladle of steel prior to casting the ingots to permit of time for the chemical reactions to settle.

4. What is the effect on rails rolled from ingots cast with running stoppers and sometimes without any control by the ladle operator? How does the size of the nozzle, pouring temperatures, and time required to cast the ingots of a heat influence rails?

5. How soon after casting ingots should they be charged into the soaking pits in order to assure a minimum of piping and segregation? What effects are produced by delays in charging the ingots to the pits promptly, and what is the effect of chilling the outside of the ingots unduly and rapidly?

6. How long a time and under what conditions of gas and air regulation should ingots remain in the soaking pits? What kind of control of the pits is best to insure against overheating or burning the ingots? What is the effect of rolling rails from ingots one side of which has been heated so hot as to show a bright white spot significant of overheating?

7. What effect on rails has different rates of blooming the ingots? In some cases 8 in. by 8 in. blooms are made from ingots in 9 passes and in other cases in 20 passes. Some mills work rapidly and others slowly; does this produce any difference?

8. What effect on the grain structure or the life of rails is produced by increasing the number of passes, or work given to the steel, when the ingots are rolled into rails? One mill makes a rail from a 19-in. square ingot in 15 passes, while another mill makes the same rail from a 24-in. square ingot in 29 passes. Has the average rate of reduction per pass any effect on the life of rails?

9. What matters mostly influence the production of rails showing seams on the surface? Some heats are practically free from indications of seams, while on other heats rolled at the same time seams are abundant.

Discussion

The discussion of this paper was concerned largely with that portion of it devoted to rail failures. It was conceded that the nine questions propounded by Mr. Gennet were of vital importance but no one felt qualified to answer them. H. M. Wickhorse, rail expert for the American Railway Engineering Association, discussed the record of rail failures, calling attention to the fact that failures in rails in a service period of five years have been reduced since the records were kept by the American Railway Engineering Association from a total of 400 failures per 100 miles of track to 74 failures for the rails rolled in 1914. Studies of records for subsequent rollings indicate that less favorable results are being obtained for rails rolled during the war period when, according to Mr. Wickhorst, there was some breaking down in the morale of the mill forces. This tendency, however, did not deter Mr. Wickhorst from the feeling that much better records on rail failures could be obtained in the future.

In reply Mr. Gennet expressed the opinion that inadequate track maintenance also had much to do with the unfavorable rail failure records of recent years. He also pointed to the importance of seemingly minor influences in mill practice and pointed to the prevalence of transverse fissures in rails, coming from heats produced at certain times when some peculiar or intangible mill conditions seemed propitious for the development of these serious defects. Captain Robert W. Hunt, president of Robert W. Hunt & Co., reviewed the essential requirements for reduced rail failures, including a clean ingot and careful treatment of the ingot from the time it is cast until the rolling has been completed. He also advocated the abolishment of cold straightening and advocated the milling of rail ends and the use of canted tie plates. He emphasized the importance of the element suggested by Mr. Gennet, namely, the possible influence of some seemingly unimportant circumstances of mill practice. Touching on the increase in rail failures for rails rolled during the war period, he was inclined to ascribe this to defective maintenance and also to the fact that the technical organizations of the manufacturers were compelled to divert their energies very largely from rails to the problems of war materials.

THE CANADIAN GOVERNMENT had been criticized for building in advance of requirements, but such building has hastened the development of the country.—*Hon. J. D. Reid, Canadian Minister of Railways.*

The Year's Activities of the A. R. A.

Reports of the Executive Committee and Division General Committees at the Annual Meeting

At the meeting of the American Railway Association, held at the Blackstone Hotel, Chicago, November 17, the work undertaken by the association during the past year was outlined to the members in the reports of the Executive Committee and the General Committees of the various divisions, as outlined briefly in the issue of last week. Reports on the more important matters settled or still under consideration are abstracted below:

Executive Committee Report

The Executive Committee in its report submitted a statement regarding the important subjects which have been given attention since the November, 1919, session of the Association.

Per Diem Rate

By action of the Association of Railway Executives the per diem rate was fixed at 90 cents per car per day, effective March 1, 1920. This rate was based on data obtained by the Transportation Division of the American Railway Association.

Early in August of this year the Advisory Committee of the Association of Railway Executives requested the Executive Committee to give immediate consideration to several subjects, among which was the per diem rate, particularly as to what would be an adequate per diem rate to meet present conditions, such rate, if approved, to take effect as of September 1, 1920.

The Executive Committee thereupon requested the General Committee of the Transportation division to give immediate consideration to this subject. The General Committee of that division recommended that the rate be made $1.00 per car per day, effective September 1, 1920. The Executive Committee on reviewing the report decided to recommend to the Advisory Committee that the rate be made $1.10 per car per day. This action was approved by the Advisory Committee and the Association of Railway Executives, and the general secretary was directed to take a letter ballot, the increased rate to take effect September 1, 1920, if approved by a majority of the members of the Association, that membership to represent two-thirds of the cars owned or controlled. The proposition did not receive such approval, railroads representing 60 per cent of the freight cars voting in the affirmative, 39 per cent in the negative, and one per cent not casting ballots. At the request of the Advisory Committee the Executive Committee thereupon convened and again considered the per diem rate, based on a further review of the computation of the various factors by the General Committee of the Transportation division. In accordance with the recommendation of the General Committee the Executive Committee, pending the receipt of further data, decided to recommend that the rate be made $1.00 per car per day, effective November 1, 1920, which has in turn been approved by the Association of Railway Executives and has been submitted to the members for a vote by letter ballot; due announcement of the result of the ballot will be made on November 23, 1920.

At the request of the Advisory Committee the General Committee, of the Transportation division, is also considering the subject of graduated per diem rates to apply to cars of various capacities. It is obtaining figures covering the cost of owning and maintaining freight cars for the first eight months of the current year and will submit a further report on the subject at a later date.

Cancellation of Per Diem Reclaims and Per Diem Discrepancy Claims During Guaranty Period

Subject to securing approval of the Interstate Commerce Commission, the Executive Committee has approved the recommendation of the Transportation division that per diem reclaims and per diem discrepancy claims between railroads working under government guarantee during the guaranty period, February 29 to August 31, 1920, be cancelled. The Commission now has this subject under advisement.

Department of Demurrage Supervision

Recommendation was received by the Executive Committee from the General Committee of the Transportation division for the establishment of a Department of Demurrage Supervision to insure uniform application and enforcement of demurrage and storage rules on all railroads.

The Executive Committee has approved this plan which recognizes that primarily each railroad must assume responsibility for the proper enforcement of its tariffs, the supervising agency merely undertaking to see that the rules are uniformly applied. The plan does not contemplate the organization of an accounting bureau which would relieve the individual railroads of their responsibility. A manager and six district supervisors will be maintained whose duties it shall be to secure uniform enforcement of the tariffs in cooperation with the demurrage officers of the individual railroads. The expense of this department is to be borne by the railroads at interest.

The plan has been submitted to the executive officer of each of the railroads in the Official Classification territory, and approval thereof has been received from a large majority.

The manager and his immediate force formerly employed by the Eastern Freight Inspection Bureau to take care of this work, have been temporarily continued and will be used as the nucleus for the Department of Demurrage Supervision.

Campaign for Conservation of Fuel

The Executive Committee has authorized the president to arrange for the establishment of a Joint Committee on Fuel Conservation to consist of representatives of the Operating, Mechanical, and Purchases and Stores divisions.

The work of organizing this committee is now progressing, further report of which will be made to the members by circular. It is expected that an active campaign for the conservation of fuel will be inaugurated at an early date.

Mechanical Inspection Department

Request was received by the Executive Committee from the Eastern Presidents' Conference that the American Railway Association again take up and investigate the matter of making and rendering bills for repairs to freight cars, with a view of correcting any wrongful practices that may exist in this connection.

The Executive Committee has authorized the establishment of such department within the Mechanical division, following the plan recommended by the General Committee of that division.

Prevention of Freight Claims

The Executive Committee has given consideration to recommendations of the General Committee, of the Freight Claim division, for the establishment of a campaign for the

prevention of freight claims, and in that connection has appropriated a sum not to exceed $20,000 per annum, for the employment of competent assistants to work in co-operation with and under the direction of the Committee on Cause and Prevention of the Freight Claim division.

Creation of Committee on Relations of Railway Operation to Legislation

With the provision that such action does not conflict with any action which may be taken by the Association of Railway Executives, the Executive Committee has directed the president to appoint a Committee on Relations of Railway Operation to Legislation and properly establish the same.

The committee when appointed will work in close accord with Col. A. P. Thom and the Legal Committee of the Association of Railway Executives in charge of legislation at Washington, both federal and state. The work of the Committee will be generally along the lines adopted by the constituent railroads in May, 1910. The president will consult Col. Thom and the Legal Committee of the Association of Railway Executives and ascertain their views as to the establishment of the Committee before further action is taken.

Interchange Agreements

The Executive Committee has recently received a recommendation from the General Committee of the Mechanical division that a formal agreement be executed covering the Passenger Car Rules of Interchange. This recommendation has been approved and a formal agreement blank will be submitted to the members for execution.

Water Containers

Request has been received from the acting surgeon-general of the Bureau of Public Health Service, Treasury Department, that an order be issued fixing July 1, 1922, as the date when all water containers in cars and stations should be so constructed that ice does not come in contact with the water. The Executive Committee has referred this subject to the Medical and Surgical section.

Amalgamation of Other Organizations

Applications have been received from several volunteer railroad organizations to become amalgamated with the American Railway Association. The Executive Committee having given careful consideration to such amalgamation has authorized the president to arrange to admit as sections of the association under such conditions as he may deem advisable the following:

American Association of Local Freight Agents.
Association of Railway Electrical Engineers.
Association of Railway Chief Surgeons.
American Railway Surgeons Association.
New York and New England Surgeons Association.
Railway Section of the Southern Medical Asscciation.
American Railway Chief Special Agents and Chiefs of Police Association.

Definite steps have also been taken to include the four Associations of Railway Surgeons in Division I—Operating to be known as the Medical and Surgical section.

Report of Division I—Operating

The General Committee submitted a report reviewing the activities of the division since the last annual meeting of the Association. In addition to the matters which have already been closed the committee reported that it had under consideration an amendment to the A. R. A. Rule 1307 covering a proposed form for use in notifying train and engine employees of the presence and location in trains, of cars containing explosives or tank cars containing inflammable liquids, and recommended that the amendment be adopted by the Association.

In addition to submitting the reports of several committees and of the Telegraph & Telephone Section, which were submitted, the General Committee stated that it had approved the recommendation that the Committee on Freight Station Operation and Handling Freight be consolidated with the Committee of Service Efficiency of the Transportation division in order to eliminate duplication of work.

Division II—Transportation

Since its last report the division has considered many important subjects. Opportunity was given to study the practices inaugurated during the war period to determine whether or not such practices should be continued after the period of Federal control. A number of recommendations were submitted to the Executive Committee and by it approved for submission and ratification by the Association of Railway Executives in order that the rules and practices recommended could be established and made effective upon the termination of Federal control.

At the annual meeting of the division, October 20, action recommended with respect to the following subjects was approved:

Revision of the Codes of Per Diem and Car Service Rules

A special committee was appointed to consider and revise the Code of Per Diem Rules. The revised rules are in principle a continuation of those formerly in effect, the changes being in the direction of increased efficiency, particularly with respect to accounting.

Questions Relative to Car Service and Per Diem Rules

As directed by the Special Committee on Car Service Matters of the Association of Railway Executives, consideration was given to seven questions and answers are presented to the Association for its approval and endorsement of the position of the Transportation division that the present car service rules shall not be revised or any new rules promulgated for adoption until after the present rules shall have been given a fair trial by all railroads subscribers to the Car Service and Per Diem Agreement and the results from such a trial indicate that a revision of the rules is necessary.

Through Expedited Package Freight Cars

The general observation during the war of the sailing day plan was attended by marked transportation advantages and economies. Following the close of the war more or less objection was developed on the part of the shippers and the plan has since been greatly restricted. It is the belief of the division that this plan has exceptional merit and that the questions of delivery by shippers, etc., can be reasonably arranged and met. It is, therefore, recommended that the policy of developing and handling the movement of less carload freight in through expedited package freight cars to the fullest extent possible, consistent with efficiency and economy in transportation with due regard to the service afforded shippers, be adopted.

Revision of Car Service Rule 8

Statements were obtained from members showing cost of ownership of various types of passenger equipment for the calendar year 1918 and formed the basis for recommendation to increase the old mileage and per diem rates upon passenger equipment 60 per cent, which was submitted for a vote by letter ballot. The changes recommended were approved and made effective October 1, 1920.

Increase in Demurrage Rates

Effective February 10, 1918, demurrage rates were fixed at $3 for each of the first four days after expiration of free time, $6 for each of the next three days, and $10 per day thereafter. These rates remained in effect until July 20, 1919, when they were changed to $2 for each of the first four days, and $5 per day thereafter. As directed by the

Association of Railway Executives, the Demurrage Committee proposed to the National Industrial Traffic League that the demurrage rates which were in effect during the year 1918 be restored as an emergency measure to increase available equipment, and be made effective early in September, 1920. In the meantime, the Interstate Commerce Commission authorized the publication of a $10 per day penalty charge on all open-top cars and on all cars loaded with coal or coke not released within the free time as prescribed in the Demurrage Code. This penalty charge was published to take effect August 19, 1920, but was suspended by the Commission until December 17, 1920. A special committee was therefore appointed to confer further with the League, and, as a result, the following agreement was reached at a joint conference September 14:

(1) That the demurrage rates on all cars after expiration of free time be $3 for each of the first four days, $6 for each of the next three days, and $10 for each succeeding day.

(2) That under the Average Agreement, after a car has accrued four debits, the charge be $6 for each of the next three days, and $10 per day thereafter; debits which are not offset by credits to be charged at $3 each.

(3) These rates to be made effective October 15, or as near thereto as practicable, and remain in effect for a period of six months, when the question will again be made the subject of another joint conference.

(4) That with the adoption of these rates the $10 penalty charge on all open-top equipment and all cars loaded with coal or coke be withdrawn and cancelled.

(5) That appropriate committees representing the National Industrial Traffic League and the American Railway Association confer and agree upon revision of the rules governing allowances on account of bunching of cars by railroads, allowance for railroad failures, created by railroad strikes, and allowances on shipments which are frozen to such an extent as to prevent unloading within the prescribed free time.

The recommendations were endorsed by the National Industrial Traffic League, and accordingly application was filed to publish the agreed changes in Rules, 7, 8 and 9 of the National Car Demurrage Rules and make them effective on five days' notice.

The commission denied this application, making it necessary to publish the new rules on regular statutory notice to take effect December 1, 1920.

Uniform Code of Storage Rules

The Committee on Demurrage, Storage, Reconsignment and Diversion also revised the Code of Storage Rules, which were approved for submission to the United States Railroad Administration and made effective December 31, 1919. In the decision of the Interstate Commerce Commission July 20, 1920, in the matter of increased rates, the carriers were authorized to increase the storage rates 40 per cent in Official Classification territory, 25 per cent in Southern Classification territory, 35 per cent in Western territory and 25 per cent in Mountain-Pacific territory. These increased rates were published to take effect August 26, 1920.

Supervision of Demurrage, Track Storage and Storage Charges

During the period of Federal control, an effort was made to combine the supervision of demurrage, track storage and storage tariffs with the functions of the various weighing and inspection bureaus. Upon recommendation of the Transportation division, this plan was abolished. Upon request of representatives of the Traffic division and the National Industrial Traffic League, consideration has been given to a plan of supervision which will insure uniform application of the rules by all railroads.

Service Efficiency

The Committee on Service Efficiency was organied August 26, 1919, and its activities have been devoted to standard containers; packing, marking and handling of freight; loss and damage freight claims and prevention; loading regulations; weighing and inspection regulations, and general matters relating to transportation efficiency.

Mileage Allowance on Privately Owned Freight Equipment

The General Committees, Traffic and Transportation divisions, were directed to give consideration to the question of increasing the mileage allowances on privately owned freight equipment. Considerable data was collected and, after conferences with representatives of the private car owners, recommendations were submitted to the Executive Committee which form the basis of the changes in the mileage rates on refrigerator cars, effective August 31, 1920, and on other classes of equipment, November 1, 1920.

Recommendations have also been made to the Executive Committee on the following subjects:

Cancellation of per diem reclaims and per diem discrepancy claims between railroads operating under the Federal guarantee of net earnings during the period March 1 to August 31, inclusive.

Rules and charges governing the use, by private parties, of railroad owned freight cars.

Uniform method of settlement for car hire with industrial railroads.

Rules to provide compensation for excess empty movement of cars created by Orders of the Car Service Division and Service Orders of the Interstate Commerce Commission.

Continuance of Campaign for heavier loading of cars.

Solid freight train movement.

Division III—Traffic

The general committee of the Traffic division reported that the passage of the Transportation act and the return of the roads to private control had created such a change of status for the personnel of this division that it had been inadvisable for the members of the division to take up any work outside of their railroad duties. As a consequence, no definite recommendations were submitted other than to express a hope for the reorganization of the Traffic division and its re-establishment on a status that will enable it to proceed with a consideration of the various matters that seem to require national attention.

Report of Division IV—Engineering

The report of Division 4, Engineering, was presented in three parts, covering the activities of the Construction and Maintenance, the Electrical and the Signal sections, during the past year. The Signal section submitted a statement of specifications and standards adopted during the year or prepared for adoption but which await favorable result of letter ballot now in progress. For the construction and maintenance section the general committee submitted a large file of specifications and standards adopted at the meeting of the Construction and Maintenance section held on March 16, 17, and 18, 1920, at Chicago, (A. R. E. A. convention) with the recommendations that these be "approved as recommended practice and be made standard." These specifications and standards of practice are listed below:

(a) The proper depth of ballast.
(b) A form for cross-tie statistics.
(c) Specifications for carbon, steel rail; rail sections, 90-lb., 100-lb., 110-lb., 120-lb., 130-lb., and 140-lb.; standard drilling of rails.
(d) Plans for frogs, switches and fixtures; specifications, design and dimensions of manganese steel-pointed switches; cut track spike; screw track, spike; steel tie plates; wrought iron tie plates; malleable iron tie plates; relayer rail for various uses.
(e) Lighting of passenger station interiors, surroundings and platforms; toilet facilities at small stations where water supply and sewers are lacking.
(f) Specifications for plain and reinforced concrete and for steel reinforcement; methods of depositing concrete under water.
(g) Approach warning sign on public highways.
(h) Forms for reporting progress in construction and maintenance work; authority for expenditure; monthly report of expenditures; final record cost of work.
(i) Rules for inspection of bridges, trestles and culverts.
(j) Definitions of terms used in railway water service; water service organization; impounding reservoirs for railway purposes; water meters for railway water service; specifications for wooden water tanks; specifications for tank hoops.
(k) Rules for the location, maintenance, operation and testing of railway track scales.
(l) Specifications for steel railway bridges; column formula.
(m) Curve resistance—freight cars.
(n) Specifications for preservative treatment of wood—creosote, oil

and zinc chloride, demarcation line between the use of creosoted and zinc-treated ties.

The report of the electrical section was submitted as information.

Report of Division V—Mechanical

The General Committee of the Mechanical division, which includes the Equipment Painting section, presented a report reviewing the activities of the division during the year, from which the following is taken:

Co-operation With Other Divisions of the A. R. A.

With a view of correlating the work of the engineering and mechanical divisions, each appointed a special committee to study the reports and discussions presented to the other which have a bearing on its own work. Upon the conclusion of such study the two special committees are to form a joint committee and make a report of their findings and recommendations to the general committees of the two respective divisions.

Conferences have been held with special conference committees of the Traffic and Transportation divisions and representatives of private car owners to consider publication in tariff form of the rule covering the payment for repairs to privately owned freight equipment. Conference committees on freight and passenger car repair shop layouts have been appointed to meet with the committee on Shop Construction of the Equipment Painting section to consider layouts of repair shops. A conference has been held by the Committee on Engine Terminals with the committee of the Engineering division on Shops and Terminals, and a similar conference has been arranged with the Committee on Repair Shop Layouts.

Letter Ballot

The recommendations contained in the reports from the following committees considered at the annual meeting, were referred to letter ballot:

Brake Shoe and Brake Beam Equipment.
Car Construction.
Car Wheels.
Electric Headlights and Classification Lamps.
Fuel Economy and Smoke Prevention.
Loading Rules.
Specification and Tests for Materials.
Standard and Recommended Practice.
Standard Methods of Packing Journal Boxes.
Superheater Locomotives.
Train Brake and Signal Equipment.
Train Lighting and Equipment.

With the exception of proposition H-2 of the Committee on Car Construction, which recommended that broken car ends be replaced with ends specified for new cars, all of the propositions submitted were approved by letter ballot, and the General Committee recommended approval by the Association.

Such approval was granted, except that the inside dimensions of box cars recommended by the Committee on Car Construction are to be referred to letter ballot of the members of the association.

Rules of Interchange

One of the most important changes in the Rules of Interchange was that in the methods of settlement for destroyed and damaged cars, as recommended by the Committee on Depreciation for Freight Cars. The committee recommended that destroyed and damaged freight cars be settled for on a basis of reconstruction costs. The Committee on Prices for Labor and Material accordingly prepared a revision of Interchange Rule 112 to provide for the new basis of settlement, the reproduction costs being figured on the per pound basis for the various classes of cars using the information prepared by the Presidents' Conference Committee on Federal Valuation of Railroads in the United States.

Interchange Rules Agreement

During the year practically all railroads and private car owners have executed the standard form of Interchange Rules Agreement.

Report of Division VI—Purchases and Stores

The General Committee of Division 6 reported that it had eighteen sub-committees investigating subjects pertaining to the service of supplies. These committees, consisting of from three to eight members have held service meetings and completed reports from the majority of these committees were presented, discussed and adopted at the first annual meeting of the Section.

The reports of the following committees were approved by the Section at the annual meeting and the Executive Committee presented them with the statement that their adoption and application will benefit and increase the service of supplies on all railroads:

Subject 1—Stores Department Book of Rules.
Subject 3—Reclamation of Material.
Subject 7—Stationery, Purchasing, Storage and Distribution.
Subject 10—Scrap, Classification and Handling of Sales.
Subject 11—Ice, Purchasing, Storage and Distribution.
Subject 12—Purchasing Agents' Office Records.
Subject 13—Lumber, Purchasing, Inspection and Distribution.
Subject 14—Rails, Handling and Distribution.
Subject 15—Buildings and Structures.
Subject 16—Supply Train Operation.

A procedure and uniform method of material accounting was presented at the annual meeting and it was decided to submit this to the Railway Accounting Officers' Association for any suggestions the membership of that organization might have to make before it is presented for adoption by the American Railway Association.

Report of Division VII—Freight Claims

The General committee of Division VII—Freight Claims, presented a report containing a review of its activities during the past year, adding:

"Under date of November 12, 1919, the General committee made certain recommendations to the Executive committee concerning the inauguration of an active and energetic campaign for the reduction of freight losses and damages, report of which recommendations was duly made at both the special session in March and the annual session in June. Authority not having been received from the Executive committee at the time of the annual session, the General committee, in view of opinions expressed by resolution at the annual session, found it necessary to change its recommendations to the Executive committee, and to request an appropriation of not exceeding $20,000 per annum for the employment of paid representatives to work in connection with and under the jurisdiction of our Committee on Cause and Prevention. This authority was later received from the Executive committee (whose action was also approved by the Advisory Committee of the Association of Railway Executives), and the Freight Claim Division has recently entered actively upon its campaign to reduce the economic waste resulting from losses of and damages to freight.

"The freight claim division is working in close harmony and co-operation with the other divisions of the association and feel that this harmony and co-operation are particularly necessary in order that a substantial reduction may be made in the causes which give rise to loss and damage claims. The importance of overcoming these transportation failures becomes more apparent when it is realized that the amounts paid in the settlement of freight loss and damage claims is in each case a reduction in the net earnings of the carriers. In other words, were there no loss and damage, the net earnings of the carriers would be increased by the more than one hundred million dollars now being paid out in the settlement of claims."

Report of Division VIII—Perishable Freight

The report for Division VIII—Perishable Freight—outlined the work of that division since its creation on July 1, 1920, when it took over the duties previously within the scope of the former committee on Perishable Freight of Section IV—Traffic, and the former committee on Perishable Freight of Section V—Transportation.

The following recommendations were offered for adoption by the association:

Recommended, That the inspection of fruits, vegetables and other perishable freight as may be necessary by carriers' own representatives at points of origin, destination, etc., be encouraged and extended, looking forward to the future development of centralized control of the transfer of inspectors from one producing district to another as the volume of movement requires.

Recommended, That the practice of furnishing shippers and receivers of perishable freight any records of icing or other protective services (except on regular bills rendered in the course of ordinary business) be discontinued, for the reason that the supplying of such data on postal cards or other form is a duplication and results in unnecessary and increased expense.

Conference Committee on Grain

The association's conference committee on grain presented a report of its work following the Interstate Commerce Commission's "investigation of the practices of shippers and carriers with respect to the filing, investigation and disposition of claims for loss and damage of grain." Following the Commission's report, the shippers' and carriers' conference committees submitted separate reports with the result that the Commission promulgated and tentatively endorsed:

1. Rules for the handling of bulk grain in interstate commerce and the filing, investigation and disposition of claims for loss and damage incident thereto.
2. Specifications for automatic scales, hopper scales, track scales and other shippers' facilities.
3. Specifications for temporary grain doors and grain door lumber.
4. Directions to shippers for inspecting and coopering cars for bulk grain.

These rules were presented in full in the report.

Senator Cummins Proposes Railroad Legislation

WASHINGTON, D. C.

CHAIRMAN CUMMINS, of the Senate committee on interstate commerce, has announced a program of additional railroad legislation which he will press for enactment at the coming sessions of Congress. At the short session which convenes in December he will endeavor to obtain the passage of a bill he introduced at the close of the last session, to amend the valuation act by striking out the words which direct the Interstate Commerce Commission to report separately the "original and present cost of condemnation and damages or purchase in excess of the original cost or present value" of railroad land.

At the first session of the new Congress he will also attempt to have adopted two amendments to the transportation act embodying the anti-strike and compulsory consolidation provisions of the Senate railroad bill which were not approved by the House.

The Senator has just returned to Washington after having been re-elected by a majority of 210,000 against the opposition of the Plumb Plan League, the American Federation of Labor, the railroad brotherhoods and certain farmers' organizations that concentrated on an especially bitter campaign against him on the issue of the railroad law.

Senator Cummins feels that a compulsory consolidation of the railroads into a limited number of systems, as proposed in the railroad bill as it passed the Senate, is necessary to insure the satisfactory operation of the transportation act, by effecting a greater equalization of the earning power of different roads. The theory of the law is to allow rates which will produce a 5½ or 6 per cent return on the aggregate value of the roads, which means that it sets up an average standard of reasonableness. In recognition of the fact that under given rates certain roads will earn a high percentage while others will earn an inadequate return the law provides that a part of the excess earnings of the more prosperous systems shall be turned into a fund which may be used to assist the weaker roads to some extent by loans. It has been well understood that this affords a very inadequate protection for the road which is below the average standard of prosperity for any reason and the question as to how much can be accomplished by increasing the divisions which the weaker lines receive out of the through rates is somewhat doubtful and has not yet been tested. Senator Cummins has long held the idea that if the railroads could be consolidated into systems made up of both strong and weak lines many of the most troublesome problems incident to rate regulation would be done away with and three different carefully worked out plans have been submitted to and considered by his committee under which the roads could be grouped into competitive systems whose net returns would not differ by more than ¼ per cent.

Senator Cummins believes that such a plan of consolidation could not be worked out except under a plan of federal incorporation, to which there is much opposition in the states, and that therefore it is not to be expected that his proposed amendment can be easily put into the law, but he intends to make the fight.

The proposal for the amendment to the valuation act arises from the situation involved in the Kansas City Southern case which was decided last May by the Interstate Commerce Commission. The commission had reported that the cost of acquisition of railroad land in connection with an estimate of the cost of reproduction was impossible of ascertainment and that the figure if ascertained would be of no value under the decision of the court in the Minnesota rate case, but the court held that the commission must comply with the requirement of the law and report the cost of acquisition of land. The decision has delayed the serving of valuation reports and the state commissions have been active in demanding the amendment to the law which Senator Cummins proposes to urge. He concurs with the views of the commission that the requirement of the law as it stands is impractical and he also believes that the item in question should not be considered in valuing the railroads.

The opposition of the labor leaders to the Senator's re-election was based largely on his insistence upon an anti-strike law, and while at the primaries most of the railroad men in his state voted against him he believes that a large percentage voted for him at the election following the campaign. This has convinced the Senator that the railroad employees themselves, regardless of the position of their leaders, are coming to believe that government regulation of wages as provided in the transportation act is more to their advantage than the right to strike, while he believes that after provision has been made in the law for the adjudication of wage disputes by an impartial tribunal it is not right to leave the question of obedience to the decision of the labor board entirely in the hands of the labor organizations. He pointed out that a strike against an award of the labor board would really be a strike against the government.

In the newspaper interview Senator Cummins pointed to the fact that the September earnings of the railroads were below the 6 per cent standard as evidence that the rate-making rule of the law does not constitute a guaranty of earnings.

Manganese Steel in Track Work*

By J. B. Strong
Chairman, Standardization Committee, Manganese Track Society and Vice-President, Ramapo Iron Works, Hillburn, N. Y.

MANGANESE STEEL as usually furnished, is a metal containing 10 to 14 per cent of manganese, 1 to 1.40 per cent of carbon, not over 0.10 per cent of phosphorus, not over 0.06 per cent of sulphur and 0.25 to 0.40 per cent of silica, the remainder being iron. The peculiar merit of manganese steel in resisting abrasive wear results from the combination of strength and ductibility. It is only moderately hard and will not maintain a cutting edge, but is very strong and tough and cannot be machined commercially at normal temperature except by grinding.

Manganese steel was first used in track work in America on street railways in 1894 and on steam railways in 1901. Its use increased rapidly from about 1,000 tons a year in 1903 to nearly 10,000 tons a year in 1913; since which time, owing to but little new construction work and deferred maintenance and other causes, the annual consumption has decreased somewhat.

Economy has been the first reason for the introduction and increased use of manganese steel in track work to meet severe service conditions. Nowhere in track work has manganese steel proved of such economy as on the turnout switch point which takes the heavy side thrust wear for train movements into the turnout or crossover. Manganese steel gives the greatest efficiency when subjected to wear without pounding, as on a switch point where its life as compared with carbon steel is phenomenal. It is not unusual to get records of 10 to 20 times the life of a carbon rail point.

The Track committee of the American Railway Engineering Association, in conference with the Standardization committee of the Manganese Track Society and the Manganese Steel Founders' Society, has developed plans for many units of special track work. In these designs the first consideration was to provide a manganese steel wearing surface to take all extra shock and wear incidental to carrying wheels across the intersection of the gage lines at the frog point for both facing and trailing train movements. Manganese steel is carried into the throat, and also into the wing flare to take care of wheel flange wear on both sides for wheels entering the frog. The tread surface is provided sufficiently wide to take the wear of badly worn double flanged wheels. Other considerations were the lapping of the manganese steel wearing thread surface with the open hearth rail so that the change from one to the other would not be abrupt, attaching the open hearth rails securely to the manganese casting and to each other for a rigid structure; providing straight lines where possible for economy of machine work and fabrication; distributing metal for strength and sound castings. This is one of the most important as manganese, in cooling, has a shrinkage about double that of other steels and the annealing process of quenching from a high heat in water is severe and necessitates careful attention to the correct distribution of metal to avoid excessive internal strains.

A manganese frog properly installed and maintained should give a life approximately equal to that of adjacent open hearth rail. I have records of manganese rail bound frogs maintained in service for 275 millions tons traffic and then being removed on account of the wear on rail arms and adjacent rails rather than wear of the manganese steel.

Manganese steel turnout frogs will give better comparative life than crossing frogs, for as the angle increases up to 90 deg. the pound at the intersection increases, which manganese steel cannot so well withstand.

Roughly it might be stated that 90 deg. manganese steel crossing frogs giving over double the life of open hearth carbon steel are doing well, while as the angle decreases we secure a greater life down to a No. 10 turnout frog which gives 6 to 10 times greater life than open hearth carbon steel.

*Presented before the St. Louis Railway Club, St. Louis, Mo., on September 23

Freight Car Performance in September

WASHINGTON, D. C.

THE TOTAL net ton miles of freight handled by the railroads in September amounted to 40,999,843,000, according to the monthly bulletin of freight car performance compiled by the Bureau of Railway Economics. This was less than the record-breaking total for August, which was 42,706,835,000, but the decrease is more than accounted for by the fact that September has one less day than August and that it included the Labor Day holiday, and the total was greater than the total recorded for any other previous month. In September, 1919, according to the Railroad Administration statistics, the net ton miles aggregated 38,860,311,000, and in September, 1918, 38,592,137,000. The ton miles for October should show an even greater total than August, as the average weekly car loading in October was about 995,000, as compared with 963,000 in August and 950,000 in September.

The statistics also record a further gain in efficiency as compared with the record for previous months. The average number of tons per loaded car in September was 30, which equals the standard set by the railway executives at their meeting in July. This compares with 28.3 in September, 1919, 29.7 in September, 1918, and 27 in September, 1917. It is the largest average car load for a month since August, 1918, when the average carload was 30.1. In August, 1920, the average car load was 29.8.

The average miles per car per day showed a further increase in September to 28.1, as compared with 26.5 in September, 1919, 26.8 in September, 1918, and 26.6 in September, 1917. This average exceeds that for any month while the railroads were under federal control but it was exceeded in May June and July, 1917.

The total freight car miles were 2,041,245,000, of which 67 per cent were loaded car miles. The total number of freight cars on line daily was 2,417,447, of which 173,229, or 7.2 per cent, were unserviceable. For August the percentage of unserviceable cars was 7.1. In September, 1919, it was 8.5. The bureau's compilations are summarized in the accompanying table.

FREIGHT CAR PERFORMANCE, SEPTEMBER, 1920

	Average miles road operated	Net ton miles (thousands)	Frt. car-miles (thousands)			Freight cars on line daily			Efficiency ratios	
			Total	Loaded	Per cent loaded to total	Total	Unserviceable	Car-miles per day	Tons per car	Per cent of unserviceable cars
New England Region	8,160.47	1,059,206	59,277	42,014	70.9	108,625	9,854	18.2	25.2	9.1
Great Lakes Region	22,093.14	7,108,314	364,662	242,691	68.6	459,171	37,036	26.5	29.4	8.1
Ohio-Indiana-Allegheny Region	26,567.38	9,975,181	414,121	274,840	66.4	600,784	34,490	23.0	36.3	5.7
Pocahontas Region	5,339.29	2,465,622	96,494	57,719	59.8	86,717	7,544	27.1	42.7	8.7
Southern Region	37,724.13	4,795,985	251,130	171,168	68.2	269,495	20,683	31.1	28.0	7.7
Northwestern Region	47,423.56	5,812,650	302,822	202,484	66.9	342,804	27,238	29.4	28.7	8.0
Central Western Region	52,202.71	6,907,378	391,910	266,028	57.9	339,332	25,187	38.5	26.0	7.4
Southwestern Region	32,072.69	2,875,507	160,829	109,907	68.3	210,169	11,147	25.5	26.2	5.3
Grand total, all regions	231,583.37	40,999,843	2,041,245	1,366,849	67.0	2,417,447	173,229	28.1	30.0	7.2



A Good Terminal Lay-Out Is a "Thing of Beauty and a Joy Forever"

The Locomotive Terminal as an Operating Factor*

With Intensive Railroad Operation, Adequate Terminal Facilities Are Imperative

By L. G. Plant,
Associate Editor, *Railway Age*

FROM AN OPERATING STANDPOINT it may be said that there are some facilities which are indispensable to the enginehouse, while the necessity for certain machine tools and other special equipment may depend upon the proximity of the terminal to the backshop. With the increasing weight of locomotives and the growing appreciation of the value of every locomotive service hour, we are faced, however, with the practical necessity of doing more and more heavy repair work in the locomotive terminal.

It is important, therefore, that in all new terminal projects this situation be taken into account and the enginehouses be fully equipped for any repairs that may reasonably be anticipated. In some of the most recent and important terminal developments, the enginehouse in reality approaches the modern erecting shop in design and equipment. These roundhouses comprise about 30 stalls occupying approximately a semi-circle. The depth of the house is 115 ft. and it has a cross-section which resembles that of an erecting shop of a three-bay construction. This includes a lofty bay, in which a 75 ft. 15-ton crane operates along the outer side of the house, and two lower bays at the turntable side. The outer wall, which rises to a height of nearly 40 ft., is comprised almost wholly of steel sash, which together with continuous monitor windows 15 ft. in height over the lower bays, provide unsurpassed natural illumination. In fact, this might be appropriately styled the "Round House Beautiful."

"The Round House Beautiful"

Adjustable standpipes, resembling water cranes are located between the stalls in such a position that they may be fitted over each locomotive stack. All smoke and gases are then removed by means of a down draft system so that there are no smoke jacks to interfere with the operation of a crane throughout the entire circumference of the house. Separate drop pits are installed to serve trailing, main and engine truck wheels. The machine tool equipment at these terminals ranges from a comparatively small number of machines located in an annex to the roundhouse to a full complement of heavy machine tools in an adjacent erecting shop. The annex equipment includes a wheel lathe, boring mill, planer, motor driven lathes and unwheeling hoist, while the shop adjacent to other enginehouses has the traveling crane and other equipment conventional to erecting shop lay-outs.

It should be mentioned in this connection that the down draft feature above mentioned is relied upon in building fires thus eliminating the use of the steam blower and blower lines. While a blower fan is installed to create the necessary down draft, the stack erected outside of the house is of sufficient height to effect a strong natural draft when the fan is not in operation. The effect of standing in one of these new roundhouses, free from smoke and the noise of exhausting steam, with the light streaming in the tall windows and a crane operating briskly overhead, is truly inspiring to one accustomed to the atmosphere of the average roundhouse.

In fact it is not beyond the range of possibilities to conceive of a development in locomotive terminals along these lines that would supersede many of the functions of the central erecting shop. While this is a subject more closely related to locomotive maintenance than to operation the question may well be raised as to whether better results could not be obtained from an operating as well as a maintenance standpoint if facilities were such that it would be practical to keep locomotives in good condition by frequent and adequate terminal repairs, rather than by executing only the most urgent repairs in the terminal and relying largely on periodical backshop operations.

Of the particular features regarded as essential to the most successful operation of terminal enginehouses, those

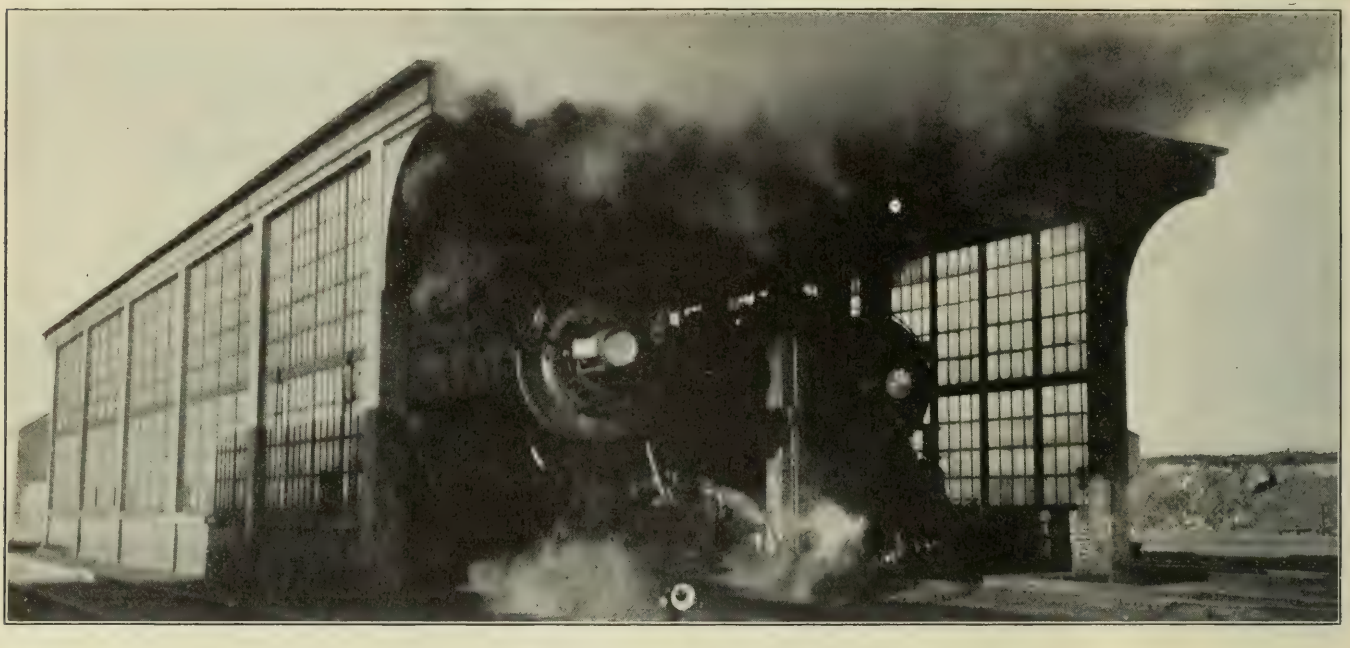
*This is the second part of a paper read before the New England Railroad Club, November 9, 1920. The preceding part of this article was published in the issue of November 19, and the article will be concluded in the next issue of the *Railway Age*.

which tend to reduce labor costs are of the first importance. On this ground a traveling crane or electric tractor that would have been considered an extravagance ten years ago might well be regarded as a necessity on the basis of present labor costs.

The Most Important Facilities

Splendid results, however, can be obtained by equipping the roundhouse with two jib cranes between each stall, located so as to swing over both ends of the locomotive boiler. It is entirely practical to build a jib crane with a toggle joint which will enable it to swing in a complete circle of 15 ft. radius about the column and to equip these jib cranes with two-ton chain hoists. In fact, some foremen would prefer a roundhouse well equipped with jib cranes of this character to having a traveling crane where the repairs required are not too heavy.

The only definite suggestion which can be advanced in regard to this feature of roundhouse equipment is that in all new projects where the development is on an extensive scale the enginehouse should be made ample in size and



Preliminary Inspection at Covered Pits Will Expedite Terminal Operation

equipment to allow for a wide variety of repair work without interference with the routine operating functions. The equipment in such cases should include the overhead traveling crane and down draft ventilating apparatus. Where the activities of the enginehouse are limited to routine operating functions, the use of jib cranes is satisfactory and, if supplemented by an electric monorail or storage battery tractors, will meet every practical requirement.

Nothing need be said in regard to drop pits further than that they, or the equivalent in the form of an unwheeling hoist, are essential to any locomotive terminal responsible for the maintenance of power in satisfactory running condition between shoppings. A number of well arranged drop pits are preferable to a single unwheeling hoist in the roundhouse, but where an annex is designed to care for the heavy repair work originating in the terminal, the unwheeling hoist would appear to be the most practical apparatus for such shop facilities.

It may also be said in a general way that the heating of enginehouses by steam or air even in the southern states is essential and that good ventilation and lighting are very important. Good floors will further contribute indirectly to the prompt movement of power through the enginehouse. The operation of the hot water washout system has a direct effect on the operation of the railroad by reducing the time locomotives must be held in the enginehouse as well as exerting a very wholesome effect on boiler maintenance and no locomotive terminal is in any sense complete without this equipment.

Operation of Locomotive Terminals

While it would be as impossible to prescribe any fixed mode of terminal operation as to describe equipment that would be universally applicable, there are certain operations in the terminal that are fundamental. Moreover all terminal operations should proceed with as great regularity and as much expedition as possible. *Terminal operations constitute an unwritten page on every timetable and should be conducted accordingly.*

The habit of waiting until repairs are actually completed before advising the transportation department that the locomotive is available for service cannot be too strongly condemned. The time at which a locomotive will be available for service should be anticipated as far as possible and the transportation department notified accordingly. It is better to assume responsibility for an unavoidable delay than to be the cause of frequent unnecessary delays.

An accurate knowledge of the work required on every locomotive arriving at the terminal is obviously essential to the successful execution of that work, hence thorough locomotive inspection is the only safe foundation upon which terminal operations can proceed successfully. There are very few railroads today on which the work reports submitted by locomotive engineers can be depended upon as a reliable index to the work to be done. Enginemen cannot be relieved of the responsibility for a locomotive condition report and something might be said in favor of educating the engineers to submit a more intelligent report but as matters stand the most careful inspection of arriving locomotives must be made.

More might be said in favor of educating air brake and other inspectors responsible for inspecting locomotives upon arrival at the terminal. Frequent changes in the personnel of the inspection force and appointment on the basis of seniority are bound to result in a certain amount of incompetence in the inspection of locomotives. The railroads will surely be held responsible in the event of accidents resulting

from incompetent inspection and if they cannot always pick trained men for this work they should see that instruction of some sort is available to these men. The air brake instruction car should not only be available to every air brake inspector, but these men should be subject to certain examinations that will serve to establish their competence.

Inspection may either be conducted immediately upon arrival or as soon as the locomotive is placed in the house. Where locomotives arrive at frequent evenly spaced intervals throughout the day, the system of outside inspection in covered pits has very great advantages. The delay over the inspection pit should not average in excess of 15 minutes and a statement of the work required of each gang foreman may be available before the locomotive has actually been placed in the house. Moreover, an advance report in regard to the condition of the locomotive frequently makes it more practical to assemble the necessary material in time so that there is no delay on this account.

On the other hand, at terminals where comparatively few locomotives are handled or where locomotives arrive at very irregular intervals, it becomes uneconomical to maintain an outside inspection force. Where an inspection in the enginehouse is promptly made upon the arrival of every locomotive there can be no serious objection to this method. In fact, there is frequently a great advantage to conducting inspection in the enginehouse since it is frequently practical and economical to have inspectors make repairs on certain classes of defects. Locomotive inspection should be subdivided as far as possible. Excellent results are often obtained from assigning one inspector to certain defects that have been causing serious trouble. For instance, it is the practice on one railroad that has made a conspicuous success of Mallet locomotive operation, to assign one mechanic and assistants at each terminal during the winter months to inspect and repair steam leaks exclusively.

Intensive Locomotive Terminal Operation

One of the most remarkable examples of intensive terminal operation in this country is accomplished by departing boldly from the conventional routine. Approximately 170 locomotives are handled through this terminal each day and as each of these locomotives arrives it is first subjected to the most thorough inspection. There are three parallel inspection pits under the direction of a foreman inspector. The number of men and the facilities at this inspection point are such that many light repairs can be executed during the time that the inspection is being completed. Upon the basis of the reports made by each of the principal inspectors, the foreman decides whether the character of repairs necessitates placing the locomotive in the enginehouse. Where the repairs are not of a heavy nature and do not require the services of a drop pit or crane the locomotive after passing over the ash pit is routed directly to a longitudinal repair shed. This shed covers two parallel track pits approximately 400 ft. in length. The building is of concrete and steel sash construction and the illumination, both overhead and in the pits, is very complete. The work at this repair shed is under the direction of an assistant roundhouse foreman and the number of mechanics employed is equal to any emergency. Moreover the stores department has erected special facilities to provide for the material requirements at this point. While the work in this light running repair shed is conducted with the same degree of system and thoroughness as should characterize roundhouse work, it will readily be appreciated that these repairs can be executed far more expeditiously under the circumstances than were it necessary to place each locomotive in the enginehouse. In fact, it would be practically out of the question to handle 170 locomotives in and out of a 30-stall roundhouse each day and the general plan adopted at this point is one that might well be put into effect at other points where fewer locomotives are handled.

The successful operation of any locomotive terminal is more dependent upon supply department co-operation than any other mechanical unit. Very few parts can originate at the terminal and yet the continuity of all terminal operations depends upon having certain materials on hand at a certain time. The locomotive terminal is no place for the execution of undue economy in curtailing material stocks. It would be far better to have a considerable surplus than a slight shortage. Moreover it must be borne in mind that the most careful check of past material issues may prove an entirely unreliable index to future requirements at the locomotive terminal.

Stores Department Co-operation

In general, it might be well to draw a distinction between commodities that are common to the entire railroad and specialties that are identified largely with terminal operation. Such specialties should be stored in as close proximity to the engine terminal as possible and should be under the direction of storekeepers that are thoroughly conversant with engine terminal requirements.

It is inevitable that on frequent occasions, material which can neither be manufactured nor kept in stock at the terminal should be urgently needed. It is not an unfrequent occurrence for passenger trains to be seriously delayed, particularly during the winter months, due to loading and unloading locomotive parts destined to some outlying terminal.

The institution of a regular bi- or tri-weekly baggage car service from a central manufacturing shop to outlying terminals will prove an excellent means for relieving this unsatisfactory situation. They can be alternately dropped and picked up at each terminal by local passenger trains. While this may not wholly relieve the emergency shipment of some items, it may prove a much more systematic and economical method than that of loading everything up to driving wheel tires on the back of a locomotive tender.

It will also be found that the service of supply can be of the greatest assistance to terminal operation in connection with the handling of tools and oil cans. It is safe to say that no two small items can give the roundhouse foreman more concern. At one terminal where this matter is dealt with quite successfully, a platform at the height of the average locomotive deck has been erected adjacent to the incoming and outgoing tracks. Here all tools and cans are removed from each incoming locomotive and carefully checked over by a representative of the stores department. The same department is responsible for delivering a full complement of tools and oil cans properly filled to each outbound locomotive.

Car Loading Decreases

WASHINGTON, D. C.

THE REVENUE freight car loading for the week ending November 6 showed a further reduction as compared with the previous week, following a reduction in the last week of October. The total was 910,592 cars, as compared with 826,724 in the corresponding week of 1919 and 873,854 for 1918. This represented a reduction of 63,000 in a week but is probably accounted for largely by the fact that the week included election day. There were increases as compared with the corresponding week of 1919 in the loading of coal, coke, forest products and ore, but reductions in grain and grain products, livestock and l. c. l. and miscellaneous. Most of the reductions as compared with previous weeks also come under the head of miscellaneous freight, as shown in the table at the top of the next page.

For the week ending November 13 the total car loading was slightly greater than for the preceding week, 919,909 cars, as compared with 808,304 in the corresponding week of 1919 and 810,430 in 1918. This shows not only a larger total than for the corresponding weeks of the past two years but

less of a reduction as compared with the preceding weeks than was shown in 1919 or 1918. The November figures in 1919 were somewhat affected by the coal strike, which began on November 1, but the big reduction in 1918 followed the armistice on November 11. The summary compiled by the Car Service Division for the week ending November 13 follows at the bottom of the page.

The volume of freight which the railroads have been carrying is still greater than that for corresponding periods of previous years and it will take a much greater reduction than has thus far been shown in the reports to prevent the year 1920 from breaking all previous records for the amount of freight handled.

For the first nine months of 1920, according to the Interstate Commerce Commission reports and those compiled by the Bureau of Railway Economics, the net ton miles of freight handled aggregated 332,052,000,000 in 1918. For the period since September the only available traffic index is the following weekly car loading report compiled by the Car Service Division of the American Railway Association:

October 9	1,009,781	982,171	959,723
16	1,005,663	972,078	927,134
23	1,010,961	977,051	920,111
30	973,120	935,479	892,392
November 6	910,592	826,724	873,854
13	919,909	808,304	810,430
	5,830,026	5,501,807	5,383,644

While these figures show a falling off as compared with the first three weeks of October, the fact that a similar reduction was shown in the corresponding figures for 1919 and 1918 indicates that it is to a large extent seasonable, while the figures for the first week in November were affected by the light business on election day. From November 6 on the comparisons will be made with the periods when railroad traffic was considerably reduced in 1919 by the coal strike which occurred in November, and in 1918 by the cessation of war activity following the armistice of November 11. The weekly car loading figures for the closing weeks of 1919 and 1918, with which comparisons are to be made for the balance of this year, as compiled by the Railroad Administration, were as follows:

	1919	1918
November 15	825,458	810,430
November 22	884,150	857,377
November 29 (Thanksgiving Day week)	753,757	735,628
December 6	813,086	837,806
December 13	779,265	820,202
December 20	831,951	796,116
December 27 (Christmas week)	676,670	549,975

For the week ending November 15 the car shortage was 35,356 and there were surpluses amounting to 19,865 cars. There was a surplus of 12,000 cars in the Central Western district and a surplus of 3,000 cars in the Southern district.

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS; COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO, FOR WEEK ENDED SATURDAY, NOVEMBER 6, 1920

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L.C.L.	Miscellaneous	Total revenue freight loaded: This year 1920	Corresponding year 1919	Corresponding year 1918	Received from connections: This year 1920	Corresponding year 1919	Corresponding year 1918
Eastern	1920	5,397	3,334	48,844	3,044	6,991	10,869	47,341	86,589	212,409	....	....	244,007	....	....
	1919	6,287	3,919	29,575	3,573	6,933	5,192	22,360	122,142	....	199,981	206,932	....	224,279	241,972
Allegheny	1920	2,748	3,800	61,079	9,168	3,831	12,476	39,329	65,391	197,824	....	....	138,613	....	....
	1919	2,822	3,897	36,637	4,095	4,132	8,815	44,890	70,098	....	175,386	204,997	....	117,669	191,059
Pocahontas	1920	111	275	21,916	610	1,953	181	2,638	6,623	34,311	....	....	18,369	....	....
	1919	198	286	19,632	664	2,070	289	237	9,971	....	33,247	35,106	....	19,246	23,981
Southern	1920	2,454	2,676	27,878	1,744	17,175	2,617	37,083	33,301	124,928	....	....	67,268	....	....
	1919	3,070	2,704	7,912	557	18,062	2,498	21,152	57,560	....	113,515	116,791	....	72,177	73,390
Northwestern	1920	11,809	8,077	10,669	3,617	21,088	28,997	28,293	34,868	147,418	....	....	54,360	....	....
	1919	11,931	10,814	11,673	2,584	16,272	11,792	22,177	44,154	....	131,397	139,571	....	55,211	76,050
Central Western	1920	9,311	10,954	25,153	517	5,212	2,674	30,254	45,759	129,834	....	....	65,837	....	....
	1919	10,719	15,245	5,427	387	4,820	2,767	22,773	55,242	....	117,380	114,687	....	68,671	62,169
Southwestern	1920	3,430	2,264	7,068	114	7,263	182	17,059	26,488	63,868	....	....	50,471	....	....
	1919	4,194	3,403	1,261	83	6,488	373	12,865	27,151	....	55,818	54,870	....	46,979	45,687
Total, all roads	1920	35,260	31,384	202,607	18,814	63,313	57,998	201,997	299,019	910,592	....	....	638,925	....	....
	1919	39,221	40,268	112,117	11,943	58,777	31,725	146,354	386,318	....	826,724	....	....	604,232	....
	1918	....	....	....	....	....	....	....	....	....	....	873,854	....	....	714,308
Increase Compared	1919	....	....	90,490	6,871	4,736	26,278	55,643	....	83,868	....	....	34,693	....	....
Decrease Compared	1919	3,961	8,884	....	....	....	....	....	87,299	....	....	....	....	....	....
Increase Compared	1918	....	....	....	....	....	....	....	....	36,738	....	....	....	....	....
Decrease Compared	1918	....	....	....	....	....	....	....	....	....	....	....	75,383	....	....

*L.C.L. merchandise loading figures for 1920 and 1919 are not comparable as some roads are not able to separate their L.C.L. freight and miscellaneous of 1919. Add merchandise and miscellaneous columns to get a fair comparison.

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS: COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. FOR WEEK ENDED SATURDAY, NOVEMBER 13, 1920

District	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L.C.L.*	Miscellaneous	Total revenue freight loaded: This year 1920	Corresponding year 1919	Corresponding year 1918	Received from connections: This year 1920	Corresponding year 1919	Corresponding year 1918
Eastern	1920	5,544	3,617	55,656	3,020	7,119	9,603	45,320	88,211	218,090	.....	.....	239,978	.....	.....
	1919	6,628	4,434	26,998	3,341	7,215	4,815	33,126	110,651	.....	197,208	190,257	.....	231,568	228,983
Allegheny	1920	2,779	4,209	73,128	6,472	3,914	11,941	38,046	68,738	209,227	.....	.....	139,647	.....	.....
	1919	2,963	4,085	31,651	4,331	4,417	6,699	42,452	71,932	.....	168,530	177,424	.....	129,625	169,216
Pocahontas	1920	121	280	24,949	560	1,959	178	2,427	6,120	36,594	.....	.....	18,585	.....	.....
	1919	213	326	21,300	639	1,783	220	161	9,423	.....	34,065	36,126	.....	18,828	23,992
Southern	1920	2,763	2,635	29,964	1,296	17,667	2,711	37,415	35,657	130,098	.....	.....	69,885	.....	.....
	1919	3,190	3,205	7,980	291	18,104	2,468	19,891	59,917	.....	115,052	114,472	.....	73,961	73,283
Northwestern	1920	11,356	10,702	11,209	1,919	14,426	21,974	27,817	32,257	131,660	.....	.....	52,698	.....	.....
	1919	11,459	9,719	11,483	756	14,265	12,755	21,230	42,515	.....	124,182	128,298	.....	52,144	71,734
Central Western	1920	8,243	14,581	25,891	472	4,779	2,715	29,262	44,119	130,062	.....	.....	65,583	.....	.....
	1919	10,452	15,836	3,676	467	5,356	2,664	22,071	53,076	.....	113,598	108,834	.....	70,208	58,527
Southwestern	1920	3,491	2,999	7,238	155	7,665	239	16,532	25,859	64,178	.....	.....	49,658	.....	.....
	1919	4,416	3,515	1,150	117	6,627	320	12,576	26,948	.....	55,669	55,019	.....	46,070	45,946
Total all roads	1920	34,287	39,023	228,035	13,894	57,529	49,361	196,819	300,961	919,909	.....	.....	636,034	.....	.....
	1919	39,321	41,120	104,238	9,942	57,767	29,941	151,513	374,462	.....	808,304	.....	.....	622,464	.....
	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	810,430	.....	.....	731,681
Increase compared	1919	.....	.....	123,797	3,952	.....	19,420	45,306	.....	111,605	.....	.....	13,630	.....	.....
Decrease compared	1919	5,034	2,097	.....	.....	238	.....	.....	73,501	.....	.....	.....	.....	.....	.....
Increase compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	109,479	.....	.....	.....	.....	.....
Decrease compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	95,647	.....	.....

*L.C.L. merchandise loading figures for 1920 and 1919 are not comparable as some roads are not able to separate their L.C.L. freight and miscellaneous of 1919. Add merchandise and miscellaneous columns to get a fair comparison.

Hoover Heads American Engineering Council

First Meeting of the New Federated American Engineering Societies Held at Washington, D. C.

THE FEDERATED American Engineering Societies has at last become an independent organization and the work of the Joint Conference Committee of the four founder societies has come to an end. The first meeting of American Engineering Council, its representative group, was held at Washington in the New Willard Hotel on November 18, 19 and 20. Herbert Hoover, former food administrator, becomes the active head of the new council, having been unanimously elected president. A total of 21 member societies and nine societies, which have not as yet taken final action, participated in the work.

E. S. Carman, temporary chairman, presided and the real work began with the selection of nominating committees for the executive officers and the members of the executive board. As reported in the *Railway Age,* June 11, page 1667, this board consists of 30 members of the American Engineering Council. From the report of the committee it was decided that as there were a number of societies which were expected to join shortly, vacancies should be left on the board in order that these societies might be able to secure proper representation. As a result of this decision four vacancies were left for this purpose, and this, plus the six executive officers who are regular members of the board, left 20 places open out of the full number of 30; they were apportioned by assigning 14 places to the national societies and six to local organizations.

Following the method outlined in the societies' constitution the country was divided into six districts for the locals as follows: District 1, New England and New York; District 2, Michigan, Wisconsin and Minnesota; District 3, Ohio, Indiana and Illinois; District 4, New Jersey, Pennsylvania, Delaware, Maryland, and the District of Columbia; District 5, all the southern states including Louisiana and Texas, and District 6, all other states west of the Mississippi river. Of the national societies the American Society of Mechanical Engineers received four places; the American Institute of Mining and Metallurgical Engineers, three; American Institute of Electrical Engineers, four; American Institute of Chemical Engineers, one; American Society of Agricultural Engineers, one, and the Society of Industrial Engineers, one.

The executive officers and the members of the executive board so far as they were elected are: Herbert Hoover, Palo Alto, Cal.; president; Calvert Townley, New York, vice-president; W. E. Rolfe, St. Louis, Mo., vice-president; D. S. Kimball, Ithaca, N. Y., vice-president; J. Parke Channing, New York, vice-president, and L. W. Wallace, Baltimore, Md., treasurer. For the A. S. M. E., L. P. Alford, New York; E. S. Carman, Cleveland, Ohio; A. M. Greene, Jr., Troy, N. Y., and Fred J. Miller, Central Bridge, Pa. For the A. I. E. E., H. W. Buck, New York; Willian McClellan, Philadelphia, Pa.; C. F. Scott, New Haven, Conn., and L. B. Stillwell, New York. For the A. I. M. E., Edwin Ludlow, New York; A. S. Dwight, New York, and Phillip N. Moore, St. Louis, Mo. For the A. I. C. E., T. E. Howe, Washington, D. C., For Districts 4, 5 and 6, W. W. Varney, Baltimore, Md.; O. H. Koch, Dallas, Texas, and L. B. Smith, Topeka, Kan., respectively.

Time Extended for Charter Membership

A resolution was passed which stated in effect that the time for all societies among those originally invited to become charter members would be extended until July 1, 1921, and that a society joining before that limit would become a full charter member. The matter of a permanent location for headquarters proved to be a serious question and was hotly debated. The consensus of opinion was, however, that in order to carry forward the work of public service for which the federation was organized it would be necessary to maintain an office in Washington. As a result it was decided that the headquarters be located in that city after January 1, 1921, and that until that time the society would, through the courtesy of the existing Engineering Council, carry on its work in the Washington office of Engineering Council.

The committee on plan and scope presented a large number of topics of important interest to the public at large and on which the society could well devote its energies. The more important of these included the conservation of labor or the reduction of economic waste, transportation, the establishment of a department of public works, national fire protection, patents, licensing of engineers, education, compensation, service bureau, and numerous others, some of which are now in the hands of Engineering Council, or are under consideration by it. In the main, the committee and the new council attempted to develop and carry on that work which at the present time is of the most vital interest to the nation. It was emphasized that the limiting factor to this work would be the finances of the federation.

The budget committee submitted two estimates based on the maximum and the minimum assumed income. The minimum income was based on the number of societies already members and amounted to $59,000 a year, and the maximum was based upon a reasonable additional number of societies or an income of $80,000 per year. The expenditures were estimated to be $56,500 as a minimum and $92,500 as a maximum. The actual expenditures, it was thought, would be somewhere between these two figures.

In general the work of the new American Engineering Council will be along the lines of existing Engineering Council though it is expected to broaden the scope and to render a service extending over a greater field of activity than has been heretofore attempted. Thus Engineering Council's work will be largely duplicated and for that reason certain tentative measures had been taken to turn over its work to the new federation. The resolution of the American Society of Civil Engineers given elsewhere had the effect of blocking any movement which might have been taken at this meeting toward the immediate turning over of its work to the Federated Societies. This action makes it necessary to refer the matter back to the founder societies for further action and as Engineering Council depends largely upon their appropriations it is thought that it will pass out of existence because of lack of funds.

Of the public service work to be undertaken the reduction of economic waste will probably receive first consideration. Mr. Hoover emphasized this strongly in an address on "Some Phases of Relationship of Engineering Societies to Public Service." An abstract of the address follows:

Reduction of Economic Waste

The greatest of the problems now before the country and, in fact, before the world, are those growing out of our industrial development. The enormous industrial expansion of the last 50 years has lifted the standard of living and comfort beyond any dream of our forefathers.

We have built up our civilization, both political, social and economic, on the foundation of individualism. We have

found in the course of development of large industry upon this system that individual initiative can be destroyed by allowing the concentration of industry and service, and thus an economic domination of groups over the whole. While our present system of individualism under controlled capitalism may not be perfect, the alternative offers nothing that warrants its abandonment. Our thought, therefore, needs to be directed to the improvement of this structure and not to its destruction.

A profound development of our economic system apart from control of capital and service during the last score of years has been the great growth and consolidation of voluntary local and national associations. These associations represent great economic groups of common purpose, and are quite apart from the great voluntary groups created solely for public service. This engineers' association stands somewhat apart among these economic groups in that it has no special economic interest for its members. Its only interest in the creation of a great national association is public service, to give voice to the thought of the engineers in these questions. And if the engineers, with their training in quantitive thought, with their intimate experience in industrial life, can be of service in bringing about co-operation between these great economic groups of special interests, they will have performed an extraordinary service.

We have just passed through a period of unparalleled speculation, extravagance and waste. We shall now not only reap its inevitable harvest of unemployment and readjustment, but we shall feel the real effect of four years of world destruction, and from it economic and social problems will stand out in vivid disputation. One of the greatest conflicts rumbling up in the distance is that between the employer on one side and organized labor on the other. There are certain areas of conflict of interest, but there is between these groups a far greater area of common interest, and if we can find measures by which, through co-operation, the field of common interest could be organized, then the area of conflict could be in the largest degree eliminated.

The American Federation of Labor has publicly stated that it desires the support of the engineering skill of the United States in the development of methods for increasing production, and I believe it is the duty of our body to undertake a constructive consideration of these problems and to give assistance not only to the Federation of Labor but also to the other great economic organizations interested in this problem, such as the Employers' Association and the chambers of commerce.

It is primary to mention the three great wastes in production; first, from intermittent employment; second, from unemployment that arises in shifting of industrial currents, and third from strikes and lockouts. Beyond this elimination of waste there is another field of progress in the adoption of measures for positive increase in production.

In the elimination of the great waste and misery in intermittent employment and unemployment, we need at once co-ordination in economic groups. For example, in the bituminous coal industry where the bad economic functioning of that industry results in an average of but 180 days' employment per annum, a great measure of solution could be had if a basis of co-operation could be found between the coal operators, the coal miners, the railways and the great consumers. The combined result would be a higher standard of living to the employees, a reduced risk to the operator, a fundamental expansion of economic life by cheaper fuel. With our necessary legislation against combination and the lack of any organizing force to bring about this co-operation. the industry is helpless unless we can develop some method of governmental interest, not in governmental ownership, but in stimulation of co-operation in better organization. In the great field of seasonal and other unemployment, we indeed need an expansion and better organization of our local and federal labor exchanges. The individual worker is helpless to find the contacts necessary to make this seasonal shift unless the machinery for this purpose is provided for him.

In the questions of industrial conflict resulting in lockouts and strikes, one mitigating measure has been agreed upon in principle by all sections of the community. This is collective bargaining, by which, whenever possible, the parties should settle their difficulties before they start a fight. The point where the universal application of collective bargaining has broken down is in the method of its execution. The conflict arises almost wholly over the question of representation and questions of enforcement. The second Industrial Conference proposed a solution to this point by the provision that where there was a conflict over representation the determination should be left to a third and independent party. It also proposed that each party should have the right to summon skill and experience to its assistance. It further proposed that where one of the parties at dispute refuses to enter upon collective bargaining, the entire question should be referred to an independent tribunal for investigation as to the right and wrong of the whole dispute—but only for investigation and report.

There are questions in connection with this entire problem of employer and employee relationship, both in its aspects of increased production and in its aspects of wasteful unemployment, that deserve most careful study by our engineers. There lies at the heart of all these questions the great human conception that this is a community working for the benefit of its human members, not for the benefit of its machines or to aggrandize individuals; that if we would build up character and abilities and standard of living in our people, we must have regard to their leisure for citizenship, for recreation and for family life. These considerations, together with protection against strain, must be the fundamentals of determinations of hours of labor. These factors being first protected, the maximum production of the country should become the dominating purpose.

The precise hours of labor should and will vary with the varying conditions of trades and establishments, but the proper determination of hours, based upon these factors, is an immediate field demanding attention of engineers. There is no greater economic fallacy than the doctrine that the decrease of hours below these primary considerations makes for employment of great numbers, and it is an equal certainty that the 84-hour week of some employments transgresses these fundamentals to a point of inhumanity.

There is a broad question bearing upon stimulation of self-interest and thus increase in production that revolves around the method of wage payment. I need not review to you the advantages, difficulties and weaknesses of bonus, piece work, profit or saving sharing plans that are in use as a remedy for the deadening results of the same wage payment to good and bad skill alike. A suggestion for your consideration is the possible use of another device in encouragement of individual interest and effort by creating two or three levels of wage in agreements for each trade, the position of each man in such scale to be based upon comparative skill and character. This plan should be developed upon the principle of graded extra compensation, for added skill and performance, above an agreed basic wage. In order to give confidence, the classification under such scales must be passed upon by representatives of the workers in such shop or department. This plan is now being successfully experimented with.

We must take account of the tendencies of our present repetitive industries to eliminate the creative instinct in its workers, to narrow their field of craftmanship, and to discard entirely the contribution to industry that could be had from their minds as well as from their hands. There has been a great increase in shop committees as a method to relieve this tendency. Where they have been elected by free

and secret ballot among the workers, where they are dominated by a genuine desire on both sides for mutual co-operation in the shop, they have resulted in great good. Organized labor has opposed some forms of these committees because of the fear that they may break down trade organization covering the area of many different shops.

Again I believe the engineers could assist in the erection of a bridge of co-operation if organized labor, which has already made a beginning, would extend more widely its adoption of the principles of a shop committee settling its problems of wage and conditions of labor in general agreement and applying its energies through shop committee organization to development of production as well as to the correction of incidental grievance. There would be little outcry against the closed shop if it were closed in order to secure unity of purpose in constructive increase of production by offering to the employer the full value of the worker's mind and effort as well as his hands.

While it is easy to state that increased production will decrease cost and by providing a greater demand for goods secure increased consumption and ultimate greater employment, yet the early stages of this process do result in unemployment and great misery. It takes a variable period of time to create the increased area of consumption of cheapened commodities, and in the meantime, when this is translated to the individual worker he sees his particular mate thrown out of employment. We accomplish these results over long periods of time, but if we would secure co-operation to accomplish them rapidly we must take account of this unemployment and we must say to the community that if it is to benefit by the cheapening costs and thus the increased standard of living, or alternatively if the employer is to take the benefits, the entire burden should not be thrust upon the individual who now alone suffers from industrial changes. Nor can this be accomplished except by co-operation between groups.

I am not one of these who anticipates the solution of these things in a day. Durable human progress has not been founded on long strides. But in your position as a party of the third part to many of these conflicting economic groups, with your lifelong training in quantitive thought, with your sole mental aspect of construction, you, the engineers, should be able to make contribution of those safe steps that make for real progress.

Other Matters Before the Board

The question of a permanent executive secretary was left for future consideration. In order to aid in a proper selection a committee of seven members of the executive board, including Herbert Hoover, was selected to look up and report on the name or names of those men best qualified to handle the secretarial work of the council and society.

Arrangements were made for immediate steps in co-operating with Engineering Council, the National Public Works Department Association and others in forwarding the move towards establishing a Department of Public Works. The date of the next meeting was left to the discretion of the president, except that it may not be later than January, 1921.

Upper Berth Best in European Cars.—"You can tell you're back in America," said the traveler, "when you hear people insisting upon getting a lower berth in the sleeper. In Europe what they insist upon is the upper. The upper berth is hung so far down that the lower berth becomes merely a sort of catacomb shelf into which the unfortunate who uses it must insert himself horizontally; whereas in the top berth a man could almost stand up; he has the lights and he controls the ventilator, and in the morning he may sit up in spacious comfort to eat the breakfast of coffee and rolls which the sleeping car attendant serves to him in bed. Don't ever ask for a lower. Go after the upper berth in the foreign sleepers."—*N. Y. Sun.*

Short Line Wage Hearings

Public hearings on the demands of employees of the short lines for the extension to them of the rates of pay granted to employees of trunk lines by the Railroad Labor Board's award of July 20 were re-opened before the Board at Chicago on November 22.

Ben B. Cain, assistant to the president of the American Short Line Railroad Association, presented the short line carrier's side of the case, testifying at both sessions on that date. In general, Mr. Cain opposed the granting of increased wages to short line employees, first, because on the merits of the case alone such action would not be just; second, because of the financial condition of the short lines and the unfortunate results which may accompany such action; and, third, because the short lines are not properly before the Board. Mr. Cain began his presentation by outlining the position of the representatives of the employees as expressed in testimony presented in the hearing culminating in the Board's decision of July 20. This position was that all railroads should be treated alike inasmuch as they are all treated alike by the terms of the Transportation Act. After defining the Association's position in regard to subsidiary lines such as those of the Southern and Seaboard Air Line, which are before the Board in this case, which is briefly that there is no difference between them and other short lines. Mr. Cain refuted the employees' probable contention that the Transportation Act guarantees every railroad six per cent return on the value of the property by quoting and interpreting the rate sections of the act.

In speaking of short lines, Mr. Cain called them "children of transportation," and outlined their importance as feeders to larger systems and as servants of the public. In regard to rates of pay on these lines, Mr. Cain advocated the maintenance of differentials, citing previous testimony of various labor leaders to show that differentials are recognized as necessary even by representatives of the opposing side. Mr. Cain then presented his views on each of six conditions upon which the board's awards should be based under the terms of the Transportation Act. Regarding wages paid in outside industry, he cited rates of pay for street car employees. Their rates are now lower than those now paid on short lines. Regarding the relation of wages to the cost of living, he called attention to the fact that commodity costs are declining rapidly, that living costs are even cheaper in smaller communities where short line employees reside and that therefore the living wage is already below that being paid on short lines. Regarding hazards of employment, he cited the fact that these roads operate usually but one train, largely during the daytime at slow speed with light engines and trains. Furthermore, he said the short line employees have regular hours of work, are usually at home every night and in no way are their hazards comparable with those of employees of larger systems. These factors also apply to the experience and skill required on short lines, he added. In addition, employment is regular because of the fact that a minimum number of trains are being operated and there can be no curtailment. Regarding inequalities in wages, Mr. Cain stated that there could be no uniformity of wage scales for short lines because of their great physical differences.

Upon being questioned, Mr. Cain stated that the application of the consolidation clauses of the Transportation Act would probably overcome this difficulty. Mr. Cain closed his representation with a discussion as to whether short lines are properly before the Board in this case. He called attention to the Board's ruling on the application of the representatives of the "outlaw" switchmen and to the similarity of conditions in the present case to the conditions leading to the issuance of the Board's ruling on the switchmen's petition. The Board adjourned after two sessions on November 22 until November 24.

Operating Statistics for August

The Interstate Commerce Commission has issued a tabular summary of operating statistics for the month of August, 1920, of roads having annual operating revenues in excess of $25,000,000 (including mixed and special train service). The figures per ton miles, car loading and car mileage, and net ton miles per car day are as follows:

		Net ton-miles (millions)		Net ton-miles per loaded freight car-mile		Car-miles per car day		Net ton-miles per car day	
		1920	1919	1920	1919	1920	1919	1920	1919
New England Region									
Boston & Albany	August	165	123	26.9	22.5	33.2	30.5	616	466
	Eight months	1,086	870	24.8	21.5	26.2	31.5	459	479
Boston & Maine	August	379	306	25.6	23.2	19.5	17.2	359	289
	Eight months	2,555	2,186	24.2	23.8	15.6	17.4	278	303
New York, New Haven & Hartford	August	308	282	24.8	23.0	12.7	13.6	233	232
	Eight months	1,926	2,050	23.3	23.0	9.6	14.1	168	244
Great Lakes Region:									
Delaware & Hudson	August	456	346	36.8	35.4	28.1	28.0	688	627
	Eight months	2,962	2,328	35.1	35.5	26.9	25.3	645	582
Delaware, Lackawanna & Western	August	548	461	29.6	29.2	33.5	31.4	698	668
	Eight months	3,399	3,319	28.8	29.9	27.1	27.0	558	562
Erie (including Chicago & Erie)	August	1,126	1,057	29.1	28.5	26.8	33.6	544	667
	Eight months	7,718	6,775	29.4	28.6	23.4	30.3	494	579
Lehigh Valley	August	706	593	32.9	31.4	26.1	25.7	601	593
	Eight months	4,207	3,730	31.5	30.2	19.9	22.5	447	472
Michigan Central	August	522	430	25.5	20.2	23.6	24.9	439	385
	Eight months	3,307	2,861	24.5	20.7	18.2	26.0	340	380
New York Central	August	2,499	2,122	29.7	26.9	25.3	26.1	499	492
	Eight months	15,949	13,699	28.0	26.1	21.6	23.7	411	406
Pere Marquette	August	275	238	27.2	24.5	17.9	17.4	386	328
	Eight months	1,770	1,633	26.4	24.1	15.1	18.2	311	327
Pittsburgh & Lake Erie	August	262	226	42.8	41.6	9.0	11.8	282	323
	Eight months	1,374	1,445	42.3	40.9	7.5	8.9	217	240
Wabash	August	503	241	25.3	23.9	27.6	17.3	547	329
	Eight months	3,144	2,543	24.9	23.2	25.7	26.4	507	446
Ohio-Indiana-Allegheny Region—									
Baltimore & Ohio	August	2,154	1,837	36.0	32.5	25.8	24.6	607	575
	Eight months	14,058	11,081	34.2	33.4	24.3	22.5	566	484
Central of New Jersey	August	269	237	33.4	32.7	15.7	14.7	342	300
	Eight months	1,721	1,558	33.9	33.0	13.5	13.0	293	265
Cleveland, Cincinnati, Chicago & St. Louis	August	640	648	29.1	27.5	28.8	30.6	562	621
	Eight months	4,498	4,021	28.3	27.6	27.3	26.6	531	500
Pennsylvania System	August	4,928	4,888	36.3	34.2	22.0	21.7	514	505
	Eight months	33,096	31,725	34.0	37.0	18.9	18.9	435	438
Philadelphia & Reading	August	693	651	38.8	37.9	18.0	22.2	483	562
	Eight months	4,669	4,105	38.0	37.7	18.9	18.7	492	465
Pocahontas Region—									
Chesapeake & Ohio	August	1,192	793	42.3	40.8	36.1	23.2	938	563
	Eight months	8,182	6,449	41.0	40.4	36.4	24.3	919	584
Norfolk & Western	August	1,104	984	41.7	39.7	37.1	33.6	996	850
	Eight months	7,608	6,722	41.4	39.6	34.9	27.4	930	676
Southern Region—									
Atlantic Coast Line	August	309	230	23.4	20.6	24.5	16.1	395	255
	Eight months	2,630	2,417	21.2	21.5	22.7	20.5	332	299
Illinois Central (including Yazoo & Mississippi Valley)	August	1,606	1,247	30.4	26.4	42.1	36.3	892	683
	Eight months	11,470	8,622	28.8	26.6	40.4	31.1	800	575
Louisville & Nashville	August	947	796	31.1	29.2	30.0	26.2	629	542
	Eight months	6,636	5,881	29.8	29.0	31.3	24.4	628	486
Seaboard Air Line	August	242	157	24.0	22.1	23.6	18.1	416	314
	Eight months	1,959	1,538	22.9	21.9	21.7	20.0	356	311
Southern Railway	August	804	640	24.1	21.9	25.3	22.3	451	388
	Eight months	6,421	4,587	23.3	22.2	23.1	19.9	403	325
Northwestern Region—									
Chicago & North Western	August	1,073	826	26.5	24.6	24.2	17.1	421	305
	Eight months	7,494	6,470	25.5	24.9	21.1	19.3	369	322
Chicago, Milwaukee & St. Paul	August	1,175	1,132	24.9	23.4	32.9	27.3	537	461
	Eight months	8,742	8,182	25.2	24.7	24.2	26.0	434	450
Chicago, St. Paul, Minneapolis & Omaha	August	173	146	24.0	22.3	25.1	20.0	433	341
	Eight months	1,242	1,054	23.7	23.4	22.2	14.8	396	240
Great Northern	August	883	673	29.9	27.2	31.3	21.7	561	413
	Eight months	6,139	5,580	28.3	28.8	26.4	21.0	529	419
Minneapolis, St. Paul & Sault Ste. Marie	August	302	267	23.0	21.2	29.1	24.3	468	396
	Eight months	2,378	2,051	23.1	22.3	26.6	22.2	475	367
Northern Pacific	August	770	632	26.8	24.6	36.0	29.1	598	493
	Eight months	5,945	5,308	27.2	27.1	33.6	25.1	671	486
Oregon-Washington R.R. & Navigation Co	August	183	173	28.0	25.9	38.5	32.3	826	609
	Eight months	1,430	1,109	28.1	26.2	29.8	25.7	656	514
Central Western Region—									
Atchison, Topeka & Santa Fe	August	1,199	1,130	22.1	21.8	41.6	30.8	627	483
	Eight months	8,611	7,249	22.8	22.1	32.1	26.1	507	407
Chicago & Alton	August	226	151	26.0	24.3	21.6	17.5	387	290
	Eight months	1,558	1,357	27.0	26.0	23.4	22.0	423	361
Chicago, Rock Island & Pacific	August	789	726	25.2	24.4	30.2	21.9	571	411
	Eight months	5,947	4,801	24.1	23.0	25.5	24.5	451	401
Chicago, Burlington & Quincy	August	1,451	1,431	29.1	27.0	34.3	32.6	679	606
	Eight months	10,776	8,931	28.3	26.8	30.4	25.6	603	465
Denver & Rio Grande	August	191	183	29.4	28.3	20.8	17.6	426	314
	Eight months	1,414	1,158	30.3	29.8	19.0	13.2	403	267
Oregon Short Line	August	321	298	28.8	26.8	52.3	41.5	975	776
	Eight months	2,373	1,855	29.6	27.5	46.3	31.3	984	611
Southern Pacific	August	972	791	25.1	24.3	36.6	34.7	676	568
	Eight months	6,729	6,077	25.3	25.7	34.6	32.0	626	567
Union Pacific	August	998	874	23.0	21.8	86.7	65.2	1,373	975
	Eight months	6,237	5,542	24.3	23.8	68.9	54.0	1,249	922
Southwestern Region—									
Missouri, Kansas & Texas	August	225	193	24.6	22.8	31.5	31.4	492	473
	Eight months	1,516	1,317	23.7	23.3	28.2	23.8	414	332
Missouri, Kansas & Texas of Texas	August	133	127	26.5	24.2	19.5	17.2	343	291
	Eight months	899	811	24.3	23.6	16.8	12.7	268	186
Missouri Pacific	August	810	692	27.3	25.8	24.1	24.2	495	446
	Eight months	6,022	4,773	26.8	25.3	22.5	20.5	453	376
St. Louis-San Francisco	August	454	383	26.0	24.5	22.6	17.7	404	314
	Eight months	3,318	2,842	25.8	24.8	20.7	18.3	368	308
Texas & Pacific	August	184	154	24.2	23.1	25.8	19.7	449	327
	Eight months	1,289	1,198	23.3	22.9	21.0	19.7	344	313

Operation of British and U. S. Railways Compared

Detailed Statistics Regarding Results in Both Countries in First Months of 1920 Afford Interesting Material for Comparisons

THE BUREAU of Railway Economics has prepared the following interesting and valuable comparative study of the operating statistics of the railways of Great Britain and the United States for the first six months of 1920:

Operating Statistics—United States and Great Britain Six Months—1920

Among the several provisions in the Act of Parliament of August 13, 1919, creating the British Ministry of Transport, is one which empowers the Minister to require the railways to publish certain railway statistics. As a result of this and other general powers conferred upon the Ministry by the Act, a new system of railway operating statistics was made effective in Great Britain, beginning the first of January, 1920.

The forms and instructions from which the figures have been compiled were prepared by the general managers of the railway companies concerned. Under the new system summaries of the statistics are issued by the Ministry of Transport for each period of four weeks. Their publication marks an important stage of progress relative to railway operation, especially during the period of post-war reconstruction. Three new factors have been introduced, namely: Ton-miles, car-miles, and locomotive hours. In addition, statistics previously ascertained, such as train-miles and locomotive miles, have been more closely analyzed so as to add materially to their value. Results for the first six months of the present year are now available, and the practical value of the new statistics will be greater as figures are added for each succeeding month, and later for two or more years on a comparative basis.

Summarized results for the six months (24 weeks) to June 20, 1920, appear in the accompanying table.

RAILWAYS OF GREAT BRITAIN

OPERATING STATISTSCS FOR SIX MONTHS, JANUARY 1 TO JUNE 20, 1920

Total freight tons	180,738,588
Coal, coke and patent fuel	104,491,295
Other minerals	36,316,487
General merchandise (including live stock)	39,930,806
Total freight—net ton-miles	10,364,679,852
Coal, coke and patent fuel	4,904,380,808
Other minerals	1,847,007,045
General merchandise (including live stock)	3,613,291,999
Average length of haul—all freight-miles	57.35
Coal, coke and patent fuel	46.94
Other minerals	50.86
General merchandise (including live stock)	90.49
Per cent of total freight-tons	100.00
Coal, coke and patent fuel	57.82
Other minerals	20.09
General merchandise (including live stock)	22.09
Per cent of total freight—net ton-miles	100.00
Coal, coke and patent fuel	47.32
Other minerals	17.82
General merchandise (including live stock)	34.86
Freight traffic receipts—gross	$282,974,011
Receipts per ton-mile (including C. & D.)—cents	2.866
Receipts per ton-mile (excluding C. & D.)—cents	2.629
Average train load—tons	150.36
Average car load—tons	6.10
Locomotive-miles	256,343,647
Locomotive-hours—total	37,023,827
In traffic	33,625,039
In other locomotive duties	3,398.788
Car-miles—total	2,388,281,135
Loaded	1,692,150.254
Empty	696,130,881
Percentage of loaded to total	70.85
Cars per train—total	34.68
Loaded	24.57
Empty	10.11
Average miles per car per day (loaded and empty)	10.63
Net ton-miles:	
Per train engine hour	968.00
Per shunting hour	935.69
Per engine hour	475.72
Ton-miles per route mile	515,332
Car-miles per train locomotive-hour	222.93
Car-miles per shunting hour	222.50
Car-miles per locomotive-hour	109.56
Passenger train-miles per train-hour	12.94
Freight train-miles per train-hour	7.61
Passenger train-miles per engine-hour	10.09
Freight train-miles per engine-hour	3.16
Average time per day cars were in transit—hours	1.40
Average time per day cars were being switched or standing waiting repair—hours	22.60

NOTE.—Pounds converted to dollars at 4.8665. Tons are short tons of 2,000 lbs. C. & D. = collection and delivery.

This table provides a basis, for the first time, for a detailed comparison of English and American operating results. A note of caution is necessary against the too hasty attempt to draw conclusions *from the figures merely;* comparisons between different countries, as between different systems in any individual country, should not be made except by those who know and can make allowance for the varying circumstances and conditions affecting the countries concerned.

What the Statistics Show

The average train load in Great Britain for the six months to June 20, 1920, was 150 tons, while that for the United States for the six months to June 30, 1920, was 710 tons. Some critics may say that operating and traffic, as well as geographical conditions in the United States and England, are so different that comparisons of train or car loading are not only useless but absolutely misleading. Yet a direct comparison, designed merely to set out the differences in sharp detail, must have some value, especially when all other factors in the comparison are taken into account. The average freight train load in the United States for the decades since 1888, has been as follows:

Year	United States average freight train load-tons
1888	176
1898	226
1908	352
1918	628
1920 (Six months)	710

The foregoing figures present a luminous historical fact as to increased train loading results attained by the railways of the United States. Every decade from the very first has shown marked advance, with the curious coincidence that in 1888 the average train load in this country was greater than the British average for 1920, while the American *average* for 1888 was almost the same as that for one or two of the individual companies that top the list in England to-day.

To speak of the American train-load of 710 tons is to talk in terms only of an average, and conveys no idea of the size of the heaviest freight trains in this country. It is not exceptional for a locomotive in the United States to haul three or four thousand tons, and in the case of iron ore coming down from the mines at Duluth, engines have handled as much as 7,500 tons of gross load on one train. This may be said to represent the maximum train load in the United States, while in England the heaviest gross train loads run up to 1,500 tons, and these are very exceptional. Both these last figures include weight of cars and therefore are comparable with each other, although not strictly comparable with the average freight train loads referred to above.

Receipts Per Ton-Mile

An important statistical unit in the new English statistics is the average revenue, or receipts, per ton per mile. The average gross receipts per ton mile in England for the month of January, 1920, was 2.328 cents, and was increased to 3.-000 cents in the month of June, 1920. This increase was due to the higher level of freight rates made effective on January 15, 1920. The average for the six months ended June,

was 2.866 cents. These averages are gross receipts, and include charges for collection and delivery. Excluding such charges, the average net receipts per ton-mile were as follows: First four weeks (to January 31st), 2.107 cents; second four weeks (February), 2.689 cents; month of June, 2.748 cents; average for six months, 2.629 cents.

The general increase in freight rates, effective January 15, ranged from 25 to 60 per cent, plus a flat rate addition per ton, making an average increase of 55 per cent for the country as a whole. Later, on September 1, 1920, these rates were cancelled and an increase of 100 per cent, plus a flat rate addition per ton, was made on the rates in effect previous to January 14, 1920. This latter increase, of course, plays no part in the average receipts per ton-mile for England discussed above.

The average receipts per ton-mile for Class I roads in the United States, which correspond to the British averages, exclusive of collection and delivery charges, was 0.972 cents for the six months to June 30, 1920. A survey of the average receipts per ton-mile in the United States by decades since 1888 is of interest, as shown by the following table. No allowance is made for the freight rate increase of August, 1920, just as the British increases of September 1, 1920, have not yet been reflected in the operating returns.

Year	United States Average receipts per ton-mile (cents)
1888	1.001
1898	0.753
1906	0.754
1918	0.849
1920 (Six months)	0.972

Average Length of Haul

Any comparison of freight charges in England with those in America would be misleading, unless distances are shown at the same time. The average length of haul for all freight, as revealed by the new statistics in Great Britain for the six months ending June 20, 1920, was 57 miles, while that for general merchandise alone was 91 miles. The average haul for all freight in the United States for the six months ending June 30, 1920, approximated 316 miles. The figures in Great Britain for the six months ending June 20, 1920, are shown as follows:

Traffic	Railways of Great Britain as a whole
General merchandise	91 miles
Coal and coke	46 miles
Other minerals	51 miles
All freight	57 miles

These figures correspond with those in the United States shown below:

Year	Typical haul railways of U. S. regarded as one system
1915	295.90
1916	295.23
1917	312.07
1918	301.47
1920 (Estimated)	316.00

It is readily seen that England is at a disadvantage in having shorter hauling distances than those in the United States. In fact, the average length of haul in England is practically as short as that of any other country in the world. In view of the fact that heavy terminal costs are included as a fixed figure in long and short distance traffic alike, England must either increase her long distance traffic in order to increase her railway revenues, or (barring great development along that line, because of geographical or traffic conditions) reduce terminal costs, if her railway charges per ton mile are to return to anything like pre-war levels.

Freight Car Performance

According to the new statistics, British roads for the six months ending June 20, 1920, hauled a total of 10,364,679,852 tons one mile. Their freight cars ran 2,388,281,135 miles, with an average of 34.68 cars per train. Of these, 34.68 cars, an average of 27.57 were loaded and 10.11 were empty, the proportion of loaded cars per train being 70.8 per cent. In the United States, Class I roads for the six months ending June 30, 1920, hauled 207,281,000,000 tons one mile, with a car performance of 10,305,601,000 car-miles. The average number of cars per train was 36, which is practically the same as in England. Loaded cars per train in the United States were 26 and the empty 10, the percentage of loaded to total being 70.7 per cent, slightly higher than the British figure.

In England, for the six months ending June 20, 1920, the average number of miles per car per day was 10.63 miles. For the six months ending June 30, 1920, in the United States, the number of miles per car per day was 23.

Locomotive Efficiency

Locomotive hours is another of the new factors introduced in the English statistics, and as it is one of the test units of cost in railway operation, it is a most invaluable addition when taken in conjunction with ton-miles. The total number of engine hours in England for the six months ending June 20, 1920, was37,023,827, of which 33,625,039 were expended in moving traffic, and 3,398,788 in other locomotive duties.

During the same period the English freight locomotive hauled on an average, 968 tons each hour in regular traffic, while an average of 936 tons per locomotive was switched each hour. Each hour the average English locomotive moved 110 cars.

British vs. American Results

For the six months ending June 30, 1920, the Class I railroads in the United States carried 189,997,457,000 ton-miles of revenue freight earning $1,847,217,911, with an average receipt per ton-mile of 0.972 cents. According to the new British statistics, the average receipts per ton-mile for the six months ending June 20, 1920, was 2.629 cents. If the average receipts per ton-mile which have been collected by the British railways during this six months period, had been charged against the freight traffic carried by the Class I railways in the United States, for the six months ending June 30, 1920, the latter would have earned $5,445,327,118 instead of $1,847,217,911. In other words, British rates applied to American traffic would have cost the shippers of the United States $3,600,000,000 in six months, or $7,200,000,000 per year, virtually $20,000,000 per day.

The 207,281,000,000 ton-miles, including non-revenue freight, hauled by the Class I railways in the United States for the six months ending June, 1920, were carried by an average train consisting of 36 cars averaging 20 tons each. If the railways in the United States had used British cars, which have an average load of 6 tons, in moving the tonnage quoted above, they would have moved trains consisting of 120 cars, or more than three times the number of cars per train. In view of the present car shortage in the United States, this necessity for more than three times the number of cars for a given amount of traffic, would clearly have tied up our railway traffic in a congestion such as the United States never has experienced, even in its most congested periods.

In hauling the 207,281,000,000 ton-miles of freight during the six months' period, Class I railways in the United States operated 252,540,000 freight train-miles, i. e., in train loads of 710 tons. Applying the British train load of 150 tons to the ton mileage hauled in the United States, the railways in the United States would have been forced to operate 1,195,356,000 train-miles, or nearly five times as many train-miles as the number actually needed under American operating conditions.

The estimated length of haul in the United States, for the six months, was 316 miles. The average length of haul for the British railways for the same period was 57 miles. If

the average haul of the British railways had been in effect in the United States, American freight would have been interchanged 5.54 times as often as it was. The consequent loss in efficiency, increase in cost, and delays in handling the freight business, are almost incalculable.

In other words, if railways in the United States had carried their freight at the rate per mile charged by the British railways, they would have earned $3,600,000,000 more.

If they had been using British freight cars, they would have been forced to use 84 more cars to the train, and the resulting car shortage would have tied them up.

If they had operated with the British train-load, their train-miles would have increased to 473 per cent of the actual number.

If they had hauled their tonnage with the British length of haul, their interchanges would have been increased 5½ times.

National Industrial Traffic League Annual Meeting

Committees Report on 40 Subjects. Attendance of 450 Is Largest in Organization's History

THE ANNUAL MEETING of the National Industrial Traffic League was held at the Waldorf-Astoria Hotel, New York City, on November 18 and 19; W. H. Chandler, of Boston, president of the League, in the chair, and J. H. Beek, executive secretary, acting as secretary of the meeting. About 430 members and guests were in attendance. The membership of the League is now 950 and this was the largest meeting in its history. Veteran members pronounced it the best. More than 40 subjects were on the docket for discussion, some committees reporting on several different matters. Few, if any, of the discussions resulted in any decision affecting the permanent policy of the League, the four sessions being devoted mainly to statements of committee chairmen telling of matters concerning which they are holding conferences, from time to time, with the railroads, or the government, or on which they desired further instructions from the membership. Numerous conferences have been held recently with the railroads and two important ones are scheduled to be held in the next two weeks; one in New York on November 29 and one in Chicago on December 10.

These and other conferences will deal with various proposals of railroads to make advances in freight rates, or to make modifications in tariffs and regulations which will have the effect of producing advances.

The membership of the League is now so large that proposals for action are very numerous and varied. Some of those presented at this convention contemplated action which conservative members held would not come within the provisions of the League constitution and by-laws; and these were referred to the executive committee, with power. Following are notes on the more important matters dealt with:

Increases in freight rates by various devices, changes in classifications, abrogation of commodity rates, etc. The executive committee has appointed a special committee, W. H. Chandler, chairman, to report to the League on this general question, after further conferences with railroad traffic officers.

A special committee made a report on the question of allowances to terminal railroads, including particularly charges for spotting cars on industrial tracks, giving a mass of detailed information on the general subject. The present proposal of the carriers, looking to an increase of their revenue, is not different from one proposed in 1915, and then condemned by the Interstate Commerce Commission. Members are recommended to appeal to the railroads not to abolish free service and to complain to the Interstate Commerce Commission when negotiations fail; and to be prepared to ask legislatures to act when such course is deemed advisable. This committee was instructed to continue its vigorous campaign; and to see that copies of its reports be sent to the Interstate Commerce Commission, to the commissions of the several states and to railroad traffic committees. It was stated that the Southern and the Louisville & Nashville had already given notice of discontinuance of free service at private sidings.

The executive committee proposes to have established a new standing committee, the duty of which will be to keep the public informed on freight rate questions.

A brief report was presented on the clause of the Transportation Act, 1920, providing for consolidation of the railroads into a few systems; and the executive committee proposes to keep a close watch on what the Interstate Commerce Commission does in this connection.

Sidetrack Agreement—The committee on revision of form of contract between railroads and industries, for the construction and operation of sidetracks at industries, reported that the long pending negotiations on this subject had been brought to a final decision; and the proceeding in the matter before the Interstate Commerce Commission had been withdrawn.

Demurrage—The executive committee proposes, in view of the less congested condition of freight yards, to ask the railroads not to increase demurrage charges.

Charges, Regulations and Demurrage on Shipments Reconsigned—The decision on this matter in case No. I. C. C. 10,457 making certain conditions more favorable, applies only in territory east of the Hudson River. The meeting approved the committee's proposal to try to get the order amplified to apply to all territory. The committee thinks that rules for diversion and reconsignment ought to be published by one agent for the whole country, not by each road individually: this ought to tend to promote uniformity of rates. A member suggested, however, that uniformity probably would be accomplished by increasing the rate where it is now $2.50 a car to $3, the latter rate being now in effect in certain territory.

Express Receipts.—The committee on express made a brief report on a proposed combination receipt and way bill, to be filled out by the shipper, which is said to have been adopted by a considerable number of shippers in Chicago; and samples were shown to the members. There is still considerable difference of opinion as to the merits of this form, and the committee proposes to confer further with the express company.

Telegraph Liability—The case involving the intention of the Interstate Commerce Commission to make telegraph companies assume a larger liability for negligence in the transmission of messages is to be argued on December 10 and the League committee will be present at the hearing.

Agency Tariffs—Freight tariffs, issued by agents who act for a number of roads (to save the expense of a large and unnecessary number of individual tariffs) were discussed at some length, many agency tariffs being declared difficult of interpretation. The Interstate Commerce Commission is

contemplating the issuance of drastic rules to cure the faults complained of. It was recommended that all members should promptly report faults to the issuing agent and to the committee.

Diversion and Reconsignment of Perishable Freight.—The committee on perishable freight reported that the Philadelphia & Reading had given notice of cancellation of tariffs allowing transit and storage facilities on fruits and vegetables. It was said that the other roads propose similar action, withdrawing privileges now enjoyed by shippers. It was proposed that the League should intervene before the Interstate Commerce Commission in the protest against the change; but this was objected to on the ground that it has never been the policy of the League to take part in issues of such a local character. On the other hand, it was claimed that the threatened abolition of stop-off privileges would make disturbance in all parts of the country. The matter was finally referred to the executive committee with the recommendation that it be put in the hands of a special committee to confer with the railroads.

Bills before Congress—The legislative committee reported that bills now before Congress in which the League is interested will probably have to be reintroduced in the next Congress, as there is little prospect of any action being taken in the remaining short session of the present Congress. These bills are S. B. 4,204, Interference with Commerce; S. B. 1,024, Commercial Bribery; S. B. 4,254, Lake and Rail Service on the Great Lakes; H. B. 12,953, Withdrawal of Water Transportation Service; S. B. 4,336, Liability of Telegraph Companies.

As to bill S. B. 1,024 the committee is not agreed as to what ought to be done. The re-enactment of the Smith Amendment to the 15th section, which expired by limitation on January 1, 1920, has been discussed by the committee, but no conclusion has been reached.

Freight Claims—The committee on this subject is to have a conference with officers of the freight claim association of the railroads at Chicago on December 7. It is proposed to ask for a rule under which a railroad shall pay interest on claims for loss and damage if not paid within 60 days from the date of filing the claim.

Weighing—The committee on weighing proposes that there shall be no tolerance on coal and coke except by actual weight and tests. This committee will confer with the railroads with a view to promoting better practice in securing actual weights of carload freight.

Export Bill of Lading—The committee in charge of this matter has formulated a blank which will be laid before the Interstate Commerce Commission at its next hearing concerning the bill. It is expected that the arguments for and against the League's form will be all in the hands of the Interstate Commerce Commission by January 1, and that by March 1, a decision from the Commission may be expected. Thereafter it is hoped that the Commission will promptly promulgate form for a domestic bill of lading. The only difference of consequence between the League and the ocean carriers is in regard to the limit of liability, which the carriers desire to continue at $100 a package; the League wants to make this $250.

Shippers' Names on Cars—A special committee, considering complaints of detention of carload freight because of billing being lost, has considered a rule providing for putting a card on the inside of a car showing the name of shipper, name of consignee, etc. One road asks shippers to put in such a card. There are, however, obvious objections to making names public in this way, and the committee has had only one definite complaint of delay due to lost billing. The only action taken was to instruct the committee to keep watch of the situation.

Embargoes—A committee reported proposing action to secure various changes in railroad practice. It is desired to have names of embargo agents published in the Official Guide. The Guide is accessible to many persons who do not have the publication in which the names of embargo agents are now given. Among the other rules desired is one providing that before an embargo is placed, the shipper shall be notified, and one to facilitate the securing of information by shippers from the embargo agents. This committee desires to confer further with the railroads, and the report was received with that understanding.

Telegraph Code—A conference has been held with the Telegraph and Telephone Section of the American Railway Association and further conferences are to be held. It is proposed to formulate a brief cipher code, to be put in the hands of the more important railroad offices. The question of a longer code, or of putting any code in the hands of all local agents, is one requiring further consideration.

Mileage Books—The committee reported a strong demand for a general interchangeable mileage ticket. The committee expects soon to confer further with the railroads, and it proposes to ask for a reduction of 20 per cent in the prices of mileage tickets.

Coal Traffic—The American Wholesale Coal Dealers' Association is conferring with the American Railway Association on the revision of the reconsignment rules affecting coal, and there was a lively discussion as to whether the League could legitimately comply with the request that it support the coal men. Views both for and against were vigorously supported. The matter was finally referred to the executive committee. Similar action was taken concerning the plea made in behalf of the grain shippers in Oklahoma, Kansas, Missouri and elsewhere concerning alleged exorbitant rents asked by railroads for land and shipping station privileges.

Election

J. C. Lincoln, of New York, one of the pioneers in the League, was elected an honorary life member.

The election of officers for the ensuing year resulted in the choice of W. H. Chandler, Boston, as president; Charles Rippin of St. Louis, vice-president; E. C. Wilmore, Chicago, treasurer, and the following officers and directors to represent districts: Honorary vice-presidents, for the seven districts, the following (the name of the district being shown, in each case, in italics). *New England,* W. H. Day, Jr., Lynn, Mass.; *Trunk Line,* R. J. Menzies, New York, N. Y.; *Central Freight Association,* F. H. Baer, Cleveland, O.; *Southeastern,* M. M. Caskie, Montgomery, Ala.; *Southwestern* H. D. Driscoll, Oklahoma City, Okla.; *Western Trunk Line,* C. E. Childe, Omaha, Neb.; *Pacific Coast,* Seth Mann, San Francisco, Cal.

Members of the Board of Directors, to represent the several regions (as indicated in italics), the following: *New England,* C. B. Baldwin, Boston, Mass.; R. W. Poteet, New Britain, Conn.; R. L. French, Bridgeport, Conn.; *Southeastern,* C. S. Hoskins, Tampa, Fla.; J. S. Davant, Memphis, Tenn.; W. S. Creighton, Charlotte, N. C.; *Southwestern,* C. D. Mowen, Ft. Smith, Ark.; U. S. Pawkett, San Antonio, Tex.; C. Giessow, New Orleans, La.; *Pacific Coast and Intermountain,* Seth Mann, San Francisco, Cal.; F. P. Gregson, Los Angeles, Cal.; J. D. Mansfield, Seattle, Wash.; C. O. Borgan, Spokane, Wash.; *Western Trunk Line Northwest,* H. Mueller, St. Paul, Minn.; F. D. Keiser, Duluth, Minn.; M. H. Strothman, Minneapolis, Minn.; *Western Trunk Line West,* Charles Rippin, St. Louis, Mo.; G. M. Cummins, Davenport, Ia.; J. P. Haynes, Sioux City, Ia.; C. E. Childe, Omaha, Neb.; J. H. Tedrew, Kansas City, Mo.; *Central Freight Association,* H. D. Rhodehouse, Youngstown, O.; J. C. Graham, Jackson, Mich.; H. C. Barlow, Chicago, Ill.; F. T. Bentley, Chicago, Ill.; F. M. Renshaw, Cincinnati, O.; *Trunk Line,* W. J. L. Banham, New York, N. Y.; George P. Wilson, Philadelphia, Pa.; F. E. Williamson, Buffalo, N. Y.; J. M. Belleville, Pittsburgh, Pa.

New England Roads Ask Larger Divisions

Trunk Lines Object to Giving Up Revenues to Help Neighbors. Committee Appointed to Seek Agreement

WASHINGTON, D. C.

THE FINANCIAL CONDITION of the New England railroads and the question as to whether their revenues should be increased by allowing them larger divisions of the through rates into and out of New England was the subject of an informal conference before the Interstate Commerce Commission at Washington on November 22, attended by executives of the eastern trunk lines and the New England lines and shippers and state commissioners of New England, who had been called together by the commission for the purpose of discussing the possibility of a voluntary adjustment by the railroads themselves which might make it unnecessary for the commission to determine the divisions in the case instituted by the formal complaint filed by the New England roads. The trunk line executives vigorously opposed the idea of increasing the revenues of the New England lines at their expense, which was the plan favored by the New England interests, but after an all-day discussion an executive session of the railroad officers was held at which a committee of 11 was appointed to endeavor to work out a solution of the problem if possible.

In opening the conference Chairman Clark of the commission said that the New England roads seem to be faced with a serious situation; that they had asked to be treated as a separate group for the purpose of the general rate case but that the commission had suggested that consideration be given to the divisions of joint rates accruing to those lines. The New England lines had filed a complaint asking the commission to fix the divisions, but the commission had called the conference with the thought that an exchange of ideas might pave the way for an understanding and lead to results more satisfactory and lasting than could be reached by a formal proceeding. Mr. Clark suggested that the speakers consider that they were addressing their remarks to each other rather than to the commission.

The position of the New England lines was outlined in a statement by Charles F. Choate, Jr., in part as follows:

The Desperate Condition of the New England Carriers

"The condition of the New England railroads, through the operation of causes entirely beyond their control, has become such that unless immediate relief is afforded, all or most of them will very shortly be driven into receiverships. The net railway operating income of these roads, omitting the Boston & Albany, for the test period averaged $35,175,077, and for the fiscal year ending June 30, 1917, was $42,170,828. During the test period these roads earned a net income after the payment of all fixed charges of over $9,000,000 per year. For the entire 26 months of federal control their net railway operating income was $9,676,535, or an annual average of $4,477,989. For the eight months ending August 31, 1920, the actual deficit in net railway operating income was $23,674,676.

"The best estimate obtainable based on the year ending June 30, 1920, which has been adjusted to reflect the increases of revenue under *Ex Parte* 74 and all wage increases and other increased costs, and predicated on a continuation of present volume of business and operating costs shows for 1921 a net railway operating income of about $10,000,000, or $40,000,000 less than the net railway operating income required by the Transportation Act to show 6 per cent on the fair value of their property, and about $22,000,000 less than the amount required to meet fixed charges. This estimate is generally confirmed by the actual results for September and estimates for October, the only figures available which in any way reflect the operation of the increased rates.

"The book cost of road and equipment as shown by property accounts of the New England Roads, excluding Boston & Albany, exceeds $838,247,769. An annual return of 6 per cent on this amount would require $50,296,485. The preliminary figures informally served on the carriers by the Bureau of Valuation indicate a reproduction cost of over $200,000,000 in excess of book cost.

"The fixed charges of the New England roads as of August, 1920, are $37,641,465, against which there is available non-operating income of $5,853,404, leaving what may be called 'net' fixed charges of $31,788,061, or nearly $22,000,000 in excess of their net railway operating income.

"The high cost of operation in New England, due to short hauls, branch lines, frequency of junction points, density of freight stations, diffusion of traffic and the terminal character of New England railroad service, has been still further exaggerated by the increased costs in all departments and by steadily increasing taxes.

"The increase in fuel cost has been very much greater in New England than in territory west of the Hudson, both because of the restriction of water transportation and because of the higher rates paid railroads outside New England for transporting it. The increased cost of fuel of 1920 over 1919 has been $13,000,000. The increased cost of fuel of 1920 over 1916 has been $25,000,000.

"The increase in wages has also been greater in New England, because the scale of wages of the roads in northern New England was considerably lower than west of the Hudson, with the result that the standardization of wages has imposed an excessively heavy financial burden on the New England carriers. The payroll of New England roads has increased over $100,000,000 per annum since the test period.

"Rate advances increasing the gross revenues of roads operating in Maine have added heavily to the taxes, as in that state a tax is levied as an excise on gross revenue. Per diem, already a heavy burden to New England roads, will as a result of the increased daily rates add a burden of $2,000,000 to $3,000,000 over 1917 charges, and probably considerably more than that. In reality this charge is a transfer of a large sum from New England carriers to Western carriers, based upon transportation conditions entirely beyond the control of New England lines.

"The New England roads are essential to the community which they serve. It is largely an industrial community. The population of the New England states according to the latest census is 7,400,856, which is almost wholly dependent on these industries.

"Not only is no money available for vitally necessary improvements and additions to handle a volume of traffic amounting in 1919 to 72,000,000 tons, but the deficit shown above is so great that these roads can see no escape from their present predicament unless the relief prayed for in the petition be granted.

"Through the inclusion in the Eastern rate group of the investment accounts and revenue needs of the New England roads there was added to the revenue of the C. F. A. and trunk line roads, produced by the increased rates granted, approximately $25,000,000 which would not have been realized had the revenue needs and the property investment of the New England roads not been included. And this $25,000,000 is in excess of the revenue which was needed by the C. F. A. and trunk lines to produce 6 per cent upon their investment.

"In other words, the lines needing the revenue have by

their inclusion in the group lost, and the lines not needing the revenue have gained the $25,000,000.

"From the increased freight rates granted August, 1920, the trunk lines and C. F. A. lines, whose traffic is roughly ¾ freight, profit much more than the New England lines, whose traffic is about ⅓ passenger. In other words, the former lines gain 40 per cent on ¾ of their business, the latter on only about 2/3.

"It was highly desirable that the New England lines should be included in the Eastern rate group to avoid an objectionable and discriminatory rate situation in the whole of official classification territory. The needs of the New England lines represented in the original request to the commission for 30 per cent amounted to an increase in freight revenue for New England carriers of 47-plus per cent, of the C. F. A. lines 24-plus per cent, and of the trunk lines 29-plus per cent. The wage award required an additional 10 per cent., so that the New England carriers needed an increase of 57-plus per cent, whereas they received but 40 per cent.

"Approximately 34,000,000 tons of freight are interchanged between the New England lines, excluding the Boston & Albany, and the lines west of the Hudson. As to this entire volume the New England roads are either originating or delivering carriers. This tonnage produced a gross revenue in 1919 of $124,000,000 for the roads west of the Hudson. The same tonnage at the increased rates should produce nearly $175,000,000 for 1921. In this traffic and the territory which produces or absorbs it, the lines west of the Hudson are as vitally interested as the New England roads, and their revenue from it is 100 per cent in excess of the revenue accruing from it to the New England roads. If this traffic is to be preserved—and it must be preserved—the roads which serve the New England territory must be allowed to live and the industries within that territory must be accorded adequate transportation.

"The commission, as a part of the financial plan upon which the Transportation Act is based, is given the power to divide joint rates so that they shall be just, reasonable and equitable as between the several carriers, giving due consideration, among other things, to the amount of revenue required to pay their respective operating expenses, taxes and a fair return on their railway property held for and used in the service of transportation, and the importance to the public of the transportation service of the carriers, and also whether any particular carrier is an originating, intermediate or delivering line, and any other fact or circumstance which would ordinarily, without regard to the mileage haul, entitle one carrier to a greater or less proportion than another carrier, of the joint rate.

"It seems that the commission, of its own motion, could, in the rate case, have so adjusted the divisions here in question as to be equitable in the light of the foregoing provisions and enable the New England lines to survive and render the service their territory requires. For adjustment of divisions is an integral part of the financial plan devised by Congress.

"So now the commission may adjust these divisions to accomplish this necessary equitable result. Of the $40,000,000 additional net income needed by the New England roads a portion should come from readjusted divisions.

"The action taken by the New England carriers is responsive to the suggestion of the commission in its Report in *Ex Parte* 74, where the commission said (p. 247):

> While the New England carriers are included in the Eastern group and are subject to the percentage for that group, the evidence as to the disproportionate needs of the New England lines makes it desirable that the carriers give careful consideration to the divisions of joint rates accruing to these lines.

"The form of relief suggested is an increase in the New England roads' proportion of through rates which will yield an amount equivalent to the amount which has accrued to the C. F. A. and trunk lines from the rate increases allowed in *Ex Parte* 74 as a result of an inclusion of the New England roads in the Eastern group.

"The New England roads submit that a reasonable arbitrary charge adjusted to the various kinds of commodities transported should be deducted from the joint rates, so that such charge shall yield to the New England lines a net increase in addition to their present divisions upon—

low grade traffic such as coal, iron ore, clay, sand or gravel,	1¾c. per 100 lb.
grain and grain products, forest products, other mill products, pig iron, bloom and brick,	2½c. per 100 lb.
all other freight traffic,	5½c. per 100 lb.

"These unit figures should be translated after careful computation into figures which when applied before prorating will yield the same net result.

"It is believed the New England roads, exclusive of the Boston & Albany, might receive about $24,000,000 from such readjustment, but the figures given are subject to revision after careful analysis of the tonnage in each group, and such revision should be retroactive. These arbitraries will fall far short of meeting the full financial needs of the New England railroads.

"While the Boston & Albany is not included—being a part of the New York Central—it is represented that to avoid discrimination any arbitrary allowed the other New England lines must necessarily apply to the Boston & Albany.

"In submitting this proposition, the New England lines have not omitted to consider what additional revenue may be obtained from adjustments of local and interline rates within their own territory. They have never been able to obtain the full benefit of the Anderson scale—the rates being depressed by the "hold-down" of certain overhead rates and the prohibition of the Fourth Section of the Commerce Act.

"They are ready to co-operate with the trunk lines in adjustment of any commodity rates and reclassifications which will not result in discriminating conditions adversely affecting New England industries.

"But from these various sources the New England roads could not expect to increase their gross revenue more than $3,000,000. At the same time such increases would increase trunk line revenues in much greater proportion.

"In the huge volume of traffic exchanged between lines in trunk line and C. F. A. territory, readjustment of divisions may be so made as to make equitable the situation of those trunk lines which are themselves not earning an adequate return on their investment. Though it should not be forgotten that whatever their situation now they are better off than if the New England lines had not been included in their rate group, because their freight revenues as a whole have been increased 1.48 per cent more than they otherwise would have been. If the $25,000,000 is restored to New England roads, the intention of the framers of the Transportation Act may be carried out and their purpose effectuated. Otherwise the act at the first and crucial test of its efficacy will be proved a failure.

"It was plainly the intent of Congress that our great transportation systems should be nourished rather than starved, and that there should be no large and important group of railroads failing to earn a fair return on the fair value of their property. Congress left to the commission the working out of the intended result, and vested adequate powers in the commission to attain it.

"If within 12 months of its passage it is found that an important group of railroads, whose income has been regulated and wage rate determined by government instrumen-

talities and which are necessary to one of the richest industrial sections of the country, cannot earn interest on their bonded debt and government loans, then the Transportation Act is unworkable.

"Sound financial health for all essential parts of the national rail transportation agency is the central purpose and intent of the new Transportation Act. In this it is in striking contrast with all preceding legislation. The commission was by the new act required to impose rates sufficient to nourish adequately all essential parts of the system and, by fixing through rate divisions and other devices, invested with powers to allocate revenue where needed in order to maintain and develop the transportation system.

"But unless speedy relief is afforded through the only device now available for this situation to the New England lines, financial death, instead of sound financial health, is the certain result.

"Plainly, it is the duty of the representatives of the New England lines to bring this situation promptly to the attention of the commission as well as to the representatives of the lines west. If the act cannot be administered to prevent the results now threatening, it is an obvious failure.

"Such failure will ultimately be as serious for the respondents as for the complainants."

R. T. Higgins, chairman of the Connecticut commission, urged that the Interstate Commerce Commission exercise its power summarily to afford relief to the New England lines, saying that the New England industries should not be penalized by further increases in rates but that the through rates should be divided more equitably. If this cannot be done at once the commission should ask the trunk line executives to agree to a temporary adjustment. H. C. Attwill, chairman of the Massachusetts commission, expressed similar views. A Rhode Island commissioner said that the Interstate Commerce Commission had determined the gross amount of increased revenues necessary for the eastern group of railroads and that now it seems strange that the railroads cannot arrive at at least a tentative agreement. If they cannot do so, he said, the Interstate Commerce Commission should act promptly. B. F. Cleaves, chairman of the Maine commission, said that neither Maine nor the Maine railroads desire to ask for charity or any gift but take the position that the increase in revenues already allowed by the commission should be distributed more equitably.

W. A. Dutton, chairman of the Vermont commission, said the New England roads are facing bankruptcy, but the state commissions can do no more and the Interstate Commerce Commission ought to use its power to remedy the situation. He said all the New England states have allowed intrastate rate increases corresponding to the interstate increases, but a further advance in rates ought not be considered.

E. K. Hubbard, president of the Manufacturers' Association of Connecticut, and James Q. Gulnac, representing various business men's organizations of Maine, spoke from the shippers' standpoint regarding the need for better railroad facilities in New England and the need of the roads for more money to provide additional facilities. They urged that the trunk lines voluntarily give the New England lines larger divisions without requiring the Interstate Commerce Commission to act.

Bird M. Robinson, president of the American Short Line Railroad Association, and a representative of the Denver & Salt Lake, objected to any plan which would take too much money from the trunk lines before the claims of the short lines for better divisions are taken into consideration. Mr. Robinson said he spoke for 186 short lines that are defendants to the complaint filed by the New England roads, and while they would not oppose a temporary adjustment he wanted it understood that if the case comes to a formal proceeding the short lines will ask to be heard in each case. He said the clause in the act authorizing the Interstate Commerce Commission to fix divisions was put there at the request of the short lines and that if they are not able to earn a fair return they are entitled to go to the commission and ask relief. He thought, however, it is incumbent upon the connecting lines to do something for the New England lines by adjustment. Mr. Robinson said that his association had just completed an organization to endeavor to work out a more equitable adjustment of divisions with the Association of Railway Executives.

Daniel Willard, president of the Baltimore & Ohio, said the trunk lines had reached no agreement among themselves, but at an informal conference the day before it had seemed to some of the trunk line executives that the difficulty of the New England lines must rest largely with New England for solution, because their local rates are lower than those west of the Hudson and their divisions are already larger than similar divisions anywhere else. He denied that the trunk lines had received from the rate increase $25,000,000 more than they needed because of the inclusion of the New England lines in the eastern rate district because, he said, they got less than they asked for and on a large amount of interterritorial traffic the increase is only 33 1/3 per cent instead of 40. The problem is not a simple one, he said, and he had no idea that the trunk lines would do but they would be glad to meet and see if a plan of adjustment can be worked out.

However, Mr. Willard said, if the trunk lines are to be expected to give up an unduly large part of their earnings for the benefit of New England they will want to discuss the question of efficiency and to know how the money is to be used. He believed that New England roads are giving local service at rates that are not compensatory. The Anderson scale was made subject to so many exceptions that it does not apply generally and a very large volume of local business moves on low commodity rates.

Mr. Willard said that the position taken at the conference of trunk line representatives would be stated by R. C. Wright, general traffic manager of the Pennsylvania, who made the following statement:

Position of Trunk Line Roads

"The New England carriers claim, in support of their demand for increased revenue, that unless increased revenue is provided their net railway operating income will be approximately $36,000,000 less than a 6 per cent return on their aggregate property investment accounts, and approximately $18,000,000 less than the amount necessary to meet their fixed charges.

"It is submitted that up to this time it is impossible to estimate the results either for roads, for groups of roads, or for territories from the increases under *Ex Parte* 74, as so many factors have arisen which affect the resultant revenues and expenses that no reliable figures are as yet available.

"Moreover, experience is limited to the month of September, which month is well known not to have fully represented the effect of the rate and fare increases, and the accounts for which month include many adjustments and lap-overs, incident to the guaranty period. It is our opinion, therefore, that the figure of $18,000,000, which we understand is presented by the New England roads as the necessary additional amount to cover the interest on their funded debt, cannot be considered accurate or as representing the actual needs, if any, for that purpose.

"Moreover, this committee is of the opinion that certain situations in New England have contributed largely to the alleged need for financial assistance and should be carefully considered in determining what, if any, assistance is required from the lines west of New England, namely:

A. The fact that the expenses of the New England lines have been largely increased by the peculiar fuel coal situa-

tion recently existing, it being our information that this year a very large tonnage of coal was purchased by New England lines in the open market, at prices somewhere near $6.00 per ton more than the contract price, resulting in a very large increase in expenses which is not likely to continue, or occur again;

B. The probability that with the increase in ocean tonnage the water rate from Hampton Roads to New England will be materially reduced, thus decreasing the cost of fuel coal from that territory;

C. The fact that the New England roads participate in all rail differential routes to the west, some of which are circuitous, thereby depleting their revenues;

D. The existence in New England of commodity rates for the transportation of various classes of traffic, which in other territories move generally under class rates;

E. The continuance on the part of New England lines of water competitive rates, when the water competition has for some time been non-existent;

F. The extension of the New York westbound rate to apply all the way from Bangor, Maine, and the blanketing of the eastbound rates from western territory to the whole New England territory on the Boston basis extending as far east as Bangor, Me.;

G. The failure up to date of the New England lines to secure the benefit of the Anderson scale of class rates, because of the rate adjustment just beyond the gateways;

H. The detention of cars in New England resulting in heavy per diem balances.

"Your committee is of the opinion that all of these matters should be fully considered before the final needs of the New England roads in the matter of assistance are determined.

"A study of the divisions in effect between trunk line carriers and New England show that the present divisions to the New England roads are more than equitable, for the following reasons:

A. They exceed divisions which might be worked out on a straight mileage basis;

B. They exceed divisions which might be worked out on a basis of 50 mile blocks with 50 miles for each terminal line;

C. They exceed a rate pro rate division. An analysis of traffic between trunk line territory and New England territory shows that the trunk lines receive divisions equal to 55 per cent of their local rate while the New England roads receive divisions equal to 60 per cent of their local rate; and, indeed, if comparable mileages are taken in trunk line and New England territories, it shows that the trunk lines receive only 51 per cent of their local rate, while the New England roads receive 66 per cent of their local rate. As a result of the present divisions, statistics show that the New England lines enjoy an interchange traffic a ton mile revenue 50 per cent greater than that of the lines in Trunk Line Territory, and that for similar mileage hauls they secure on an average 30 per cent in excess of the ton mile revenues of the lines west of the Hudson river.

"The favorable result of the present divisions to the New England lines arises from the following situation:

A. By the grouping of their stations into large groups for division purposes, thereby securing more than an actual mileage pro rate on short haul traffic;

B. By the use of constructive distance in excess of actual distance between junction points and the furtherest point in each group;

C. By taking terminal deductions from joint rates before prorating, which are not allowed to the terminal carriers west of the Hudson river."

L. F. Loree, president of the Delaware & Hudson, expressed the opinion that the question should be settled by the orderly process of a proceeding before the commission. He read an opinion of counsel that the commission could no more compel a road to give a competitor an increased division, merely because it needed the money and without reference to the factors which should determine the proportion of division, than it could compel it to give up its money directly to another. Mr. Loree also said that conditions are not encouraging, and he estimated that on the basis of the results for September and October the Delaware & Hudson would earn less in a year than it did in the test period. The stock market quotations, he said, indicate that a freight traffic for next year 10 per cent less than for this year has been discounted. The trunk lines are faced with a very difficult situation, he said, and he saw no way in which money can be taken from the Delaware & Hudson and given to New England. He had asked a number of people on whose judgment he relies as to whether it would be worse for the general credit situation for the New England roads to go into bankruptcy or for the trunk lines to pass their dividends and they had replied that the latter would be the more serious. He expressed the opinion that it will be necessary for the railroads to "clean up" the employee system, because they are "loaded up with too many men," and said that much has been done in the way of increasing car mileage and car loading, but the shippers ought to do more in the way of increasing their own facilities. Mr. Loree also asked why it is necessary for the New England people to "ride around so much" as is indicated by the fact that 32 per cent of the earnings of the New England roads are from passenger business as against only 14 per cent for the trunk line roads.

Samuel Rea, president of the Pennsylvania, said his company has interests in and is sympathetic toward New England, but he had not been able to convince himself that the trunk lines could do much to ameliorate the New England situation. He said the divisions are not only fair but liberal to the New England roads. He also pointed out that there is no fund to divide, only an estimate of earnings based on last year's traffic. With the present outlook the result may be very different. Next year will unquestionably be the test year under the transportation act and some roads may have to go down. If they now try to help New England the trouble may be more widespread than if concentrated in New England.

F. H. Alfred, president of the Pere Marquette, said that the September earnings as published in the *Railway Age* indicate a less favorable showing for the trunk lines than for the New England lines and that the Pere Marquette is earning even less than the New England lines.

Mr. Choate said that while it is true that the New England roads receive divisions larger than are allowed in some parts of the country, they are not large in view of the conditions and the cost of operation in New England.

At the conclusion of the conference Chairman Clark said that the first year of the operation of the transportation act would naturally bring many complications which would require time to work out, but he pointed out that the law represented a new attitude of the public to the railroads and a new relation of the railroads to the public, and he suggested that the railroad executives hold a meeting to see if some solution cannot be found. He said the commission has no view as to this controversy, but hoped the executives could find a solution and it would be glad to aid in any way possible. Mr. Willard replied that the executives would hold a meeting but he was not sanguine as to the result.

The railroad officers then went into executive session and after about an hour's discussion agreed upon the appointment of a committee representing the Central Freight Association, Trunk Line and New England roads and the short lines, to endeavor to find a solution. The committee consists of: Samuel Rea, president, Pennsylvania; F. D. Underwood, president, Erie; A. H. Smith, president, New York Central; W. H. Truesdale, president, Delaware, Lackawanna & Western; W. H. Williams, chairman, Wabash; W. M. Duncan, president, Wheeling & Lake Erie; E. J. Pearson, president, New York, New Haven & Hartford; Morris McDonald,

president, Maine Central; J. H. Hustis, president, Boston & Maine; F. H. Alfred, president, Pere Marquette, and Bird M. Robinson, president, American Short Line Railroad Association.

Hearing on Proposed Capitalization of Burlington Surplus

WASHINGTON, D. C.

A HEARING on the application of the Chicago, Burlington & Quincy for authority to issue $60,000,000 of additional capital stock, to be distributed to its stockholders, and $109,000,000 of first and refunding mortgage bonds under a new mortgage, was held before W. A. Colston, director of the Bureau of Finance of the Interstate Commerce Commission at Washington, beginning on November 22. Hale Holden, president of the Burlington, testified that the company proposed to sell $80,000,000 of the bonds to reimburse the treasury for expenditures made from earnings and that unless unforeseen circumstances develop it will probably declare a cash dividend out of the proceeds. The balance of $29,000,000 is to be held for future expenditures. The plan proposed would capitalize $140,000,000 of the company's surplus, which amounts to about $240,000,000.

Mr. Holden outlined the history of the road's financial and physical development, explaining how expenditures had been made largely from earnings to increase the efficiency of the railroad and increase its earning power. The present capitalization is $284,000,000, or $31,836 per mile. Mr. Holden said the company should have a more flexible mortgage and a broader stock base and that the stockholders should receive something in return for their sacrifice of earnings used for improvements. It is compatible with the public interest, he said, that the company's capitalization should more nearly correspond to its value and the proposed dividend would tend to encourage future sales of stock by sound companies for capital purposes. If legitimate rewards of this character are not permitted, he said, it will be necessary to distribute earnings currently. The proposed issue is to be dated February 1, 1921, and to mature in 50 years unless redeemed earlier. It is in the plans of the company, when money conditions permit, to refund its underlying bonds by the use of bonds under the new mortgage, and $261,000,000 will be available under the mortgage for future financing. This, Mr. Holden said, should cover the needs of the company probably for 20 years, especially if it is later able to sell stock for part of its requirements. The company has invested out of earnings more than the amount of the proposed issue and will still have a good surplus reserve. Since 1901 it has invested in additions and betterments $200,099,975, practically all of which has been for the intensive development of the existing facilities—"to make a better machine."

In reply to one of a long series of questions propounded by the Bureau of Finance, Mr. Holden said that practically all of this represented revenue-producing property, because even the expensive track elevation work at Chicago and Aurora had resulted in a saving in operation by eliminating causes of delay.

For the purpose of furnishing the commission with evidence as to the value of its property, Mr. Holden presented a calculation based on average figures applied to other roads in its territory by the Bureau of Valuation of the Interstate Commerce Commission and applied to its inventory. This valuation, he said, does not represent the company's claim as to its value, but a conservative minimum estimate of what the Interstate Commerce Commission valuation will show. On December 31, 1919, the investment in road and equipment, as shown on the company's books, was at the rate of $55,050 per mile, whereas its cost of reproduction new as of its valuation date, June 31, 1917, plus the naked land value, was estimated at $64,300 a mile. Mr. Holden described in detail the methods by which this estimate was arrived at. He said that the Burlington officers would not like to believe that the road is worth only $572,000,000, but thought that these figures demonstrated conclusively that its book value is substantially less than its present value.

Director Colston called attention to a letter addressed to the commission by the Farmers' National Council, asking that the company's application be denied, on the ground that it proposed to capitalize an increase of land value. The letter referred to the opinion of Commissioner Franklin K. Lane in the 1911 rate case, in which he referred to an increase in the Burlington's land value of $150,000,000. Mr. Holden pointed out that the company is not seeking to capitalize any appreciation of growth in the value of any of its property, but is asking authority to issue securities against only a part of the "hard, round, iron dollars" that have been invested in its property out of earnings in recent years.

The hearing was adjourned to December 14, when the protestants will be given an opportunity to be heard if they desire. The Nebraska commission indicated that it might desire to be heard and a protest was filed by W. J. Frank, an attorney representing 50 shares of minority stock of the Burlington.

THE PRICE OF GOVERNMENT OWNERSHIP.—Disclosures in the United States Shipping Board investigation furnish convincing grounds for argument against government ownership and operation. While the investigation has not yet proceeded far enough to determine whether any blame for unnecessary expenditures rests with those in charge of the Board's affairs, enough has been revealed to show that governmental ownership and operation is a prohibitively costly luxury that can be eliminated with profit to the nation's taxpayers.—*Virginian Pilot and Norfolk Landmark.*



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Bridge Over the Zambezi River, Rhodesia

General News Department

Cleveland, Ohio, to Mineola, N. Y. (New York City), in three hours is the latest speed record of the aeroplane mail service. The estimated average rate of speed was 141 miles an hour.

The Piedmont & Northern recently received at its yard in Charlotte, N. C., 57 cars loaded with automobiles from Michigan, all of which cars were unloaded and returned within 24 hours. One trainload of 40 cars, carrying four automobiles each, arrived on Friday afternoon at 1:30 o'clock; and these, with 17 others, were unloaded on that afternoon and Saturday morning; and the 57 were started back northward at 1:30 p. m. on Saturday. The derrick in the Charlotte freight yard is so situated that freight can be picked up from cars on three tracks without moving the cars, and the automobiles were unloaded at the rate of about one every two minutes, the empty cars being pulled out from one track while the derrick was working on one of the others. The Piedmont & Northern is an electric road, operating 128 miles.

Passing reports, made out daily, to facilitate the tracing of loaded freight cars, are now in use on the New York Central, at the places named below, prepared on the plan in use on the Baltimore & Ohio, and described in the *Railway Age* of June 25 last (page 1973). These reports are sent each day to general and district freight representatives, supplying them promptly with information as to the progress of freight shipments which traverse long distances, for the benefit of inquiring consignees. The places where these reports are made are, on the lines East: New York City (four yards); Ravena, N. Y.; West Albany, N. Y.; Rotterdam Junction, N. Y.; De Witt, N. Y.; Rochester, N. Y.; Belle Isle (Syracuse), N. Y.; West Seneca, N. Y. (westbound); East Buffalo, N. Y. (eastbound); Gardenville, N. Y.; Suspension Bridge, N. Y.; Newberry Junction, Pa.; Canandaigua, N. Y.; Watertown, N. Y., and Ogdensburg, N. Y. On the lines West: Dunkirk, N. Y.; Erie, N. Y.; Collinwood, Ohio; Elyria, Ohio; Sandusky, Ohio; Air Line Junction, Ohio; Elkhart, Ind.; Indiana Harbor, Ind.; Englewood, Ill.; Detroit, Mich.; Coalburg, Ohio, and Kankakee, Ill.

The Use of Powdered Anthracite

A meeting will be held at the Engineers' Club at Philadelphia, 1317 Spruce street, at 8:15 p. m., on December 3, at which the use of powdered anthracite and the recovery and use of river coal will be discussed. Engineers of several anthracite coal mining companies and of railroad and industrial companies using small anthracite will take part in the discussion.

New York Central Safety Bureau

Marcus A. Dow, general safety agent of the New York Central Lines, announces the appointment of safety agents at nine new places, as follows: W. S. Emmet, Weehawken, N. J.; I. G. Jones, West Albany (N. Y.) shops; Jay F. Wallace, Corning, N. Y.; L. W. Newcomb, Watertown, N. Y.; J. S. Pritchard, Collinwood (Ohio) shops; L. F. House, Detroit, Mich.; A. K. Woods, Jackson (Mich.) shops; Guy Taylor, Danville, Ill.; E. E. Wise, Indianapolis, Ind.

A. S. C. E. Holds to Engineering Council

As a subsequent move in the stand that the American Society of Civil Engineers has taken in regard to the Federated American Engineering Societies the former has endeavored through a recent resolution to prevent the dissolution of Engineering Council, or at least to prevent it from turning over its activities to the newly organized American Engineering Council. The resolution as passed by the Board of Direction at its meeting of November 9 and made public at the time of the meeting of the federation in Washington, stated that as the American Society of Civil Engineers by a vote of 3,278 to 2,330 had decided not to become a charter member of the federated societies and that as it has been suggested that the work of Engineering Council should be turned over to and be taken up by the said Federated American Engineering Societies: "Be it resolved that the Board of Direction hereby instruct its representatives upon Engineering Council to state to Engineering Council that they cannot participate in any actions transferring its activities to the Federated American Engineering Societies and that the Board instructs its representatives to express to the Council its hope that Engineering Council will for the present carry forward its work."

Hearing on Maintenance Allowance

The Interstate Commerce Commission has announced a hearing at Washington on December 4 on the question of the amounts to be included in operating expenses of carriers subject to the guaranty provisions of the transportation act for maintenance. The order for the hearing says that questions have arisen in respect of the interpretation of the rule set forth in the proviso in paragraph a of Section 5 of the standard contract between the United States and the carriers and particularly in respect of the allowances and adjustments to be made because of the additions in the costs of labor and materials.

Signal Section—A. R. A.

H. S. Balliet, secretary of the American Railway Association, Signal Section, 75 Church street, New York City, has issued the advance notice of the regular meeting of the section which is to be held at Hotel McAlpin, New York City, on December 2 and 3. The principal items on the program are the reports from eight committees as follows: No. 12, form of contract for installation of interlocking plants and block signalling; No. 2, specification for mechanical interlocking machine, style "A" locking, and specification for concrete trunking; No. 3, specification for circuit controller for drawbridges; No. 4, specification for d. c. automatic block signaling; No. 6, five drawings of new standard designs, one revised drawing and a report on electric lamps; No. 8, information for calculating power supply and distribution, a. c.; No. 10, aspect for "take siding"; No. 13, methods of testing d. c. motor signals, and specification for portable a. c. voltmeters.

The other committees are expected to make progress reports.

This pamphlet contains an illustrated paper, by F. B. Wiegand, describing the Gravit signal, known as the right angle semaphore, which was for many years in extensive use on the Lake Shore & Michigan Southern. This signal was the invention of William G. Gravit, master carpenter on the Lake Shore.

Pennsylvania Makes Headway Against Slide

The landslide on the Pennsylvania in Pittsburgh, Pa., reached its probable peak during the first part of the week of November 21. At that time the slide was moving outward over the tracks of the Pennsylvania at the rate of nearly one foot an hour due to the effect of previous heavy rains. According to General George W. Goethals, who was called in by the city, there is no way to check the slide and it must wear itself out. Throughout the largest part of the time, the railroad has had about eight or nine tracks buried, though ten steam shovels have been working continuously. In addition, the upheaval action of the large stones and parts of the retaining walls which are thought to be working their way under the roadbed has rendered operation difficult over the remaining available tracks. In order to maintain train operation. Due to the drier weather, the slide was moving at last siderable changes in train schedules and terminal points and in some cases local trains were consolidated to relieve the congestion. Dut to the drier weather, the slide was moving at last reports at the rate of about one inch an hour and it is now expected that substantial gains will be made in clearing the tracks.

Traffic News

The annual report of the Panama Canal, just issued, shows for the year an excess of revenues over expenses of operation and maintenance amounting to $2,387,599. The governor of the canal predicted that within a reasonable period of normal world conditions the canal will earn an actual profit on its cost.

Secretaries of the state chapters of the American Mining Congress and officers of operators' associations in several states conferred at Denver, Colo., on November 16, on bullion freight rates. The subject was brought before the Mining Congress in that city in an effort to secure a reduction in charges.

Modification of the car load requirements of the Interstate Commerce Commission affecting grain and grain products when the present regulations go out of force January 1, 1921, was urged by representatives of grain interests at a hearing held at St. Louis, Mo., on November 15. The hearing was held before W. V. Hardie, who is the commission's director of traffic.

The New York Central has established freight and passenger agencies at 14 cities, namely, Birmingham, Ala.; Dallas, Tex.; Denver, Colo.; Kansas City, Mo.; Los Angeles, Cal.; Memphis, Tenn.; Milwaukee, Wis.; Minneapolis, Minn.; Oklahoma City, Okla.; Omaha, Neb.; Seattle, Wash.; San Francisco, Cal.; St. Paul, Minn., and Toronto, Ont.; and has also established freight offices at New Haven, Conn.; New Orleans, La.; and Philadelphia, Pa.

The order of the Interstate Commerce Commission authorizing railroads in New York state to make a general advance in intrastate passenger fares on December 18, will be contested by the attorney-general of the state of New York and by the legal department of the city of New York. The Board of Estimate of the city protests especially against the proposed increase on the Long Island Railroad, and calls upon the legal department of the city to contest the matter in the courts, holding that the Public Service Commission of the state (first district) is the only authority possessing power to regulate passenger fares on the Long Island.

The Traffic Club of Chicago held the first of a series of semi-monthly get-together traffic discussion meetings for the purpose of discussing questions of interest to traffic men, both railroad and industrial, on November 23. The aim of the meetings is educational with the idea of informing traffic men of the reasons for proposed measures, as well as to bring the representatives of the railroads and industries into closer relationship. The subject for the first meeting was "Car Spotting Charges" and C. B. Heinemann, chairman of the special committee of the National Industrial Traffic League, which has this matter in charge, discussed the proposal from the point of view of the shipper.

A Record Average Trainload

The average freight train on the railroads of the United States during the month of August, carried a greater tonnage of freight than for any previous month in railroad history. The Interstate Commerce Commission reports the average in August as 788 tons as compared with 777 in August, 1919. The August average for 1918 was 737 tons; in 1917, it was 684 tons, and in 1916, it was 646 tons. For the eight months of 1920, the average was also greater than for any previous similar period, 729 tons, as compared with 719 in 1919. The figures by months, in 1920, are as follows: January, 672; February, 693; March, 725; April, 666; May, 746; June, 758; July, 769, and August, 788. The heavier train loading was accomplished mainly by utilizing a greater percentage of the capacity of the freight car. The average car load of freight in August was 30.1 tons, against 28.2 tons in August, 1918. The average number of cars per train showed a decrease, from 40.8 to 39.5.

Commission and Court News

Interstate Commerce Commission

The Commission has suspended until March 22 certain increased commodity rates on grain, c.l., from St. Louis, Minneapolis, Chicago and Peoria, to Kansas City.

The Commission has suspended until March 22 proposed increased rates on grain from Mississippi and Missouri river Crossings and other producing points to points in Arkansas, in Missouri Pacific, and St. Louis Southwestern tariffs.

The Commission has suspended until March 22 certain proposed increases in water competitive rates on lumber, c.l., from points in the Carolinas, Georgia, Florida, Virginia and eastern Alabama to Baltimore, Philadelphia, New York and Boston.

The Commission has announced hearing at Topeka, Kan., on December 20, on the question whether the refusal of the Kansas Court of Industrial Relations to authorize for intrastate traffic the full amount of the rate advances allowed for interstate traffic constitutes an undue discrimination against interstate commerce.

The Commission has suspended until March 24 the operation of a tariff which provides for the suspension for the season of 1920, of rail-and-lake and rail-lake-and-rail class and commodity rates applying from eastern points to western points in connection with the Great Lakes Transit Corporation, via Buffalo, Cleveland, and Erie.

The Commission has suspended until March 24 proposed cancellation of rates on coal, c.l., from mines in Kentucky and Tennessee to Atlanta, Ga., via Cartersville, Ga., and the Western & Atlantic. The effect of the proposed cancellation will be to force the payment of an additional switching charge of 30 cents a ton, less $2.50 per car, by the consumers located more than three miles from the point of interchange of the L. & N. with the Southern.

Rates to Canada Must Be Paid in U. S. Money

The Interstate Commerce Commission has issued a decision vacating suspension orders which have rendered inoperative proposed tariff rules requiring the payment of charges in United States currency and prepayment of charges on shipments into Canada in so far as they affect charges for interstate transportation held within the United States and the charges or divisions accruing for that part of the transportation between the United States and a foreign country which takes place within the United States. The rules, which had been suspended and which the commission now finds justified, were intended to protect the carriers from the present depreciation in value of Canadian currency as compared with United States currency and to insure their receiving in lawful money of the United States the full amount of their charges or divisions. The protestants objected to the rules on the ground that they would result in the carriers receiving an over-payment for that part of the transportation which takes place in Canada, but as the commission's jurisdiction is limited to that part of the transportation which takes place within the United States, it does not undertake to pass upon the rules in so far as they affect charges for transportation beyond the boundaries of the United States, but leaves their validity and propriety to be determined under the laws in force where the transportation takes place.

State Commissions

The Public Service Commission of West Virginia has authorized the railroads of that state to make an increase of 20 per cent in their passenger fares on all lines where the present rate does not exceed three cents a mile. The commission also puts on a parity with interstate rates, the tariffs on excess baggage and on milk and cream carried on passenger trains; and also allows a surcharge of 50 per cent on fares for rides in parlor and sleeping cars.

Personnel of Commissions

G. J. Bunting, who recently resigned as comptroller of the Chicago, Milwaukee & St. Paul, has been appointed accounting and statistical assistant to the director of the Bureau of Finance of the Interstate Commerce Commission, at Washington, D. C.

Court News

Rule as to Closing Coach Doors on Entering Tunnels

The Kentucky Court of Appeals holds that where a brakeman, in violation of the company's rules, left the coach door open as the train entered a tunnel and as a result a cinder flew into and injured a passenger's eye, the railroad was liable.—L. & N. v. Roberts (Ky.), 218; S. W. 713.

Persons Crossing Tracks Must Look Out for Backing Trains

In an action for injuries to an automobile at a crossing over a double track, the West Virginia Supreme Court of Appeals holds that the fact that the engine or train doing the injury may have been moving backwards on the track not regularly used by trains going in that direction does not excuse the traveler, as a general rule, from stopping, looking and listening, for he is bound to take notice that the railroad may operate trains on either track in either direction.—Cline v. McAdoo (W. Va.), 102 S. E. 218.

Engineman's Assumption of Risk When Struck While Crossing Bridge

In an action under the Federal Employers' Liability Act for damages for the death of an engineman who, while leaning out of his cab and looking backward, was struck by one of the vertical steel members of a bridge, the special findings showed that the clearance between the bridge and the side of the engine was approximately two feet; that the engineman had been running an engine over the bridge for 15 years; that in the year previous to the accident he had run an engine of the same class over the same bridge 300 times, including 26 times in that month; that he had warned his fireman against the dangers in passing through the same kind of bridges; that the engine he was operating did not sway from side to side in going over the bridge more than was ordinarily the case with engines of similar type. The Kansas Supreme Court held that the railroad was entitled to judgment on these findings, because they established that the engineman had assumed the risk.—McDougall v. Atchison, T. & S. F. (Kan.), 186 Pac., 1028.

Crossing Rules—Traveler Signaled by Watchman to Cross

The Circuit Court of Appeals, Third Circuit, holds that it is the positive duty of an automobile driver approaching railroad tracks where there is a restricted vision to stop, look and listen at a time and place where stopping, looking and listening would be effective, and that, broadly speaking, failure to observe this rule is negligence. The rule is the same in Pennsylvania.

It is also held that when at a grade crossing, gates are raised or a flagman beckons a waiting traveler to come on, there is a representation that there is no approaching train within striking distance. It is in effect an invitation to cross; but one, however, by which the railroad company does not become the guardian of the traveler or an insurer of his safety. It is an invitation only to cross with due care, requiring on the part of the one accepting it the exercise of his sight, hearing and such other factors of safety as the situation and circumstances permit. Where the driver of an automobile, on approaching a strange crossing at night, where at some points near the track the view was obstructed, stopped 20 or 30 feet from the crossing and looked and listened, without seeing or hearing any train, whether he was chargeable with negligence in proceeding to cross on the signal of the watchman without again stopping was held a question for the jury, whose verdict was for the plaintiff.—Philadelphia & Reading v. Le Barr, 265 Fed. 129.

United States Supreme Court

Discrimination in Absorption of Switching Charges

An order of the Interstate Commerce Commission (44 I. C. C., 455), directed the Seaboard Air Line, the Southern, and the Atlantic Coast Line, to abstain, from August 1, 1917, from absorbing switching charges on certain interstate carload freight at Richmond, while refusing to absorb such charges on other similar shipments. The railroads' suit to enjoin the order was dismissed by the Federal district court for the Eastern District of Virginia (249 Fed., 368). The Commission found that if the freight is received at a point served by any two or more of the carriers, the switching charge is absorbed if the freight is delivered on the line of either. But if the delivery is to an industry served only by a non-competitive carrier the switching charge is not absorbed.

The railroads contended that the transportation to the different places was not a like and contemporaneous service of a like kind of traffic under substantially similar circumstances and conditions, but the Supreme Court of the United States holds that the Commission was correct in its finding. Moreover, the findings of fact by the Commission on such questions can be disturbed by judicial decree only in cases where the Commission's action is arbitrary or transcends the legitimate bounds of its authority. The Commission did not hold that switching charges must be always the same. The practice it condemned was that of absorbing switching charges only when the line-haul carrier competes with the switching line, and refusing when the switching line does not compete with the line-haul carrier, which the Commission held was discrimination within section 2 of the Act to Regulate Commerce. The court found no merit in the contention that the Commission's order was too vague and uncertain to be enforced.—Seaboard Air Line v. United States. Decided November 8, 1920. Opinion by Mr. Justice Day.

Assumption of Risk Barring Recovery Under Federal Employers' Liability Act

Action for personal injuries, based on the Federal Employers' Liability Act, was brought against the receivers of the Wabash by an employee who, while engaged in tearing down a bridge, lost his balance and fell 12 ft. to the ground, owing, as was alleged, to a defect in a clawbar which he was directed to use. The bar slipped while he was attempting to draw a bolt. The defect, it was alleged, the plaintiff did not know. Negligence, however, was charged against him, and assumption of risk and contributory negligence. He recovered a verdict of $5,000 in the Missouri state courts. The defect was that the claws of the bar had become so rounded and dull by long usage that they could not be made to grab the shank securely and slipped from their hold when the handle was pressed. The Missouri Supreme Court held that the failure to furnish a reasonably safe clawbar was negligence on the part of the master. If the defects were so glaring and the clawbar so patently defective that a prudent servant could not have used it, then its use under such circumstances was negligence on the part of the servant, which negligence, under the rule in Missouri, would bar him from recovery. But not so under the Federal statute. In other words, the court held that if assumption of risk existed, it amounted in legal effect only to contributory negligence, and that such negligence under the Federal statute worked a reduction of damages and did not a defeat of the action.

The Supreme Court of the United States holds that the state court erred, and the judgment is reversed. Except in the cases specified in section 4 of the Federal statutes, a servant assumes extraordinary risks incident to his employment or risks caused by the master's negligence which are obvious or fully known and appreciated by him (Boldt v. Pennsylvania, 245 U. S. 441; Seaboard Air Line v. Horton, 233 U. S. 492, 503; Jacobs v. Southern, 241 U. S. 229, 235). It was therefore error of the trial court to refuse the instruction requested by the defendants that the effect of the assumption of risk by the plaintiff incident to the use of the clawbar, and the circumstances under which it was used, was to relieve the defendants from liability. Pryor v. Williams. Decided November 8, 1920. Opinion by Mr. Justice McKenna.

Foreign Railway News

Spanish Railways Require Rolling Stock

LONDON.

The Spanish government has authorized the Spanish railway companies to purchase under government guarantees a number of locomotives, passenger cars, and freight cars.

Cost of the Coal Strike to the Railways

LONDON.

The coal strike, Sir Eric Geddes, Minister of Transport, states, has cost the railways a loss of revenue between £2,000,000 and £3,000,000 ($7,000,000 and $10,500,000) per week.

France Offers Electric Locomotives to Chile

LONDON.

The press despatch in the London Times states that a French company has offered the Chilean government oil and electric locomotives to improve the railway service between Arica and La Paz.

German Railways Face Large Deficit

LONDON.

The Times reports that the deficit of the German State railways will shortly exceed 20,000,000,000 marks. This compares with an estimated deficit, last February, of some 2,000,000,000 marks on the Prussian Hessian system, which operates 81 per cent of the railways in Germany.

Australian State to Contract for Electrical Goods

Bids for electrical supplies aggregating $75,000,000 are being invited by the Electricity Commission of the state of Victoria. The equipment will be for the construction of 132,000 volt power station and a 90-mile trasmission line. Plans and specifications for the various portions of the project can be obtained from the New York or Chicago offices of the Bureau of Foreign and Domestic Commerce.

Ministry of Transport's Economies

LONDON.

It was stated in the English Parliament that great economies have been secured by the Ministry of Transport in the working of the railways. This is shown by the fact that while wages have increased on the average by about 250 per cent and materials from 200 per cent to 300 per cent, railway charges have only increased by 75 per cent on ordinary passenger traffic and by an average of 110 per cent on freight.

Preliminary Survey by Airplane

A long flight in an army airplane has enabled an engineer of the Manila Railroad to determine which of three possible routes will be taken by a new line about to be constructed. Permission to use an army airplane was secured from the commanding general of the Philippine department when it was shown that the new railway would have military value. Parts of the territory through which the road will pass are sparsely populated and no comprehensive maps were available. Instead of three parties of engineers being sent out to make the preliminary survey, only one will now be necessary. The innovation has resulted in the saving of many months of time and thousands of dollars.

Increase in Mexico's Shipping Facilities

The Mexican government and Mexican corporations will probably be in the market soon for the purchase of several small, fast steam vessels suitable for the transportation of freight and express along the coast of that country, according to plans now being developed. Some tank ships will also be required. Additional shipping facilities are considered necessary in view of the increasing commerce of the country. The opening of Salina Cruz and Puerto Mexico as free ports will give rise to great increases in the traffic across the Isthmus of Tehuantepec and the organization of a fleet of freight vessels is believed to be necessary in order to avoid a congestion of traffic along this route.

South African Railways Order Equipment

Since May, 1920, the South African Railways have ordered 50 locomotives, 85 passenger cars and 945 freight cars, according to a statement of the company received from Johannesburg. The following percentages of rolling stock are out of commission awaiting repairs: Locomotives, 27 per cent; passenger cars, 11 per cent, and freight cars, 6 per cent. A representative of the company has recently gone to London to organize a publicity campaign, the purpose of which will be to attract tourists to South Africa, to seek markets for surplus products and to attract capital to build up the industries in the territory served by the company. From the beginning of the financial year, April 1 last, and including the week ending August 28, the total earnings of the line were £9,200,610.

Working of the Industrial Councils in Germany

LONDON.

A correspondent writing in the London Observer states that whereas the labor in the collieries of the Ruhr valley, Germany, seem to be peaceful, the railway shopmen are causing trouble. In one shop it was found that a smith had been using Government time and Government steel to manufacture a dozen table knives for his own use. The authorities proposed his dismissal, but the Betriebs-Rat (Industrial Council) forbade it. As a solution of the difficulty it was suggested that the delinquent keep and pay for the results of his labor at the current hourly rates of pay. The Betriebs-Rat saw to it that this was carried out to the letter, and the result was that these Government knives cost their maker 50 marks apiece or 600 marks ($135 pre-war value) the dozen.

Canadian Pacific Cars in Italy

The Italian State Railways have acquired from the Canadian Pacific a train of observation cars which was used on the Austrian State Railways before the war. Upon the outbreak of hostilities the cars were seized by the Austrian government and used by the Red Cross. At the close of the war the cars were returned to the Canadian Pacific, which sold them to the Italian government. The cars were first used in Italy to transport a party of American women who were "seeing Italy" on their way to the International Feminist Convention at Christiana, Norway. Women from America were naturally a bit surprised to find such luxurious traveling facilities in Italy, but thanks to the Canadian Pacific and the fortunes of war, their trip was more comfortable than it otherwise would have been.

Railway Crisis in Ireland

LONDON.

The London Times reports that the Midland Great Western railroad, which links Dublin with the west of Ireland and a large part of the midlands, has taken definite steps to cease work in the near future. Two causes have forced the company into this. One is the refusal of its employees to carry armed troops, policemen or munitions, and the other is a strike of the boilermakers which has been in existence since August. The suspensions of drivers and guards because of their attitude to government traffic have been so numerous that the available men remaining are barely sufficient to work the depleted services.

The position on the Great Southern & Western, which serves the country between Dublin and Cork and on the Dublin & South Eastern, which connects Dublin with the counties of Wicklow and Wexford, while not so critical, is said to be grave. The continued objection of the company's employees to handle government traffic has so depleted the staffs that the closing of both lines appears to be only a matter of time.

The closing of the Midland company's line will have a disastrous effect both on the city of Dublin and on the country. Both the export and import trade through Dublin will receive a serious check and grave fears are entertained of the consequence of a prolonged closing of the line.

Equipment and Supplies

Locomotives

THE CAMOA QUARRY COMPANY, Cuba, has ordered 1 Consolidation type locomotive from the Vulcan Iron Works.

THE MISSOURI PACIFIC, reported in the *Railway Age* of November 12, as being in the market for 25 Mikado type locomotives, has ordered this equipment from the American Locomotive Company.

Freight Cars

THE SEWELL VALLEY is inquiring for 50 hopper cars.

THE BROWN COMPANY, Berlin, N. H., is inquiring for 4 general service cars.

THE SPANISH GOVERNMENT is inquiring, through the car builders, for 200 cars.

THE GRAND TRUNK is inquiring for 175 steel underframes for refrigerator cars.

THE A. M. BYERS COMPANY, Pittsburgh, Pa., is inquiring for 10, 70-ton gondola cars.

THE SOUTH DAKOTA HIGHWAY COMMISSION is inquiring for from 25 to 50 gondola cars.

THE COMMISSIONERS OF THE DISTRICT OF COLUMBIA are inquiring for 3 flat gondola cars of 55 tons capacity.

THE RHODESIAN RAILWAY are inquiring, through the car builders, for 100, 8-wheel high side bogie wagons, of 86,000 lb. capacity.

THE LOUISVILLE & NASHVILLE, reported in the *Railway Age*, November 12, as being in the market for 2,000 steel hopper cars of 55 tons capacity, has ordered 1,500 of these cars from the American Car & Foundry Company and 500 from the Mt. Vernon Car Manufacturing Company.

Iron and Steel

THE PHILADELPHIA & READING has placed orders for 20,000 tons of 100-lb. rails; 5,000 tons will be rolled by the Carnegie Steel Company and 15,000 by the Bethlehem Steel Company. It is expected that 130-lb. sections will be ordered for the remaining 5,000 tons of its 25,000 ton allotment for 1921.



Photograph from Underwood & Underwood, N. Y.

Freight Yards at Stratford, England

Supply Trade News

J. E. Slimp has been appointed manager of sales of the E. T. Chapin Company, Spokane, Wash., with offices at 127 North Dearborn street, Chicago. He will have charge of the territory east of the Dakotas, and in Canada, east if Winnipeg.

C. B. Merrell, who has been for a number of years in the general offices of the **Economy Fuse & Manufacturing Company,** Chicago, has been appointed district sales manager of its Philadelphia office, 523 Widener building, vice E. J. Watson, resigned.

The Chicago Pneumatic Tool Company, New York, announces the removal of its rock drill plant from 864 East Seventy-second street, Cleveland, Ohio, to its Boyer pneumatic hammer plant at 1301 Second boulevard, Detroit, Mich. Location of the company's Little Giant air drill plant at 1241 East Forty-ninth street, Cleveland, remains unchanged.

L. R. Felder has been appointed district manager for the **Keller Pneumatic Tool Company,** in the Milwaukee district, with offices at No. 915 Majestic building, Milwaukee. This company's factory is at Grand Haven, Mich., and its sales office at 20 East Jackson boulevard, Chicago. For the past twelve years Mr. Felder has been associated with the sales organization of the Chicago Pneumatic Tool Company in the Milwaukee territory.

S. C. Wilson has been appointed sales engineer in the Pittsburgh, Pa., office, 1224 Fulton boulevard, of the **Whiting Corporation,** Harvey, Ill., succeeding C. H. Martin. Mr. Wilson for the past year and one-half has served at the main office and works of the company. **J. D. James,** who has been with the Whiting company for the past eleven years, serving in various capacities, has been appointed assistant to **George F. Crivel,** the company's representative at 430 Ellicott Square, Buffalo, N. Y.

The **Morse Chain Company,** Ithaca, N. Y., has established a branch factory in Detroit, which will be devoted exclusively to the manufacture of silent chain sprockets and the Morse adjustment for use in automobile power transmissions. The manufacture of chains and power transmission at the main plant at Ithaca will continue. The Detroit branch will be under the general management of **F. C. Thompson,** with **F. M. Hawley** as chief engineer, and **C. B. Mitchell** as factory manager. The sales and engineering offices are located at the Detroit plant, Eighth and Abbott streets.

The Dunbar Manufacturing Company announces that on November 15 the corporate name of the firm was changed to the **Morton Manufacturing Company. H. U. Morton** is president; **H. H. Schroyer,** vice-president, and **Charles D. Morton,** secretary and treasurer. The factory and general offices are situated at 5133-39 W. Lake street, Chicago, as formerly. Among the railway appliances handled by this company are vestibule diaphragms (canvas and steel), steel doors for passenger and baggage cars, Chanarch steel flooring, car window curtains and fixtures, curtain rollers, sash locks and racks.

The **Walsh Tie Company,** Minneapolis, Minn., has awarded a contract for a creosoting plant, at Minneapolis, to C. F. Haglin & Son, Minneapolis, Minn. The plant is located at the intersecting line of the Minnesota Transfer and Central avenue in North Minneapolis, where the company has purchased 280 acres of land. Construction was begun on October 1 and it is planned to have the plant in complete operation by March 1, 1921. The tie treating plant will consist of two cylinders with a capacity of 1,000,000 ties annually. Two pole treating plants for the butt treatment of telephone and power poles are also being installed and will have a capacity of 10 carloads per day. A storage and concentration yard for cedar poles and posts has also been provided for and the company will build boarding houses to accommodate its employees.

Railway Construction

Aransas Harbor Terminal Railway.—This company will rebuild its line from Aransas Pass, Tex., to Port Aransas, a distance of 6½ miles, at a cost of $500,000. It has not yet been determined whether the work will be done by company or contract forces.

Atchison, Topeka & Santa Fe.—The Interstate Commerce Commission has issued an order authorizing this company and the California, Arizona & Santa Fe to abandon a branch line from Henrietta to Poland, Ariz., a distance of approximately 5.9 miles.

Atchison, Topeka & Santa Fe.—This company, which was noted in the *Railway Age* of November 5 (page 817), as accepting bids for a 100 ft. frame extension to its freight house at Topeka, Kan., to cost approximately $50,000, has let the contract for this work to Swanson Bros., Topeka. This company will also build coaling stations at Frey, Lehigh and Skedee, Okla. Cinder conveyors as well as coaling stations will be built at South Shawnee, Guthrie and Cushing, Okla.

Carolina Lines.—This company contemplates the construction of a new line from Charlotte, N. C., to Winston-Salem, a distance of 75 miles. There will be one important bridge, 600 ft. in length. The offices of the company are located temporarily with the Simmons Construction Co., Charlotte, N. C.

Chesapeake & Ohio.—This company will add 10 stalls to its engine house, install a new turntable, and erect an ice plant, storeroom and office building at Clifton Forge, Va., at an approximate cost of $600,000.

Cowlitz, Chehalis & Cascade.—The ownership of this line has changed and the general offices have been moved from Seattle to Chehalis, Wash. The following new officers have been elected: C. L. Brown, president; W. E. Brown, vice-president and general manager, and A. Fuss, secretary. The new management has announced that many improvements will be undertaken and that the line will be extended.

Gulf, Colorado & Santa Fe.—This company contemplates the elimination of grade crossings at Merlin and Chestnut streets, Dallas, Tex.

Houston & Shreveport.—This company contemplates the replacement of steel bridges over the San Jacinto, Trinity-Neches, and Sabine rivers, at a cost of approximately $265,000. The company is also strengthening the timber trestles on its entire line at a cost of about $20,000, to permit the use of heavier motive power.

Lehigh Valley.—This company is changing the course of a creek near Waverly, N. Y., which will permit the elimination of two existing bridges. It is estimated that the work will cost approximately $100,000.

Long Island.—This company is contemplating changes in the arrangement of its stations at Railroad avenue, Warwick street, Nostrand avenue and Flatbush avenue, Brooklyn, N. Y., at a cost of approximately $30,000. An overhead bridge and changes in the station at East New York are also contemplated, to cost approximately $45,000.

New York Central.—This company, which was noted in the *Railway Age* of October 29 (page 773) as receiving bids for the construction of a subway under its tracks at Rochester, N. Y., has awarded the contract for this work to the Walsh Construction Company, Davenport, Ia.

Norfolk & Western.—This company is adding 16 stalls to its 24-stall engine house at West Roanoke, Va. The company is also adding 8 stalls to its engine house at Bristol, Va.

Spaulding Logging Company.—This company, whose headquarters are at Sheridan, Ore., contemplates the construction of two logging lines from the terminus of the Willamina & Grand Ronde at Bentley, Ore., into the Spaulding Company's timber holdings on either side of Bentley. Grading of the new lines will be handled by a force now engaged in completing the line of the Willamina & Grand Ronde from Willamina, Ore., to Bentley.

The Miami Corporation, Chicago.—This company has awarded a contract to the Northern Construction Co., Vancouver, B. C., for the construction of five miles of logging railway from Fraser River, B. C., to Timber Limit. The Northern Construction Co. will handle all work of clearing, grading and construction of bridges and trestles. The work will cost approximately $400,000.

The San Francisco-Oakland Terminal Railways.—This company has applied to the Railroad Commission of California for authority to abandon service and to dismantle its San Lorenzo branch line. The company says that the line has been operated at a loss for the last three years.

The Sugar Pine Railway.—This company, operating between Ralph, Cal., and Lyons Dam, a distance of approximately 15 miles, has applied to the Railroad Commission of California for permission to abandon its service. The company's application states that the road has never made any money, that its principal business has consisted of hauling logs for the Standard Lumber Company, Sonora, Cal., and that it owes approximately $67,000 to the Standard Company, which has met several of the railway's operating deficits. The application further states that if the company is to continue in business, it must rebuild practically its entire line.

Texas & Pacific.—This company will accept bids about November 30 for the construction of a one-story brick passenger station at Ranger, Tex., which will cost about $90,000 complete. The company has recently awarded a contract to the Missouri Valley Bridge & Iron Company, for the construction of a substructure necessary for installing a 135-ft. double-track bascule bridge span over the Bayou Plaquemine, at Plaquemine, La. The new bridge will replace a single-track swing span which is too old and light for further service. The contract has not yet been let for the superstructure, which is estimated to cost $235,000 complete.

Union Pacific.—This company has been granted a certificate of convenience and necessity by the Interstate Commerce Commission authorizing an extension of the line of the North Platte branch approximately 30.3 miles through Scotts Bluff County, Nebr., to a point in Goshen County, Nebr., and a 13.2 mile branch in Goshen County, making a total extension of 43½ miles, at an estimated cost of approximately $3,835,000.

Wichita Falls & Southern.—This company has applied to the Interstate Commerce Commission for certificate authorizing it to construct and operate a new line from Newcastle, Tex., to Breckinridge, a distance of 44 miles.

The Interstate Commerce Commission has issued Accident Bulletin No. 75, containing the statistics of accidents on the railroads of the United States in the three months ending with March, 1920. In train accidents, 21 passengers, 113 employees and ten other persons were killed, and 944 passengers, 980 employees and 37 other persons were injured. In the same quarter of 1919, 51 passengers, 89 employees and seven other persons were killed, and 949 passengers, 658 employees and 18 other persons were injured. Adding all other accidents, the totals for the quarter now reported were 1,457 persons killed and 39,507 injured, as compared with 1,735 killed and 35,111 injured in the same quarter of 1919.

The damage to cars, engines and roadways by collisions, derailments and other train accidents in the first three months of 1920, amounted to $7,319,580, as compared with a total in the same quarter of 1919 of $4,359,550. This large increase is explained mostly or wholly by the increases in the price of labor and material necessary to repair the damage done. Of the 8,346 train accidents occurring in the quarter under review, 7,555 involved no injury to persons; and this number is larger than in former years because of the minimum cost limit. An accident damaging railway property to the amount of less than $150 is not reported; but, because of the increase in costs, this limit now makes necessary the inclusion of cases formerly omitted from the reports.

The Bulletin contains seven pages of the usual detail tables.

Accident Bulletin No. 74, containing totals for the year 1919, was noticed in the *Railway Age* of November 19, page 894.

Railway Financial News

CHESAPEAKE & OHIO.—Kuhn, Loeb & Co. and the National City Company have bought and resold at private sale an issue of $4,500,000 6½ per cent equipment trust certificates, series S. The certificates will mature $375,000 each year. They are to be issued by the Commercial Trust Company of Philadelphia, as trustee, from December 1, 1924, to December 1, 1935.

CHICAGO, ROCK ISLAND & PACIFIC.—This company has applied to the Interstate Commerce Commission for authority to issue its rent notes for $4,421,000 and to participate in the National Railway Equipment Corporation equipment trust for the purchase of equipment of that amount.

CINCINNATI, NEW ORLEANS & TEXAS PACIFIC.—This company has applied to the Interstate Commerce Commission for authority to assume an obligation and liability as lessee of the Cincinnati Southern to pay as increased rental the interest as it becomes due on an issue of not exceeding $3,500,000 of municipal gold bonds of the City of Cincinnati at 5 per cent and a further sum of 1 per cent to provide a sinking fund for the retirement of the bonds on July 1, 1965. The contract has been let for a new bridge over the Ohio river at Cincinnati which it is estimated may cost $3,500,000 and the company has entered into an agreement with the trustees of the Cincinnati Southern providing for the issue of the city bonds to pay for the bridge, on condition that the lease of the Cincinnati Southern be amended to provide for the increased rental.

CINCINNATI NORTHERN.—This company has applied to the Interstate Commerce Commission for authority to issue a 6 per cent 10-year promissory note of $113,000 to the Cleveland, Cincinnati, Chicago & St. Louis for a loan for additions and betterments.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—This company has applied to the Interstate Commerce Commission for authority to issue $3,944,000 of 6 per cent promissory notes for approximately $262,933 each, maturing serially, payable to the New York Central; also a 6 per cent 10-year promissory note for $4,560,000 to the New York Central; $4,560,000 of its 6 per cent refunding and improvement mortgage bonds dated July 1, 1920, and maturing July 1, 1935, to be pledged as security for the note of similar amount; also $4,189,000 of its 6 per cent refunding and improvement mortgage bonds dated July 1, 1919, and maturing July 1, 1929; also $113,000 of 10-year 6 per cent promissory notes payable to the New York Central. The notes are to pay 25 per cent of the cost of equipment included in the New York Central equipment trust and to pay for additions and betterments to existing equipment amounting to $529,000. The company also asks authority to guarantee a 6 per cent 10-year promissory note of the Cincinnati Northern for $113,000, payable to the applicant.

DENVER & RIO GRANDE.—This railroad was sold at foreclosure on November 20 to the Western Pacific Railroad for $5,000,000. Court confirmation of the sale has been deferred until December 18 to give the Denver & Rio Grande Stockholders' Protective Committee time to have its appeal heard.

KANAWHA & MICHIGAN.—This company has applied to the Interstate Commerce Commission for authority to issue a 6 per cent, 10-year promissory note for $256,000, payable to the New York Central, for a loan the proceeds of which are to be used for additions and betterments and for the rebuilding of equipment.

LAKE ERIE & WESTERN.—This company has applied to the Interstate Commerce Commission for authority to issue a 6 per cent 10-year promissory note for $609,000, payable to the New York Central.

LONG ISLAND.—This company has applied to the Interstate Commerce Commission for authority to issue refunding mortgage bonds not exceeding $3,876,000 in exchange for its outstanding unified mortgage bonds.

MASON CITY & FT. DODGE.—Following an announcement by the Chicago Great Western, its controlling road, that interest on $12,000,000 50-year 4 per cent first mortgage bonds of the Mason City & Ft. Dodge will not be paid on December 1, a bondholders' protective committee has been formed composed of the following: M. N. Buckner, president of the New York Trust Company; H. S. Marston, of Blair & Co.; F. H. Ecker, vice-president of the Metropolitan Life Insurance Company, and Eugene M. Stevens, vice-president of the Illinois Trust and Savings Bank.

MINNEAPOLIS & ST. LOUIS.—This company has applied to the Interstate Commerce Commission for authority to issue $5,925,000 of rent notes and to participate in the National Railway Equipment Corporation equipment trust for the purchase of equipment of that amount.

MINNEAPOLIS & ST. LOUIS.—This company has applied to the Interstate Commerce Commission for authority to issue its promissory notes and assume obligations with reference to the purchase of 100 refrigerator cars from the Union Refrigerator Transit Company at a cost of $2,275 each. The company proposes to issue 36 notes for $5,055.55 each as a part of the purchase price.

MICHIGAN CENTRAL.—This company has applied to the Interstate Commerce Commission for authority to issue 6 per cent promissory notes of $262,000 each, aggregating $3,930,000, maturing serially yearly from 1921 to 1935, payable to the New York Central; also a 6 per cent 10-year promissory note for $613,000, payable to the New York Central; also $507,000 of its 6 per cent refunding and improvement mortgage bonds dated July 1, 1920, and maturing July 1, 1935, to be pledged as security for the note of $613,000. The notes are in return for a loan to provide 25 per cent of the cost of equipment included in the New York Central equipment trust of 1920, and to pay the cost of additions and betterments to existing equipment amounting to $1,885,000.

NEW YORK CENTRAL.—This company has applied to the Interstate Commerce Commission for authority to issue $6,494,000 of its 6 per cent refunding and improvement mortgage bonds and $9,600,000 of its 6 per cent equipment trust gold certificates of 1920 and to guarantee $3,930,000 of Michigan Central 6 per cent promissory notes, payable to the New York Central, and also promissory notes from its other subsidiaries, all to be pledged by the applicant as collateral security for its promissory notes proposed to be given to the Secretary of the Treasury, amounting to $14,850,000. These are to be notes maturing serially for 15 years at 6 per cent for a loan to be used to provide 25 per cent of the cost of equipment and to pay for additions and betterments. The notes of the subsidiary companies are to be acquired by the applicant in return for loans of like amounts proposed to be made.

NEW YORK, NEW HAVEN & HARTFORD.—This company has been authorized by the Interstate Commerce Commission to issue, not exceeding $80,000,000 of first and refunding mortgage gold bonds, series A, and to pledge all or part as security for note or notes to be issued payable to the director-general of railroads in connection with the funding of its indebtedness to the United States incurred during the period of federal control; also to issue not exceeding $15,000,000 of first and refunding mortgage gold bonds, series B, and to pledge all or part as security for a loan from the United States from the revolving fund.

NORFOLK SOUTHERN.—This company has applied to the Interstate Commerce Commission for authority to issue $222,000 of 10-year first lien equipment trust notes at 6 per cent, dated October, 1920, and payable in October, 1931; also $200,000 of its first and refunding mortgage bonds, dated February 1, 1911; also $111,000 and $200,000 of notes to the Secretary of the Treasury for a loan from the revolving fund to be secured by the deposit of the equipment notes and the bonds.

TOLEDO & OHIO CENTRAL.—This company has applied to the Interstate Commerce Commission for authority to issue a 10-year 6 per cent promissory note for $214,000, payable to the New York Central.

WESTERN PACIFIC.—See Denver & Rio Grande.

ZANESVILLE & WESTERN.—This company has applied to the Interstate Commerce Commission for authority to issue a 6 per cent, 10-year promissory note for $60,000 payable to the New York Central for a loan for additions and betterments.

Railway Officers

Executive

F. S. Wynn, whose election as vice-president of the Southern was announced in the *Railway Age* of November 19 (page 905), was born September 9, 1879, at Danville, Va. He was graduated from the Georgetown University law school in 1906, after having entered railway service in the law department of the Southern at Washington, D. C., in 1900. He later served as secretary and also as chief clerk to the assistant to president and vice-president. In 1909 he was appointed assistant secretary and in August, 1910, purchasing agent, which position he held until January, 1914, when he was appointed secretary, with headquarters at New York. In July, 1918, he was made treasurer in addition to his duties as secretary. He continued in this position until his recent promotion.



F. S. Wynn

L. C. Gilman, whose election as vice-president of the Great Northern, with headquarters at Seattle, Wash., was announced in the *Railway Age* of October 22 (page 728), was born at Levant, Me., on January 28, 1857. Mr. Gilman was educated at the Maine Central Institute, at Pittsfield, Me., from which he graduated in June, 1879, and at the Law School of Columbia University in New York, where he received a degree in May, 1883. He entered railway service in October, 1903, as western counsel of the Great Northern, with headquarters at Seattle, Wash. On February 1, 1909, he was made assistant to the president of the Great Northern, with headquarters at St. Paul, Minn., where he served until June 1, 1914, when he was elected president of the Spokane, Portland & Seattle, and subsidiary lines, including the Oregon Trunk Railway, the Oregon Electric Railway Company, the Pacific & Eastern Railway, and the United Railway. On June 20, 1918, Mr. Gilman was appointed director of the Puget Sound district, comprising the states of Oregon and Washington, by the United States Railroad Administration. He served in this position throughout the period of federal control, and when the roads were returned to their owners he was re-elected president of the Spokane, Portland & Seattle and its subsidiaries. On November 15, 1920, Mr. Gilman resigned as president of the Spokane, Portland & Seattle and its subsidiaries to enter upon his new duties as vice-president of the Great Northern.



L. C. Gilman

Financial, Legal and Accounting

Charles C. Rose has been elected treasurer of the Spokane, Portland & Seattle, with headquarters at Portland, Ore., effective November 15, succeeding M. Barger, deceased.

C. E. A. McCarthy, whose appointment as secretary of the Southern was announced in the *Railway Age* of November 19 (page 905), was born in Brooklyn, N. Y., November 27, 1873. He was educated at St. James Commercial Academy, Brooklyn and entered railway service for the first time in December, 1888, as a clerk in the office of the general superintendent of the Central of New Jersey. In 1890 he left this company to take a position as a clerk in the offices of the Pullman Company. He became a chief clerk in the operating department of the Pullman Company in 1897, which position he resigned in 1898 to become a stenographer in the office of the secretary of the Southern at New York. In 1901 he was appointed assistant secretary, which position he held at the time of his recent promotion.

Daniel Taylor, whose promotion to general attorney of the Chicago, Rock Island & Pacific, with headquarters at Chicago, was announced in the *Railway Age* of October 15 (page 678), was born at Verona, Miss., on August 6, 1880. He entered the University of Arkansas in 1896, graduating in 1900. He received a degree from the law school of Cumberland University in 1906, and immediately engaged in general legal practice at Pine Bluff, Ark. While at Pine Bluff Mr. Taylor served as legal representative of several railroads, including the Missouri Pacific. During the war he was commissioned major in the judge advocate's department and served in France, being attached to the office of the judge advocate general of the American Expeditionary Forces at general headquarters in Chaumont. He returned to the United States in October, 1919, and on January 1, 1920, was appointed assistant general attorney of the Rock Island, the position which he held at the time of his recent promotion. As general attorney of the Rock Island, Mr. Taylor will have immediate charge over all litigation in Illinois.



Daniel Taylor

Robert Crosbie, secretary of the Spokane, Portland & Seattle, with headquarters at Portland, Ore., has been elected comptroller, with the same headquarters, succeeding W. F. Turner, who has been elected president, effective November 15.

Operating

P. D. Barry has been appointed assistant superintendent of the Montana division of the Northern Pacific, with headquarters at Billings, Mont., effective November 9.

W. S. Butler, master mechanic of the Chesapeake & Ohio, with headquarters at Huntington, W. Va., has been appointed assistant to the general superintendent, with the same headquarters.

Geo. T. Reid has been elected vice-president of the Spokane, Portland & Seattle, with headquarters at Tacoma, Wash., succeeding W. F. Turner, who has been elected president, effective November 15.

E. I. Ford, general superintendent of the Chesapeake & Ohio terminal at Newport News, Va., has resigned, to become vice-president and traffic manager of the Consolidated

Pocahontas Coal Company, with headquarters at Baltimore, Md. **M. C. Selden,** superintendent of terminals at Newport News, has taken over the duties of Mr. Ford's office.

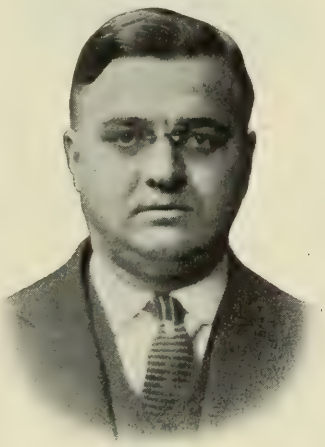
W. H. Bevans, assistant superintendent of the St. Louis-San Francisco, with headquarters at Enid, Okla., has been promoted to superintendent of the Western division, with the same headquarters, succeeding **J. E. Liston.** Mr. Liston has been transferred to the Southern division, with headquarters at Memphis, Tenn., succeeding P. O. Wood, who has been assigned to other duties. These appointments are effective November 18.

Ira B. Richards, whose appointment as superintendent of transportation of the Northern Pacific was announced in the *Railway Age* of November 5 (page 819), was born May 20, 1864, at Bowling Green, Mo., and was educated in the public schools. He entered railway service with the Chicago & Alton as a telegraph operator in 1880. In 1882 he went to New Mexico as a telegraph operator for the Atchison, Topeka & Santa Fe, and, in 1882, returned in the same capacity to the Chicago & Alton at Chicago. In 1885 he became a train despatcher on the St. Louis Southwestern, and in 1890 went to Tacoma, Wash., as a despatcher for the Northern Pacific. In 1892 he was promoted to chief despatcher, and, in 1897, to train master. In 1903 he was appointed superintendent of transportation, with headquarters at St. Paul, Minn., and, in 1910, general superintendent, with headquarters at Tacoma, which position he was holding at the time of his recent appointment.

Traffic

James N. Gall has been appointed general agent of the Boston & Maine, with headquarters at Chicago, effective November 15.

Frank F. Rice, whose appointment as traffic manager of the Cairo, Truman & Southern, with headquarters at St. Louis, Mo., was announced in the *Railway Age* of October 29 (page 775), was born at Louisiana, Mo., on November 25, 1887, and entered railway service in January, 1902, as a messenger and clerk in the offices of the Chicago, Burlington & Quincy at East St. Louis, Ill. In July, 1905, he left the service of the Burlington to become a clerk in the East St. Louis offices of the Illinois Central, where he was employed until October, 1906, when he became a clerk on the Vandalia Railroad, remaining at East St. Louis. After a year of service with the Vandalia, Mr. Rice became a clerk in the offices of the Mobile & Ohio, at East St. Louis, a position which he held until July, 1910, when he became a clerk in the office of the Toledo, St. Louis & Western. From February, 1913, when he was made rate clerk, to September, 1920, he served continuously with the Toledo, St. Louis & Western. At the time of his recent appointment Mr. Rice was serving as contracting freight agent, with headquarters at St. Louis, Mo., a position to which he had been promoted in February, 1913.



F. F. Rice

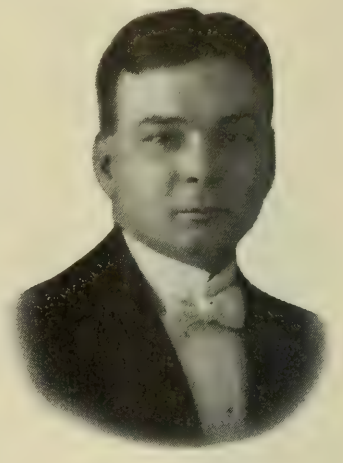
A. K. Morris, coal traffic manager of the Erie, with headquarters at New York, has resigned to enter the service of another company. **F. D. Austin,** coal freight agent, with headquarters at New York, has been appointed general coal freight agent, with the same headquarters. **G. H. Reinbrecht** succeeds Mr. Austin as coal freight agent at New York.

Mechanical

A. E. Smith, master car builder of the Union Tank Car Company, has been elected vice-president in charge of construction and maintenance of plant and equipment, with headquarters at New York, effective November 15. The office of master car builder has been abolished.

H. C. Gillispie, master mechanic of the Chesapeake & Ohio, with headquarters at Peru, Ind., has been transferred to a similar position at Huntington, W. Va., succeeding W. S. Butler, promoted. **E. R. Woody,** assistant mechanic at Fulton, Va., succeeds Mr. Gillispie as master mechanic at Peru.

H. L. Worman, assistant superintendent of motive power of the St. Louis-San Francisco, has been appointed superintendent of motive power, with headquarters at Springfield, Mo., succeeding C. C. Higgins, deceased. Mr. Worman was born at Salem, Ohio, July 19, 1877. He entered the service of the St. Louis-San Francisco in 1905 as a machinist in the shops at Kansas City, Mo. In 1906 Mr. Worman was appointed roundhouse foreman at Kansas City. In 1907 he became erecting foreman and in 1908 machine foreman in the same shop. In 1911 he was appointed general foreman at Fort Scott, Kan., and in 1916 he became traveling roundhouse foreman for the entire system. In 1917 he was appointed master mechanic at Memphis, Tenn. In 1919 he was appointed assistant superintendent of motive power, with headquarters at Springfield, Mo., which position he held at the time of his recent promotion.



H. L. Worman

Engineering, Maintenance of Way and Signaling

H. L. Kile, roadmaster on the Western Pacific, with headquarters at Oakland, Cal., has been promoted to engineer of the Western division, with headquarters at Sacramento, Cal.

G. N. Prentiss, chemist on the Chicago, Milwaukee & St. Paul, with headquarters at Milwaukee, Wis., has been appointed engineer of tests, with the same headquarters, effective November 16.

The transfer of **W. A. Kennon,** division engineer of the Missouri Pacific, with headquarters at St. Louis, Mo., to a similar position at Osawatomie, Kan., which was announced in the *Railway Age* of November 19, has been cancelled and Mr. Kennon will remain in the same position at St. Louis. **E. P. Hawkins,** division engineer, at Wichita, Kan., has been transferred as division engineer, with headquarters at Osawatomie, Kan. **J. R. Nagel,** division engineer at Nevada, Mo., who was to have succeeded Mr. Kennon at St. Louis, has succeeded Mr. Hawkins at Wichita.

Purchasing and Stores

B. B. Brain, whose appointment as purchasing agent of the Kansas City Southern was noted in the *Railway Age* of November 19 (page 906), entered railway service in 1885 with the Kansas City, Fort Scott & Memphis (now a part of the St. Louis-San Francisco). In 1902 he went to the Kansas City Southern as general storekeeper, with headquarters at Kansas City. Later he served as chief clerk in the purchasing department and, since 1912, has been fuel agent for the company, which position he held at the time of his recent appointment.

EDITORIAL
Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

September Earnings and Expenses

The September statement of railway earnings and expenses just issued by the Interstate Commerce Commission makes an unsatisfactory showing. The effect of the rate increases is only partially reflected because a considerable portion of the business handled was billed in August at the old rates and because in some states the full amount of the increases has not yet been applied to the intrastate traffic. With an increased volume of traffic as compared with September, 1919, the freight revenues show a gain of only 27 per cent and the passenger revenues of only 17 per cent. The wage increase awarded by the Railroad Labor Board in July, however, was in full effect throughout the month and also some $2,701,000 of back pay chargeable to prior months was included in the September operating expenses, which were about 28 per cent greater than for September, 1919. The net operating income for the month was only $75,310,311, or actually less than for September, 1919, when it was $77,648,722, and the operating ratio was 83.01 as against 80.2 last year. It will be necessary to await the returns for October before it will be possible to ascertain the full effect of the rate increase. Meanwhile a striking illustration of the way expenses have increased is afforded by the fact shown in the report, that for the first nine months of 1920—a period in which the railroads handled a larger volume of business than ever before in a similar period—there was a deficit of $87,402,050 as compared with a net operating income in the corresponding period of 1919 of $402,344,166. Although the operating revenues increased by $657,000,000 the expenses were $1,073,000,000 greater and taxes were $63,000,000 greater.

Car Building In October

The production of freight cars for domestic service in October showed an encouraging increase over the total for the month of September and was in fact nearly twice the monthly average for production in the preceding months of the year. The figures supplied by the 23 leading car manufacturing companies reporting to the Railway Car Manufacturers Association showed a domestic production in October of 5,999. This compares with a total of 3,529 in September and with an average monthly production for the earlier months of the year of slightly over 3,000. The figures in question are given in detail in an item in the Equipment and Supplies column of this week's issue. From the data given it will also be observed that the total domestic production of freight cars to the end of October was 33,584. The production of cars for export in October was 668 and the total production to the end of October was 12,264. The passenger car output for domestic service was 21, making a total of 129 for the year up to October 31. The big increase in domestic freight car production in October does not mean that the car building industry is as yet working to capacity. It does mean, however, that the industry is recovering from the low level at which it was during the summer months. This improvement is expected to continue and the November figures will no doubt show increases over the total domestic production in October. The total for domestic freight car orders on hand and undelivered on October 31 was 46,051, on September 30 it was 48,114 and on July 31, 50,275. It is unfortunate that this total is being reduced with a monthly production of from only 3,000 to 6,000 cars.

The Influence of Track Labor on Maintenance

In one sense the foundation of track maintenance is the labor which is required to perform the work. That it is a large factor is too well recognized to need emphasis. The manner in which maintenance of way labor has been "hired and fired," in order to keep pace with the varying changes in allowable expenditure, is indicative of its importance, at least from the standpoint of money. The most remarkable fact regarding these changes in expenditure is that they are made chiefly by changes in force, the men themselves being considered as so many units at some fixed value per unit. Seldom if ever is any consideration given to efficiency, ability, character, or any of the other numerous qualifications which are considered as of such prime importance in the business world. Yet every one of the qualifications is just as necessary in the conduct of successful maintenance as in any other line of business, no matter how specialized. It is a distinction of degree only. The proper performance of track work requires more than supervision plus animal force, no matter how well directed the supervision may be. It necessitates the use of capable workmen. Then and then only does intelligent supervision obtain the needed results at the lowest cost. Track labor is an operating factor, and as such, it should be thoroughly investigated, studied and planned, for only in this way can results be obtained that will show permanent economies affecting every department. Almost any locomotive will pull a train, to some extent or other, and almost any man will work, also to some extent or other, but no modern railroad buys or builds its locomotives on a "hit or miss" plan. Why place the man below the machinery? The man costs more in the long run.

Where the Promise Is Performed

It is an axiom among mine operators that if living conditions in the mining community are such that the women are contented, they need not anticipate any serious labor agitation on the part of the mine workers. While the situation throughout a typical mining district bears no parallel to the conditions encountered in railroad service, it would not be difficult to prove that any reasonable expenditure on the part of the railroads toward making the living conditions available to employees, particularly at outlying terminals, more comfortable and the surroundings more wholesome is the best kind of investment. Moreover, there is a moral obligation involved which the railroads cannot conscientiously ignore. Road service differs from almost every other industrial occupation, as the employee is required to travel a great part of his time and must spend much of this time in idleness at outlying terminals. The railroads are, in a sense, the custodians of every man whose life work is devoted to train or engine service and they should seek to assume rather than evade this responsi-

bility. The most inspiring feature in connection with a new locomotive terminal project recently completed is the handsome and commodious Y. M. C. A. building with appointments that in many respects equal those of a first-class hotel. Here the promise is performed, the hundreds of train and enginemen are assured a clean, comfortable bed, a wholesome, appetizing meal, and a healthy moral atmosphere. If you doubt the extent to which such things are appreciated by employees, talk this over some morning with an engineman who could not get a decent cup of coffee for breakfast, or a fireman who spent the night in a shanty adjoining the lunch counter. These men are in much the same condition for the return trip as a locomotive that has been turned without having its fire cleaned and the situation is not one calculated to improve the capacity of employees for loyal and effective service. It is not too much to say that the Railroad Y. M. C. A. which is actuated by motives that are above material gain, or the Fred Harvey meal service that is available to employees at railway terminals on a basis of service rather than profit, or any other institution that is designed primarily to enhance the comfort and the morale of railway employees, is just as important to the successful operation of a railroad as any part of the physical equipment designed for the maintenance of locomotives and cars.

A Material Consideration

The statement that prior to the great war the stores department on the Trans-Siberian Railway was required to maintain a three-year stock of all materials may startle some of our best authorities on the service of supply. Yet it is this stock of material that has enabled the shops on that railroad to continue operations through the vicissitudes of war and revolution. The motive governing this unusual policy was plainly the desire to put service ahead of every other consideration. The railroad must run, come what may and cost what it will. There is obviously no occasion for such tremendous material reserves in this country even if we could afford them and the railroads should be encouraged to reduce rather than enlarge material stocks. It is believed that when comparative statistics are available which indicate the true amount of unapplied material on every railroad, some roads will discover that in comparison with adjacent railroads they are carrying an excessive amount of certain materials to no good purpose. However, in this country as in old Russia, the question of service should be considered in advance of any economies that can be effected through reducing material stocks. There are places on the railroad where a considerable surplus would be preferable to a slight shortage. Locomotive terminals, particularly at outlying points, must always have an ample supply of packing, arch brick and many other specialties essential to keeping locomotives in service without interruption.

Further Data on Adequate Rail Renewals

In last week's issue we presented an estimate of the deficiency in rail renewals made by C. W. Gennet, Jr. Further data relative to this same important subject will be found in this issue in the form of a table of rail production, exports, imports and estimated consumption, as prepared by the American Iron and Steel Institute covering the years 1874 to 1919, inclusive. Since the figures for rail consumption given include rails purchased by street car lines, interurbans and industrials, in addition to those of the steam roads, they are obviously not comparable with the data compiled by the United States Railroad Administration on tonnages of rails purchased and laid by the railroads under government control. However, since the mileage of the steam roads constitutes nearly 90 per cent of the track mileage of the country, the consumption tonnages referred to will serve very well for general comparisons. The most remarkable fact brought out by these data is that the rail consumption in 1919 was smaller than in any year since 1897 and equal to only 43 per cent of the consumption of the banner year, 1906. However, as a study of this table will disclose, the yearly totals are exceedingly variable. Consequently, it is better to consider averages. Thus, we find that the average consumption for the six years, 1914 to 1919, inclusive, is 2,021,590 tons while for the ten years, 1904 to 1913, it was 2,804,369 tons. To be sure these figures are influenced by new construction, weight and density of traffic and gross mileages of track involved, as well as other variables. No attempt will be made to arrive at a definite estimate of the present deficiency which must also take into account the rails laid in 1920 for which no figures are now available. That this deficiency is one of the most serious problems of the railways today cannot be questioned.

Cost of Leaks in Train Lines

An authority on air brake matters has estimated that under average conditions, 55 per cent of the air compressed by the air compressor on the locomotive is wasted. The greater part of this waste is caused by leaks in the train line, of which the most important and the hardest to detect are those occurring in the hose. When trains are pumped up before departure the inspector makes a cursory examination to detect audible leaks but leaks in porous hose can seldom be heard and usually are not found. The extent of the loss from this cause is shown by the fact that in a series of tests of trains of 65 cars, by removing from five to eight porous hose, the rate of leakage in the train line, which had ranged from 12 to 20 lb. per minute, was reduced to 6 to 8 lb. per minute. Excessive leakage is both costly and troublesome. The amount of steam used by the air compressors may amount to as much as 10 per cent of that used by the locomotive cylinders and if this can be cut in half, as in the cases cited above, a direct saving of 5 per cent in fuel will result. Many terminal delays are caused by inability to get the required train line pressure, due solely to porous hose, and on the road the leakage causes difficulty in handling trains. The remedy for this condition is not difficult of application nor expensive. In the first place, the uncoupling of cars without first parting the hose by hand must be stopped as this is the principal cause of porous hose. It is not enough to issue instructions to all concerned. Some employee must be delegated to part the hose on all incoming trains. To make sure that hose are not allowed to remain in service after they have become porous, periodical tests must be made by painting the hose with soap suds. The saving through the elimination of leakage was estimated in 1918 to be at least $35 per car per year. Under present conditions, it would certainly be much greater.

Everybody's Business

No single governmental function is so narrowly understood as the activities of the United States Patent Office. Regarded generally as an institution for protecting a proprietary interest in inventions that affect the public welfare, its part in promoting inventions that have enhanced the comforts and pleasures of life a thousand fold is seldom comprehended. The rapid development of railroad facilities in this country could not have been realized had it not been for the broad scope of our patent laws. It is hardly probable that George Westinghouse would have applied himself so persistently to the development of the air brake or that the inventors of a hun-

dred other devices essential to modern railroading would have sacrificed the time and money required for the development of these devices if they had not been assured of a proprietary interest in their invention by virtue of our patent laws. The electric light, the telephone and a thousand other important developments owe their introduction into our everyday existence to our system of patent protection. As the mass of inventions presented to the patent office is multiplying daily, it is of the utmost importance to transportation as to every other branch of human activity that the patent office function promptly and effectively. It is discouraging to observe that the efficiency of this important work should be impaired because the salaries of the technical experts of the patent office have been held to pre-war standards. There is little excuse for such a situation in view of the fact that the fees received by the patent office exceed the running expenses of that office and that a surplus is turned over to the Secretary of the Interior which goes to make up the deficit incurred by some other governmental activity. The railroads and the industries that supply the railroads may well feel concerned when it takes months to get decisive action on many important inventions. There should be an incentive to hold the best men in the patent office rather than to attract them away. It is everybody's business to impress these facts upon the new congress.

Will Railway Employees Help Reduce Operating Expenses?

RAILROAD LABOR ORGANIZATIONS are approaching an important crisis in their history. The prices of most commodities are declining, thus undermining the high cost of living argument which was used effectively for the present high wages of railway employees. These reductions of prices are reducing the incomes of some of the largest classes of people in the country, especially the farmers. Reductions of wages also are being made in many industries. The result is that the high wages of railroad employees already are beginning to stand out prominently. They will stand out more prominently as prices and wages in other industries continue to decline.

Meantime the advances in freight and passenger rates granted to the railways by the Interstate Commerce Commission are failing to produce the net returns the commission expected. To have earned that month's portion of the 6 per cent annual return the railways should have earned in September about $109,000,000 net operating income. They earned only $75,310,000. There were several special reasons for this. A substantial part of the traffic delivered started to move in August and was carried at the old rates. The September expenses included about $2,700,000 of retroactive advances in wages properly chargeable to preceding months. In many States advances in intrastate rates corresponding to the advances in interstate rates have not been made. On the whole, however, it begins to seem very improbable that on the present general basis of operating expenses and the basis of all the advanced rates, state and interstate, contemplated by the commission in its recent decision the railways can earn as much net return as the commission estimated.

The commission, has, however, accepted the principle that under existing conditions the railways must, in the public interest, earn an average of 6 per cent. The situation is, therefore, raising very directly the question whether the further increases in net returns the railways must have are going to be obtained by further advances in rates or by reductions of operating expenses. At a time when the prices of most commodities and the wages of many working men are declining there would undoubtedly be vigorous opposition to further advances in rates. The needed additional net earnings required probably should, and must be secured by reductions of operating expenses. In this connection, it is important to remember that the law requires the commission to fix rates which will yield the returns specified in the Transportation Act only if the railways are being efficiently and economically operated. Therefore, before the commission authorized any further advances in rates it would not only be pertinent, but its duty, for it to inquire whether the railways actually are being efficiently and economically operated.

When it inquired regarding the use being made of the available tracks, terminals, locomotives and cars, it would find the record demonstrates they are being used more efficiently than ever before. The largest item of railway expenses, however, is wages, which are now almost 60 per cent of operating expenses. It is quite conceivable, and even probable, that this part of the expenses would be found excessive either because the wages being paid are too high or because the men who receive wages are not doing as efficient work as they should, thus making it necessary to employ an excessive number of men. If the commission found that the net return of the railways was too small because their operating expenses were too large; that their operating expenses were too large because their pay-roll was too large; and that their pay-roll was too large because the wages paid were too high, it would raise a very important question for consideration by the Railroad Labor Board. If it found the pay-roll was too large because the inefficiency of labor resulted in the employment of an excessive number of men it would raise an important question for consideration by railway officers and by railway labor leaders and members of their organizations.

The question of the reasonableness of present railway wages already is being raised by the leaders of some organizations of farmers and by business men in all parts of the country who have to compete with the railways for labor. It will be only a matter of time until the leaders and members of railroad labor organizations will be called on to defend them. If the wages of railroad labor can then be shown to be relatively higher, as compared with those of pre-war times, than the incomes of farmers and the wages of other working men, there will be only one valid argument which can be made against their reduction. This is that the efficiency of the work of railway employees has increased so much since pre-war times that they are earning their advanced wages by increased service per man to the railways, and through them to the public which, in the last analysis, pays all railway expenses. This argument cannot be made at the present time, because the efficiency of railway labor has not been restored to anywhere near the pre-war basis.

What are the leaders of the railway labor organizations doing to furnish their members real protection against reductions in wages? Are they carrying on propaganda to cause employees to do more and better work? If so, they are very successful in preventing publicity from being given to the fact. On the contrary, they are carrying on propaganda for the Plumb plan and using it in attacks upon the railway companies and private operation which are adapted and apparently intended to prevent increases of efficiency among the employees. They are also trying to secure the establishment of national boards of adjustment to which could be carried a wide variety of questions arising between the employees and the managements of the individual railroads.

It is well known that there are differences of opinion among railway executive and operating officers regarding the advisability of national boards of adjustment. Many favor them, but a majority oppose them. Those who oppose them may or may not be right, but there is no question as to the

reason for their attitude. They oppose the national boards of adjustment and favor boards of adjustment local to each line because they believe that only by getting out of the hands of national organizations of the railways and of their employees, and transferring to local boards of officers and employees the settlement of as many questions as possible can they secure the better discipline and greater effort on the part of railway labor which is necessary to securing the needed efficiency and economy of operation.

Railway officers, whether in favor of or opposed to national boards of adjustment, offer many concrete suggestions for increasing the efficiency of labor. Many of them would like to restore piece work in the shops. Most of them would like to break down the many absurd and indefensible rules and agreements regarding conditions and methods of work which result in many millions of dollars being paid by the roads for work which is not done. Most of them would like to see the abolition of punitive overtime in train service, which affords to train service employees a direct incentive unnecessarily to protract the time which freight trains take in getting over the road and unnecessarily increases expenses. On the other hand, the labor leaders have not come forward with a single suggestion for increasing the efficiency of labor or reducing operating expenses except the absurd and fantastic Plumb plan.

Now, one thing is certain. The present high average operating cost, including the labor cost, of moving a ton one mile and a passenger one mile must be reduced. The labor cost of rendering each ton-mile and each passenger-mile of service can be reduced by increasing the efficiency of each employee or by reducing the wages of each employee; and, regardless of whether national boards of adjustment or local boards of adjustment are established, this labor cost must and will be reduced just as other items of railway expenses must and will be reduced.

The Railroad Labor Board established the present scales of railway wages. To it also has now been submitted for consideration the question of the establishment of national or local boards of adjustment. The question of future wages will not be directly raised in the consideration of this matter, but they really are merely two phases of one general problem, viz., the problem of putting the relations between the railways and their employees on a basis where the cost of labor will be made reasonable. The railways' costs are not now reasonable, and they must be made reasonable if the roads are to serve the public at reasonable rates and at the same time earn a net return which will enable them adequately to increase their facilities. The conclusion reached by the Railroad Labor Board should be based primarily on recognition of the public's right to have the employees render a service to the railways, and through them to the public, proportionate to the amount of wages they are paid, and should be intended primarily to help establish relations between the railways and their employees under which this will be done.

Meantime, it is to be hoped that railway employees and the leaders of their labor organizations will recognize the fact that the wages and conditions of employment of railway employees are rapidly coming to occupy a more and more prominent place in the minds of farmers and business men, and that in the long run nothing will prevent reductions in present railway wages unless it can be shown that the employees are doing all that they reasonably can to earn them. There are several classes of employees, especially those employed in the shops, who will have to increase their efficiency very greatly and contribute very largely toward reducing railway expenses before they will be able to convince anybody but themselves that they actually are earning their present wages.

The *Railway Age,* in an editorial in its last issue, urged the managements of the railways to use methods in attempting to solve the present labor problem which would tend to win the co-operation of the employees and their organizations, rather than increase antagonisms. But the managements must secure greater economy in operation; and if the employees and their organizations do not put their shoulders to the wheel and help reduce operating costs in spite of present wage scales, then they must expect the present wage scales to be made in a short time the object of serious attacks.

Commodity Prices and Railway Rates

FROM THE STANDPOINT of both the railroads and the public it is unfortunate that the large advances in railway rates, made necessary chiefly by increases in operating expenses under government control, were not made until the prices of many commodities began to decline. The extensive reductions in the prices of commodities and the cost of living which have occurred since the advances in freight rates were made at the end of August have, however, had one salutary effect. They have completely refuted the absurd argument made by some opponents of advances in rates that they would cause a five times greater increase in the cost of living. Since the rapid decline in the cost of living began almost simultaneously with the recent large advance in freight rates, it seems reasonable to hope that we shall never again hear this silly argument.

A more recent contention which apparently has more validity is that because the advance in rates was made just when prices began to decline, it has imposed a heavy burden upon producers and business concerns, whose prices have been reduced. Even this argument, however, has not much validity, because in spite of the recent advance in freight rates and declines in prices, freight rates still are relatively much lower compared with the prices of most commodities than they were before the war.

In the absence of definite statistical information regarding the actual revenues of the railways under the new rates, we can only estimate what has been the increase in the average rate per ton per mile in this country since before the war. Taking into consideration all the advances in freight rates which have been made, however, it is probable that the average rate per ton per mile is now about 81 per cent higher than in 1913. If this estimate errs, it exaggerates rather than understates the average increase in rates. In spite of recent reductions in prices, there apparently are only two classes of commodities whose wholesale prices are not at the present time relatively much higher as compared with railway rates than they were before the war. The statistics of the Bureau of Labor indicate that on November 1 the average price of farm products was only 82 per cent higher than before the war, and the average price of metals and their products only 84 per cent higher. The average wholesale prices of foodstuffs were still 104 per cent higher than in 1913, and those of clothes and clothing, 157 per cent higher. Those of building materials were 214 per cent higher; those of chemicals, 116 per cent higher; those of fuel, 182 per cent higher; those of house furnishings, 271 per cent higher, and the prices of miscellaneous commodities, 129 per cent higher. The weighted average price of all commodities was 125 per cent higher.

It is a fact now generally conceded that before the war railway rates were too low. They were so low that the new investment in railroad facilities was rapidly declining. Although, however, before the war railway rates were too low, the statistics show that as compared with prices in general they are relatively even lower now than they were then. Comparisons with existing wages in almost all industries would also show that the advances in railway rates have not made them anywhere near as high relatively as wages. In the railroad industry itself the average advance in rates has been less than two-thirds as great relatively as the average advance in wages.

If, under present conditions, farmers and business men find themselves burdened by excessive costs of doing business, they cannot successfully maintain that one of these excessive costs is railway freight charges.

The Motor Truck as a Railway Facility

UP TO THE PRESENT TIME railway men and motor truck manufacturers alike have commonly looked upon their respective agencies of transportation as primarily competitive in character with little thought of the possibilities of the railways themselves using motor trucks as aids in the conduct of their varied operations. This impression has been created largely by the widespread reports of fleets of motor trucks carrying important traffic long distances during the period of abnormal and acute car shortage of the past two years. Now that transportation conditions are fast returning to normal and the car supply is again sufficient to meet the demands, this traffic is returning to its original and natural channels.

Of more direct and permanent interest to both railway and motor truck operators is the possibility of correlating these agencies. Up to the present time neither has given much thought to this phase of their relationship, yet the motor truck offers large possibilities to the steam railroads as an agency in the performance of many tasks which confront them. When one considers the diversity of operations on a large railway and the extent to which the motor truck has entered other industries, it is surprising that it has not received more general consideration on the part of the roads. It has seemed strange to railway men that such limited attention as the manufacturers of motor trucks have given to the possibility of securing the railways as customers for their product has been largely with the idea of extending the activities of the roads from the freight house to the store door and from stations along existing lines to interior points, remote from railway facilities. Many students of the transportation problem at large have advocated the railways operating motor trucks beyond the ends of branch lines and radiating from other stations to bring to their tracks traffic not now accessible directly by rail. However, railway men have not taken this suggestion seriously because of the present necessity that they concentrate on the intensive development of their properties to handle the traffic now offered without assuming any new responsibilities.

It is with the thought of effecting economies in the performance of the services the railways are now rendering that the motor truck deserves careful consideration from railway men.

There are many places on the railways in which a truck will demonstrate it has advantages similar to those which it has shown in industrial haulage. Among such operations may be enumerated the transfer of less-than-carload freight moving in interchange from one road to another, now commonly hauled across cities in trap cars or by other agencies; the transportation to central forwarding houses for consolidation of less-than-carload freight received at outlying sub-stations and now commonly moved by trap cars; the distribution of materials from local storehouses to various points in large terminals where they may be required by maintenance gangs; the transfer of railway materials from place to place about storeyards and other central points of assemblage, etc. At the present time when the railways are confronted with high operating costs, with congestion in terminals, etc., it is important that they consider every means for relieving these conditions. We shall further discuss the possibilities of the motor truck as a means to this end editorially in succeeding issues.

St. Louis Southwestern

IN STUDYING THE RESULTS of the operation of many railway properties during the last two years one gains little information of help in estimating their future possibilities because of the abnormal conditions under which the roads have been operated. This is particularly true of the St. Louis Southwestern which was the source of one of the most active controversies between the corporate and federal managements during government control. Its corporate management criticized most severely the action of the Railroad Administration in dividing its system at the Texas state line and merging the two portions of the road with competing railways. Claims were made that traffic normally tributary to its lines was diverted over other lines and particularly that the maintenance of the property was neglected. Because of these contentions the road declined to enter into the standard form of agreement with the Railroad Administration during federal operation but chose rather to stand on its rights under the Federal Control Act. As a result of these conditions a better index of the outlook for this road is gained from a review of its operations during the period following the return of the property to its corporate management and its operation by these officers.

During the calendar year 1919 the St. Louis Southwestern failed to earn its standard return by $2,348,755. In the face of this unfavorable showing its management refused to accept the government's guarantee of earnings for the six months' period ending September 1, and chose rather to proceed at once upon its own resources with the result that its net income for this period exceeded the standard return by $306,754 after spending $1,593,285 more for the maintenance of roadway and equipment than it is estimated that it would have been permitted to spend under the terms of the guarantee, which amounts accrued to the owners of the property. Of the few large roads which rejected the government guarantee, the Cotton Belt is one of only two or three which benefited by this decision. This result was attained after meeting in full the wage increases granted to employees by the Railway Labor Board and retroactive to May 1, which amounted to approximately $900,000 during the four months of the guarantee period in which they were effective. As early as May, the management began to inflate operating expenses to meet the expected wage advance and at the time the award was made a fund of $725,000 had been set up to meet it.

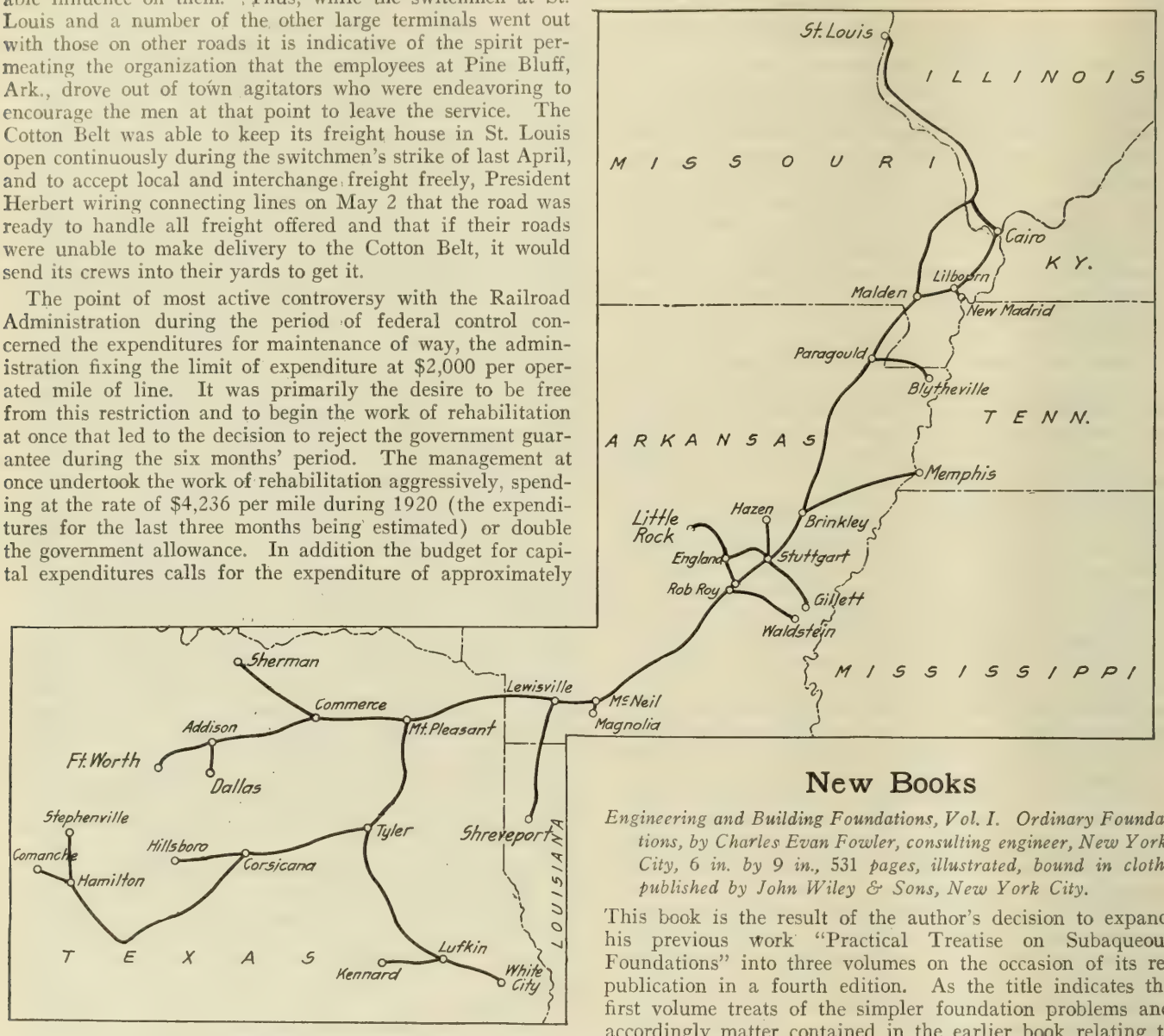
The St. Louis Southwestern extends southwest from St. Louis through southeastern Missouri and Arkansas to Fort Worth, Dallas, and other eastern Texas points. It operates through ownership, lease and trackage rights 1,776 miles of line, slightly less than half of which is in Texas.

The freight traffic handled during 1919 amounted to 1,140,459,526 ton miles or approximately 10 per cent less than that of either of the two preceding years. The passenger traffic showed a decrease of 18 per cent from that of 1918, although it was about 6 per cent greater than in 1917. Immediately following the termination of federal control all of the outside pre-war agencies were reopened and one or two new ones established, with the same personnel as in 1917, and an aggressive campaign for business was inaugurated under the spur of the necessity of operating without other assistance. The rapidity with which the road is coming back from a traffic standpoint is indicated by the fact that 599,802,003 ton miles of freight were handled during the four months of this year from March to June inclusive as compared with 319,593,055 for the same period in 1919 and 453,417,291 in 1918, the previous high water mark for this period in the history of the road. Similar recovery is being made in an operating way. Measured in terms of car mileage per day the performance on the lines north of Texarkana

increased from 28.7 in July, 1919, to 35.1 in July, 1920, and on the lines in Texas from 13.1 to 28.9, while the mileage of tank cars on the entire road rose to 97.1.

Of particular interest has been the improvement in the morale of the employees. While the Cotton Belt has encountered the same change in the spirit of its men in the last three years that is found on other roads, the fact that the management saw fit to decline the federal guarantee exerted a favorable influence on them. Thus, while the switchmen at St. Louis and a number of the other large terminals went out with those on other roads it is indicative of the spirit permeating the organization that the employees at Pine Bluff, Ark., drove out of town agitators who were endeavoring to encourage the men at that point to leave the service. The Cotton Belt was able to keep its freight house in St. Louis open continuously during the switchmen's strike of last April, and to accept local and interchange freight freely, President Herbert wiring connecting lines on May 2 that the road was ready to handle all freight offered and that if their roads were unable to make delivery to the Cotton Belt, it would send its crews into their yards to get it.

The point of most active controversy with the Railroad Administration during the period of federal control concerned the expenditures for maintenance of way, the administration fixing the limit of expenditure at $2,000 per operated mile of line. It was primarily the desire to be free from this restriction and to begin the work of rehabilitation at once that led to the decision to reject the government guarantee during the six months' period. The management at once undertook the work of rehabilitation aggressively, spending at the rate of $4,236 per mile during 1920 (the expenditures for the last three months being estimated) or double the government allowance. In addition the budget for capital expenditures calls for the expenditure of approximately



The St. Louis Southwestern

$6,300,000, including 21 new locomotives and considerable quantities of new rail, ballast, etc. The following table shows the general results of the operation of the property under the government in 1919 and 1918.

	1919	1918
Average mileage operated	1,755	1,783
Freight revenues	$15,821,318	$14,365,854
Passenger revenues	4,492,096	4,910,251
Total operating revenues	20,661,163	19,588,761
Maintenance of way and structures	4,127,516	3,226,375
Maintenance of equipment	5,220,162	4,688,980
Traffic expenses	314,114	376,207
Transportation expenses	7,880,833	6,843,340
General expenses	789,959	705,713
Total operating expenses	18,332,583	15,840,615
Taxes	780,575	742,779
Railway operating income	1,543,822	3,003,064

The following shows the corporation income account for 1919:

Standard return, tentative (as certified by the Interstate Commerce Commission)	$3,910,914
Non-operating income	659,740
Gross income	4,570,653
Interest, rentals, etc.	2,597,776
Corporate organization expenses	164,658
Taxes, accruals and miscellaneous	462,310
Income balance	1,345,909

New Books

Engineering and Building Foundations, Vol. I. Ordinary Foundations, by Charles Evan Fowler, consulting engineer, New York City, 6 in. by 9 in., 531 pages, illustrated, bound in cloth, published by John Wiley & Sons, New York City.

This book is the result of the author's decision to expand his previous work "Practical Treatise on Subaqueous Foundations" into three volumes on the occasion of its republication in a fourth edition. As the title indicates the first volume treats of the simpler foundation problems and accordingly matter contained in the earlier book relating to the more complex subjects has been withdrawn for use in the later volumes, while new chapters on the masonry for piers, abutments, retaining walls and culverts round out the subject. Volume I covers practically all engineering details relating to the construction of the substructures of bridges that do not involve the open or pneumatic caissons or elaborate dredging. It embraces both design and construction practice, going into considerable detail on such matters as cofferdam sinking, pile driving, removal of old piers, pumping, etc. In general the treatment is direct and analytical, but considerable space is given to detailed accounts of the methods used in building particular structures.

THE RAILROADS AND BUSINESS.—Every business man has his eye on the railroads today for first move in the direction of liberal for first move in the direction of liberal orders for equipment. That is his signal things are all right again.—*N. Y. Commercial.*



The Chicago, Milwaukee & St. Paul Roundhouse at North McGregor, Iowa, Has a Gypsum Roof

Gypsum Tile as a Covering for Railroad Buildings

Low Conductivity, Resistance to Disintegration and Ease of Erection Commend This Material

By Curtis F. Columbia,
Consulting Engineer, New York City

A ROUNDHOUSE has been described as a semi-circular structure with a questionable roof. It is a matter of common knowledge that engine houses have not kept pace with locomotive development and that atmospheric conditions in roundhouses are not conducive to satisfactory maintenance of the types of construction most commonly used. The high percentage of moisture present in the air aided by the sulphurous and sulphuric acid occurring in locomotive flue gases encourages the decay of wood and the corrosion of steel. The effects are so severe that some roads prohibit the use of any rolled metal in the roundhouse superstructure while others have installed elaborate ventilating systems in an effort to improve the atmospheric conditions.

Gypsum, which is a relatively new material for roof decks, has had some of its earliest use in railway roundhouses. It is made from a specially prepared calcium sulphate rock and is reinforced with wire netting, iron rods or steel cables. Gypsum roof decks may be applied as poured roofs or as pre-cast tile. Each has its advantages. The poured-in-place roof is a somewhat unique construction in which steel cables suspended from truss to truss are imbedded in a slab of gypsum which is poured on the job. The pre-cast tiles are manufactured in definite sizes and shipped to the building site ready for immediate erection.

The tiles are placed in units, without mortar, after which the joints are grouted with gypsum grout, consisting of one part unfibered gypsum cement plaster and three parts of sand. As each tile is machine molded individually, the surface of the roof is practically smooth. Curbs under monitor or sawteeth sash and end walls of monitors or sawteeth are constructed of three-inch solid gypsum tiles, usually not reinforced with steel. The gutter fill is composed of gypsum and wood chips in a proper mix. When the tile, end walls and gutter fill are in place, a roof covering of any description or make may be applied immediately.

Railroad.	Location.	Size in Feet.	Floor Area Sq. Ft.	Cross Section.	Wall Area	Roof Area.	Per cent of Roof Area to Total Exterior Surface.
A.T.&S.F.	Topeka, Kan.	400'x100'	40,000	20'-4 1/2" 13" 100'	22,600±	44,400±	66%
C.P.R.	Angus	303'x146' and 303'x130'	84,200	20'-3" 20'-10" 19" 146'	30,100±	86,800±	75%
C.R.I.&P.	Silvis	465'x99' with 85' used as a brass furnace.	46,000	25'-4 1/2" 99'	29,860±	38,000±	60%
N.Y.C.	Collinwood	80'x312'	25,000	50'-4" 80'	14,608±	32,000	80%
L.&N.	South Louisville	400'x150'	60,000	14'-6" 24" 150'	30,000	68,800	45%

Principal Characteristics of Five Large Railway Blacksmith Shops

Are Designed Similar to Reinforced Concrete

Gypsum tiles are designed and reinforced in accordance with the recommendations of the "Joint Committee" and specifications of the American Society for Testing Materials.

This specially prepared gypsum takes the place of the concrete aggregate and has developed maximum ultimate value in compression of from 3,300 to 4,000 lb. per sq. in. The pre-casting of the tiles in most cases insures surfaces that are true planes with a smooth finish and offer a finished surface for the application of all types of roof covering. The tile are easily cut and fitted for any roof requirements. This is of special interest in railway construction as the roofs of the majority of buildings have many irregularities to provide for ventilators, smoke stacks, vent pipes, trim, flashing, louvres, skylights, sawtooth and monitor sash, etc.

The light weight of gypsum tiles is most significant as the material from which they are made weighs but 77 lb. per cu. ft. Gypsum tile may be erected with great rapidity. With proper working facilities 300 to 5,000 sq. ft. may be laid daily. Erection is not hampered by freezing weather or the continuation of activities going on below the roof structure. An illustration of the speed of erection is exemplified in the construction of the Standard Steel Car Company's coach paint shop at Hammond, Ind., which was designed by the Austin Company, Chicago, and erected completely in 40 working days.

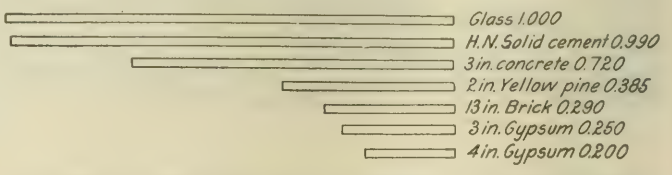
The presence of steam in the enginehouses makes high conductivity in roof construction objectionable because of the excessive condensation that will take place on the underside of the roof in cold weather. This has been particularly noticeable in some concrete roofs and has led in some recent



A Typical Shop Building Roofed with Gypsum Tile—Standard Steel Car Company Coach Paint Shop at Hammond, Ind.

designs to the use of the reinforced concrete-clay tile construction. Properly designed gypsum roof decks do not permit the formation of condensation because gypsum has such a low thermal conductivity factor that heat is not easily transmitted through the material. The low conductivity of gypsum has been determined by the United States Bureau of Standards, the Bureau of Yards and Docks, Underwriters Laboratories and others. The results of a test by G. F. Gebhardt, Armour Institute of Technology, Chicago, are shown graphically in the diagram where it is seen that three inches of solid concrete and one inch of cement tile are scarcely more effective as a barrier to heat than ordinary window glass. The results of this test are significant, not only from the question of eliminating condensation, but also in showing that gypsum will retain warm air in a building in winter and greatly simplify the heating of all buildings with large roof areas, thus effecting a material saving in fuel.

The question arises as to whether the area of the roof as compared to the total exterior area of a building is sufficient to warrant consideration of the roof construction from the standpoint of exposure. In this connection the author compiled the table of building dimensions from data on five



Comparative Amount of Heat Transmitted Through Various Building Materials

typical railroad blacksmith shops. This shows that the roof constitutes at least 65 per cent of the exposed surface of an industrial building of this type.

Results of Exposure Tests

When a gypsum tile roof was installed on the roundhouse of the Chicago, Milwaukee & St. Paul at North McGregor, Iowa, by the United States Gypsum Company it was arranged to use one panel of the roof for test purposes. After three years of continuous exposure to locomotive flue gases six slabs were removed to ascertain their condition. The reinforcing in the gypsum tile showed no signs of rusting or disintegration, and the steel appeared as bright and sound as when it was first placed. A black or sooty discoloration on the tile due to the smoke from the engine stacks did not penetrate into the slab deeper than the thickness of a thin piece of tissue paper.

It is further interesting to note that the Pittsburgh Plate Glass Company of Crystall City, Mo., has a gypsum tile roof over tanks used to dip the glass in a solution of muriatic acid and to date no disintegration has been observed. C. T. Clarke, manager of the charcoal division, E. I. Dupont DeNemours & Co., tested gypsum tile by immersing it in a steam bath for six weeks' constant application and then subjected the same tile for three weeks to the fumes of pyroligneous and acetic acid and finally submerged it for a period in hot water. The gypsum roof tile withstood all the tests to which it had been subjected.

Recently a large copper manufacturer in New Jersey tested a slab of gypsum roof tile to determine the effect of concentrated sulphuric acid. The tile was suspended in a five per cent solution of acid for 24 hrs. After this period of emersion, the liquid was allowed to evaporate, thus concentrating the acid. Examination of the tile showed no ill effects.

The question arises as to the effect of the moisture content of gypsum slabs owing to the fact that gypsum has the power of absorbing considerable quantities of water. To determine whether the absorption of water resulted in permanent ill-effects on gypsum tile, A. S. Ross, laboratory manager of the Milwaukee Coke and Gas Company, subjected a specimen of gypsum tile to steam, ammonia and tar vapor for a period of 10 days. The specimen was then dried in an oven for 48 hr. at a temperature of 105 deg. C. and finally suspended over a dehydrator for four months. At the end of this test, the tile showed no apparent deterioration. In view of the fact that gypsum roof tile is invariably protected by a waterproof covering and because designs in gypsum tile construction are based on the strength of saturated tile, the question of water absorption is of little consequence.

Labor Board Concludes Short Line Hearings

Labor Representatives Demand Living Wage for All Employees and Request New Adjustment Boards

HEARINGS before the Railroad Labor Board on the demands of representatives of the employees of short line railroads for the extension of the wage scales created by Decision No. 2 of the Board were practically completed on November 24. On that date both the employees' and carriers' representatives presented their rebuttals, thus closing the presentation of evidence unless the Board calls for additional testimony. This, it is rumored, will be necessary before the case can be decided.

The progress of these hearings has been reported in the *Railway Age* of October 29 (page 747), of November 5 (page 786), of November 12 (page 837), and of November 25 (page 935). Practically all of the testimony presented from the beginning of the hearings until November 24 has been that of the representatives of the various short lines involved. The employees' representatives presented as their testimony the evidence submitted to the Board in the hearings which culminated in the Board's award of July 20. The carriers' representatives protested against accepting this testimony as evidence in the present case, however, their protests were overruled by the Board, and the hearings were continued, the carriers completing their testimony on November 22.

L. E. Sheppard, president of the Order of Railway Conductors, opened the employees' rebuttal by attacking the carriers' contention that the cost of living of employees on short lines is below that of employees on trunk lines, and that therefore there should be a differential between the wage scales paid for similar work. Mr. Sheppard said in part:

"We hold that the cost of living is only the basis and that after a living wage has been established, those who give service of an intellectual or supervisory character should receive additional compensation in accordance with the value of the service rendered and that the so called cost of living should be the minimum and should be applicable to those who perform only physical labor."

The remainder of Mr. Sheppard's testimony was devoted to answering the carriers' contentions that: first, the men are satisfied and are being paid adequately at the present time; second, that the roads cannot pay increased wages without going into bankruptcy and ceasing to operate, and, third, that the rates charged by the short lines cannot be raised without driving away traffic. In answer to the first contention, Mr. Sheppard said that the men had importuned their representatives to help them and that discrimination against the short line employees in train, engine and station service was prevalent. In answer to the second contention he said: "If railroads require labor they should pay the going rate for it." In answer to the third contention, he said: "We have no desire to see any road close operations, but a road should be closed unless it can continue to operate as do other lines and it should not expect to continue to operate at the expense of the laborer."

Mr. Sheppard closed his testimony by urging that conductors be granted the same rates of pay granted to conductors on the trunk lines on the theory that labor should not be called upon to accept less when the owners pay the going rate for everything else necessary for the operation of their roads.

Timothy Shea, representing the Brotherhood of Locomotive Firemen and Engineers, followed by attacking the carriers' contention that there is no real grievance existing between the employees and the officers of many of the short lines. In support, he presented correspondence to show that representatives of the employees had followed the procedure prescribed in the Transportation Act as necessary to bring wage disputes properly before the Board.

Regarding labor's attitude toward the Transportation Act, Mr. Shea said: "Our criticism of the Esch-Cummins Bill was because the law guarantees to investors in railroads a minimum return of five and one-half or six per cent on the aggregate value of the property of the carriers. The law also guaranteed to the railroads compensation for six months, March 1 to September 1, under the three year test period. The railroads were also returned to private control and operation with all their resources unimpaired. On the other hand, no measures were provided in the Act for the protection of railroad labor, except that wages could not be reduced during the first six months' period. In other words the human element was ignored all the way through."

The remainder of Mr. Shea's testimony was devoted to the presentation of many long quotations from court decisions involving rate controversies, from arbitration board decisions and from other tribunals involving wage controversies. A large part of this testimony was designed to answer the contention of the carriers' representatives that their ability to pay increased wages and still operate should be a factor in arriving at a decision in this case.

The basis of Mr. Shea's argument was similar to that of Mr. Sheppard; that inasmuch as the short lines had to pay the going rates for their equipment and materials, they should pay the going rate for their labor. In addition, Mr. Shea brought out several facts to show that the work of the employee of the short lines is far less favorable than that of the employee of the trunk line, i. e., their earning capacity is restricted, promotions are slower, and they are required to live in small towns where the living conditions are less favorable.

In regard to the cost of living, Mr. Shea presented voluminous statistics from various sources to show that living costs had not materially decreased. In closing this part of his testimony, he cited the fact that "lower prices will greatly increase the profits of the railroads." Part of any such saving should be applied toward increasing wages, he said, "until an American standard of living for all railroad employees is attained, the remainder to be used in reducing transportation rates to the public."

Mr. Shea was followed by W. N. Doak, representing the Brotherhood of Railway Trainmen, who confined his remarks to certain provisions of the Transportation Act and their application to this case.

Mr. Dougherty, representing the Brotherhood of Locomotive Engineers, and B. M. Jewell, representing the Federated Shop Crafts, followed Mr. Doak, their testimony dealing mainly with: first, the relation of wages to the cost of living; second, the hazards of employment; third, the training and skill required; fourth, the degree of responsibility; fifth, the character and regularity of employment, and, sixth, inequalities in wages and working conditions. In every case the evidence was such as to show that the work of employees of the short lines was comparable to that performed by men in similar positions on larger roads. In addition, Mr. Jewell presented a lengthy statement regarding the cost of living prepared by a new publicity and research bureau created by the Railway Employee's Department of the American Federation of Labor.

The testimony so far presented had practically covered the

employees' main contentions, and therefore the remainder of the testimony submitted pertained largely to the wages and working conditions of particular classes of short line employees. Mr. Brown, representing the Order of Railroad Telegraphers; Mr. Eastty, representing the Brotherhood of Railway Clerks, Freight Handlers, Express and Station Employees; J. G. Luhrsen, president of the American Train Despatchers Association, and J. C. Smock, representing the United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers, presented testimony of this character.

S. S. Ashbaugh, representing the American Short Line Railroad Association, closed the hearings with a general statement on behalf of the short line carriers. Mr. Ashbaugh's remarks were based upon the constitutionality under prevailing conditions of any decision in this particular case granting short line employees increased wages. In presenting the position of the short lines, he said, "I object on behalf of all the lines represented by the American Short Line Railroad Association, to all the proceedings these claimants in name, or pretended claimants, have introduced here." In support of his contention that the Board could not render a decision in this case, he cited numerous precedents to show that legally private property cannot be taken away from one party and given to another without "due process of law." This "due process of law" he contended had not been followed in this case and that therefore the Board could not afford to render a decision which would bring it into disrespect or one that could easily be reversed by court action. In conclusion, Mr. Ashbaugh urged the Board to confine its "decision" in this case to a statement of what constitutes "due process of law" and of the reasons why a wage award cannot be made in any case developed and conducted as this one has been.

On November 29, a closed hearing was held at the request of leaders of the various railroad brotherhoods. Precautions were taken to exclude representatives of the press, however, the labor leaders appearing before the Board at this session were frank regarding the testimony presented to the Board and in published interviews stated that they had appealed to that body to adopt some plan whereby disputes between the railroads and their employees other than wage differences might be settled. According to G. W. W. Hanger, a member of the Board and its chairman of publicity committee, the hearing was held at the request of the labor leaders "to discuss general conditions." Practically all of the leaders of the larger railroad brotherhoods attended the hearing and many were outspoken in their demand for the establishment of national boards of adjustment which could pass on disputes over working conditions.

There is some question as to the jurisdiction of the Labor Board to enter into this controversy. The establishment of boards of adjustment is not mandatory under the terms of the Transportation Act. It is true, however, that some machinery must be created to take care of the large number of disputes constantly arising and if the employees and the railroads cannot agree upon their formation, it may be necessary for the Labor Board to expand in order to handle grievance cases as well as the appeal cases which it is now handling.

NEWFOUNDLAND'S NARROW-GAGE LINE of 960 miles, running through the period of the war without government aid, has been forced to call on the colony for help in post-war readjustment. The railway administration has been placed in the hands of a joint commission of seven, of which the government has a majority of the members. The commission, equipped with $1,000,000 of colonial funds, has been set the task of working out the salvation of a railway system which before the war lost an average of $100,000 a year, and in the last five years has had to meet without advance in rates an increase in expenses. As one of its first problems, the commission is faced with a demand for further increases in wages ranging from 20 to 30 per cent.

Lowest Rail Consumption In 22 Years

THE CONSUMPTION of rails in the United States in 1919, based on statistics issued by the American Iron and Steel Institute, was less than for any year since 1897. This figure, which includes rail purchases for all purposes, has been obtained from actual statistics on production, imports and exports and is 1,568,402 tons. This is to be compared with the consumption of 2,096,060 tons for 1918, 2,440,755 tons for 1917 and the maximum figure of 3,654,794 tons for 1906. The complete tables, which cover the years 1874 to 1919, inclusive, appear below.

APPROXIMATE CONSUMPTION OF RAILS, 1874–1919.

Years.	Production—Gross tons.			Imports.	Exports.	Approximate consumption.
	Iron.	Steel.	Total.			
1874....	521,848	129,414	651,262	96,706	1,122	746,846
1875....	447,901	259,699	707,600	17,364	1,080	723,884
1876....	417,114	368,269	785,383	256	3,180	782,459
1877....	296,911	385,865	682,776	31	6,647	676,160
1878....	288,295	499,817	788,112	9	8,354	779,767
1879....	375.143	618,850	993,993	39,417	3,066	1,030,344
1880....	440,859	864,353	1,305,212	259,543	958	1,563,797
1881....	436,233	1,210,285	1,646,518	344,929	611	1,990,836
1882....	203,459	1,304,392	1,507,851	200,113	3,220	1,704,744
1883....	57,994	1,156,911	1,214,905	34,801	2,308	1,247,398
1884....	22,821	999,367	1,022,188	2,829	6,034	1,018,983
1885....	13,228	963,750	976,978	2,189	7,757	971,410
1886....	21,142	1,579,395	1,600,537	41,587	2,644	1,639,480
1887....	20,591	2,119,049	2,139,640	137,830	549	2,276,921
1888....	12,725	1,390,975	1,403,700	63,037	6,908	1,459,829
1889....	9,159	1,513,045	1,522,204	6,217	9,325	1,519,096
1890....	13,882	1,871,425	1,835,307	204	16,947	1,868,564
1891....	8,240	1,298,936	1,307,176	253	11,239	1,296,190
1892....	10,437	1,541,407	1,551,844	347	7,982	1,544,209
1893....	6,090	1,130,368	1,136,458	2,888	19,876	1,119,470
1894....	4,674	1,017,098	1,021,772	300	13,556	1,008,516
1895....	5,810	1,300,325	1,306,135	1,447	15,599	1,291,983
1896....	4,347	1,117,663	1,122,010	7,796	73,131	1,056,675
1897....	2,872	1,645,020	1,647,892	415	148,221	1,500,086
1898....	3,319	1,977,922	1,981,241	200	301,903	1,679,538
1899....	1,592	2,271,108	2,272,700	2,134	277,714	1,997,120
1900....	695	2,384,987	2,385,682	1,448	361,619	2,025,511
1901....	1,730	2,872,909	2,874,639	1,905	318,956	2,557,588
1902....	6,512	2,941,421	2,947,933	63,522	67,666	2,943,789
1903....	667	2,991,810	2,992,477	95,555	30,837	3,057,195
1904....	871	2,283,840	2,284,711	37,776	416,250	1,906,237
1905....	318	3,375,611	3,375,929	17,278	295,023	3,098,184
1906....	15	3,977,872	3,977,887	4,943	328,036	3,654,794
1907....	925	3,632,729	3,633,654	3,752	338,906	3,298,500
1908....	71	1,920,944	1,921,015	1,719	196,510	1,726,224
1909....	none.	3,023,845	3,023,845	1,542	299,540	2,725,847
1910....	230	3,635,801	3,636,031	7,861	353,180	3,290,712
1911....	234	2,822,556	2,822,790	3,414	420,874	2,405,330
1912....	none.	3,327,915	3,327,915	3,780	446,473	2,885,222
1913....	none.	3,502,780	3,502,780	10,408	460,553	3,052,635
1914....	none.	1,945,095	1,945,095	22,571	174,680	1,792,986
1915....	none.	2,204,203	2,204,203	78,525	391,379	1,891,349
1916....	none.	2,854,518	2,854,518	26,299	540,828	2,339,989
1917....	none.	2,944,161	2,944,161	9,263	512,669	2,440,755
1918....	none.	2,540,892	2,540,892	8,705	453,537	2,096,060
1919....	none.	2,203,843	2,203,843	17,008	652,449	1,568,402

THE DINING CARS of the New York Central Lines serve 10,726 persons every day. Recent advertisements state that the New York Central Lines purchase 2,015,000 lb. of meat a year for consumption in their diners. There are at present 154 dining cars in service and 12 new dining cars, costing approximately $46,000 each, will soon be ready for use. The number of waiters who serve the traveling public on these lines is 884, and in the course of a year 42,993 bu. of potatoes are bought; 235,392 lb. of butter; 720,000 loaves of bread; 365,475 lb. of chicken; 371,193 lb. of sugar; and 324,060 dozen eggs. In the compact kitchens are 651 busy cooks. And the unbelievable sum of 14,076,108 pieces of linen are laundered every year. Every employee in the New York Central dining-cars is physically examined at the time of his engagement and at stated intervals thereafter, and must pass exacting tests.

Threatening Purposes of Railroad Labor Leaders*

Far-Reaching Results of Administration's Easy Policy—Local Boards Essential to Discipline

By W. W. Atterbury
Vice President of the Pennsylvania Railroad

General Atterbury stated the well known policy of the Pennsylvania toward its employees and set forth his own personal platform on the general labor question; sketched the policy of the Government in dealing with railroad employees during the period of government operation and the efforts of the brotherhood leaders to perpetuate that policy; and then went on:

Remembering the tactics adopted by certain labor leaders which so successfully stampeded Congress into enacting the Adamson law, chiefs of 16 railroad labor unions last winter sought to compel the same body to pass a railroad law based on the Plumb Plan.

Failing there, they made a determined effort, through the so-called Anderson amendment to the Cummins-Esch Bill, to continue centralized enforcement of discipline as it was during government operation. Congress refused their demands, and the Transportation Act, as passed, established a decentralization policy and restored the enforcement of discipline to the individual railroads, but to guard against interruption of transportation by strikes, established the United States Labor Board, made up of equal representatives of railroads, the employees and the public.

Frankly dissatisfied with this plan because the public, which eventually pays the bills, is given a hand in deciding these matters, labor chiefs are seeking to force the railroads to concede what Congress refused to give them.

Their plan for national boards of adjustment should be considered in connection with their pending demand for working agreements with all of the different crafts, which will be national in scope and is a logical step in their policy of standardization and the nationalization of the railroads. This matter is of particular interest to the public. Any lessening of discipline enters seriously into the safe and efficient operation of the railroads.

But the public's good is threatened in even more vital manner, for the plan means the "Closed Shop" on the railroads and, in view of the intimate relationship now existing between the various organizations of railroad workers, will put the transportation lines completely in the hands of "The One Big Union." Such a condition is fraught with the greatest danger to all other industries.

With all railroad workers completely under the domination of one organization, it can compel the granting of the demands of its members who may be employed elsewhere. Under threat of a complete suspension of transportation the country over, or affecting one branch of industry, manufacturers and railroad managers will be at the mercy of the union chiefs. All production may continue or cease merely at their word. The efforts of the organizations to have the Anderson amendment passed were for the express purpose of perpetuating the national boards of adjustment. Congress did not pass this amendment.

Present Status—Contest Over National Agreements

The organizations will naturally use every available means to carry out their expressed purpose of having these so-called national agreements perpetuated. On the other hand, the railroads have been and are preparing their arguments against the perpetuation of these national agreements, endeavoring to illustrate each of their arguments with actual examples, in order that the labor board will be given full notice of the consequences of these agreements, also the resultant excessive costs, for which the users of the railroads must provide the necessary funds.

Each rule in each agreement is being analyzed, with an effort to point out whether it is workable or not, and the effects thereof, also the different conditions on the various railroads, and the arbitrary application of the rules regardless of the results therefrom.

Certain rules appear in all the agreements, notwithstanding that the conditions under which they will apply are entirely different. Other rules are restrictive and result in handicaps upon the management in the distribution of working forces; others necessitate the use of so-called skilled men for performing work that requires no skill and, therefore, entail an economic waste.

The unions refuse to join local boards of adjustment, though the railroads have been ready to join in their formation, as provided by Section 302 of the Transportation Act; or to adopt any other plan which may be agreed upon for bringing the two parties together *on the ground* or at the point of inception of the difficulty, in order that as many as possible of these controversies not involving wage increases, may be settled between the parties immediately at interest, and thus avoid burdening the United States Railroad Labor Board unnecessarily with matters which may be adjusted between the parties themselves. The employees, however, have insisted that the boards of adjustment shall be national in character, but without public representation. These diverse opinions have delayed the formation of boards of adjustment.

Maintenance of Authority Is at Stake

In the organization of the boards of adjustment under federal control all the representatives of the employees appointed to the boards were selected from members of the unions. Under such an arrangement a non-union man would hardly believe that he would receive impartial treatment from the union representatives on any board of adjustment as against a union man, and this would inevitably tend to produce the "closed shop."

Local boards of adjustment, as proposed by the railroads, would afford the railroad officers opportunity to renew their personal contact with their own employees, and thus establish proper relationship between the employees and the officers of the railroads.

If the authority is taken from the general manager to handle questions arising on his individual property, whether on interpretations, or schedule rules, or on matters of discipline, it will not be possible for him to efficiently and economically conduct the operation of the property entrusted to him.

Unions Seek Nationalization of Roads

The organizations in attempting to perpetuate these so-called national agreements, and, further, to form national boards of adjustment for all railroads, are clearly endeavoring to bring about the nationalization of all the railroads and unification of all properties in so far as wages, working condi-

*Abstract from a paper prepared for the National Industrial Conference Board.

tions, discipline, etc., are concerned, ignoring the rates and working conditions of analogous employees of outside industries at various local points; and their demands are calculated to fasten the "closed shop" not only upon the railroads, but eventually upon the industries of the country. If the railroad managements should now falter or yield, the breach which will result in the front presented by the forces of the "American plan"—the "open shop"—will be so wide and deep as to be irreparable.

Congress has said that the railroads and their men may, by agreement, establish boards of labor adjustment for the settlement of all controversies not directly involving wage rates. In the words of the law, these boards "may be established by agreement between any carrier, group of carriers, or the carriers as a whole, and any employees or subordinate officials of carriers, or organization or group of organizations thereof."

Under this section of the Transportation Act, the labor leaders are demanding that such boards of adjustment be *national* in scope. The railroads are holding out for boards local to each road, or each system under one management, or what amounts to the old method of deciding matters between the officers and committees of employees on any one road.

If this demand for national boards of adjustment stood alone, it would be serious enough, but as the "first step" in a series of carefully planned campaigns for labor union control and operation of the railroads, and the other essential industries and utilities, it becomes a matter of paramount importance.

Menace of "One Big Union" for All Forms of Industry

National boards of adjustment, formed by agreement between the carriers as a whole and their employees as a body, could only be found representative, on the men's side, of organized workmen. None other might hope to have a voice in their forming, or the faintest hope of real representation.

This at once makes it necessary not only that all employees must be members of unions, but that the unions must be organized nationally, and that these national unions must, in turn, be merged into one grand organization, for the purpose of agreeing upon the national boards, if for no other reason. Even now, the self-styled "Associated Standard Recognized Railroad Labor Organizations," composed of sixteen national organizations, having as their spokesman an officer of the American Federation of Labor, and many of their units being also constituent parts of the Federation, are conducting the negotiations on behalf of the railroad employees. The "One Big Union" is, therefore, for the moment at least, an accomplished fact upon the railroads. This "One Big Union" is but another name for the Plumb Plan League, the president of which is the president of one of these national unions, and the other officers of which are, as far as officers reach, the heads of the various unions.

Four Threatened Hazards

If the union leaders succeed in carrying out their plans, we shall very shortly find:

1. That the railroad systems of the country will be dominated by the brotherhoods and the unions affiliated with the American Federation of Labor, with power not only to enforce their demands by stopping the transportation of the country, but also, through affiliation with the workers in other industry, to stop production in all essential lines, whenever they feel so inclined.

2. That all discipline, with the power to employ or discharge men, will be lodged in national tribunals likewise dominated by the union organizations, with the managements, minus authority, helpless to change or improve conditions.

3. That wages, hours and working conditions, of railway employees will be uniform throughout the country, regardless of varying conditions in the different localities, the amount of work performed by different individuals, or the relative efficiency of that work.

4. That the public will be without voice in determining most of the questions at issue, and without means of blocking the insidious plans of the labor leaders for Soviet operation of the railroads under the Plumb Plan.

There may be a natural tendency on the part of some railroads complaisantly to yield to the first of the demands under this program—for national boards of adjustment, upon the plea that the Federal Administration gave the men such boards (Boards of Adjustment Nos. 1, 2 and 3); but the real issue is in the next step—the demand for national agreements.

The unions are claiming—and hoping—that the railroad labor board will be swamped with grievances from all parts of the country unless these adjustment boards are created at once, and naturally the grievances are already beginning to come in. Neither the public at large, nor its three representatives on the labor board, will be in a position to judge the full import of the controversy until the board proceeds with its regular order of business, and takes up the deferred question of working conditions, which is always an integral part of the wage question, and which has been before it since last spring as a dispute under Section 301 of the Transportation Act. It will be the tactics of the unions to postpone the hearings on this question in the hope that by loading up the board with minor grievances they will be enabled to retain the existing status without letting the public know what is going on.

The Labor Board's Responsibility

I doubt if the board realizes what a great responsibility it assumed when it was ruled in the recent wage award that all working conditions on all railroads must remain in effect exactly as they existed prior to March 1, notwithstanding the fact that all agreements covering such matters ceased to be effective on that date; nor the great responsibility assumed in continuing this agreement, when the members have not heard the evidence from either side to indicate what this action or inaction may mean to the public. It is the avowed purpose of the union leaders to fasten the Plumb Plan upon the country if they can, and they are already importuning the labor board to perpetuate the so-called national agreements.

The significance of this effort may not be understood by the members of the board, and it devolves upon them to see to it that no further steps are taken in this direction until full light has been turned upon the whole subject. Chambers of commerce or boards of trade desiring to be heard in this controversy, should openly and vigorously press that desire through such channels as promise to be most effective.

The Coming Readjustment

The handwriting on the wall is clear. Readjustment of all valuations is proceeding rapidly. With that must come readjustment of wages, necessitated by economic forces beyond our control. On this rock the split will come between the radicals and conservatives in labor's ranks. Railroad wages, artificially established by the labor board, will remain at their present high standards, while all other labor, through the workings of economic law, will gradually reach a level commensurate with, and directly proportionate to, the then economic conditions, with the usual short variables as between good and bad times. Those employed in outside industry will be the first to demand a reduction in the wage of railroad employees. A split will at once follow in the organizations themselves. The leaders, unusually intelligent men, will recognize the trend of the time, and must inevitably endeavor to meet the sitution by acquiescing in an adjustment which will be measurably comparable with the then wage scale of the country.

And then the wickedness of their previous conduct will be recognized by these officers themselves. Having done everything within their power to break down discipline on the railroads as between the officers and their men, and to destroy respect for official authority, it need hardly come as a shock to them, when they attempt to control their own men, to find that the very spirit of insubordination which they have fomented against the railroad officers should be in turn exerted against their labor organization officers.

The strength of the American Federation of Labor in the past has been that local organizations were permitted to handle their own matters locally. No attempt has ever been made by it to exert its economic strength in a nation-wide coercive movement.

I have no fight with organized labor so long as it does not bring about the "closed shop," advocate or practice sympathetic strikes, act to limit production, nor undermine discipline. I have every desire to see its existence healthy and normal. Within reasonable limits it is a healthy spur to bring about fair conditions as between employer and employee. When, however, it attempts to nationalize industry, and in effect set up a super-government, and a small minority of the total population attempts to coerce the whole, it becomes a menace to our civilization. This is what is in progress at the present time with the railroads.

New Department of Short Line Association Negotiates Larger Divisions

WASHINGTON, D. C.

THE AMERICAN SHORT LINE RAILROAD ASSOCIATION has completed the organization of its traffic department, under the supervision of Vice-president L. S. Cass, by the appointment of three traffic managers to represent the association and its members in the Official, Southern and Western Classification territories. R. A. Belding, formerly of the traffic department of the Chicago Great Western, has been appointed traffic manager for Official territory with office at Washington, D. C. J. A. Streyer, formerly manager of the Macon & Savannah, has been appointed manager for Southern territory, with office also at Washington, and F. C. Reilly, formerly freight traffic manager of the St. Louis & San Francisco, has been appointed traffic manager for Western territory, with office at Chicago. James Berlinget, manager of the labor department of the association at Chicago, having been given a leave of absence on account of ill-health, Mr. Reilly will also have charge of the Chicago office.

The traffic department of the association had previously organized a tariff bureau at Washington in charge of I. T. Hanson, assistant to the vice-president.

One of the important functions of the traffic department is to assist the short lines in their negotiations with the trunk lines for better divisions of joint rates. Bird M. Robinson, president of the American Short Line Railroad Association, had asked the Association of Railroad Executives to appoint a traffic manager to join the traffic department of the short line association in negotiations on the question of divisions. This plan was considered impractical by the executives but the chairmen of the traffic committees of the three classification territories, Benjamin Campbell for the Official, C. R. Capps for the Southern and C. G. Burnham for the Western, were instructed to take up with their committees the question of divisions with short lines in the respective territories "in a broad spirit" and to "make an earnest effort to arrive at a basis of divisions that can be accepted by the individual trunk lines and the individual short lines."

The short lines have been advised by their association to take up the question of divisions first with their connecting lines, and the traffic department will assist them in presenting their cases. In case of a failure to agree negotiations will be undertaken by the territorial traffic managers with the traffic committees of the trunk line roads in an effort to reach a satisfactory arrangement without the necessity of an appeal to the Interstate Commerce Commission.

The short line association was largely responsible for the language of the Transportation Act giving the Interstate Commerce Commission complete power to prescribe the divisions of joint rates but after the passage of the law negotiations were opened with the Association of Railway Executives for the purpose of bringing about an agreement for better divisions for the short lines in as many cases as possible without the necessity of filing complaints with the commission. In a letter to Chairman Cuyler of the executives' association, President Robinson of the short line organization said in part:

"The short lines of the country have heretofore originated and now originate and deliver to the main line carriers, in the aggregate, a very large volume of traffic, but notwithstanding that fact they have suffered seriously for the want of adequate revenue. The principal difficulty in that respect is that they have not received fair and adequate divisions of the joint earnings.

"Heretofore the traffic managers of the main line carriers have, by the strong-arm process, arbitrarily determined the division of the joint rates and, as a rule, have appropriated unto their own lines the major portion, leaving to the interested short lines the remainder, regardless of conditions.

"In most instances, divisions thus made were unfair and unjust to the interested short lines and caused constant and ever increasing irritation and ill-feeling on their part.

"Congress recognized and understood to a greater extent than any other governmental body the necessity of protecting the short lines, and inserted in the Transportation Act a number of provisions that were intended to insure just treatment of that class of roads. Among other things, Congress specifically provided that the Interstate Commerce Commission should have full and complete power to make division of joint rates, and for that purpose it incorporated a definite rule fixing a basis which the commission is to use when making divisions. This act of Congress terminated the strong-arm process and substituted therefor a governmental agency to act on that question.

"Promptly after the Transportation Act became a law, many of the short lines appealed to this association to immediately file complaints with the commission, asking it to grant to them substantial increases in the divisions of the joint revenue in which they were interested. We advised all such applicants and all other short lines to refrain from filing any complaint with the commission pending the decision of the commission in the advance rate case, and in the meantime to take up the question of the desired increase in divisions with their connecting lines. So far as we know, all of the short lines accepted our advice and refrained from filing complaints with the commission, and we are advised that a great many of them attempted to secure from their connecting lines the desired increase of divisions. Many of the roads that made such an attempt advise us that they have not been able to accomplish any result; that in practically all instances the traffic departments that were approached have refused to concede anything.

"The time has now arrived when the question of a fair and equitable division of joint rates and the establishment of through routes and joint rates must be settled. A very large number of the short lines are calling upon this association to prepare complaints in their behalf and to file them with the Interstate Commerce Commission. They insist that these steps must be taken without further delay for the reason that they are losing money and if they do not obtain relief immediately upon the termination of the government guaranty

on the first of September, they will certainly become bankrupt.

"In view of these facts, we must act. If we do not, the interested lines will proceed by employing attorneys who devote their time to fighting the railroads before the interstate and other commissions. Under the circumstances, this association cannot consistently delay longer. If we adopt the plan of filing individual complaints, there will possibly be as many as from 400 to 600 suits, and I fear that such action will result in great injury to the carriers as a whole. Suits of that character cannot be instituted and conducted without creating ill-feeling as between the officials of the interested lines, and the washing of the dirty linen of the carriers before the public will almost certainly result in injury to all concerned. I am, therefore, quite anxious to avoid that procedure if it can be done.

"If we find that the matter cannot be promptly adjusted in any other way and we cannot obtain for the short lines their equitable and legal rights, we will ask the commission to create a *Bureau of Interline Divisions,* for the purpose of considering as expeditiously as possible any and all complaints on the question of divisions, through routes and joint rates."

The resolution adopted by the executives declared that "inasmuch as government guarantees no longer exist and rates have been advanced so that theoretically the railroads are to be self-supporting, prompt action be taken and the matter not allowed to drag."

The New England Situation

The current issue of the Bulletin published by the short line association has an editorial commenting on the efforts being made by the New England lines to obtain larger divisions in part as follows:

"The question of the division of joint rates has been precipitated before the Interstate Commerce Commission at a time, in such a way, and by parties, that is surprising, and we fear may prove to be seriously detrimental to the interests of the short line railroads. The trunk roads of New England have filed with the Interstate Commerce Commission a complaint asking for $25,000,000 from the roads west of the Hudson river as an increase in their divisions, and have made 186 members of this association parties defendant.

"We have no doubt but that the condition of the majority of the roads in New England is bad—some of them very bad—and we earnestly hope that some plan can be adopted which will afford them necessary temporary relief. We will be glad to aid in any legal or equitable way that we can to accomplish that result, but we cannot permit that sympathy and good will to interfere with our duty to protect the rights of the members of this association.

"The condition of a great majority of the members of this association is bad; in most cases it is much worse than that of the New England roads, hence all such members must not only have an opportunity to be heard, but they are entitled to have adequate time in which to prepare their answers and not only make proof as to their own condition, but should circumstances force it, to very *carefully examine* all of the evidence presented by the New England lines and by all other lines.

"The law fixes the cost of the service, not first come, first served, as the basis for the division of joint rates, and it is apparent that the commission cannot ascertain the cost of the service on the numerous roads interested, except after very full investigation and consideration.

"Short line railroads that require an increase in their divisions are especially interested in the case presented by these New England roads, particularly such lines as are located in the Official Classification Territory, for the reason that if the commission grants the prayer of the complainants, it may decrease the already inadequate divisions of such short lines."

Coal Priority Order Vacated

Washington, D. C.

Because of the general improvement in the coal situation, brought about by the recent large production of bituminous coal, the Interstate Commerce Commission on November 27 vacated, effective at midnight on November 29, its Service Order No. 20, the order giving to bituminous coal general preference in the use of open-top cars east of the Mississippi river.

The commission said in explanation that the emergency which occasioned the issuance of the order had been "measurably relieved." On November 24 the commission had also set aside and vacated its Service Order No. 21, which provided for the preferential assignment of coal cars for public utilities and public institutions in necessitous cases upon authorization by the commission, saying that the emergency "has in general been measurably relieved."

The cancellation of Order No. 20 leaves in force no priorities except Service Order No. 19, which gives priority in car supply and transportation to certain coal commandeered by the Navy Department from mines in Pennsylvania and Maryland, which was not based upon any transportation emergency, but on a certificate issued by the President under the war power, to help the Navy get its coal at a lower price.

The only other service order now outstanding is No. 18, which governs the assignment of cars for railroad fuel.

The commission also issued a special permission order authorizing the carriers to cancel, on one day's notice, the emergency reconsigning rules applicable on all freight in open top cars and on coal and coke in all cars, which were authorized by special permission on August 9. In a letter to Daniel Willard, chairman of the advisory committee of the Association of Railway Executives, Chairman Clark of the commission said that the emergency which prompted the authorization of the special rules has in large measure been passed, as evidenced by the cancellation of the priority order, and that he was authorized to recommend to the roads that the rules be cancelled at the earliest practicable date. Mr. Clark said it was admitted by all concerned that the rules were emergency measures which ought to be abated with the passing of the emergency, and that the commission assumed that its recommendation for their cancellation would be recognized by the carriers, thus avoiding formal complaints against them "which would certainly be filed and would perhaps be difficult to defend."

Under Service Order No. 20 and the previous orders of which it was a modification, coal has been given almost a monopoly in the use of open top cars since the latter part of June, although under permits and amendments nearly 200,000 cars had in recent weeks been released from the operation of the order.

Coal Production

The production of soft coal during the week ended November 20 dropped back below the 12,000,000 ton mark. The total output is estimated at 11,770,000 net tons, the lowest in any full time week since that of October 2. The bulletin of the Geological Survey says the cause of the depression is not yet entirely clear. Production of bituminous coal during the first 276 working days of the year has been 488,304,000, which is about 37,000,000 tons behind 1918, but within 5,000,000 tons of 1917, a year when production about equalled consumption. During the week of November 13 the loss of full time output on account of transportation disability is placed at 19½ per cent. The cumulative lake movement for the year up to November 20 now stands at 22,274,000 tons, which is about 7,000,000 tons behind 1917, but almost equal to the 1919 movement.





Storage of Car Repair Material With and Without Proper Facilities

The Organization of a Strong Service of Supply*

Policies Pursued in the Purchasing and Distribution of Materials on the Western Maryland

SELECTION OF MATERIALS with a view to their ultimate cost presents in many respects the most difficult problem with which the purchasing agent is confronted. First cost is *not* the only consideration with any purchasing agent having the true interests of his company at heart, but it is essential that he have sufficient evidence at hand to warrant the payment of a premium for any particular brand or specialty. It is of the greatest importance that the relative merits and ultimate efficiency of various materials be established by reliable tests and close observation. The fact that the general purchasing agent of the Western Maryland was formerly identified with an industrial concern dealing in high grade railway supplies may account in part for the very broad policy adopted with respect to the purchase of materials on the basis of quality and ultimate cost.

Selection of Materials

Instructions have been issued by the president of the Western Maryland that all tests of material, whether laboratory or service, must be arranged in conjunction with the general purchasing agent who is expected to work in close co-operation with the heads of various departments to determine: *first,* why the test should be made and, *second,* what results must be obtained. The general purchasing agent is expected to obtain information from the manufacturer as to the claims for superiority of the device or article, price, terms, etc. Before commencing any service test, the matter is thoroughly discussed with representatives of the department by which the material will be used with a view to determining that the test is necessary and can be conducted in accordance with a fixed plan. The results of similar service tests conducted on other railroads are taken advantage of where it appears that such tests were conducted intelligently.

No test is conducted unless competent supervision is arranged for and one or more individuals designated to follow up the test and record the results according to a prescribed form. Prior to engaging on any test, the expense of making the test is estimated in man-hours and close consideration is given to the method of procedure and claims that the results to be secured will be accurate and conclusive. No patented device is accepted for test nor for service until the railroad association counsel has passed upon the status of the patent.

The item of test is regarded as one of service or expense according to necessity or the established value of the article. It is recognized that very often the user pays fully for the manufacturer's experiment. The effort is made to anticipate and prevent material failures through proper purchase but where these occur it is expected that they will be reported without delay.

Purchase of Specialties

It is believed that specialties or new devices, whether operating units in themselves or applied to an engine, car or machine tool, usually a patented device, too often are accepted on a saving statement basis without sufficient knowledge of their true maintenance cost. The manufacturer should be able to show to a very definite extent that the device itself is so constructed as to perform without undue maintenance expense in repair or labor, and to substantiate his claims. Proper application and use of the device is necessary and the railroad must take steps to know that the many devices used are performing properly.

To this end it particularly devolves upon the purchasing department to so carry its records as to note the increase or decrease of purchase of units or parts. Increase of expenditure for repair parts may denote necessity for replacement of the unit or that its upkeep is expensive. Too often a device is repaired when replacement would result in economy. As an example it is stated that one road found track drills of an obsolete pattern cost in repairs over $22.00 per drill, when they could have been replaced at a cost of $18.00 for a new and better machine. In the same investigation, a similar condition applied to jacks, hand and push cars, switch stands, track tools and small motor cars. Particular consideration of the wearing parts as applying to any device should be worked out before the purchase is made.

General Policy Pursued

It is realized that the purchase of material or supplies for railroad consumption, affecting, as it does, the economical operation of the departments involved and finally the net revenue of the railroad, must be planned and executed to the best interest of all concerned. To establish this condition, those in charge of purchasing endeavor to keep in close contact with those using material, and become, so far as possible, a real part of each department; thus gaining a working knowledge of their requirements and keeping these

*The preceding portion of this article dealing with the development of the Purchasing and Stores Departments as a unit on the Western Maryland appeared in the November 19, 1920, issue of the *Railway Age*.

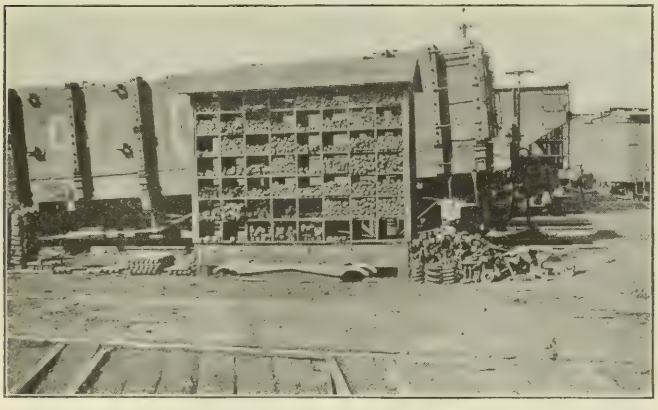
departments posted as to present and future market conditions.

It is recognized that economical purchase does not necessarily mean buying at the lowest price, for very often the determining factor is the knowledge that the dollar invested in material will become an earning factor and give full value for the amount expended. Anticipation of requirements is necessary, particularly on a rising or falling market. This involves a careful study of the proper amount of materials used, the delivery that can be effected or the stock that can be turned over; what is required for normal use, how many departments must be supplied with a certain line, and *the avoidance of an excessive stock.*

Another feature in purchase economy is careful study of use to which the material is put. Consideration of this element can be a decided factor in preventing misuse, misappliance and waste of material. A comparative price check on shop manufactured goods, as against articles purchased outside, is relied upon in determining the extent to which the practice of manufacturing in the railroad shop should be adhered to. It is believed that as a general proposition a railroad can afford to pay a small premium over the actual shop cost for the manufactured article purchased in the regular manner. The policy of buying at the point of shipment nearest destination is desirable as it tends to reduce the time required for delivery and the stock necessary to cover delays in the receipt of material. Patronizing home or line industries is also an important policy and should be adhered to so far as possible.

Tour of Duties for Stores Section Officers

In that part of this article appearing in last week's issue of the *Railway Age,* which dealt particularly with the development of the purchasing and stores departments as a unit on the Western Maryland, it was stated that the purchasing force is designated as the Service of Supply—Purchasing Section and the stores force as the Service of Supply —Stores Section. It was also stated that each position in this service, from the purchasing agent down, is classified



These Material Racks in Car Repair Yards Are Inventoried and Replenished Daily by Stores Section on the Western Maryland

by title and the work of each position is designated under the caption "Tour of Duties."

The "Tour of Duties" for all of the individual officers assigned to the purchasing section appeared in the first part of this article and an abstract of the "Tour of Duties" for some of the most important positions identified with the stores section appears as follows:

Duties of the General Storekeeper

The general storekeeper will have direct jurisdiction over, and shall be responsible for all unapplied material on the railroad. He should, as far as possible, keep the purchasing agent informed regarding grade or quality of material required by other departments and what is best suited for purpose intended.

Co-operates with heads of other departments in connection with material required for new jobs, etc., in order that purchasing and stores sections will be given sufficient time to have necessary material available at the time the work is to be started.

Familiarizes himself with the condition of power and its location on the railroad in order to notify division and local storekeepers to provide for necessary material occasioned by a transfer of equipment.

Follows up with the heads of all departments the use of material furnished to determine whether or not the best service is received from the articles purchased.

Personally approves all recommendations made in connection with the employment and assignment of working forces at all stores, also recommendations for improvements, or additional



Method of Storing and Piling Lumber on the Western Maryland

facilities necessary in the economical handling of material by the stores section.

Keeps in close touch with the general purchasing agent with reference to market conditions, prices, etc., so as to properly anticipate and protect the railroad's requirements.

Keeps closely in touch with the scrap situation on the railroad, and, by conference with the general purchasing agent, attends to the shipment of available scrap.

Directs all reclamation work.

Executes local purchases in the event of emergency.

Handles urgers direct with firms holding orders for material (to avoid the necessity for relaying these urgers through the general purchasing agent's office).

Duties of the Division Storekeeper

The division storekeeper will be responsible for the condition of all stores on his division including material on line of road.

Supervises all matters pertaining to the physical operation of his stores, keeping in close touch with the storekeepers, to make sure that the highest efficiency is being maintained by the working forces.

Personally checks all orders prepared by storekeepers and stock men, either in stock books or on floor sheets, to assure himself that the proper material, as well as the correct quantity, is being ordered.

Approves personally purchase, transfer requisitions and shop orders after they are prepared in the office.

Keeps closely in touch with the material situation at all points in his division to see that proper and prompt action is taken to secure material necessary to avoid delays to equipment and work. Approves all recommendations made by storekeepers in connection with the arrangements at various stores on his division, making report to the general storekeeper.

Duties of the Storekeeper

The storekeeper will see that stock books are maintained. That the information shown therein is accurate, and that his section stockmen get them in on time. In preparing orders, he will go over the stock books with his section stockmen, shop foreman, or others interested. He is expected to exercise good judgment in ordering, to see that quantities are in accordance with the amount he has on hand, due, owes, and what he uses per month (always taking into consideration such information that he might have to estimate what material will be needed).

Personally approves all requisitions received from the line of road or other stores for material; ships store items; transfers items from other stores or places orders with purchasing agent

for direct shipment of any items which are held in the general storehouse; turns over to supply car attendant any items of material which he considers would be economical to deliver from supply cars.

Supervises all requisitions to see that they are properly made up, and turned over to division storekeeper for approval (signing all requisitions in his absence, but keeping a copy of same for divisions storekeeper's attention on his return).

Duties of the Section Stockman

The section stockman will be accountable for the maintenance of a supply of all material included in the various classes in his section in sufficient amount to meet minimum requirements at all times.

He will be expected to handle and take care of the stock books (classes assigned him) showing monthly, on specified dates, the amount of material he has on hand, the amount he has due on unfilled requisitions, the consumption for the past specified time, surplus, items, etc. He will then enter in the stock book the amount of material which he wants ordered to take care of his requirements, using good judgment in all cases, to see that the material which he orders is actually required.

He shall tally in all material received (on standard form) both on purchase requisitions and from other stores, and will record in his records and stock books a record of the material and date received. He shall be expected to check weights of all materials which are purchased in this manner.

He shall see that all shipments for points on line or elsewhere are gotten together so that they can be handled by the shipping foreman and he will turn over to the storekeeper all "back orders" on requisitions for which he does not have material in stock to fill, showing on the face of same requisition the order number on which material is due. He will not be expected to hold requisitions or "back orders" for which he does not have material in stock until the requisition is properly stamped by the storekeeper.

He will be responsible for charging out all material removed by any persons from various classes in his section and will be required to produce charges on all issues during his tour of duty. He must also maintain an accurate check on all items stored in open bins, or racks, in order that removal in his absence will be detected. He will be required to investigate and develop by whom material was removed in his absence, and if proper charge was submitted insofar as he is able, reporting all irregularities direct to storekeeper.

He will be responsible for the packing and shipment of all materials from his section, whether carload or less than carload, and will be responsible for loss or damage through improper packing, marking or billing.

He will be responsible for proper identification of his stock, not only standard, but special items that are classified in the classes handled by him, and must at all times be prepared to answer questions concerning special and stock items—such as proper name and description and where used if standard number, date and price of items which are not standard but required as repairs to machinery, etc.

He will be expected to keep the grounds and buildings under his jurisdiction in a very neat and orderly manner, seeing that material is lined up in stock book order wherever possible.

He will be expected to report to the hurry clerk in storekeeper's office immediately any anticipated shortage of material, to enable the hurry clerk to procure material in time to prevent a shortage.

He will turn in to the hurry clerk daily, a list of live items which will be assigned him by the storekeeper, showing amount of each item he has on hand; amount which will be kept as a minimum stock; requisition number; amount and date ordered of the material due.

Duties of the Hurry Clerk

The hurry clerk will handle all urger forms, letters and telegrams from other stores and departments in connection with the hurrying of material and will draw a requisition to cover all items to be shipped that are not already on requisition. He will see that shipment of such items as covered by these hurries is made and that the person by whom material is urged is properly notified as to the action taken. If material is not available, he will take this up with the purchasing department or the store or shop holding the order for same. He will see that each urger is handled with such promptness as to permit the material, if available, to be shipped by next train after urger is received. He will retain his own files and follow up all matters to a conclusion.

Special Representative

The duties of this position will be devoted to:

1. Standardization of materials; the proper description of each article; the service to which it is put; the proper and thorough entry in the stock book; the keeping of the stock book up to date. Where there is any question, he may himself or with the general purchasing agent, or with other officials, if necessary, arrive at a proper decision.
2. Study the use of materials and make recommendations to the general storekeeper as to conservation or other matters (particularly as to handling) which might prove of decided benefit.
3. So far as reclamation methods which might be brought to his attention in the study or use of material, make a detail memorandum for the general storekeeper.
4. Write up the purchasing department price book (to be finished before the end of the year) so that complete records may be kept in the purchasing department.

It is understood that the special representative will, in direct correspondence, obtain such catalogues and descriptive information as is necessary from outside concerns over the general storekeeper's signature; but that the question of specifying standards will be left to the general purchasing agent and general storekeeper acting with the Committee on Standards, which is composed of those two officers and the heads of departments. The special representative will attend such meetings whenever possible.

An important feature in the work of the stores section relates to shop deliveries and routing. Careful attention is paid to the shop delivery system on special materials with a view to avoiding delays to men occupied on machine work. The requirements are checked against the published shop repair program and materials are delivered so as to favorably affect shop output.

The stores section is authorized to, and does, follow up the delivery of all material on order, only calling on the purchasing section where difficulties are met that can be overcome by the purchasing section. The stores section is also given authority to arrange for and make local purchases along the line of road, first establishing the source of supply and prices to be paid, giving the purchasing section details of such arrangements.

The price book is depended upon to show where one or more devices or units are in service for the same purpose in one or more departments. This information is used to assist in establishing a proper standard. It is the particular duty of the special representative whose work is outlined above to see that all stock books are kept properly, that all material ordered is described and as soon as standards are determined on, that they be recorded.

Results of Organization

One of the objectives accomplished by the Service of Supply organization on the Western Maryland is that of following up the delivery of material from the time of purchase until it is put in actual use and, so far as possible, placing purchases on a budget system. This involves the proper recording of the unit bought, the quantity used and the total expenditure over a fixed period. It also necessitates a proper comparison of prices and the quantity that, with due economy, should be used; the heads of departments being kept fully posted. This has resulted in reducing the consumption of several items on the Western Maryland from 25 per cent of total investment to as high as 33⅓ per cent. As an example, the cost of locomotive scoops has been reduced from over $12.00 per engine per year to approximately $4.50 per engine per year.

The consolidation of the purchase section and stores sec-

tion into a single unit, has demonstrated economies which cannot be effected where two different departments are maintained; it has eliminated friction and has established the Service of Supply department as a unit of earning importance comparable with any other department of the railroad. Moreover, it has placed in line for promotion those who otherwise might be sidetracked and has created a degree of initiative and effort not ordinarily manifest. It has been established that this department can be made an influential factor toward improving the net earnings of the railroad.

Railroad Asks Mandamus to Force Payment of Guaranty

A PETITION FOR A WRIT of mandamus was filed by the Grand Trunk Western in the supreme court of the District of Columbia on November 29 for the purpose of requiring the Secretary of the Treasury to honor a certificate of the Interstate Commerce Commission calling for the payment of $500,000 as a partial payment of the amount due it under the guaranty provision of the Transportation Act.

This proceeding grew out of the opinion rendered October 7 last by the comptroller of the treasury, based upon certain certificates presented by the Interstate Commerce Commission to the Treasury Department in favor of the Grand Trunk Western and the Detroit, Grand Haven & Milwaukee, in which the comptroller held that partial payments could not be made by the Secretary of the Treasury to a carrier in advance of final settlement.

The comptroller took the position that the Interstate Commerce Commission was empowered to issue only one certificate to each carrier, which certificate must be for the full amount of the final settlement. While in this proceeding the Grand Trunk Western is the only petition, yet the result of the decision rendered in this case will involve the payment of nearly $400,000,000 now due to the railroads under the guaranty provisions of the Transportation Act.

The proceeding is a test case designed and necessary to settle what the law is in respect to the authority and obligation of the Treasury Department to make partial payments under the guaranty, when amounts are certified by the Interstate Commerce Commission as certainly and in all events due, without waiting, before making any payment for the result of a final accounting which cannot be accomplished for a very considerable time. About $254,000,000 of the guaranty has been paid to the railroads on applications for advances filed before September 1.

The petition for a writ of mandamus was filed after an effort had been made by General Counsel Thom of the Association of Railway Executives to enlist the influence of the President to obtain a change in the decision of the comptroller. This request was referred to the attorney-general. The Interstate Commerce Commission, at the request of the carriers, had also attempted to get a new ruling from the comptroller by submitting a new certificate for the Grand Trunk Western in a modified form, on November 24, but the comptroller, in a letter to the Secretary of the Treasury dated November 27, adhered to his original opinion and advised the secretary that he was not authorized to issue a warrant for the amount stated in the new certificate. The revised certificate stated that the amount of $500,000 is necessary to make good to the carrier the guaranty provided by the act and also:

"The commission hereby certifies that such amount of $500,000 can not be reduced by further accounting or otherwise, and there may be, upon further investigation, additional amounts found due to said Grand Trunk Western Railway Company to make good to said carrier the guaranty of section 209 of the Transportation Act, 1920, and which if, and when, ascertained by the commission will be certified to the Secretary of the Treasury."

After quoting paragraph (g) of section 209 of the Transportation Act, 1920, the comptroller said in the letter:

"The certificate submitted in this case is not a certificate to the effect that $500,000 is the amount necessary to make good to the carrier the guaranty provided by section 209. You are advised, therefore, that for reasons set forth in my decision to you of October 7, 1920, 27 Comp. Dec., 331, in the matter of a former certificate for the same amount in favor of this carrier, you are not authorized under the law to issue a warrant on the certificate as submitted. See also in this connection my decision to you of November 10, 1920.

"It appears from papers accompanying your submission that the Interstate Commerce Commission is not prepared to issue a certificate in this case substantially in the form indicated in the decision of November 10 as necessary to authorize payment.

"Commissioner Meyer in letter to you dated November 24, made the following statement:

"'On behalf of Division 4 I desire to call your attention to two communications which are addressing to you today through our secretary. The first cancels our certificate No. A-246, and the second transmits to you a substitute certificate in somewhat modified form, covering the same situation.

"'The changes in the original certificate were made primarily at the request of the interested carriers who believe that the revised form of certificate will more clearly present the legal questions at issue in the interpretation of Section 209 of the Transportation Act. Believing that you are equally interested with us in securing an authoritative judicial interpretation of this provision of law we acquiesced in the request of the carriers.'

"In view of the fact that a settlement by the auditor for the State and other departments is a prerequisite to any final action by you in the matter, it is suggested that you transmit the certificate and accompanying papers to said auditor in order that final settlement of this claim may be made in accordance with this decision."

The court ordered the Secretary of the Treasury to show cause on December 7 why the writ should not be issued.

NINETY-FOUR PER CENT of the passenger trains operated over the Baltimore & Ohio in October made schedule time and 83 per cent arrived at destination on time.



Photograph from Underwood & Underwood, N. Y.

A Railroad Train That Crosses the Equator Near Stanley Falls, Africa

I. C. C. Orders Increase in Intrastate Passenger Fares

Commission Supersedes State Authority in Additional Decisions Involving Intrastate Rates Under Transportation Act

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION on November 26 handed down its decision in the Illinois intrastate rate case, in which it is held that passenger fares for intrastate travel in Illinois lower than are charged for interstate travel subject interstate travelers and points outside of the state of Illinois to undue prejudice and disadvantage and constitute an unjust discrimination against interstate commerce. The carriers are ordered to increase the passenger fares within the state of Illinois 20 per cent to bring them up to the level of interstate fares and to establish the surcharge of 50 per cent on Pullman traffic prescribed by the commission last August in the general rate case, to go into effect on or before January 10. Questions relating to freight rates, commutation and excursion fares are reserved for later determination. The Illinois Commission authorized a freight rate increase of only 30 per cent, whereas the Interstate Commerce Commission had authorized 40 per cent for the eastern district and 35 per cent for the western district.

Illinois has a two-cent fare law but the three-cent rate of the Railroad Administration is still in effect under a federal court injunction restraining the enforcement of the state law.

This decision, by Commissioner McChord, expresses the attitude of the commission more in detail than the decision in the New York case reported last week and sustains the argument of the carriers that the commission's power to remedy state discrimination against interstate commerce has been broadened by the transportation act.* An abstract of the report follows:

Report of the Commission

Effect of Lower State Fares

All the carriers in Illinois are engaged in the handling of both state and interstate passengers and such passengers are carried on the same trains.

Evidence offered by the carriers indicates that, if the present intrastate rates are continued for one year and there is the same intrastate passenger travel as in 1919, the loss to the carriers, due to their failure to secure the 20 per cent increase in intrastate fares, will approximate $7,000,000, and if the 2-cent intrastate fare should become effective the loss would be $15,000,000.

Near the borders of Illinois are such points as St. Louis and Hannibal, Mo.; Keokuk, Davenport, Muscatine, Burlington, Dubuque and Clinton, Iowa; Beloit, Janesville, Madison, and Milwaukee, Wis.; Gary, Indiana Harbor, Hammond, Whiting, La Fayette, Terre Haute and Evansville, Ind.; and Paducah, Ky. All such points are in constant competition, more or less, with cities in Illinois for population, industrial development and business growth.

Quincy, Ill., is in keen competition with Burlington and Keokuk, Iowa. A branch line of the Chicago, Burlington & Quincy runs between Burlington and Quincy. Trains leave both points in the forenoon and return in the afternoon, carrying people from Quincy and Burlington out into the country to sell goods and also carrying the country people into Quincy and Burlington to buy goods. The time of the trains is fixed so that Quincy and Burlington are on an approximate equality as to service, but passengers to and from Quincy ride on a basis of 3 cents per mile, while those to and from Burlington pay 20 per cent more, or on a basis of 3.6 cents per mile. Danville, Ill., has a country trade coming into it from Indiana for distances of perhaps as much as 50 miles. Illinois people also come into Danville to trade. Those from Illinois pay the lower fare. Chicago competes with St. Louis, Evansville and Paducah in doing business in interior Illinois. Passengers to and from Chicago, of course, have an advantage in fares over the other points. These instances are given of record as typical. Similar situations may be found all around the borders of the state.

As is commonly known, jobbers send their salesmen to visit the trade. Those in Illinois pay the lower basis of charge. That the differences referred to are injurious to those who must pay the higher fares is obvious.

Just across the river from Rock Island, Ill., is Davenport, Iowa. The total railroad and sleeping car fare from Chicago to Rock Island is $8.04 and from Chicago to Davenport $10.36. The difference of $2.32 against Davenport is not due to the slight additional haul incurred in crossing the bridge between the two cities, but is in the main, the result of the failure of the Illinois authorities to permit the same basis of charge as we have fixed. Passengers for Davenport are carried in the same train and by the same railroad as those for Rock Island. The train carries one sleeping car which runs to Rock Island and another which goes across to Davenport. Passengers to Rock Island pay on the basis of the intrastate fare of 3 cents per mile, plus the intrastate sleeping car fare, without a surcharge, plus 8 per cent war tax; while passengers to Davenport pay on the basis of 3.6 per cent per mile, plus a sleeping car fare the same as is charged to Rock Island, but with a surcharge for the sleeping car accommodations, plus the war tax of 8 per cent on the greater total fare. Except for the crossing of the bridge, as previously indicated, there is no difference in the character of the service. Until the increases in interstate fares became effective August 26 both cars were equally well patronized, but since that date passengers for Davenport ride to Rock Island and walk across the bridge. No one familiar with the conditions buys a ticket to Davenport or rides in the Davenport car unless the Rock Island car is full. Situations almost identical with that described above are found as between St. Louis, Mo., and East St. Louis, Ill., and as between Paducah, Ky., and Metropolis, Ill., and it is testified that there are other instances. Any incidental benefits that may accrue to an Illinois point, like Rock Island, by reason of having passengers leave their trains at such points rather than at the interstate point, their real destination, would be at the expense and to the detriment of that interstate point. Davenport and Rock Island are in competition with each other for local retail and perhaps some wholesale trade in Illinois, Iowa and Missouri. Moreover, by reason of these disparities intrastate passenger traffic increases and interstate passenger traffic decreases.

There is reason to believe that in general, measured per passenger carried, it costs more to handle the intrastate than the interstate traffic. The interstate passenger is generally a long-haul passenger, while the intrastate passenger generally goes a much shorter distance. It is testified that there is relatively the same amount of service for pick-up and delivery, for ticket sales, for accounting, etc., in connection with intrastate traffic as there is in connection with interstate traffic. In other words, the terminal costs are about the same whether the passenger is intrastate or interstate. Coaches used in interstate traffic generally are in use at night as well as in the daytime, but the coaches used for intrastate movements are usually idle during the night. Although old and second-grade coaches are often used for intrastate traffic, which tends to reduce the cost, the density of the traffic is said to be much lighter. An intrastate coach is said ordinarily to carry fewer passengers and to make much less mileage than the average interstate coach.

The record shows how the lower intrastate fares affect the revenue that should accrue from interstate traffic in another manner. Certain carriers between given points operate intrastate while others between the same points run interstate. Competition generally compels the maintenance of the same fares via all lines. The interstate carriers must either meet the Illinois intrastate fares or lose the traffic to lines within the state. In either event the total revenue from interstate traffic is adversely affected.

The Illinois intrastate fares have the effect of otherwise reducing the earnings on interstate traffic, or rather on what would be interstate traffic if it were not for the differences in fares. Travelers

* Oral arguments will be heard before the commission at Washington on December 13 in five cases involving intrastate rates. These are the Michigan, Ohio, Florida and Nebraska cases and the Illinois freight rate case. Oral arguments in the Minnesota case were heard before the commission on November 26, and arguments in the North Carolina, Iowa and Arkansas cases were heard this week.

destined to or coming from points outside the state find it cheaper to pay the intrastate fare within Illinois and the interstate fare beyond the border than to pay the through interstate fare. It is a common practice for travelers to buy their tickets to the state line, leave the train, immediately buy a ticket thence to destination, and then resume their journey on the same train. Technically they break their journey, making part of it intrastate, but practically they resort to a device which defeats the through fare. This practice is likely to result in delayed trains, especially when there are a number of people taking advantage of it. In addition, it may require the carriers to provide additional employees to sell tickets or receive fares. It may result in certain border points being favored as gateways unless the carriers via other routes reduce their charges to meet the situation. It is testified that the practice has had these results in other states in the past. Also that the practice has made it impossible in some parts of the country to maintain reasonable interstate fares; that is, the practice became such a nuisance that the carriers found it advisable to publish through fares based upon the factors to and from state borders. Principally as a matter of general interest, an instance was cited in which the authorities of one state went so far as to require the carriers to post notices at their stations to the effect that through fares could be defeated by resorting to the device above described.

The state authorities take the position that we have no power to act with respect to intrastate rates or fares except to remove discriminations found to exist which injuriously affect persons or localities in interstate commerce. They urge that the evidence in this case does not warrant a finding that the fares generally throughout the state subject interstate commerce to unjust discrimination within the meaning of the statute.

Section 3 of the act provides as follows:

> That it shall be unlawful for any common carrier subject to the provisions of this act to make or give any undue or unreasonable preference or advantage to any particular person, company, firm, corporation, or locality, or any particular description of traffic, in any respect whatsoever, or to subject any particular person, company, firm, corporation, or locality, or any particular description of traffic, to any undue or unreasonable prejudice or disadvantage in any respect whatsoever.

This particular provision of the act stands unamended by the transportation act, 1920. It was this provision which gave rise to what is commonly known as the Shreveport doctrine, laid down by the Supreme Court in Houston & Texas Railway v. United States, 234 U. S., 342, commonly known as the Shreveport Case. That case involved the validity of our order prescribing maximum reasonable rates from Shreveport, La., to points in Texas and requiring the removal of undue prejudice against Shreveport as to traffic to Texas points found to result from lower state commission-made rates from Dallas and Houston, Tex., toward Shreveport for equal distances.

In American Express Co. v. Caldwell, 244 U. S., 617, and Illinois Central R. R. Co. v. Public Utilities Commission, 245 U. S., 493, the principles announced in the Shreveport Case, supra, were reaffirmed, but it was also held that in each such case our order must have a definite field of operation and not leave uncertain the territory or points to which it applies.

The state authorities contend that paragraph 4, section 13, of the act is merely a restatement of the effect of section 3 of the act as interpreted by the Supreme Court in the Shreveport Case, supra. The provision in question reiterates in effect what is stated in section 3, but in it Congress has gone further than declaring that there shall be no undue or unreasonable advantage, preference, or prejudice as between persons and localities, as in section 3, and has forbidden and declared unlawful "any undue, unreasonable, or unjust discrimination against interstate or foreign commerce." The term "commerce" covers the entire field of transportation—the traffic itself and all the instrumentalities and means of carrying it on. The language used is certainly broad enough to cover every discrimination growing out of the relation between intrastate and interstate commerce which injuriously affects the latter.

Legislatures do not enact laws for the purpose of construing a previous act unless a construction has been placed upon the prior act which was not intended by the legislature. There is certainly nothing in paragraph 4 of section 13 which indicates any purpose of construing section 3 of the act.

The Supreme Court, in the Minnesota Rate Cases, 230 U. S., 352, recognized the power of the federal government to supervise the rates of intrastate commerce when they are so intermingled with interstate commerce on roads engaged in both that in the interest of interstate commerce such regulation becomes necessary.

The Purpose of Congress

From the debates, committee reports and the act itself, Congress evidently concluded that a crisis threatened the transportation of the country. Notwithstanding the constant efforts of the railroad administration to improve conditions, and because of the mounting cost of operation, the excess of operating expenses over revenues during the period of federal control and after was steadily increasing, resulting in great losses to the government. The primary purpose of Congress was to return the roads to private ownership surrounded by such safeguards as would assure the people of the whole country adequate service. To rehabilitate the railroads so that they might perform the duties necessary to the very life of the nation Congress determined upon a definite plan. It extended the guaranty period for six months beyond the termination of federal control. It directed us to initiate, modify, establish, or adjust rates so that carriers as a whole (or as a whole in each of such rate groups or territories as we may from time to time designate) will, under honest, efficient and economical management and reasonable expenditures for maintenance of way, structures and equipment, earn an aggregate annual net railway operating income equal as nearly as may be to a fair return upon the aggregate value of the railway property of such carriers held for and used in the service of transportation. It provided that in determining the fair return to the carrier we "shall give due consideration, among other things, to the transportation needs of the country and the necessity . . . of enlarging such facilities in order to provide the people of the United States with adequate transportation." It directed us to take as such fair return for two years beginning March 1, 1920, a sum equal to 5½ per cent of the aggregate value of the carriers' property, and authorized us, in our discretion, to add thereto a sum equal to ½ of 1 per cent of such value to make provision for improvements, betterments or equipment.

The terms of the act are sufficiently broad to forbid unjust discrimination against interstate commerce without reference to particular persons or localities. Considering the conditions existing at the time of the passage of the act, the purpose of the act to correct these conditions, and the legislative scheme adopted by Congress to carry out that purpose, we have no doubt that Congress meant to give full import to the language used, and that the prohibition against "undue, unreasonable, or unjust discrimination against interstate or foreign commerce" is not limited to particular persons or localities, but is applicable to such discrimination against interstate or foreign commerce in their broad definitions.

Not an Encroachment on State Rights

This construction of the act cannot be said to be an encroachment on states' rights. The power to regulate interstate commerce was granted Congress chiefly as a means of protection against commercial hostilities and reprisals between the various states which overwhelmed the Confederation and threatened the commercial destruction of some of the states. The existence of that exclusive power in Congress is of greater importance now than at the time of the adoption of the constitution, for the protection of the states themselves. Today railroads run the length and breadth of the country. Many of the roads traverse with their own lines a number of states. Even though a carrier's rails may be confined wholly within a state, it is ordinarily an important link in the transportation of commerce from and to other states. Each state, therefore, is vitally interested in the transportation conditions in the other. A narrow or selfish policy with respect to the transportation instrumentalities within a state may cripple or suppress the commerce of the other states. It was stated on argument that about 31 states had permitted the same increases in fares as we fixed in Increased Rates, 1920, supra. Are the transportation facilities of these states and of the nation to be put in jeopardy by reason of the failure of the other states to conform to the plan adopted by the Congress for the welfare of the nation as a whole? The states gave to Congress the power to protect and promote the instrumentalities of interstate commerce and as the states' right they look to Congress to exercise that power.

In our decision in Increased Rates, 1920, we fixed the increases in rates, fares and charges necessary to comply with the act. It must be remembered that in fixing those increases we were acting within our power "to prescribe just and reasonable rates." The resulting rates therefore become, in effect, what Congress has deemed on the whole necessary to yield the carriers the prescribed return on the value of their property.

It is further urged that in Increased Rates, 1920, we did not find the value of any railroad property in the state of Illinois or elsewhere in the eastern or western groups as designated in that report. We were directed to prescribe rates so that in the aggregate they would yield a certain return, as nearly as may be, "upon the aggregate value of the railway property of such carriers held for and used in the service of transportation." We understand the interstate commerce act to require us to determine upon a valuation for the total property of the

carriers and not for the property that might by some necessarily arbitrary method or formula be assigned to interstate traffic, and that is the course we followed in arriving at the estimated value used in Increased Rates, 1920.

In that case, conformably to the act, in the exercise of our power to prescribe just and reasonable rates, we determined the increased fares that were necessary in order that the passenger traffic should contribute its proper proportion to a fair return on the aggregate property value. If, without good reason, the fares within a state are lower than those authorized and established for interstate application, intrastate passenger traffic will not contribute its just share to the passenger revenues of the carriers, and the carriers may not earn the statutory return without further increases in the transportation charges on other traffic, including interstate commerce, thus unjustly discriminating against such commerce. Such a situation will also result, as the record discloses, in depleting the revenues from interstate commerce by diverting to intrastate channels what otherwise would form part of interstate passenger traffic. Thus, the existence, side by side with interstate fares, of intrastate fares fixed at a lower level constitutes an obstruction to interstate commerce, thereby unduly, unreasonably and unjustly discriminating against such commerce, in contravention of the act.

In Increased Rates, 1920, p. 254, in approving freight-rate increases of electric lines equal to those approved for trunk lines in the same territory, we said that this was "not to be construed as an expression of disapproval of increases, made or proposed in the regular manner, in the passenger fares of electric lines." There was, however, no approval of increases in such fares. Of the two electric lines hereinbefore mentioned, the Chicago, Lake Shore & South Bend appears to have taken the 20 per cent increase in its interstate fares; but, no such increase having been approved, none of the electric lines is included in our findings herein. Also, our findings herein, otherwise than as to the surcharges hereinafter mentioned, will relate only to the standard local and interline fares, exclusive of excursion, convention and other fares for special occasions, commutation and other multiple forms of tickets, extra fares on limited trains, and club-car charges. The excluded fares and charges will be reserved for further consideration.

We find that there are no conditions within Illinois justifying the maintenance of lower intrastate passenger fares therein than the fares applicable to the interstate transportation of passengers to, from or through the state; and that the maintenance of such intrastate fares lower than the just and reasonable interstate fares and charges established by the carriers pursuant to Ex Parte 74 gives an undue preference and advantage to persons traveling in intrastate commerce in Illinois and subjects persons traveling in interstate commerce to, from or through the state to undue prejudice and disadvantage, and unjustly discriminates against interstate commerce; which undue prejudice and discrimination should be removed.

We are of opinion and further find that, to remove the undue prejudice and unjust discrimination found to exist, the present fares for the intrastate transportation of passengers in Illinois should be increased in amounts which shall correspond with the increases heretofore made as aforesaid in interstate passenger fares; and that surcharges upon the contemporaneous charges for space occupied by passengers traveling in intrastate commerce in sleeping cars and parlor cars in Illinois, amounting to 50 per cent of such charges, should be established, such surcharges to accrue to the rail lines.

An order in accordance with the foregoing findings and conclusions will be entered.

Eastman, Commissioner, dissents.

The Interstate Commerce Commission on December 1 also made public its decision in the Wisconsin passenger fare case, ordering the railroads on or before January 15 to increase the intrastate passenger fares and excess baggage charges by the amount of increase applied to the interstate rates, and also to establish a surcharge upon passengers traveling in sleeping and parlor cars corresponding to the surcharge made for interstate travelers in the commission's decision in Ex Parte 74. The decision, by Commissioner Hall, does not discuss the contentions of the state authorities or of the railroads because in the main they are the same as those considered in the New York and Illinois cases. The Wisconsin commission had allowed increases corresponding to the interstate increases in the rates for freight service and on milk and cream, with some exceptions, but the increases in intrastate passenger fares and excess baggage charges and the surcharge were not allowed, on the ground that the state commission was without jurisdiction. Wisconsin has a two-cent fare law, but its enforcement has been temporarily restrained by injunction and the three-cent per mile basis initiated by the Railroad Administration is still in effect.

Evidence offered by the carriers indicates that if the present intrastate rates are continued for one year and if there is the same intrastate travel during that year as in the calendar year 1919, the direct losses to the carriers due to their failure to secure the 20 per cent increase in intrastate fares would approximate $2,400,000, and if the two-cent intrastate fare should become effective the loss would be approximately $6,000,000. The findings of the commission are without prejudice to the right of the authorities of the state of Wisconsin or of any other party in interest to apply for a modification as to any specific intrastate rates or charges on the ground that the latter are not related to the interstate rates in such a way as to contravene the provisions of the interstate commerce act. Commissioner Eastman entered a dissent, as he had in the New York and Illinois cases.

Injunction Permits Illinois Passenger Rate Raise

A temporary injunction, restraining Attorney General Edward J. Brundage of Illinois, State's Attorney Maclay Hoyne and the Illinois Public Utilities Commission from prosecuting railroads in Illinois when they raise their intrastate passenger rates from three cents per mile to 3.6 cents per mile in accordance with the Interstate Commerce Commission order of November 26, was granted to 14 Illinois roads on November 29 by Federal Judge G. A. Carpenter at Chicago. As a result of the injunction intrastate passenger rates in Illinois were made comparable to the present interstate rates on December 1.

At the expiration of 10 days arguments to make the injunction permanent will be heard in the United States District Court at Chicago. Meanwhile it is expected that the remaining 39 roads in the state will apply for similar injunctions.

Attorneys representing the 14 roads named in the injunction stated that their action in petitioning for an injunction was a precautionary one to forestall action by Attorney General Brundage, who announced recently that he was preparing to file a request for an injunction restraining the roads from carrying out the orders of the Interstate Commerce Commission.

Illinois state law fixes the legal passenger rate at two cents per mile. During federal control the intrastate rates were raised to three cents per mile. Following the granting of increased interstate rates by the Interstate Commerce Commission, the Illinois Public Utilities Commission denied the application of the carriers for comparable increases in intrastate rates on the grounds that it had no legal right to overrule a state law. Later, hearings were held before the state commission on passenger rates, with the result that an order was handed down to the effect that the two cent fare should be charged. The state commission was enjoined from enforcing this order by the federal courts, which held that the three cent rate was at that time reasonable.

The present injunction restrains the state officers from enforcing the three-cents-per-mile injunction or, in other words, prohibits the state from taking any action to prevent the roads from complying with the Interstate Commerce Commission's recent order.

PENNSYLVANIA RAILROAD STOCKHOLDERS numbered 129,960 on November 1, an increase of 720 over October 1, and of 16,079 over November 1, 1919.

Operating Statistics for September

The Interstate Commerce Commission has issued a tabular summary of operating statistics for the month of September, 1920, of roads having annual operating revenues in excess of $25,000,000. The figures for ton miles, car loading and car mileage, and net ton miles per car day (including mixed and special train service) are as follows:

		Freight service train miles (thousands)		Net ton-miles (millions)		Net ton-miles per loaded freight car-mile		Car-miles per car day		Net ton-miles per car day	
		1920	1919	1920	1919	1920	1919	1920	1919	1920	1919
New England Region—											
Boston & Albany	September	308	319	133	153	25.2	24.4	29.9	34.6	513	607
	Nine months	2,755	2,316	1,219	1,023	24.8	21.9	26.6	31.9	464	494
Boston & Maine	September	704	698	372	355	25.8	24.3	19.0	17.8	348	314
	Nine months	6,200	5,185	2,927	2,459	24.4	23.1	16.0	17.5	285	295
New York, New Haven & Hartford	September	555	579	302	346	24.8	24.6	12.6	13.5	233	252
	Nine months	4,480	4,440	2,228	2,096	23.5	23.2	9.9	14.1	175	245
Great Lakes Region:											
Delaware & Hudson	September	417	416	392	362	36.1	36.6	28.9	31.2	701	744
	Nine months	3,788	3,263	3,354	2,690	35.2	35.7	27.2	26.0	651	600
Delaware, Lackawanna & Western	September	559	469	489	429	28.4	28.5	32.0	30.9	637	653
	Nine months	4,548	4,111	3,888	3,747	28.8	29.7	27.6	27.3	567	571
Erie (including Chicago & Erie)	September	1,147	1,041	1,029	999	28.2	28.2	33.0	34.3	597	657
	Nine months	9,484	8,507	8,746	7,774	29.3	28.6	24.4	30.7	505	588
Lehigh Valley	September	595	564	534	577	31.4	31.7	23.1	23.7	455	354
	Nine months	5,338	4,778	4,741	4,307	31.5	30.4	20.3	22.7	451	481
Michigan Central	September	573	555	456	448	25.0	21.6	27.0	24.0	480	399
	Nine months	4,694	4,566	3,763	3,309	24.5	20.8	19.0	25.7	352	382
New York Central	September	2,140	1,984	2,255	2,131	29.2	27.0	26.3	26.3	481	496
	Nine months	18,497	16,601	18,202	15,830	28.1	26.2	22.1	24.0	418	416
Pere Marquette	September	373	367	254	239	27.4	24.9	17.9	17.8	367	340
	Nine months	3,045	2,985	2,024	1,872	26.5	24.2	15.4	18.2	317	328
Pittsburgh & Lake Erie	September	164	138	273	209	42.1	41.8	12.5	10.5	359	286
	Nine months	1,087	1,143	1,647	1,654	42.3	41.0	8.0	9.1	233	245
Wabash	September	642	562	474	415	25.8	24.6	28.6	27.6	568	543
	Nine months	5,150	4,589	3,618	2,958	25.0	23.4	26.1	26.6	514	457
Ohio-Indiana-Allegheny Region:											
Baltimore & Ohio	September	2,116	1,913	2,051	1,870	36.7	33.7	25.6	24.4	618	567
	Nine months	17,644	14,515	16,098	12,952	34.4	33.4	24.5	22.7	572	494
Central of New Jersey	September	332	322	225	230	33.1	32.9	14.2	15.1	305	313
	Nine months	2,840	2,671	1,946	1,788	33.8	33.0	13.6	13.2	294	270
Cleveland, Cincinnati, Chicago & St. Louis	September	749	699	634	624	29.8	28.1	31.0	31.8	589	630
	Nine months	6,371	5,513	5,132	4,645	28.4	27.7	27.7	27.2	538	514
Pennsylvania System	September	5,150	5,135	4,880	4,999	36.2	34.0	22.6	22.7	549	533
	Nine months	43,537	41,896	37,976	36,723	34.2	36.6	19.3	19.3	447	449
Philadelphia & Reading	September	654	648	598	651	37.9	38.2	20.8	20.6	502	517
	Nine months	5,648	5,125	5,268	4,756	38.0	37.8	19.1	19.0	493	471
Pocahontas Region:											
Chesapeake & Ohio	September	887	853	1,120	1,059	41.6	41.2	37.2	31.2	915	775
	Nine months	7,703	6,411	9,303	7,507	41.0	40.5	36.5	25.0	918	595
Norfolk & Western	September	861	813	1,039	1,000	42.8	39.3	34.9	36.3	924	887
	Nine months	7,192	6,513	8,647	7,722	41.5	39.5	34.9	28.3	929	698
Southern Region:											
Atlantic Coast Line	September	561	562	285	265	23.1	20.9	22.9	20.3	379	318
	Nine months	6,290	5,875	2,915	2,682	21.4	21.5	22.8	20.5	336	301
Illinois Central	September	1,936	1,620	1,515	1,251	30.7	27.4	43.8	39.0	877	750
Including Yazoo & Mississippi Valley	Nine months	17,380	13,074	12,985	9,874	29.0	26.7	40.8	31.9	809	593
Louisville & Nashville	September	1,597	1,551	886	839	24.5	22.6	23.9	22.0	436	387
	Nine months	14,114	12,778	7,522	6,721	23.0	22.0	21.9	20.2	363	317
Seaboard Air Line	September	423	342	226	190	24.8	22.4	28.0	23.3	456	407
	Nine months	4,189	3,486	2,186	1,727	23.5	22.2	23.6	20.3	408	334
Southern Railway	September	1,513	1,184	765	684	31.9	29.6	29.9	30.7	626	621
	Nine months	13,371	9,903	7,185	5,271	30.0	29.0	31.1	25.0	628	500
Northwestern Region:											
Chicago & Northwestern	September	1,877	1,732	1,221	1,031	29.1	24.4	26.0	23.7	499	391
	Nine months	15,417	13,168	8,715	7,502	26.0	24.8	21.6	19.8	383	330
Chicago, Milwaukee & St. Paul	September	1,827	1,931	1,202	1,326	25.6	24.9	35.2	31.2	611	553
	Nine months	15,492	14,856	9,944	9,508	25.3	24.7	25.2	26.6	449	462
Chicago, St. Paul, Minneapolis & Omaha	September	337	356	162	169	24.0	23.2	23.0	25.5	432	415
	Nine months	3,124	2,723	1,404	1,223	23.7	23.4	22.1	19.7	397	319
Great Northern	September	1,112	1,140	989	990	30.8	29.1	31.5	33.0	602	620
	Nine months	8,977	8,210	7,128	6,570	28.7	28.8	27.1	22.2	539	441
Minneapolis, St. Paul, Sault Ste. Marie	September	577	618	331	369	25.3	23.9	28.9	32.2	513	577
	Nine months	5,044	4,652	2,709	2,420	23.4	22.5	26.9	23.2	479	389
Northern Pacific	September	1,055	1,112	793	843	27.2	26.2	34.6	35.1	647	645
	Nine months	8,741	8,046	6,739	6,150	27.2	27.0	33.7	26.2	668	503
Oregon-Washington R. R. Navigation Co.	September	250	242	171	168	27.9	26.4	36.0	31.7	727	609
	Nine months	2,257	1,883	1,601	1,277	28.1	26.3	30.4	26.4	662	525
Central Western Region:											
Atchison, Topeka & Santa Fe	September	1,764	1,933	1,063	1,214	22.6	21.6	37.3	37.1	566	570
	Nine months	16,171	14,558	9,674	8,463	22.8	22.1	32.6	27.3	513	425
Chicago & Alton	September	348	355	202	209	26.5	26.1	22.9	22.6	406	403
	Nine months	3,092	2,795	1,758	1,566	26.9	26.0	23.3	22.1	421	366
Chicago Rock Island & Pacific	September	1,388	1,436	722	795	25.2	25.0	31.5	25.2	569	483
	Nine months	12,961	11,310	6,669	5,597	24.2	23.3	26.0	24.6	461	411
Chicago, Burlington & Quincy	September	1,812	1,787	1,423	1,453	29.0	27.4	36.6	35.4	682	655
	Nine months	15,682	13,661	12,199	10,383	28.3	26.9	31.1	26.6	611	484
Denver & Rio Grande	September	354	348	211	206	27.5	26.7	24.1	20.7	443	370
	Nine months	2,617	2,326	1,624	1,364	29.9	29.3	19.6	14.1	407	279
Oregon Short Line	September	461	450	306	293	28.1	26.8	48.5	47.4	890	847
	Nine months	3,802	3,222	2,678	2,148	29.4	27.4	46.6	32.9	972	635
Southern Pacific	September	1,446	1,245	973	850	25.0	24.7	38.4	38.8	708	660
	Nine months	11,255	9,865	7,701	6,928	25.2	25.6	35.1	32.7	635	577
Union Pacific	September	1,661	1,398	1,070	906	23.7	22.0	88.3	76.7	1,439	1,125
	Nine months	10,894	9,630	7,307	6,448	24.2	23.5	71.4	56.7	1,273	946
Southwestern Region:											
Missouri, Kansas & Texas	September	323	298	180	178	24.0	23.5	29.0	28.8	421	451
	Nine months	2,921	2,756	1,696	1,495	23.7	23.4	28.3	24.2	415	343
Missouri, Kansas & Texas of Texas	September	274	297	129	116	25.9	24.4	19.6	16.0	341	262
	Nine months	2,394	2,361	1,028	927	24.5	23.7	17.1	13.0	275	193
Missouri Pacific	September	1,165	1,153	747	724	26.9	25.0	24.3	27.9	467	510
	Nine months	10,488	9,167	6,769	5,498	26.8	25.3	22.7	21.3	454	390
St. Louis-San Francisco	September	938	889	411	437	25.6	25.4	23.1	22.5	385	412
	Nine months	8,214	7,342	3,729	3,280	25.8	24.9	21.0	18.7	369	318
Texas & Pacific	September	345	343	177	168	24.3	23.2	26.7	19.6	436	333
	Nine months	3,015	3,137	1,466	1,366	23.4	22.9	21.5	19.7	353	315



Lobby Talks, C. & W. I., R. R. Y. M. C. A., Chicago

R. R. Y. M. C. A. Fifteenth International Conference

Results in Recommendations for Big Advances Along All Lines During the Coming Year

THE Fifteenth International Conference of the Railroad Y. M. C. A., held at Richmond, Va., week before last—the first one for eight years, because of the world war—was notable for several reasons. There is much discussion in the industrial and transportation fields in these days concerning the importance of the human element from the standpoint of safety and production. The railroad technical associations deal almost exclusively with methods of operation, or facilities and equipment, and give little, if any, attention to those problems which directly concern the human factor. The conference at Richmond dealt almost exclusively with personnel problems and with special emphasis upon the strengthening of individual character and the consideration of those things which affect the conscience.

The high point in the conference was reached on Friday morning when A. S. Morgan, a special R. R. Y. M. C. A. secretary in Canada, and J. M. Dudley, one of the International secretaries, told of the work which has been done upon the Canadian Pacific in recent months in building up the morale by appealing to the consciences of the men, the term men including officers as well as the workmen. A combined abstract of their remarks follows:

The Source of Safety

As a subject for speculation, the presence of good and evil in the world has been fully dealt with, but as a question vital to the successful operation of railways this problem seems to some to be the question of the hour. In the crisis caused by the world war, leaders—civil and military—called on all religious agencies to come to the rescue and help rally the moral forces. The necessity of morale as basic to victory was recognized by all thinking men.

Next to war as a gigantic enterprise stands the great industry of transportation by rail and water, and it is but natural that the lessons of the war should be applied here where morale is as essential as in an army, and an effort be made to build up moral character as a means of reducing the number of deaths, personal injuries, property loss and the wastage of men and money.

To test the practical value of this idea the Canadian Pacific opened the door for a conductor, who is also a trained expert in Railroad Y. M. C. A. work, with an overseas experience, to travel over the Eastern Lines and present the arguments to the members of the railway family.

The message is based on the fact of the presence of evils, which make ineffective perfectly good safety appliances. It is based on the fact also, that the human factor is of equal or greater importance than the mechanical. It is rightly assumed that those of good intentions far outnumber those whose motives are bad and it is pointed out that the true and loyal owe it to themselves and the good name of the brotherhoods, as well as to the company and the public, to oppose those whose habits bring reproach upon their fellow employees, and jeopardize life and property.

The evils frankly dealt with are drink, theft, gambling, false reports of accidents, immoral habits and diseases and indecent language. The method followed at division points is to seek personal interviews with men of outstanding character and influence, frequently holding the interview in the home with the wife present, often with a babe in her arms. The stake of the wife, the child and the home in the matter of morality as a means of safety is easily shown. It is shown that back of a vast majority of accidents are man failures, and that back of these man failures there are in too many cases wrongdoing, acts that in themselves might easily be excused but for the fact that they lower the physical and mental powers and set a bad example for weaker men.

After several days of patient work in personal interviews, brotherhood leaders arrange meetings in their lodge rooms, officers co-operate to assemble men in shops and offices on company time, meetings are arranged with town councils and often with women. At the suggestion of Catholics and Protestants, priests and pastors have been visited and have been found eager to throw all their power into an effort to promote a morality that makes directly for the safety of life on the railways and for the happiness and prosperity of the family. Priests, ministers, officials and labor leaders speak from the same platform and unite in organizing for the uplift of the community.

In 178 personal interviews in homes, cabooses, shops and

offices, in 83 group discussions with 4,268 men in attendance, not a word has been uttered in criticism of the frank way in which wrongdoing, including theft and gambling, has been handled. On the other hand, it is stated over and over again that, "the evils you enumerate are all here, and create a real danger to the life and reputation of railroad men generally."

This attempt to rally the moral forces, to appeal to the consciences of men on the Canadian Pacific, and to remind them of the place of God and faith and prayer in the discharge of responsibility, has revealed a depth of serious interest and a readiness to co-operate.

If a further word is necessary, let the auditing department show the millions of dollars spent in policing, investigating and in trying cases before the courts, as compared with the money spent for moral betterment, and let those who know decide whether an instructor of ability and character may not accomplish as much for law and order as the same man could do in the secret service, and whether it is not good business to spend something in an effort to encourage men to do right, while a whole army is maintained to try to arrest and jail those who do wrong.

A Larger Program Outlined

The program for the four days during which the conference was in session was made up of two parts. The larger proportion of the time was given to inspirational addresses or to brief talks or testimonies on the part of the delegates. The greater proportion of the 700 delegates was made up of railroad employees, both officers and men. Other sessions of the conference were given over largely to a consideration of the detail methods of carrying on the work and in planning for the future. The interest and enthusiasm developed to such a point that it was unanimously decided to set a membership goal of 200,000 in the drive next April.

Impressed by the spirit of the conference, the International Y. M. C. A. Committee in charge of Transportation met for an all-day conference immediately following the close of the meeting and outlined an aggressive and intensive campaign for the coming months. The committee also developed a report, based largely upon the proceedings of the Saturday morning session of the conference, in which it drew special attention to practical methods which could be used to advantage in carrying on the different phases of the work. It has been the practice during the past two years for each local association to devote one week each year to the special consideration of each of the seven most important of its activities. It is the purpose during such weeks, for instance, to present a program which will stir up a greater interest on the part of the membership in the particular activity under consideration and then to organize so that this activity will be carried out on logical and orderly lines during the entire year. An abstract of the report of the International Committee with relation to each of these seven-fold activities follows:

Social and Citizenship

In connection with good citizenship the International Committee wishes to emphasize the thought developed by E. D. White of the Union Pacific in his address on Americanization, and that is that the need for education along these lines is frequently greater among men who are Americans, but have not lived up to American ideals, than it is among men who are foreign born or of foreign born parents.

The local associations are specializing during the week of December 6-12 in developing programs for the year's work along social lines and on good citizenship. The following suggestions are based largely upon a report made by E. M. Kaufman, general secretary, Pennsylvania Railroad Y. M. C. A., Jersey City, N. J.

The program for Social and Citizenship Week naturally divides itself into two independent sections; one of these relates to a social program which may be promoted by special committees and which should include the families of the men, as well as the men themselves. This part of the program needs little comment, as it is naturally the simplest part of the entire association program to carry out.

The other part of the program is concerned with good citizenship. This comprehends loyalty to and love of country, support of government, and voting intelligently on local, state and national issues. The committee in charge of this phase of the program should work in conjunction with the social committee and at special functions have speakers on some theme that will emphasize good citizenship, patriotism, and Americanization. It should at appointed intervals have speakers in shops and factories for the same purpose, and if there is a need conduct classes and arrange special patriotic events for foreign-born citizens. It would do well to organize a club with the slogan "Every Man a Voter."

Some of the practical things done at Jersey City last year in promoting good citizenship were the following: Two meetings were held in the churches at which the pastors spoke on Citizenship. There were two lectures in the "Y" building on Citizenship. Six Americanization meetings were held at the railroad shops and offices, special music being furnished by the drum and fife corps of one of the shops; eight different nationalities were represented at one of these meetings. One patriotic entertainment was held at the "Y" building. Two Americanization meetings were held in the "Y" building with the co-operation of the Pennsylvania Railroad and in the interests of the trackmen, at which the motion picture, "The Americanization of Tony," was shown and patriotic talks were made by several speakers.

Thirty-two employees were assisted in making out their naturalization papers as a result of the above-mentioned activities, and one class in English was started. An Americanization class was established which has a weekly attendance of 30 and which considers "Civics for Coming Americans." Motion pictures are shown occasionally at these classes. Social games and tournaments were also conducted and have been followed up ever since. These games had a good moral influence on several members, who were inclined to wayward habits, and consequently improved their citizenship.

During the coming Citizenship Week the flag is to be prominently displayed in the building for inspiration. The preamble of the Constitution will be posted and special patriotic literature will be placed in the reading room. More classes in English will be started. The Literary Club will adopt as its theme for the season, "The Constitution of the United States."

The Virtue of Thrift

The week of January 17-23, corresponding to National Thrift Week, will be devoted to a special consideration of matters referring to thrift and the development of an annual program for its promotion. The following suggestions are taken from an address at the Richmond conference made by Ward W. Adair, general secretary, Railroad Y. M. C. A., New York City:

There is nothing new about the thrift idea. Away back in the days of Rameses, a young man named Joseph ran one of the most successful thrift campaigns in the world's history. And his was not a whirlwind drive lasting a week, but a sustained and methodical effort running through seven long years.

We are not inventing one more new craze when we bring this subject to the attention of our members and make it an actual part of our season's work. I would not convey the impression that thrift is the greatest of the cardinal virtues, and I think one of the mistakes in the promotion of this feature last year was the attempt to emphasize it out of all due proportion. If Joseph had gone at it the same way, his campaign would have blown up while his first fat cow was still

a calf. This year we are proceeding by sane and orderly methods to lay proper emphasis on a most important subject.

National Thrift Week will be held this year, January 17-23. The program is divided into seven distinct days on which different features of the thrift idea will be emphasized: 1. National Thrift Day or Bank Day. 2. Share with Others Day. 3. National Life Insurance. 4. Own Your Own Home. 5. Make a Will. 6. Thrift in Industry. 7. Family Budget. 8. Pay Your Bills Promptly. Of these important matters I shall stress only two or three.

1. *The Importance of Life Insurance.* You recall the story of the woman who wired the sad news to her parents. The message read "Dear John is dead. Loss fully covered by insurance." The Apostle said on one occasion "He that provideth not for his own hath denied the faith and is worse than an infidel." From what I have seen of the suffering of destitute families, I am inclined to think he put the truth mildly. We owe it to ourselves to carry adequate life insurance for the protection of our families, and we owe it to our members to see that they are educated on this most important matter. The spectacle of a little, helpless woman



Foundation for Bratislava Railroad Y. M. C. A. Building, Czecho-Slovakia

being left single-handed to fight the unequal battle for her own existence and that of her children, is one of the most pitiful we are ever called upon to witness. Let us get the importance of this matter so fixed in our minds that we shall not rest until we have done our best to remedy the present deplorable conditions.

I recall some years ago, in one of our Pennsylvania conventions, a good brother who had more piosity to the square inch than I have ever known elsewhere, affected to be greatly shocked when somebody spoke of the importance of belonging to the Secretaries' Insurance Alliance. "I am grieved," he said, "to hear men in Christian service talking about life insurance. I have faith to believe that when I fall, I can trust the Lord to take care of my family." That is beautiful doctrine, but personally I believe in trusting the Lord and keeping the policy paid up.

2. *Own Your Home.* There is no young man worth his salt who does not some day aspire to have a little place he can call his own, and where he can gather his family about him and say,

"I am monarch of all I survey,
My right there is none to dispute."

There is no greater incentive to economical living and careful saving than is provided by the purchase of a home that must be paid for within a reasonable time. The joy of the home owner in doing a hundred little things about the house, knowing that he is not doing them for a landlord, but for himself and his family, is one of the delicious joys of life. Aspire to own a home of your own, even though you have to put a mortgage on it along with the other modern improvements. Billy Sunday has well said, "The renter who sings 'Home, Sweet Home,' is only kidding himself and serenading the landlord." There is a deep and true philosophy behind that remark.

3. *The Family Budget.* One of the secrets of family debt is the fact that no careful effort has ever been made by such families to live within their means. Cutting the garment to fit the cloth is something they have never thought of. You recall that classic of Irving Bacheller's, "Keeping Up With Lizzie." The sin of American families is the attempt to appear richer than they are—to keep the pace that is being set by some Lizzie, either tin or otherwise.

The family budget is a carefully wrought out document, which takes into account the exact amount of income, and distributes it in a fixed way so that a reasonable percentage will be allowed for the various necessary expenses of the family, and a reasonable amount left over to add to permanent capital. A friend of mine told me the other day that he knew of a man who had always been behind the game, who had adopted his first family budget last January, and who is already $1,800 ahead of the game for this year.

A Membership Goal of 200,000

The R. R. Y. M. C. A. now has a membership of about 145,000. To achieve the goal of 200,000 set for the drive next April, it will be necessary thoroughly to organize the forces at all of the local associations. The following suggestions for conducting a membership drive are combined from independent reports which were made by several R. R. Y. M. C. A. secretaries, including R. D. Emrick, Altoona, Pa., G. H. Winslow, Washington, D. C., and A. P. Gillette, Boston, Mass. The date for the membership promotion drive will be April 23-30.

Where organized teams are used with a local campaign slogan and the team captain is clever enough to get his men to do teamwork with the slogan fairly permeating each worker, it is safe to say the campaign will be a success.

For several years it has been the desire to eliminate the thought of commercially selling the Y. M. C. A. privileges, but rather that the men might join the Association as they do other organizations, not simply for a period of one year but permanently. The annual dues should be paid on a certain date and all dues should be made payable at one time. This idea was taken up several years ago by two or three associations and was found to work to advantage. After considering the question among the International Secretaries of the Railroad Department, it seemed advisable a little over two years ago to call the associations in conference and discuss the question of such work being undertaken simultaneously by all of them. In the six conferences that were held in different sections of the country, the idea met with hearty approval; the first Membership Week for united effort on the part of Railroad Associations was set for May 18-24, 1919.

The first campaign in 1919 was put over with such success that it was voted the next year to continue, and it has now become a fixture with nearly all of the Railroad Y's. The membership the first year increased from 90,000 to 125,000; the second year to 145,000. The simultaneous effort gives a much larger amount of publicity than could be given by each Association working independently, for the same action at the same time and the same objective makes the railroad man hear about the Association wherever he may happen to go.

A color scheme has been adopted in connection with this unity of action, whereby the associations can tell at a glance whether the ticket is up to date or not; this is a big advantage to the associations, particularly those that are centrally lo-

cated and have many members of other associations visiting them.

An efficient organization must be effected well in advance of the time the plan is to be put into operation. This organization should include in its membership the very best men in the community—men of high standing, energetic action, and a credit to the association. Various methods are employed in presenting this work to the men. A number of schemes include the names "Change Your Heart," "Base Ball Leagues," "Army and Navy," "Add a Mile," and other plans that will attract the men locally. It is generally conceded that a good-natured contest without prizes will cause an active rivalry, and the men usually reach the goal they set for themselves, and in many instances far surpass the goal. The sides as a rule are divided into different sections called teams, with a captain, or manager, or an army officer, at the head of each side, all heading up in a general committee with a president, or general manager, at the head of the organization. The interest is often kept alive during the week by daily meetings, with or without lunch, to which the reports are submitted by the teams.

Where a large organization is necessary, it is better to have fewer teams, with a greater number of workers on each team divided into divisions with a division leader reporting to the team captain. The fewer teams, the greater or keener the competition. It is a good plan to cover each department or division with one or more workers from each team. After all there is no secret in how to get new members or renewals, it is simply individual or team work, and friendly competition with a good supply of enthusiasm. When at all possible the campaign should start and finish with a get-together dinner of all workers and in case interest lags the workers should be called together for a mid-campaign dinner, when they may be recharged with inspiration. The method of reporting should be the one most convenient to the workers. As in all successful campaigns, the slogan of every team should be, "Rules of the campaign obeyed and every man a worker."

It is evident that only men who are willing to actively participate by giving time and thought to this work should be used. All the safe and sane publicity should be given through newspapers, placards, fliers, and the "whispering campaign." It would be well if every association can get a good publicity newspaper man interested during this week. Wherever time allows, four-minute men should be set to work.

Some of the results of this annual campaign are:—

(1) It has been proven that the men who comprise the membership are equal to hard tasks and are willing to undertake them when asked for definite work for a definite purpose at the definite time. If every secretary who has learned this fact will retain continued co-operation of these workers in carrying out the extension program in assimilating the new members and applying the same principle of definiteness to all committee work there will be a great strengthening of the brotherhood.

(2) The number of members secured is not more important than the effect upon the workers who secured them. Many men whose interest in the Association was confined principally to the local work have come to look upon it as a world-wide brotherhood of which they are a part. Those who previously said they could not do membership work became successful in presenting the claims of the Association to their fellow railroad men, and in securing their co-operation.

(3) Through the splendid uniform advertising matter and businesslike system of securing returns, the confidence of the workers and railway officials was established in the undertaking, and through the helpful publicity given by the press, the public has become acquainted as never before with the important work the Railroad Department is accomplishing for railroad men.

(4) It places the Association on a footing with other organizations for continued membership.

(5) It makes an intensive campaign for a week and assures a large amount of the budget in advance.

(6) It gives an approach for the secretarial staff to the men in a peculiar way because of the organized effort that has been put in operation in interesting the men. The membership work is cleaned up in a short period, with the exception of new men coming to the town through the year, thus allowing more energy to be put into the other departments of the Association work during the rest of the year.

Promotion of Health

May 9-15 has been set aside as the time for special consideration of a program for the promotion of health. The International Committee has based its suggestions for the health program on a special report made by Dr. John Brown, Jr., an abstract of which follows:—

Health and happiness go hand in hand. Both are not only within the reach of, but are characteristics of normal men. In a very real sense the crying need of the world today is for real Christians, because only men who have a true conception of their proper relations to God and their fellow men rightly regard the importance of attaining and maintaining maximum physical efficiency.

Too often we have endeavored to impress boys and young men with the fact that they should keep their bodies clean by quoting the Scripture: "Know ye not that ye are the temple of God and that the spirit of God dwelleth in you? If any man defile the temple of God, him shall God destroy, for the temple of God is holy, which temple ye are." This has been a negative appeal. Our challenge to men should be not only to keep themselves *clean* but *fit*, which is a far bigger thing. Only men who are physically fit can render their largest service to the Kingdom. With the former Scripture, we should couple Paul's injunction, "Neither yield ye your members as instruments of unrighteousness unto sin, but yield yourselves unto God as those that are alive from the dead, and *your members as instruments of righteousness unto God.* This is a positive, constructive appeal to men to always be at their best; to learn the fine art of right living and well-being, for the great purpose of being in fit condition to express themselves in Christian service.

Every man should have a great ambition to be well, to keep fit, to fight death and disease, to prolong life and increase physical well-being, thus combating misery, poverty, vice and crime. Men who are physically fit and who do not violate the fundamental laws of health are free from many temptations which beset men who do not keep themselves in good condition.

We are living on the health of our ancestors. What are we passing on to posterity? We must adapt ourselves to the new world and the new age. We despise the young college fellow who brags that he is "living on the old man," but in a far truer sense than any of us realize, we, too, are "living on our ancestors." How often we hear men excuse themselves for committing what they regard as unimportant indiscretions by saying, "This may not do me any good but at least it does not do me any harm," unmindful of the fact that many men seem for awhile to be violating minor and even major laws of right living without giving evidence of their harmful effects. It is because their ancestors lived simple outdoor lives, in accordance with the laws of health, that our unhygienic and artificial manner of living today does not produce immediate and disastrous results.

The lives of children yet unborn are doomed to be handicapped and shortened because of the thoughtless or selfish men and women who today are unwilling to order their lives

in accordance with the simple and known laws of right living, and who themselves are indebted to the clean, vigorous, wholesome and sacrificial lives of their ancestors for that measure of vitality which they now enjoy despite their own present manner of living.

Is it not fitting that those who today find it possible to survive in the face of rapidly changing conditions, should so live as to insure to their offspring the best that pure blood, fine constitution, organic vigor and mental vitality can hand down to posterity? Every man owes it to himself, his family, his employer and to society at large, to live at his best. Dissipation is not the necessary safety valve, but the unnecessary and wasteful leak by which energy and driving power is lost or misdirected.

It is a rather startling fact that at least 90 per cent of boys, young men, men in the prime of life and old men are physically much below par and are suffering from conditions which in the great majority of instances might easily be removed by the observance of very simple and well-known practices. Just stop for a moment and consider the number



Community Motion Picture Show, Duluth & Iron Range Y. M. C. A., Two Harbors, Minn.

of railroad men whom you know who give evidence of one or several of the following symptoms of being physically unfit: under weight (thin); over weight (fat); lack of "pep"; slowing up; tired feeling; headache; coated tongue; bad breath; indigestion; constipation; palpitation; short-winded; mouth breathing; frequent cold in the head; cough; stiffness in joints; sallow complexion; flabby skin; soft muscles; increasing nervousness manifesting itself in irritability, temper, lack of power of concentration, sleeplessness. This list of symptoms or "signals" does not refer to sick or invalid persons, but to individuals as we meet them every day.

The Railroad Y. M. C. A. has a real mission to arouse men and boys to the vital importance of every man studying how he can bring himself to that standard of maximum physical efficiency which is possible for him, not by doing those things which in his judgment "will do him no harm" but by the practice of those things and the establishing of habits which will do him only positive good.

Our message can only be effective if we ourselves are both healthy and happy. We should see to it that we get plenty of fresh air, drink lots of water, abstain from tea and coffee, tobacco and pastries; greatly reduce the quantity of meat; eat plenty of fruit and vegetables, particularly green vegetables; supplement such exercise as we may get through our work by vigorous daily exercises calculated to suit our particular hygienic needs, and secure sufficient mental diversion, rest and sleep. Do not worry, be happy.

Shall we not give ourselves with greater earnestness to the service of railroad men through personal interviews, health education campaigns, distribution of literature and the organization of programs of recreation and exercise that will be real factors in laying sure foundations for manhood and thus develop strong bodies which shall make for health and happiness?

Putting Over the Program for Boys

In developing the following suggestions for boys' work in railroad communities, the International Committee is indebted to T. C. Straw, Haleyville, Okla.; Dwight Stamper, Decatur, Ill., and F. M. M. Richardson, International Transportation Department secretary.

Two fundamental facts have to be taken into consideration in working out the program for boys. The first of these is the pertinent fact that the Railroad Y. M. C. A. secretary is not a trained boys' work secretary. The second is even more obvious in that the Railroad Association building is not adapted to boys' work. Each of these conditions proves to be a point of strength in actual test. The first assures the absence of professionalism, and the second necessitates the finding of a place of meeting for boys and generally leads to the selection of the best of all places, namely, the homes of the railroad men of the community, where there are boys in those homes. Furthermore, these considerations both determine the general type of work to be projected and throw about that work elements that belong in the development of a normal boy's life.

With the essential facilities thus provided, the remaining elements are leadership and a program. The first is available in every community in the discovery of a Christian man with a normal love for boys. He may be discovered in any one of a dozen branches of railway service, or perhaps among the business or professional men of the town. Sometimes it is necessary for the secretary himself to lead the group the first year that a boys' work is operated, meanwhile training a leader.

The other element is a working program. This has been made available by the publication of the Association's text "Hand Book for Comrades" published as a part of its Christian citizenship training program. The leader of a boys' group will wish to supplement the Christian citizenship training program hand book with the "Leader's Manual." As he proceeds in the development of his experience in leadership of boys' groups, he will want "Boy Life," by Fiske, "Boy Behavior," by Burger, and "Boyology," by Gibson.

Perhaps the type of boys' work that the average Railroad Association can best put over is the Hi-Y club. In the name given the club by the boys themselves, the "Hi" is an abbreviation for high school and the "Y" stands for Young Men's Christian Association. This form of boys' work is not difficult to organize and requires little nursing, once it is well under way, because the very purpose of the club leads to the development of the dynamic within the club itself. In starting a Hi-Y Club, the selection of Christian leadership and a nucleus of the four or five key boys of the upper classes are essential. As character development is the ultimate aim with other things as by-products in the school life, the club hinges on Bible study as the basis of the group discussions.

As a practical result of the operation of Hi-Y clubs, high school principals everywhere testify that the clubs have cleaned up certain immoral practices in the social life of the school, or that it has cleaned up dirty athletics or succeeded

in cutting out dirty stories, and reduced the necessity of school discipline to a mere minimum.

Working boys are under-privileged. They respond to the challenge that among any group of them there is as much brains and capacity for leadership as among any equal number of high school boys. But they have a handicap of four or five fewer years of mental training in preparation for life. Do they use an opportunity to fit themselves for the very biggest chance that may come to them? They do. They respond to the challenge and the Railroad Association does not exist that can not discover the necessary leadership and bring these boys together in groups of the Association's Employed Boys' Brotherhood.

The work for the boys in the grades partakes of the nature of the work just described, but of course is adapted to the age of the boys. It varies with the season. The discussion groups in the homes or other selected places through the winter give place in summer to hikes with a purpose, gardening, organized play, and camping. The summer camp is frequently made the time and place to clinch the year's work through a decision of the boy regarding the course of his life.

This kind of boys' work is one that the Railroad Association can do in increasing volume. It pays in results perhaps more fruitful than any work attempted in the Association's entire program for men because it touches the boy in a plastic period of life and determines his usefulness to society. In one railroad community some of the boys who were club members while still in the grammar grades are now beyond the club age. Some are firing, others braking, others are in the offices, others are in the shop crafts.

One of these is the company's expert on castings in the store department. In the community he is an expert on boys. He teaches a boys' class in his church and leads a boys' club. Another is assistant teacher of a training group of boys' group leaders. Another is leading a group of fourteen young men in a training class to become teachers of boys' classes in the Sunday schools of the community. There is no measure to the possibilities of this work when once started.

One former club boy said to the Association secretary, "My experience in the work of our boys' club helps me now in my brotherhood." Perhaps his "experience" and the sane Christian principles inculcated through those discussions of social and economic questions from a Christian viewpoint, help him and his brotherhood and his company even more than he suspects. It is a work that pays.

The Educational Program

Practical suggestions for the educational program were prepared for the International Committee by Roy V. Wright, managing editor, *Railway Age,* and included methods which different associations have utilized to advantage.

Many men holding important positions in railway service today pay a high tribute to the educational work which has been done in the past by the R. R. Y. M. C. A. I have in mind a foreman in one of our large railroad shops who came to this country 20 year ago, or more, with very little education and unable to speak the English language. He insists that he owes everything to the R. R. Y. M. C. A. because it taught him English, and then, through its mathematical and mechanical drawing courses, enabled him to qualify as a foreman.

Conditions have very greatly changed since those days. Now most of the railroads conduct apprenticeship courses and in many of our cities free night schools and other agencies are available for those who wish to complete their education in elementary subjects. While it is true that there is still a great need for this older type of educational work in many places, it is also true that if the R. R. Y. M. C. A. is to embrace its full opportunity it must in most cases vary its program to meet new and changing conditions. In every case it is therefore advisable to make a careful survey of the railroad community to determine just what type of educational work will supply the greatest need. Obviously, no two points will require the same sort of program.

In the first place, it is important to realize that there is a fair percentage of men in every department of a railway who are ambitious to improve themselves and to prepare for promotion. An evidence of this is the fact that one of the first steps which was taken after the Erie Accounting Employees Association was formed was the appointment of an educational committee which would be helpful to its members in this way.

An example of what may be accomplished in this direction was the series of talks and discussions on departmental details and relations which was conducted by the Pennsylvania Railroad Branch Y. M. C. A. in Philadelphia during the early part of 1920. The chief purposes of these talks were:

"First: To acquaint employees in one department with the work employees in the same or other departments are doing, and why.

"Second: To emphasize those features of the detailed conduct of affairs where closer co-operation would be of assistance.

"Third: To provide a consolidated record, necessarily brief, but in sufficient detail to enable the reader to get a good idea of the functions of the departments described, from the originating to the concluding offices; and thus to see how his individual work affects the work of his fellow employees in other departments."

Fourteen lectures were given on successive Monday evenings. There was an average attendance of 300, and 1,500 different men attended the meetings at one time or another. The "Talks" were printed in individual pamphlet form and copies were furnished to those employees who registered for the course.

Similar courses on somewhat different topics were conducted at several division points on the Pennsylvania System, east of Pittsburgh, and a volume has been published giving the best thoughts which were developed in all of the talks on each subject. The subjects discussed in this system course were : The General Foreman, The Shop Clerk, The District Storekeeper, The Master Mechanic, The Motive Power Clerk, The Superintendent Motive Power, The Supervisor, The M. W. Clerk, The Chief M. W. Clerk, The Road Foreman of Engines, The Yard Master, The Division Operator, The Trainmaster, The Transportation Timekeeper, The Chief Passenger Transportation Clerk, and The Claim Agent. The chairman of the educational committee of the Pennsylvania Railroad Y. M. C. A. reports that there were 86 talks in all with a total attendance of 6,123 employees.

It may be suggested that while such a course could be promoted on a large system like the Pennsylvania Railroad it could not very well be successfully adapted to the smaller associations. There are very few terminals, no matter how small, where such a course of talks could not be arranged, even if some of the speakers had to come from distant points. Most railroad managements would undoubtedly be glad to co-operate in developing such a program. Smaller associations, however, have also actually demonstrated that it is possible to secure excellent results through what is known as discussion classes or open forums. These are adapted for small groups as well as large audiences and may be led by experts or by the men themselves. Such discussion may refer to subjects closely related to railroad operation, or they may include topics of more general interest. Where possible they should be supplemented, by reading courses. This means that the libraries and reading tables must be dusted off and should be supplied with books and magazines which relate themselves to the discussion courses. It is important to emphasize the fact that the selection of books and periodicals

should be left largely to the men themselves in order that their needs may be fully met. The kind of books that the men wish to read are not always those which the "Y" secretary or a committee of officials would select.

The New York Railroad Branch has a library of 26,000 carefully selected volumes. These are used by the resident members, but possibly the best use which is made of them is the fact that families in small villages and the country districts who do not have library privileges are furnished with books which are sent out by registered train mail. Many associations could follow this same practice and serve the railroad employees and their families in small communities and isolated districts with reading matter which would be very greatly appreciated.

A number of associations have done excellent work with educational motion pictures; one association reports a freer use of the reference library as a result. One association has interested a group of men in travel talks which are given by the men themselves and are illustrated by means of a reflectoscope and postal cards which the men gathered on their travels.

Not a few associations are doing excellent work by forming glee clubs, orchestras and bands. These not only make it possible for the men to develop their musical talents but are a great aid to carrying on association programs generally.

Possibly the most spectacular piece of educational work which has been done during the past year was the St. Louis Railroad Exposition. This was made possible by the co-operation of the St. Louis Railroad Club and the R. R. Y. M. C. A. at St. Louis; it included an exhibit of railway specialties and a lively program of educational and inspirational talks extending over an entire week. This exposition was fully described in the *Railway Age* of November 5, page 794.

In many cases and in large cities the R. R. Y. M. C. A. can co-operate with the city "Y" in promoting educational work. In all cases, however, it will be possible for the railroad branches to co-operate with the correspondence courses which recently have been inaugurated under the International Committee of the Y. M. C. A.

Last, but not least, it is important that any educational program should not overlook the necessity of educating members to the policies and work which is being done by the "Y" itself; its program is so large and widespread that it demands the intelligent support of every member of the organization.

The Religious Work Program

This special report on the religious work program was prepared for the International Committee by Dean L. Brooks, general secretary, R. R. Y. M. C. A., Pittsburgh & Lake Erie, East Youngstown, Ohio.

The carrying out of a religious work program must first be actuated by an earnest desire on the part of the board of management and the secretarial force, and the program will be strong in just the proportion that the desire is strong on the part of those at the helm. Our membership readily detects insincerity and lack of interest on our part in this work. A religious work committee, when truly active, is of unestimable value.

The second step is a study of the field. It might be well to add here that there never was or never will be a railroad field in which some form of religious activity can not be carried on. Often we hear it exclaimed, "We have a peculiar field." "This thing and that thing is so entirely different from other fields. So impossible, so barren." "The men on our road are not susceptible to this sort of thing." Innumerable reasons are produced in an endeavor to prove that the absence of religious work in the field is entirely excusable. The person who makes these statements is short on either ambition or vision. Possibly both. There is not such a vast difference between the office man, the road man, and the shop man. They are all men after all.

Many mistakes are made in an endeavor to copy from the activities of another field which may differ greatly in general character, advantages, types of men, etc. This copy method frequently results in failure. The endeavor which is successful at Brownville often fails in Greenville. Rather we should "Spy out the land" carefully and prayerfully with the view of performing the service at hand regardless of whether it has the same luster and encouragement as that of the city or division point nearest us. In setting up a religious work program too many tasks should not be attempted the first year. The number of different activities should, of course, be governed by the size of the field, equipment, location, etc. In some instances a Bible class and a gospel meeting in the building is about all that can be successfully inaugurated the first year. In this case, work these two things, and work them hard. Make them strong and virile. The foundation is now laid. Build upon it the second year by adding a shop meeting, or boys' club, and so on. Above all things, avoid starting and stopping. Go through with it.

Lastly, deliver the goods. When you invite a man to a gospel meeting or Bible class, give him something. Don't fool him. Don't tell him you are to hold a religious service and then have some good brother stand before him and carefully dodge the real issue by giving a genteel talk on the virtues of the daisy. This same man will measure your religious life and the association by the type of meeting you advocate. One evening last winter Judge Anderson came to us at East Youngstown. The Judge is past the three-score-and-ten mark. His hair is long and white. His shoulders are slightly bent. A fire burned in his dark brown eyes and there was a tremor in his deep bass voice. Seventy-five men crowded into the library; it was very quiet as the Judge pointed them to the Christ. The Bread of Life was broken

THE RAILWAY Y. M. C. A. AND ITS RELATION TO DIVISION AND TERMINAL POINTS ON THE RAILROADS OF NORTH AMERICA

State	No. of divisions and terminal points	No. of railroad association points	No. of unoccupied points
Alabama	5	2	3
Arizona	7	1	6
Arkansas	15	8	7
California	22	0	22
Colorado	12	3	9
Connecticut	6	1	5
Delaware	2	0	2
District of Columbia	1	1	0
Florida	10	1	9
Georgia	11	2	9
Idaho	4	1	3
Illinois	41	20	21
Indiana	22	8	14
Iowa	16	2	14
Kansas	22	8	14
Kentucky	26	8	18
Louisiana	10	0	10
Maine	7	4	3
Maryland	5	5	0
Massachusetts	12	4	8
Michigan	15	4	11
Minnesota	12	4	8
Mississippi	17	2	15
Missouri	22	6	16
Montana	11	1	10
Nebraska	8	3	5
Nevada	13	0	13
New Hampshire	2	1	1
New Jersey	9	7	2
New Mexico	7	2	5
New York	42	35	7
North Carolina	9	3	6
North Dakota	5	0	5
Ohio	33	21	12
Oklahoma	11	3	8
Oregon	7	1	6
Pennsylvania	47	42	5
Rhode Island	1	0	1
South Carolina	5	1	4
South Dakota	12	0	12
Tennessee	19	6	13
Texas	36	11	25
Utah	7	1	6
Vermont	8	1	7
Virginia	25	13	12
Washington	11	1	10
West Virginia	21	11	10
Wisconsin	16	3	13
Wyoming	11	1	10
Canada	72	21	51
Total	770	284	486

that night. The men came; they saw and heard a Man of God. Men will always come where there is a message. Let us "deliver the goods."

A Large Field for Extension

In a discussion of a need for the expansion of the work, the data given in the table on the preceding page was presented by E. L. Hamilton, senior secretary, transportation department, Y. M. C. A., and his associate, H. O. Williams:

One of the tables shows clearly the rapid rate at which the R. R. Y. M. C. A. has grown since 1899:

GROWTH OF R. R. Y. M. C. A. SINCE 1899

	Membership	Beds	Meals, lunches served in year	No. in Bible study	Number in gymnasium classes
1899-00...	30,000	320,000	997,654	2,833	.....
1904-05...	73,000	1,100,000	2,776,201	4,183	.....
1909-10...	83,500	2,200,000	4,930,130	7,100	3,700
1914-15...	90,000	2,720,000	5,412,000	10,100	7,600
1919-20...	145,000	4,000,000	10,100,000	7,100	11,000

Tributes to George W. Stevens

The late George W. Stevens, president of the Chesapeake & Ohio, has always taken a great interest in the Railroad Y. M. C. A. and had expected to take a large part in the work of the Richmond conference. Hardly a session of the conference passed without some tribute being paid to him and on Sunday morning several hundred of the delegates marched from the convention headquarters at the Jefferson Hotel to the Hollywood Cemetery where touching services were held under the direction of Dr. John P. Munn, chairman of the Transportation Committee of the International Committee of the Y. M. C. A., and by H. O. Williams, associate senior secretary. About 25 years ago Hinton, W. Va., was one of the most difficult terminals on the Chesapeake & Ohio. In attempting to improve conditions, Mr. Stevens decided to install a Railroad Y. M. C. A. at that point. The results were so astonishing and followed so closely upon the opening of the building that Mr. Stevens gradually extended the work of the Railroad Y. M. C. A. until it covered every important point on the Chesapeake & Ohio.

Other Features of the Program

Dr. John P. Munn, who presided over the conference, stated in his opening address that the conference was being held in the interest of the 3,000,000 men who are engaged in carrying on transportation throughout the world. No other group of men, he said, had so great an opportunity to add to the wealth and power of the world. The Railroad Y. M. C. A. is primarily designed to assist these men to develop better, stronger and fitter bodies, to help to educate them to have better and finer minds, and to assist them in appropriating and feeling the spirit which Jesus Christ came into this world to give. The distinct aim of the conference was to discover how the Railroad Y. M. C. A. might do still better and more effective work.

Governor Westmoreland Davis, of Virginia, referred to his early experiences as a railroad man and stated that the Railroad Y. M. C. A. is perhaps the only organization of its kind in which the greatest railroad president and the humblest employee of the great transportation industry can meet with perfect sympathy and on perfect equality.

Matt Flanagan, master mechanic of the Chesapeake & Ohio, spoke at the opening session upon the splendid effect of the noon-day shop meetings in the Chesapeake & Ohio shops.

Those who responded to the addresses of welcome were Hugh Allan, a machinist of the Canadian National Railways at Capreol, where the Government Railways of Canada recently opened the first Railroad Y. M. C. A. on its system; F. W. Brazier, assistant to the superintendent of rolling stock, New York Central, and J. H. Banks, state Y. M. C. A. secretary of Missouri.

The keynote address, after the organization of the conference, was made by John F. Moore, associate general secretary, International Committee.

On Thursday evening the field of the transportation department was outlined by John W. Cook, general secretary, Y. M. C. A., Brooklyn; C. V. Hibbard and Dr. George S. Webster, secretary, American Seamen's Friend Society, who spoke of the work in the marine department; T. J. Wheelright, president, Virginia Railway & Power Company, who told of the Y. M. C. A. work among street railway employees; C. C. Robinson, International boys' work secretary, Y. M. C. A., who emphasized the need of work among boys in railroad communities; and F. B. Shipp, general secretary, Y. M. C. A., Pittsburgh, who told of the breadth of the Y. M. C. A. movement.

At the second day's session an address was made by Dr. M. Ashby Jones, of Atlanta. Addresses were also made on Safety First by L. J. Bentley, chief safety agent, C. & O.; Americanization by E. D. White, assistant to the general manager, Union Pacific Railway, and there were short talks on The Association—A Common Platform, by Thomas B. Morton, chairman, United Shop Crafts, Richmond; Denny Hayes, engineer, Duluth & Iron Range, Two Harbors, Minn.; Fred Hand, engineer, Canadian Pacific, Chapleau, Ont.; H. L. Hernandez, Albuquerque, N. M., and George E. Chance, vice-chairman, O. R. T., Illinois Central, Mounds, Ill. L. C. Rowlett, a fireman on the Richmond, Fredericksburg & Potomac, presided at the session on Friday evening.

On Saturday morning the seven-fold simultaneous promotion programs were considered. During the afternoon of that day an excursion was made to Newport News and Hampton Roads. In the evening "The World Outlook and Outreach for Railroad Men" was presented by Dr. John R. Mott, general secretary, International Committee, Y. M. C. A.; Prof. Moises Saenz, president of the railroad and city Y. M. C. A., Mexico City; Wilbert B. Smith, international secretary for India; S. J. Chuan, a national secretary of China, and R. L. Dilley, who told of the corner stone laying for the first Railroad Y. M. C. A. building in Europe in Czecho-Slovakia.

On Sunday afternoon a mass meeting for men was held in the City Auditorium, Fred B. Smith speaking on "Moral Robbery." During the evening members of the conference made addresses at 26 of the church services.

One important factor in helping to make the conference a big success was the Delaware, Lackawanna & Western Y. M. C. A. glee club from Scranton, Pa. The musical program also included vocal selections by Norman Call, vice-president of the R. F. & P. The secretary of the conference was R. D. Rupp, assistant chief clerk to Vice-president Elisha Lee of the Pennsylvania Railroad. He was assisted by L. S. Erickson, Y. M. C. A. secretary, Concord, N. H.

THE SHOPS, like other branches of the transportation system, were turned back to their owners in a bad state of demoralization, so that a great amount of work has been contracted for outside. It has actually been found both cheaper and quicker to reconstruct equipment in other than the railroads' own shops. Under political administration of the railroads a repair shop appears to have been a good deal of a loafing place.—*Providence Journal.*

TRAIN DESPATCHERS AS SUBORDINATE OFFICERS.—The Interstate Commerce Commission has issued a revision of its order of November 1 defining "subordinate officials" to correct a typographical error in the definition of train despatchers that are to be designated as subordinate officials. As the order now reads these are to include "chief, assistant chief, trick, relief and extra despatchers, excepting only chief despatchers, who are vested substantially with the authority of superintendent or assistant superintendent."



New Y. M. C. A. Building Erected at a Locomotive Terminal

The Locomotive Terminal As An Operating Factor*

Organization, Supervision and Management, the Three Graces of Successful Terminal Operation

By L. G. Plant
Associate Editor, *Railway Age*

ANY CONSIDERATION of the locomotive terminal as an operating factor must take into account the organization of the terminal. This is just as essential in the make-up of the terminal as the physical equipment. In fact the usefulness of this equipment depends wholly upon the extent to which its potential possibilities are developed. The most elaborate terminal equipment will be of little value to the railroad if we do not have men who know how these facilities can be used to the best advantage and who are on the ground to see that the equipment is so used. Nowhere on the railroad will the lack of organization show up more quickly than at the locomotive terminal.

Organization and Supervision

Supervision is an essential element in organization; we must not only have men who can execute repairs promptly and handle locomotives expeditiously but we must have men whose duty it is to see that these things are done. In this connection *we must clearly differentiate between mere system and organization.* What I wish to infer is that organization is more than a question of the number of supervisory officers, their titles or relative positions. It is entirely possible to have too many supervisors, as well as too few, to reach a point where the organization becomes top heavy and each man becomes a cog in the wheel rather than an individual unit. It is particularly essential in terminal operation that individual initiative be fostered and that each foreman's authority and responsibility be as broad as possible.

The roundhouse foreman's position is not an office job and unless he is a live wire who is on the job every minute of the day and has the entire situation constantly at his finger tips, we cannot expect 100 per cent service no matter how elaborate the equipment. In this fact lies the only explanation I can offer for the phenomenon which we have all witnessed wherein the results obtained in a poorly equipped enginehouse with some "boomer" foreman are found to surpass the performance of a far better equipped terminal operating under the direction of a far more elaborate complement of supervisors.

The problem of getting and holding the type of men most needed for terminal operation is a serious one. When the railroad is fortunate in finding such men it must deal wisely and liberally with them. The proper course would be to develop material from within the ranks and it is not improbable that within a short time the railroads will see the wisdom of establishing central schools in which prospective foremen can be taught the rudiments of foremanship and be carefully examined in regard to all the details with which they should be familiar.

This is by no means a radical step. Many industrial concerns have already inaugurated such steps and every important mineral state in the union has long required just such preliminary training of every mine foreman. This is primarily a safety measure but every foreman who has passed the state examinations receives a certificate which in a sense establishes him in a career of permanent usefulness to the mining industry. We are prone to accept experience as the only teacher which can qualify us for railroad service and overlook the fact, as Benjamin Franklin expressed it, that "experience keeps a dear school." In the new era of intensive railroad operation, I do not know of any one field which offers more for the improvement of transportation than the education and development of personnel along broad lines.

Locomotive Terminal Management

The problem of terminal management is very closely identified with that of organization because the strength of the organization depends greatly upon the character of the management. Constructive management can often develop ex-

* This is the concluding portion of a paper delivered before the New England Railroad Club, November 9, 1920. The preceding sections were published in the November 19, and November 26 issues of the *Railway Age.*

cellent foremen out of the most unpromising material. On the other hand poor management which may be characterized by the lack of any broad fixed policy with respect to terminal operation or organization, or failure to set any standard of achievement to which terminal forces may aspire, may deprive the railroad of some of its best talent.

It should be the policy of every railroad to establish a positive standard for every terminal and it is the duty of the mechanical officers who are responsible for terminal performance to see that these standards are lived up to. There are very few men who will not do better work and more work when it is known that this work will be subject to the most detailed scrutiny by superior officers. No matter how competent the foreman, the operation of any terminal can be improved by keeping a close check upon its performance. It is in this connection that the full value of statistical control must be appreciated. While there are no statistics which can be relied upon to take the place of a first hand knowledge relating to the condition of motive power from a maintenance standpoint, there is no question but that the operation of the average terminal can be accelerated by means of a daily operating report, without in any way impairing maintenance. In many instances a close check on the performance of the terminal has resulted in speeding up the movement of locomotives across the ash pit, which is a clear gain so far as it concerns the time available for necessary maintenance.

The value of locomotive service hours and the performance of a locomotive terminal has long been appreciated by such men as N. D. Ballentine of the Chicago, Rock Island & Pacific and it is understood that the terminal performance of locomotives was subject to close scrutiny in Germany prior to the war. The fact that figures relating to the time locomotives are in service and are held at terminals are now common to all railroads is due to the inauguration of these statistics during the period of federal control and subsequent action by the Interstate Commerce Commission requiring that the railroads continue to submit reports showing the percentage of time locomotives are in service and are held at terminals.

Statistical Control of Terminal Operation

While it cannot be denied that compilation of this data for the Operating Statistics Section of the Railroad Administration, coming at the time it did, worked a very considerable hardship on many railroads which had few facilities available for assembling this information, it must also be admitted that it has given a tremendous impetus to the statistical control of terminal operations.

Based on the most recent observation, I feel safe in saying that the step inaugurated by Prof. Cunningham during the period of federal control has worked a veritable revolution in locomotive terminal management. When we find a superintendent of motive power scanning daily a statement of the average time it took to put engines over the ash pit and the time that these engines were held in the enginehouse at each important terminal on his railroad; or when a master mechanic says that the reports he receives from all terminals under his jurisdiction have enabled him to correct a bad situation at certain outlying points; or when a roundhouse foreman who is required to make a written explanation for a delay exceeding two hours over the ash pit, or five hours in the house, admits that this has caused him to pick up many loose ends; then we must concede that such statistics are a vital element in terminal management.

The objections which some railroads have raised against continuing the compilation of important figures relating to terminal operation are not well founded. We must look forward and not backward. The aim should be to find a sensible and economical means of securing the essential facts. In some instances it may be found that the methods for compiling this data are clumsy or that the figures required from each terminal go into an absurd amount of detail. So far as compiling the figures relating to the serviceable time of locomotives as required by the Interstate Commerce Commission is concerned, I do not know of any more direct or economical means than the use of the locomotive time waybill as employed on the New York Central Lines and described in the *Railway Age* on July 30, 1920, page 190. The chief merit of the locomotive time waybill system lies in the fact that it involves only the most essential figures, that these figures originate directly at the source and must be fundamentally accurate, and that the centralized method of compilation is economical.

Timing Locomotive Movements

The locomotive time waybill is about the size of a post card and one of these cards follows the movement of every locomotive from terminal to terminal. The first entry on the waybill is made by the engine despatcher at the terminal from which the locomotive is to depart and states the time at which the locomotive is available for service. The second entry is made by the engineman and records the time that the locomotive is delivered to him. The engineman retains the card and later enters the time at which the train left the yard and subsequently the time at which the locomotive reaches the terminal at its destination. The card is held at this terminal until this same locomotive is again ready for service. The time at which the locomotive is again ready for service constitutes the final entry and is also used as an initial entry for the following card. Each succeeding card thus covers a complete cycle of locomotive events.

To insure a complete report, the cards are first delivered to a number of checkers who make sure by means of a tally sheet that an unbroken sequence of waybills is received for each locomotive in active service. Having passed through the hands of the checker the cards are all forwarded to one general office where the first operation is that of computing the elapsed time between each operation as recorded on the time waybill. This operation is accomplished by skilled computers with remarkable rapidity and when all the figures have been entered on the card, the work of summarizing these time intervals is greatly simplified by the use of mechanical tabulating machinery.

While the system as described does not segregate the important movements about the terminal there is no reason why it could not be made to do so. In fact it is conceivable that the waybill could be entrusted to hostlers and that the movement onto the ash pit and across the turntable could be recorded by suitably located time clocks. As it is, these intra-terminal movements are recorded by a clerk at each terminal on the New York Central and on many other railroads and the daily reports based upon these figures are watched with keen interest by those responsible for terminal performance.

While the efficacy of reports dealing with the movements of locomotives at the terminals as a practical means for improving terminal operation has been questioned, mechanical department officers who are critically inclined should bear in mind that the results of such reports not only indicate enginehouse detention but all terminal delays, including those that are wholly chargeable to the transportation department. It cannot be denied, moreover, that statistics of this character have served to focus attention on terminal movements and bring about improvements that might otherwise have been overlooked.

Moreover, records of terminal movements have become very useful to progressive mechanical officers in demonstrating the relative efficiency of various features of terminal equipment. They have made it possible for a mechanical superintendent to estimate with reasonable accuracy the return that can be expected from an investment in a new ash pit or a boiler

washing outfit. Statistics have served to demonstrate the extent to which use is made of the facilities available and with the assurance that existing facilities are being utilized to the utmost limit, executives have been encouraged to spend money towards improving these facilities.

There is undoubtedly a growing appreciation of the fact that the locomotive terminal is in reality an operating factor, that a block in the terminal may mean a block on the main line and that co-operation between the mechanical and operating departments must be the keynote to terminal management. Mechanical officers must realize that in their connection with the movement of locomotives through the terminal they are operating men in every sense of the word. Also operating officials should appreciate the fact that the locomotive terminal is not purely a mechanical facility identified with locomotive maintenance but a very important link in their main line.

Current Labor Conditions

It would be impossible fully to discuss locomotive terminal operation organization or management without giving more than passing consideration to the existing labor situation. Nowhere did the war work greater changes than in respect



Attractive Homes for Railroad Employees Adjacent to New Locomotive Terminal

to the relationship between employer and employee. Federal control has left many vexing problems to be solved and many trying conditions to be adjusted that vitally affect terminal performance. The only concrete suggestion that can be made relative to this situation is that mechanical officers should generally endeavor to adapt themselves to the changed conditions, rather than accept the limitations imposed.

I have in mind particularly the fact that flue blowers, engine watchmen and turntable operators are classed as labor and as such receive a lower wage than boilermakers' and machinists' helpers. These men have highly important functions to perform. Clean flues are absolutely essential to maximum locomotive capacity and efficiency. When you put a watchman on a modern locomotive remember that you are entrusting him with a $75,000 investment. The whole operation of the terminal may be slowed down unless you have a quick and intelligent turntable operator. Mechanical men must not accept the limitations imposed by this situation; they must have first class men on these jobs irrespective of the wage.

The preparatory time that is now allowed to enginemen has not proved a handicap to the operation of locomotive terminals on all railroads. While allowance by the management of more than 30 minutes' preparatory time may place an unreasonable burden on the mechanical department, this situation may be met by delivering locomotives to enginemen in a prepared condition. The practice on one important railroad is to deliver locomotives to enginemen on the train. An experienced engineman acting both as inspector and hostler places the locomotive on the train after making sure that the lubricator is filled and that the locomotive is in fit condition for the run. While it is appreciated that many railroads would prefer to have enginemen inspect and assume responsibility for the condition of their locomotive, this instance is cited as an illuminating example of the initiative that may be taken towards counteracting conditions that have been arbitrarily imposed.

We may, however, have some confidence in the fact that the railroad labor situation will tend toward improvement. A slackening in industrial activity will certainly tend to enhance the desirability of railroad jobs and consequently improve the quality and quantity of work which we may expect from the individual worker.

Terminal Welfare Work

In reviewing the equipment of a locomotive terminal it is entirely proper to include those features which tend to enhance the comfort of enginemen, particularly at outlying terminals. It is in reality as much a function of the terminal to keep the men in a fit condition for service as to maintain the locomotives in a serviceable condition. *Any terminal that does not provide clean, comfortable lodgings and good wholesome food, falls short of its real objective.* The railroad that will assign this function to a cheap news company concession is at once waiving a moral obligation and overlooking one of the very best opportunities available for improving its service.

In the execution of this function the Railroad Y. M. C. A. has a tremendous advantage because it has something more to offer than physical comfort and because its service is actuated by motives that are above material profit. There is a growing appreciation of the extent to which the Y. M. C. A. can make the terminal a truly successful operating factor but the railroads as a whole have not responded in any adequate degree to the necessity for suitable facilities for this agency.

Any discussion relating to the welfare of employees at railroad terminals would be incomplete without some reference to the operation of the Harvey houses at all important terminals on the Santa Fe. While this is simply a meal service, the basis on which it is available to employees, the splendid character of the service rendered and the clean, wholesome atmosphere of this institution, established a standard that might well be emulated by every railroad in the country. Further consideration of this interesting phase of the subject suggests a word in regard to housing conditions surrounding the locomotive terminal. One of the most pleasing features in connection with the extensive terminal development which has been referred to in this paper is the development of a very attractive suburban cottage community in the immediate vicinity of the terminal. New projects should be located, if practicable, so as to make this possible and it is not too much to say that under certain conditions the railroad should participate in the development of suitable housing conditions adjacent to the terminal.

Terminal Development Policies

In conclusion something should be said in regard to the policies that should be adopted toward locomotive terminal development. Being firmly convinced of the importance of the locomotive terminal as an operating as well as a maintenance factor on the railroads, it would appear to be the duty of every mechanical officer responsible for the performance of locomotive power to urge upon his superior officers the necessity for adequate terminal development.

It should be the policy of the railroads to maintain a proper relationship between locomotive and locomotive terminal development based on the safe assumption that the full value of

a modern locomotive can never be realized in an antiquated terminal. One railroad might be cited as having made a conspicuous success of Mallet locomotive operation over long operating divisions because the terminal facilities were equal to the burden and because the terminal organization was trained to the task. On another railroad the absolute failure of well-designed Mallet locomotives can be ascribed largely to inadequate terminal facilities and lack of terminal organization.

If the problem were always as plainly understood it would not be so difficult to develop a proper policy. As it is, terminal development calls for foresight and the most discriminating judgment. Every expenditure for terminal improvement should conform to a broad, comprehensive plan embracing ultimate terminal development so far as this can be forecast. The erection of an expensive concrete coaling station at some point where other facilities are inadequate and where terminal development along other lines must always be limited, illustrates a pitiful lack of foresight. While the locomotive terminal cannot be regarded as a suitable dumping place for worn out machine tools from larger shops, there can be little excuse for going to the other extreme and buying a wheel lathe for terminal use that will turn a pair of tires in 45 minutes when the maximum requirement at that terminal will seldom exceed one set of tires per week. Undoubtedly many projects for locomotive terminal development are discredited by just such lack of foresight, or failure on the part of mechanical officers to comprehend the purely business viewpoint that in the last analysis must dictate every good move in the conduct of our railroads.

Looking into the future, it is reasonable to predict that terminal development will undergo greater relative development than any other phase of transportation. It is of the utmost importance to railway executives and the mechanical officers that they not only have the foresight to realize the extent to which terminal equipment must be rehabilitated and the organization strengthened but the courage to command a program that will make the locomotive terminal a successful operating factor.

J. L. Eldridge, yardmaster of the New York Central at Mott Haven (New York City) and first grand vice-president of "The Railroad Yardmasters of America," has been appointed to represent that organization before the Railroad Labor Board, and has established headquarters at Chicago.

Car Loading Shows Further Decrease

Washington, D. C.

The number of cars loaded with revenue freight, as reported to the Car Service Division of the American Railway Association, showed a further decrease during the week ended November 20 to 880,528. This was a reduction of 39,000 as compared with the preceding week and 130,000 as compared with the peak week of this year, that ending October 23. It was, however, greater than the total for the corresponding week of 1919, which was 854,601, or for 1918, which was 857,377. Last year the total loading was reduced by the coal strike and in 1918 there was a reduction both on account of the influenza epidemic and on account of the general falling off of traffic after the armistice. Coal loading this year was 90,000 cars greater than for the corresponding week of 1919. The report for the week is summarized as follows:

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

Summary—All Districts, Comparison of Totals This Year, Last Year, Two Years Ago. For Week Ended Saturday, November 20, 1920.

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year 1920	Total revenue freight loaded: Corresponding year 1919	Total revenue freight loaded: Corresponding year 1918	Received from connections: This year 1920	Received from connections: Corresponding year 1919	Received from connections: Corresponding year 1918
Eastern	1920	5,611	4,088	53,935	2,395	6,590	5,266	47,518	78,825	204,228	.....	.....	230,094	.....	.....
	1919	7,429	4,341	33,075	3,517	7,644	3,522	31,773	111,179	.....	202,480	209,953	.....	227,839	238,954
Allegheny	1920	2,896	4,296	63,547	5,959	3,872	8,275	38,083	62,525	189,453	.....	.....	130,555	.....	.....
	1919	3,605	4,178	36,314	3,957	4,917	6,317	44,386	75,176	.....	178,850	192,085	.....	128,286	168,755
Pocahontas	1920	127	176	21,074	1,478	825	211	2,438	5,116	31,445	.....	.....	14,932	.....	.....
	1919	211	258	25,551	1,450	1,336	394	135	9,168	.....	38,505	37,655	.....	20,707	24,169
Southern	1920	2,643	2,466	30,586	1,251	16,527	2,804	37,339	35,599	129,215	.....	.....	66,903	.....	.....
	1919	3,398	3,276	10,998	170	18,574	2,774	19,018	59,925	.....	118,133	118,848	.....	75,426	73,984
Northwestern	1920	12,192	11,001	12,463	1,454	14,615	17,480	27,713	30,980	127,898	.....	.....	52,082	.....	.....
	1919	12,849	12,182	13,174	775	14,679	15,545	22,245	43,855	.....	135,304	122,628	.....	55,732	72,415
Central Western	1920	9,279	15,510	26,888	562	4,530	2,807	30,242	42,500	132,318	.....	.....	62,532	.....	.....
	1919	12,457	17,938	6,172	506	5,231	2,786	23,939	52,828	.....	121,857	118,153	.....	70,382	61,436
Southwestern	1920	3,694	2,890	7,829	160	7,801	166	16,589	26,842	65,971	.....	.....	48,208	.....	.....
	1919	4,521	3,873	1,510	108	7,135	323	15,116	26,886	.....	59,472	58,055	.....	50,867	45,615
Total all roads.	1920	36,442	40,427	216,322	13,259	54,760	37,009	199,922	282,387	880,528	.....	.....	605,306	.....	.....
	1919	44,470	46,046	126,794	10,483	59,516	31,663	156,612	379,017	.....	854,601	.....	.....	629,259	.....
	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	857,377	.....	.....	685,145
Increase compared	1919	.....	.....	89,528	2,776	.....	5,346	43,310	.....	25,927	.....	.....	.....	.....	.....
Decrease compared	1919	8,028	5,619	.....	.....	4,756	.....	.....	96,630	.....	.....	.....	23,953	.....	.....
Increase compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	23,151	.....	.....	.....	.....	.....
Decrease compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	79,839	.....	.....

L. C. L. merchandise loading figures for 1920 and 1919 are not comparable as some roads are not able to separate their L. C. L. freight and miscellaneous of 1919. Add merchandise and miscellaneous columns to get a fair comparison.

Freight Car Accumulations

The accumulations of revenue freight cars under load in greater number than can be handled currently had been reduced by November 19 to 28,624, which is not only a lower figure than has been reported for any week this year but is less than for any week since the United States entered the war in April, 1917, with the exception of the period from February to July, 1919, when traffic was at a very low ebb. When the delayed loads are too numerous these figures represent a measure of the congestion, but a total as low as 30,000 to 40,000 is no more than is to be expected during any season of heavy business, because the railroads naturally cannot dispose of all cars offered to them at once. A large proportion of the cars included are held awaiting vessels for export or coastwise movement. The year 1920 began with an accumulation of 74,000 cars and for the week of February 20 this had been increased to 122,000. By March 26 the number had been reduced to 84,000 but the switchmen's strike resulted in an increase to 288,000 during the week of April 16, since when, as conditions have improved and the railroads have increased their efficiency, there has been a steady reduction.

The records of freight car accumulations of the Car Service Division of the American Railway Association, which under various forms of organization has been supervising car service matters since before the United States entered the war, go back to the week ending April 13, 1917. They show that

during the entire period, with the exception of the period of depression in 1919 already referred to, there has been an abnormal amount of congestion until about the first of September this year, when the accumulations were reduced to 64,000. For the week of April 13, 1917, the number of delayed loads was 109,000. For the week of July 20 that year it was as low as 64,000 and in the week of December 14, 1917, just before the government took over the roads, it was as high as 148,000. In 1918 the peak of accumulations was reached during the period of bad weather in February, when the total reached 206,000. During the week of August 2, 1918, it was as low as 29,000, but at the end of the year it had again increased to 44,000. In May, 1919, following the depression after the armistice, the accumulation figure reached the lowest point since the records have been kept, 20,000, but from that time on it steadily increased until February 20, 1920. The improved weather conditions in March brought a reduction until the switchmen's strike caused an increase of nearly 200,000 in two weeks. The total of 288,000 on April 16 was unprecedented and it was not until July that the accumulations were reduced to below 100,000. The improvement since that time has been rapid while the volume of freight handled steadily increased until the last week of October. At that time the accumulations had been reduced to 40,000.

Cars Being Returned

Continued progress in "unscrambling" the freight cars that were pooled during federal control is shown by reports received by the Car Service Division of the American Railway Association for November 15. On that date 32.5 per cent of the freight cars were on their "home" lines, an increase of 1.2 per cent, or about 28,000 cars, since November 1. On March 1, when the railroads were returned, only about 29 per cent of the cars were at home.

Now that the car shortage is giving way to a car surplus all orders of the Car Service Division for the movement of box cars have been completed or cancelled. A circular issued to the railroads says, "it is believed that the normal return of cars to owners in the manner provided by car service rules will satisfactorily meet all current requirements.

"Present transportation conditions afford an unusual and timely opportunity to promote the movement of cars to owners, as repeatedly urged by the executives. Indications are that the present lull in demand for cars is only temporary. An increased percentage of home cars on line will permit repairs and rebuilding of equipment to meet a later increase in the demands for transportation, and it is of great importance that all roads co-operate fully to attain these results. To this end liberal and effective compliance with obligations of all to the handling of cars under the Car Service Rules is essential."

W. C. Kendall, manager of the Railroad Relations Section of the Car Service Division, has gone to Cuba, accompanied by J. P. Beckwith, vice-president of the Florida East Coast, to investigate the reasons for the failure of the Cuban lines to return promptly to the United States cars which are moved to Havana over the Florida East Coast car ferry. The Florida East Coast has been considerably handicapped by the delay in the return of these cars, of which 500 or 600 have been kept tied up in Cuba.

Because of the general easing up of the car situation, the Car Service Division is making some reduction in its force and consideration is being given to a possible reduction in the local committee organization.

The percentage of bad order freight cars, which for the month of September was 7.2, had increased by November 15 to 7.7, according to reports received by the Car Service Division. This is a total of 174,189 cars. The percentage of gondola cars in bad order was 7.7 and of box cars 7.6.

For the week ending November 22 the car surplus was almost as great as the car shortage, 32,368 as compared with 19,865 the week before. The car shortage was 30,724 as compared with 35,356 the week before. The surplus was largely in the west and included 22,000 box cars, while the shortage included 16,000 coal cars.

On November 15 the roads in the Eastern district had on their lines cars equal to 94.5 per cent of their ownership; the Allegheny district 97.2 per cent; the Pocahontas district 80.8 per cent; the Southern district 89.8 per cent; the Northwestern district 99.5 per cent; the Central Western district 97.9 per cent, and the Southwestern district 96.5 per cent.

The Car Service Division has issued the following summary of general conditions as of November 26:

Box Cars—Car supply for grain loading generally satisfactory, except for certain points in the Northwest. On practically all roads there is a sufficient supply of box cars for ordinary loading. The movement of cars to western roads on relocation orders has entirely ceased. The delivery of cars to home roads is increasing, thereby providing an opportunity for making needed repairs and getting a suitable supply of good order cars for the heavier demands that will undoubtedly follow the turn of the year.

Auto Cars—The demand for automobile cars is more than sufficient to employ the supply being made available by return to home roads. Cars should continue to be loaded to auto-manufacturing territory, but need not be moved empty except under Car Service Rules or when specifically ordered. It is important to avoid using automobile cars for cement, flour or other commodities that leave a residue in the cars that will damage the finish of automobiles when later used for that loading.

Stock Cars—Demand continues heavy at many points, and efforts must be continued to move cars to owning lines and in accordance with specific orders issued for equalization or relocation.

Refrigerator Cars—There is an unusually heavy demand and consequent general shortage of refrigerator cars, particularly pronounced in Maine and other eastern territory. Fruit and vegetables continue moving in considerable volume in the East and Middle West. Citrus fruit moving from Florida while not in same volume as during past seasons, is steadily increasing. All concerned should continue efforts to move refrigerators promptly.

Open Top Cars—In comparison with the first part of the month, the last half of November will, undoubtedly, show a slight increase in the production of bituminous coal, notwithstanding the non-productiveness of a considerable percentage of the mines on Thanksgiving Day. It is now estimated that the average weekly production for the month will hardly be below 11,700,000 tons. The coal situation has eased perceptibly during the past few weeks. On November 16th modification to Service Order 20 was made effective, releasing from preferential distribution for coal all flat bottom gondolas regardless of height. These cars are now being distributed for the transportation of commodities other than coal. This has resulted in relieving, to a considerable extent, conditions in the steel loading districts, where a large amount of mill products was stored awaiting transportation. The Interstate Commerce Commission also cancelled Service Order 21, effective November 24th, in view of the generally improved situation as regards fuel stocks at the plants of public utilities. Now that a large percentage of the open top equipment is available for distribution to commodities other than coal, such commodities are receiving greatly improved car service, and the issuance of special permits, which were formerly in effect under Service Order 20, has been entirely discontinued.

Flat Cars—Demand continues for flat cars in the Northwest territory and Southern states to protect shipments of logs and lumber. There is also a heavy demand for this type of equipment in the limestone district.

Calculating Maintenance Allowance

THE RAILROADS have been engaged for some time in developing a method for determining a just allowance for maintenance of way and structures and for maintenance of equipment during the guarantee period and a subcommittee of the Adjustment committee for the carriers has been studying this problem for some time. This committee has recently developed some forms for compiling the necessary information and formulæ for effecting a determination of the allowance which have been incorporated in a 50-page report which it has recommended to the carriers for their consideration. The conclusions of the committee are based upon some fundamental principles summarized below.

In order that the guarantee may provide for the "same relative amount, character and durability of physical reparation" as one-half that of the annual test period average, it is necessary to measure that reparation and find its cost under the conditions which obtained during the guarantee period.

Under the provisions of the standard contract the test period is assumed to be a period of normal operation. Therefore, the relations of the materials used to all other operations must be considered as a normal one, so that the materials used are a measure of the physical reparation of that period.

If during the guarantee period an allowance is to be made for one-half the average annual physical reparation of the test period, and of the same relative "character" and "durability," that allowance must provide for the use of one-half the average annual test period materials and other operations, but under the conditions during the guarantee period.

While it is, of course, realized that the proposed formulæ, as applicable to the information readily available, do not produce results which are absolutely exact from a mathematical standpoint, they do, in the opinion of this committee, provide a method of determining in a practical way an allowance for maintenance during the guarantee period which is substantially fair and just.

The main classifications covered in the analysis made by the committee for maintenance of way and structures are: Section 1. Difference in cost of material. Section 2. Difference in cost of labor. Section 3. Composite equation factor for difference in cost of labor and material to be applied to total expenses. Section 4. Maintenance allowance for test period property and use. Section 5. Difference in amount of property maintained. Section 6. Difference in use of property if substantial enough to be considered. Section 7. Summary of allowances for guarantee period.

The method for determining the difference in cost of material (Section 1.) is given below and is typical of the methods used under the different heads listed above.

(a) Net material expense, one-half annual test period average $———
(b) Salvage credit, one-half annual test period average..... $———
(c) Gross material expense, one-half annual test period average, (a) plus (b)..... $———
(d) Factor for increase in cost of material..... $———
(e) Cost of test period gross material at guarantee period prices, (c) multiplied by (d)..... $———
(f) Actual gross material expense, guarantee period..... $———
*(g) Actual salvage credit, guarantee period..... $———
(h) Ratio of salvage to gross material, guarantee period, (g) divided by (f)..... $———
(i) Proportional salvage credit, guarantee period gross material allowance, (e) multiplied by (h)..... $———
(j) Guarantee period allowance for material, (e) minus (j)..... $———

*For the purpose of this computation, arbitrary prices applied to salvaged material used by the company should be at substantially the same ratio of the price of new material during the guarantee period as the average ratio of the arbitrary price during the test period was of the average price of new material in the same period.

The summary of allowance for the guarantee as provided for in Section 7 is obtained as follows:

(a) Two-thirds of maintenance allowance for guarantee period covering difference in cost of labor and material, adjusted for difference in amount of property maintained..... $———
(b) One-third of maintenance allowance for guarantee period covering difference in cost of labor and material, adjusted for difference in use of property..... $———
(c) Allowance for fire insurance and fire losses, actual in guarantee period..... $———
Total allowance for maintenance of way and structures..... $———

Creation of National Boards of Labor Adjustment Opposed

THE CREATION of national railroad boards of labor adjustment, as advocated by railroad employees, is opposed in a resolution by the board of directors of the Chamber of Commerce of the United States, as not in the public interest.

The Transportation Act provides that the carriers and their employees may by agreement establish local, regional or national boards for settlement of all controversies, not directly involving wage disputes. Failure of the roads and their men to agree as to which of the three types should be set up has resulted in disputes remaining unsettled. The employees are united in advocacy of the creation of national boards. A majority of the carriers are for local boards.

"In the opinion of the board," says the resolution adopted, "the establishment of national adjustment boards as desired by representatives of the several organizations of the employees would tend to bring about a state of nationalization of the railroads of the United States, and eventually, to produce the same result in all industries, producing a constantly increasing cost of transportation and production, to the incalculable injury of the public at large and injuriously affecting both the employers and the employees, in the ultimate result.

"The functioning of such national boards of labor adjustment will inevitably lessen efficiency and impair the discipline necessary to the successful operation of the railways.

"Such national boards of adjustment will effectually prevent open shop operation, under which the employer and the employee may enter into and determine the conditions of employment relations with each other, and thereby impair the successful conduct and full development of the transportation systems in the first instance, and of all industrial establishments when this form of nationalization is extended to them, as will inevitably be extended in case it is established in connection with the railroad systems of the United States.

"The result of the operation of such national railroad boards of labor adjustment will make impossible intelligent and practical co-operation directly between employers and employees, based upon mutual recognition of their community of interest involved in the success of the particular railway or industrial establishment in which they are associated.

"This board is opposed to any procedure which now or hereafter will result in the establishment of national labor adjustment boards as advocated by the representatives of the several organizations of railroad employees."

A report of the chamber's railroad committee, which accompanies the resolution, points out that representatives of organized railroad employees are urging that there is power inherent in the Railroad Labor Board to create national adjustment boards, and to endow them with powers national in scope. This position is attacked by the railroad committee, which argues that failure to establish such boards by agreement renders nugatory provisions of the Transportation Act making possible their creation. So decidedly are the views of railroad officials and the representatives of organized railroad employees at variance as to the nature of the boards, there is small prospect, says the committee, of their being established by agreement.

A preamble to the resolution adopted by the board of directors says the public interest is involved in that no provision is made for public representation on the proposed adjustment boards. It points out that failure of the carriers and their employees to come to an agreement indicates that the two parties are not making every reasonable effort and are not adopting every available means to avoid interruption of the operation of the roads as was made clearly their duty under the Transportation Act.

General News Department

The San Diego & Arizona, extending from El Centro, Cal., westward, 148 miles, to San Diego, was reopened for through service on November 25 after a blockade lasting more than six months, due to landslides in Carriso Gorge.

Traffic density, as reported by the Interstate Commerce Commission, has increased since the beginning of the year 1920 as follows (net ton miles per mile of road per day): January, 4,866; February, 4,901; March, 5,432; April (strike period), 4,120; May, 5,292; June, 5,531; July, 5,657; August, 5,995.

The Pacific Railway Club, at its December meeting at the San Francisco Commercial Club, on the evening of the 7th, will consider track maintenance and the use of motor cars in track maintenance work, with papers by W. H. Kirkbride, engineer maintenance of way and structures of the Southern Pacific, and Stephen Smith, of Fairbanks, Morse & Co.

The Public Service Commission of New Hampshire, in a communication sent to the Interstate Commerce Commission, giving views on the general railroad question, as affecting New England, says that the railroads might save much by rigid economy; and, in particular, by abolishing the practice of giving free passes to employees for pleasure travel.

Nine robbers, captured by the Pennsylvania Railroad police near Metuchen, N. J., on Saturday night, November 20, stole silk said to be worth $50,000 from a freight train which had been stopped at a block signal station. One of the policemen was dangerously wounded, the robbers having been subdued only after a considerable pistol fight. The freight train was halted at a place where the line runs parallel to the highway, the robbers lying in wait with a five-ton motor truck. The policemen had been placed on the train as a special guard. The silk was recovered.

The Baltimore & Ohio, during the last four months, has specialized in unloading freight on Sunday in order to relieve the widespread congestion, and the reports for the seventeen weeks, beginning July 24 and ending November 14, show a total number of cars unloaded, on Saturdays and Sundays, of 119,232, as compared with a normal Saturday unloading of 73,601 cars. This is an increase of 45,631 cars, or 61 per cent. The heaviest two-days' record was on Saturday and Sunday, August 21 and 22, when the normal unloading being 4,401 cars, the actual number unloaded was 7,912, or an increase of 79 per cent.

Government ownership of the railroads as the best solution of the present situation was advocated by Joseph B. Eastman, of the Interstate Commerce Commission, in a speech before the Chamber of Commerce in Boston on Monday last. Mr. Eastman pictured the present situation of the railroads as "hedged in at every point by the appointees of the President of the United States," with the Interstate Commerce Commission fixing rates, controlling service, prescribing, accounting and supervising stock issues, the Railroad Labor Board fixing wages, and the Government taking profits in excess of 6 per cent. Both the danger and the attraction of railroad investments have diminished and the possibility of large speculative rewards has been all but eliminated. The crucial test of the present policy will come in securing capital.

Correction

In the table of revenues and expenses given in the *Railway Age* of November 12 the operating expenses of the Chicago & North Western for October were incorrectly given as $13,753,528. This should have been given as $12,753,528 and the operating ratio as 75.29 instead of 81.19 per cent.

Correction

In publishing the prize winning papers received in the contest on "Increasing the Average Miles per Car per Day" in the issue of November 12, page 824, the name of J. Bennett, winner of the second prize was incorrectly spelled J. Burnett. Mr. Bennett's article was entitled "Intensive Supervision Will Accomplish Results."

October Earnings Short of Expectations

The October earnings of the railroads, as indicated by the reports that had been filed with the Interstate Commerce Commission up to Wednesday of this week, failed to show as much improvement as had been expected to result from the increases in rates. Total operating revenues of 129 roads operating 151,000 miles increased only 26.4 per cent as compared with 1919, although freight traffic for the month was approximately 10 per cent heavier than in October of last year and the increase in freight rates was estimated to average nearly 35 per cent for the country as a whole and passenger rates were increased 20 per cent, except in certain states. Passenger traffic was probably somewhat less than in October, 1919. Operating expenses of these roads, however, increased 29.5 per cent and the net operating income increased only 22 per cent as compared with October last year. In the Eastern district the roads reporting showed an increase in revenues of 33 per cent, while the Southern roads showed an increase of 20 per cent and the Western lines of 21 per cent. The 129 roads showed a net operating income of $63,000,000. The large roads in October, 1919, had a net income of $76,000,000 and to attain a 6 per cent return for a year the net income for October for all the large roads should be about $112,000,000.

Freight Operating Statistics

The Interstate Commerce Commission Bureau of Statistics has issued a summary of operating statistics giving a comparison of the principal items of performance for August, 1920, with August, 1919, and also for the eight months ended with August, 1920, with the corresponding period of 1919. It is observed that during the month the Class I roads produced, in exclusive freight service, 42,656,000,000 net ton-miles, which exceeds August, 1919, by 6,240,000,000 net ton-miles and, disregarding mileage reporting, the item exceeds August, 1918, by over four billions of net ton-miles. With mileage equated the increase over August, 1918, is slightly over two billions of net ton-miles.

"Compared with the same month last year, the statement says, August, 1920, reports show a percentage increase of 17.1 per cent in net ton-miles. Train-miles increased 15.4 per cent and loaded car-miles increased 9.8 per cent. The train-load increased 1.4 per cent and the car-load increased 6.7 per cent. The per cent of loads shows a decrease of 1.6 per cent and the car-miles per car-day increased 11.8 per cent.

The net ton-miles per car-day, the resultant of the carload, per cent of loads and car-miles per car-day increased 17.1 per cent. The cost per freight train mile of locomotive repairs, enginemen, trainmen, fuel, enginehouse expense and other locomotive and train supplies shows for the total an increase of 60.4 per cent. This abnormal increase is the result of wage increases; back pay due to the retroactive feature of the United States Railroad Labor Board's decision and other adjustments for account of the guaranty period; abnormally heavy repairs to locomotives; increased cost of fuel as well as materials used in repairs and also the fact that trains in August, 1920, were operated in larger units.

"Reports show that for the eight months' period ended with August, 1920, compared with the same period in 1919, net ton-miles increased 17.0 per cent. Train miles increased 15.4 per cent

and loaded car-miles increased 14.7 per cent. The train load increased 1.4 per cent and the carload increased 1.8 per cent. The per cent of loads increased 3.4 per cent and the car miles per car-day increased 8.7 per cent. As a result of the increases shown in the car-load, per cent of loads and car-miles per car-day, the net ton-miles per car-day increased 14.6 per cent. The cost per freight train mile of selected expense accounts referred to in the comparison for the month shows for the period an increase of 20.1 per cent over same period last year.

Hearing on Security Issue

The Interstate Commerce Commission has announced a hearing at Washington on December 1 on a number of questions that have arisen in the matter of granting authority to carriers to issue securities pursuant to plans for reorganization or consolidation of the properties of common carriers as affected by Paragraph 6 of Section 5 of the Interstate Commerce Act.

The notice of the hearing says that questions have arisen, in cases not involving the consolidation of properties of carriers, as to the power and duty of the commission to authorize the issuance of securities of a total par value which would not be in excess of the total par value of outstanding securities and other obligations which it is contemplated will be funded, retired or replaced by, or upon, the issuance of the proposed securities, but which, if authorized and issued, would or might be of a total par value in excess of the total value of the property of the issuing carrier; and that questions have arisen, in cases of such proposed consolidations and in cases not involving such consolidations, as to the power and duty of the commission to authorize the issuance of securities to fund the par or other value of capital stock issued for a consideration less than its par value, discounts on funded debt, accrued interest or other fixed charges, operating losses and other items not represented by actual additions to the property, or contributions to the capital accounts of the carriers.

Copies of the order were served upon Alfred P. Thom, general counsel, Association of Railway Executives; and Bird M. Robinson, president, American Short Line Railroad Association.

Railroad Wages and Railroad Bookkeeping —Both in Need of Reform

Hon. George W. Anderson, of Massachusetts, judge in the United States District Court and former Interstate Commerce Commissioner, in a speech at Boston on Monday, last, denounced the present system of railroad wage rates as absurd and unjust, and called upon all interested to work for its correction. Speaking before a conference of commercial and railroad interests, called to take action to induce the Interstate Commerce Commission to "save the railroads and industries from ruination," threatened by the present financial condition of the roads, he condemned in strong terms "the absurd scheme of paying the same scale of wages all over the country, regardless of living conditions and of the amount of work required, to all men holding a job carrying the same name." He urged that inflexible standards of wages be abandoned, in the interests of the working men themselves, and characterized as absurd the labor unions' proposal to secure a standardization of working conditions. Labor must alter its policy in this matter, or the public must compel the Railroad Labor Board to alter it. It is a menace to the public interest.

Judge Anderson discussed the railroad problem generally, declaring that "railroading has been unbusinesslike because the bookkeeping of the railroads is the most elaborate and expensive and at the same time the most inadequate used in any great business in the world. * * * There is no real cost accounting in railroad bookkeeping. It follows that most of our railroad men don't know when they are getting a new dollar for an old one. They never will until a radical change in the bookkeeping methods under which maintenance and depreciation, including obsolescence, are charged into annual expense accounts by units. These are but illustrative defects in a system generally bad. The artificial standardization of wages, on a mere money basis, that is regardless of money purchasing power in various sections and of the quantity and quality of service required of such employees as station agents and freight handlers in large overworked sections, as compared with the necessary labor at small stations in which the business is limited to two or three hours a day, cannot be justified."

He added, that "if a remedial adjustment cannot be speedily agreed upon, the responsibility should be brought home to the National Wage Board. * * * Immediate relief from excessive and unsound taxation should at once be sought. Nothing could be more unsound than to tax railroads, which are highways, for the purpose of building granolithic roads to be torn speedily to pieces by auto trucks, many of which are carrying freight that ought to be borne on the rails."

September Earnings and Expenses

The Interstate Commerce Commission has issued the following summary of revenues and expenses for September and nine months of 1920 for 187 class I roads and 14 switching and terminal companies:

Item	September		Nine Months	
	1920	1919	1920	1919
1 Average no. of miles operated..	235,539.52	234,228.56	235,070.72	234,068.52
Revenues—	Dollars	Dollars	Dollars	Dollars
2 Freight	437,657,926	346,668,124	3,020,499,131	2,580,390,101
3 Passenger	129,438,552	110,219,099	952,636,383	888,244,654
4 Mail	7,807,732	4,276,447	124,668,818	38,914,177
5 Express	11,358,508	13,136,634	115,303,143	83,570,640
6 All other transportation	16,175,869	11,639,359	111,457,498	91,950,260
7 Incidental	13,300,791	12,263,083	109,592,008	94,228,605
8 Joint facility—Cr.	674,475	606,674	5,675,649	5,065,590
9 Joint facility—Dr.	213,057	197,503	1,672,757	1,583,882
10 Railway operating revenues	616,200,796	498,611,917	4,438,159,873	3,780,780,145
Expenses—				
11 Maintenance of way and structures	95,133,358	68,968,508	789,378,021	574,908,182
12 Maintenance of equipment	134,146,605	125,597,397	1,164,759,669	887,160,290
13 Traffic	6,397,913	4,106,386	52,428,369	34,871,635
14 Transportation	256,013,823	186,814,010	2,107,404,902	1,587,003,299
15 Miscellaneous operations	5,392,428	4,338,676	45,877,695	35,226,806
16 General	14,796,443	10,513,452	124,133,722	92,691,395
17 Transportation for investment—Cr..	397,610	434,292	3,549,047	4,485,120
18 Railway operating expenses	511,482,960	399,904,137	4,280,433,331	3,207,376,487
19 Net rev. from railway operations.	104,717,836	98,707,780	157,726,542	573,403,658
20 Railway tax accruals	23,872,276	16,878,007	204,962,901	141,290,858
21 Uncollectible railway revenues..	79,028	70,418	799,510	563,074
22 Railway operating income	80,766,532	81,759,355	d48,035,869	431,549,726
23 Equipment rents—Dr. balance....	3,516,590	2,248,875	22,933,195	15,988,714
24 Joint facility rents —Dr. balance..	1,939,631	1,861,758	16,432,986	13,216,846
25 Net of items 22, 23 and 24.....	75,310,311	77,648,722	d87,402,050	402,344,166
26 Ratio of operating expenses to operating revenues, per cent.....	83.01	80.20	96.45	84.83

Note—(a) Federal lap-over items settled during the month are included in the above compilations for those roads that have indicated that estimates were not included for substantially all unaudited corporate items.

(b) To compare the earning power of the roads in 1920 with 1919, it should be noted (1) that the effect of rate increases on interstate traffic (Ex parte 74) is only partially reflected in September revenues, as, during the early part of September, a considerable proportion of the business handled was billed in August at the old rates; (2) that the revenues of all roads for the nine months of 1920 include approximately $50,000,000 back mail pay; (3) that the corporate war taxes and organization expenses are not included in the 1919 returns; and (4) that September expenses include the current effect of the wage decision made by the United States Railroad Labor Board, as well as, in some cases, back pay resulting from said decision which was made retroactive to May 1, 1920. The amounts of back pay adjustments included in September expenses, so far as reported, are: Eastern District, $1,706,348; Pocahontas District, $139,771; Southern District, $149,897; Western District, $705,348; United States, $2,701,364.

The amount of war taxes included in September, 1920, is $3,465,271, and for period, March to September, 1920, $23,765,784.

(c) Credit. (d) Debit.

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings:

AIR BRAKE ASSOCIATION.—F. M. Nellis, Room 3014, 163 Broadway, New York City. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Fred W. Venton, 836 So. Michigan Ave., Chicago. Meeting with Air Brake Association

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Ponticus, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—S. W. Derr, Philadelphia & Reading, Philadelphia, Pa.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, Illinois Central, Chicago. Next meeting June 20, 1921.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, C. & E. I. R. R., 332 South Michigan Ave., Chicago.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next convention, August 24-26, 1921, Kansas City, Mo.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 8 W. 40th St., New York.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—C. Borcherdt, 202 North Hamlin Ave., Chicago, Ill.

AMERICAN RAILWAY ASSOCIATION.—J. E. Fairbanks, 75 Church St., New York. Next regular meeting, November, 1921.

Division 1, Operating (including former activities of Association of Railway Telegraph Superintendents).—W. J. Fripp (chairman), General Manager, N. Y. C. R. R., New York, N. Y.

Telegraph and Telephone Section.—H. Hulatt (chairman). Manager of Telegraphs, Grand Trunk. Exhibit by Railway Telegraph and Telephone Appliance Association.

Division 2, Transportation (including former activities of Association of Transportation and Car Accountng Officers).—E. J. Pearson (chairman), President, N. Y., N. H. & H. R. R., New Haven, Conn.

Division 3, Traffic.—Robert C. Wright (chairman), General Traffic Manager, P. R. R., Philadelphia, Pa.

Division 4, Engineering.—E. H. Fritch, 431 South Dearborn St., Chicago. Next annual meeting, March 15-17, 1921, Chicago.

Construction and Maintenance Section.—E. H. Fritch, secretary.

Electrical Section.—George Gibbs (chairman), Chief Engineer of Electric Traction, Long Island Railroad, New York, N. Y.

Signal Section.—H. S. Balliet, 75 Church St., New York. Next meeting, December 2-3, Hotel McAlpin, New York. Exhibit by Signal Appliance Association.

Division 5, Mechanical (including former activities of Master Car Builders' and Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chcago. Next convention June 15-22. Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association.

Equipment Painting Section.—V. R. Hawthorne, secretary.

Division 6, Purchases and Stores (including former activities of Railway Storekeepers' Association).—J. P. Murphy, General Storekeeper, N. Y. C. R. R., Collinwood, Ohio. Second annual meeting, June 20-22, 1921, Atlantic City, N. J.

Division 7, Freight Claims (including former activities of the Freight Claim Associaton).—Lews Pilcher, 431 South Dearborn St., Chicago.

Division 8, Perishable Freight.—E. F. McPike (chairman), 431 South Dearborn St., Chicago.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Austin Station, Chicago. Next convention in New York City. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railroad Association, Section II.) E. H. Fritch, 431 South Dearborn St., Chicago. Next annual meeting, March 15-17, 1921, Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railway Association, Division 5.)

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 1145 East Marquette Road, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Col. H. S. Crocker (acting secretary), Engineering Societies Building, 33 W. 39th St., New York. Annual convention, August 10-12, Multnomah Hotel, Portland, Oregon. Regular meetings, 1st and 3d Wednesday in month, except July and August, 33 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Next annual meeting, December 7-10, 1920, New York.

AMERICAN STEEL TREATERS' SOCIETY.—W. H. Eisenman, 154 East Erie St., Chicago.

AMERICAN TRAIN DESPATCHERS' ASSOCIATION.—C. L. Darling, Northern Pacific Ry., Spokane, Wash. Next convention, June 20, 1921, Kansas City, Mo.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Mt. Royal Sta., Baltimore, Md. Next annual meeting, January 25-27, 1921, San Francisco.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—Willis H. Failing, C. R. R. of N. J., Jersey City, N. J. Next meeting at St. Louis, Mo.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Exhibit by Railway Electric Supply Manufacturers' Association

ASSOCIATION OF RAILWAY EXECUTIVES.—Thomas De Witt Cuyler (chairman), 61 Broadway, New York, N. Y.

ASSOCIATION OF RAILWAY SUPPLY MEN.—C. L. Mellor, 212 W. Illinois St., Chicago. Meeting with International Railway General Foremen's Association.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railway Association, Division 1.)

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railway Association, Division 2.)

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—A. J. Filkins, Paul Dickinson Company, Chicago. Meeting with convention of American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—W. A. Booth, 131 Charron St., Montreal, Que. Next meeting, December 14.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS.—Thomas B. Koeneke, Federal Reserve Bank Bldg., St. Louis, Mo. Meetings first Tuesday in month at the American Hotel Annex, St. Louis.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 2d Thursday in November and 2d Friday in January, March, May and September, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—J. C. Keene, General Car Inspector, Wabash R. R., Decatur, Ill.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—W. P. Elliott, Terminal R. R. Ass'n. of St. L., East St Louis, Mo.

CINCINNATI RAILWAY CLUB.—H. Boutet, 101 Carew Bldg., Cincinnati, Ohio.

EASTERN RAILROAD ASSOCIATION.—D. G. Stuart, Washington, D. C.

FREIGHT CLAIM ASSOCIATION.—(See American Railway Association, Division 7.)

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Sta., Chicago. Regular meetings, Wednesday preceding 3d Friday in month, Room 856, Insurance Exchange Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 702 E. 51st St., Chicago. Next annual meeting, May, 1921, Hotel Sherman, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn. Exhibit by Association of Railway Supply Men.

MAINTENANCE OF WAY MASTER PAINTERS' ASSOCIATION.—E. E. Martin, Union Pacific R. R., Room No. 19, Union Pacific Bldg., Kansas City, Mo. Next convention October 4-6, 1921, Buffalo, N. Y.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York. Next convention, May 23-26, 1921, Planters' Hotel, St. Louis, Mo.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—(See American Railway Association, Division 5, Equipment Painting Section.)

MASTER CAR BUILDERS' ASSOCIATION.—(See American Railway Association, Division 5.)

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—E. E. Pershall, T. J. Moss Tie Company, 720 Security Bldg., St. Louis, Mo. Next annual convention, January 27-28, 1921, San Francisco.

NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York.

NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, Kelly-Derby Co., Peoples Gas Bldg., Chicago. Meeting with American Railway Engineering Association.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting months of June, July, August and September.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 30th St., New York. Annual Dinner, December 16, Hotel Commodore, New York.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meeting 2d Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Bldg., Washington, D. C. Next annual meeting, May 11, 1921, Atlantic City, N. J.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 600 Liberty Bldg., Broad and Chestnut Sts., Philadelphia, Pa.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, Americus Club House, Pittsburgh, Pa.

RAILWAY DEVELOPMENT ASSOCIATION.—D. C. Welty, Missouri Pacific R. R., Little Rock, Ark.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—D. L. Eubank, Galena Signal Oil Company, Richmond, Va. Meeting with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.

RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, C. & O. Ry., Richmond, Va.

RAILWAY SIGNAL ASSOCIATION.—(See American Railway Association, Division 4, Signal Section.)

RAILWAY STOREKEEPERS' ASSOCIATION.—(See American Railway Association, Division 6.)

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meeting with American Railway Association, Division 5.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Co., 30 Church St., New York.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Next annual convention, September 20-22, 1921, Chicago. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, Schroeder Headlight & Generator Co., New York City. Meeting with American Railway Association, Signal Section.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.

SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—C. N. Thulin, Duff Manufacturing Company, 935 Peoples Gas Bldg., Chicago.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N Y. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. R. R., Buffalo, N. Y. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN ASSOCIATION OF SHORT LINE RAILROADS.—Clarence M. Oddie, Mills Bldg., San Francisco.

WESTERN RAILWAY CLUB.—J. M. Byrne, 916 W. 78th St., Chicago. Regular meetings, 3d Monday in month, except June, July and August.

Traffic News

The Transportation Club of Louisville, Ky., will hold a dinner at the Pendennis Club on December 8.

The Traffic Club of New York held its annual meeting and dinner at the Waldorf-Astoria Hotel on November 23. The president for the ensuing year is R. J. Menzies. The next meeting of the club is to be held on Tuesday, December 28.

The Transportation Club of Peoria, Ill., will hold a dinner on December 9. The speakers will be Conrad E. Spens, vice-president of the Chicago, Burlington & Quincy, and J. H. Beek, executive secretary of the National Industrial Traffic League.

The Traffic Club of Chicago, at a business meeting on November 30, adopted a resolution protesting against any public adjustment board for hearing disputes between common carriers and their employees; and voted that copies of the resolution be sent to the presidents of the principal railroads.

So many newspapers have jumped to the conclusion that because the September earnings of the railroads were unsatisfactory the railroads were preparing to ask a further increase in rates, that President Willard of the Baltimore & Ohio has given a statement to the press explaining that the eastern railroads, at least, have no such intention. It is too early to determine the full effect of the rate increase. The thing to do is for the railroads to give the new rates a fair trial.

A practical training course in boxing and crating is being given at the Forest Products Laboratory, Madison, Wis. The object of this course is to demonstrate the principles that underlie proper box and crate construction and develop economical containers that will deliver goods to destination in a satisfatory condition at a minimum cost. The course lasts five and one-half working days. Only a limited number of men are accepted in a class, but the course will be offered as long as there is a demand for it. The next three courses are scheduled to start on January 10, March 7 and May 2, respectively.

The Commissioner of Internal Revenue has issued a revised ruling that the war tax on transportation applies to all services rendered, furnished or used in connection with the movement of persons and property by or on behalf of a carrier, including receipt, delivery, elevation, transfer and transit, ventilation, refrigeration, icing, storage, demurrage, towage, lighterage, trimming of cargo and vessels, wharfage, handling of property transported, feeding and watering livestock, and all other incidental services and facilities. In a previous ruling demurrage was not included.

The Traffic Club of Memphis, Tenn., at its annual banquet and election on November 20, elected J. M. Walsh, superintendent of the Illinois Central terminals at Memphis, president; C. F. Russell, assistant freight traffic manager of the Southern, first vice-president, and J. H. Townshend, secretary-manager of the Southern Hardwood Traffic Association, second vice-president. The directors are: J. M. Beley, A. M. Crawford, B. H. Wallace, R. E. Buchanan, J. B. McGinnis and H. W. Stigler. W. B. Ryan, assistant general freight agent of the Illinois Central, was elected treasurer, and L. E. McKnight, secretary, a position he has filled for three years. Among the speakers of the evening were Fred Collins, vice-president of the Bank of Commerce of Memphis; C. T. J. Mooney, editor of the Commercial Appeal, and A. H. Egan, general superintendent of the Yazoo & Mississippi Valley, all of Memphis.

At the annual election of officers of the Houston (Tex.), Traffic Club, J. F. Hennessy, Jr., division freight agent on the Missouri, Kansas & Texas, was elected president; I. R. Palmer, secretary and treasurer of the Trinity River Lumber Company, first vice-president; C. H. Pugh, general agent on the Missouri Pacific, second vice-president; S. J. Westheimer, president of the Westheimer Warehouse & Storage Co., third vice-president; E. L. Williams, traffic manager of the Southern Drug Company, secretary, and A. Kimbell, secretary of the Houston Drug Company, treasurer. Directors for the term expiring in 1921 are: Clint Hollady, president of the Bond & Hollady Transfer Company, and R. H. Carmichael, assistant general freight agent of the Southern Pacific. Directors for the term expiring in 1922 are: F. L. Bornefeld, city freight agent of the Atchison, Topeka & Santa Fe; E. C. Nicar, traffic manager of the Southern Motors Company, Ltd. The annual banquet of the club will be held on December 14.

The Chicago Shippers' Conference Association has been permanently organized, and it is affiliated with the Chicago Chamber of Commerce and the Illinois Manufacturers' Association. It is the purpose to consider general traffic matters of local interest to the shippers of Chicago and also to cooperate with the railroads in Chicago. The shippers' section of the Chicago Conference Switching Committee is now a part of the new association, and will act as the switching committee; the Chicago Industrial Claim Conference is also a part of this organization, and will be known as the claim committee. Other committees are to be appointed. The following officers were elected: J. J. Wait, chairman; J. A. Brough, vice-chairman; W. J. M. Lahl, secretary-treasurer. The directors are: Geo. A. Blair, J. S. Brown, Murray N. Billings, E. C. Wilmore, W. J. Womer, and C. T. Bradford. These officers and directors are to constitute the executive committee. Regular meetings are to be held on the first Tuesday of each month, except in July and August.

National Industrial Traffic League— The New Executive Committee

The names of the members of the new board of directors of the National Industrial Traffic League were given in the *Railway Age* of November 26, page 940, in connection with the report of the annual meeting of the League. The executive committee of the League, appointed by the board of directors, consists for the ensuing year of the following:

H. C. Barlow (Chairman), Association of Commerce, Chicago, Ill.
J. M. Belleville (Vice-Chairman), Pittsburgh Plate Glass Co., Pittsburgh, Pa.
W. J. L. Banham, Otis Elevator Co., New York, N. Y.
W. S. Creighton, Charlotte Shippers & Manufacturers Association, Charlotte, N. C.
R. L. French, Columbia Graphophone Mfg. Co., Bridgeport, Conn.
J. C. Graham, Jackson Chamber of Commerce, Jackson, Mich.
Carl Giessow, New Orleans Joint Traffic Bureau, New Orleans, La.
J. P. Haynes, Traffic Bureau, Chamber of Commerce, Sioux City, Ia.
F. S. Keiser, Traffic Commission of the Commercial Club of Duluth, Minn.
C. D. Mowen, Fort Smith Traffic Bureau, Ft. Smith, Ark.
H. Mueller, St. Paul Association, St. Paul, Minn.
R. W. Poteet, Stanley Works, New Britain, Conn.
Geo. P. Wilson, Chamber of Commerce, Philadelphia, Pa.
J. S. Davant, Memphis Freight Bureau, Memphis, Tenn.
C. O. Bergan, Spokane Merchants' Association, Spokane, Wash.

Hearings on Pullman Rate Increase Postponed

Further hearings on the complaint of the United Order of Commercial Travelers and other organizations of traveling men against the 20 per cent increase in Pullman fares which went into effect on May 1 will be postponed until the rates have been in effect for a full year. This was requested by attorneys representing the commercial travelers at the conclusion of a hearing before Examiner Barclay of the Interstate Commerce Commission at Washington on November 29. The rates were attacked on the ground that the Pullman Company does not need the increase and that the prices of materials which enter into its expenses are falling, but after L. S. Taylor, vice-president of the company, had presented his evidence regarding the company's expenses and revenues, showing that the latter have been materially reduced during the past three months (since the 50 per cent surcharge went into effect) it was decided to postpone the case to await more definite information as to the trend of traffic and prices. It was stated, however, that the commercial travelers' organizations propose to file shortly a complaint against all the railroads, attacking the 50 per cent surcharge on Pullman fares, which goes to the railroads. The representatives of the Pullman company said that the surcharge had considerably reduced the number of passengers using its service.

New York Fare Increases Delayed

Proposed increases in passenger fares in the State of New York, announced by several railroads last week, seem likely to be indefinitely delayed by suits for injunctions entered in the courts by state and city officers.

The decision of the Interstate Commerce Commission, authorizing the railroads of New York to advance passenger fares to 3.6 cents a mile, regardless of adverse action by the Public Service Commission or other officers of the state, required the railroads to take action on or before December 18; but the New York Central, the New York, New Haven & Hartford, the Long Island and some other roads, decided to file new tariffs to go into effect on November 29, this course being warranted by the decision of the United States Supreme Court in the case of the American Express Company versus Caldwell, 244 U. S. 617, in which it was held that the law requiring advances to be made only after 30 days' notice did not govern in cases where a carrier sought to make a change in rate in obedience to an order issued by the Interstate Commerce Commission to abate discrimination against interstate traffic.

On application made by the attorney-general of the state, the Supreme Court in Brooklyn, on November 26, issued a temporary injunction forbidding the enforcement of the higher rates on the Long Island road, and on November 29 the case was continued until December 11, the company being allowed until December 3 to submit its brief.

Proceedings concerning the rates on other roads are pending in court at Kingston, where a hearing will be held on December 4.

Anthracite Shipments Cut By Strikes

The shipments of anthracite for the first seven months of the coal year 1920-21 (April 1 to October 31), as reported to the Anthracite Bureau of Information at Philadelphia, have amounted to 39,720,654 gross tons, as compared with 41,771,313 gross tons for the same period last year. The decreased tonnage this year was, as shown in the following table, due almost entirely to the outlaw railroad switchmen's strike in April, and to the vacation strike of the miners in September. The average shipments for the five normal months were 6,262,699 tons. The shipments in April fell below this figure by 1,448,486 tons, while the loss in September, due to the vacations, was 2,669,743 tons, so that the total shipments for the period are something over 4,000,000 tons below what they would have been except for these two unauthorized interruptions to regular production.

Shipments by initial carriers were as follows:

	April	May	June	July
P. & R.	1,055,190	1,298,295	1,165,339	1,251,791
L. V.	898,929	1,130,707	1,150,977	1,217,642
C. of N. J.	305,465	483,352	525,666	536,419
D. L. & W.	545,419	844,464	891,481	908,538
D. & H.	833,254	845,033	901,325	893,358
Penna.	408,490	438,144	497,953	560,665
Erie	346,144	643,930	710,212	547,919
N. Y. O. & W.	160,306	173,913	176,604	177,427
L. & N. E.	261,014	298,040	300,400	295,341
	4,814,211	6,155,878	6,319,957	6,389,100

	August	September	October	Total 7 months
P. & R.	1,401,849	537,176	1,317,070	8,026,710
L. V.	1,159,816	534,440	1,180,270	7,272,781
C. of N. J.	510,593	348,978	486,609	3,197,082
D. L. & W.	878,222	642,016	846,054	5,556,194
D. & H.	917,579	736,160	893,058	6,019,767
Penna.	513,233	243,540	484,940	3,146,965
Erie	358,740	285,074	531,598	3,423,617
N. Y. O. & W.	177,151	149,260	190,958	1,205,619
L. & N. E.	290,470	116,310	310,344	1,871,919
	6,207,653	3,592,954	6,240,901	39,720,654

INTERSTATE VS. INTRASTATE.—There is no doubt of the power and duty of the Interstate Commerce Commission to control intrastate rates when necessary to protect interstate transportation. It is unfortunate that what seems to be such an inroad on the reserved rights of the states should have to be made by judicial construction. The action, however, was necessary. In many of the states the commissions have been petty politicians seeking to curry favor with the home vote by diverting traffic from its natural course in order to benefit state industries. The Shreveport case, in which the law was first settled by the Supreme Court of the United States, was the result of a scandalous order of the Texas Commission.—*San Francisco Chronicle.*

Commission and Court News

Interstate Commerce Commission

The commission has suspended until March 28 the operation of certain tariffs which provide for a uniform increase of 20 cents per net ton in the rates on coal, c. l., from points on the Cumberland Railroad to points on the Louisville & Nashville, and on connecting lines.

The commission has suspended until April 14 the operation of a Pennsylvania tariff which provides for the cancellation of and increase in water competitive rates on lumber, from Portsmouth and other Virginia points to Newark, Communipaw, Bridgeton and other points in New Jersey.

The Interstate Commerce Commission has suspended from December 1 to March 31 the proposed increases in demurrage rates and changes in the rules governing weather interference, bunching and the average agreement, filed by J. E. Fairbanks, as agent for the railroads.

The Commission has suspended until March 31, tariffs governing the diversion and reconsignment of fruits and vegetables and other commodities shown in tariffs of various carriers throughout the United States effective December 1, 1920, and later dates. The suspended schedules provide increased charges and restrict the number of diversions or reconsignments that may be permitted.

The Commission has suspended until April 4 the operation of certain tariffs which provide for the cancellation of joint through class and commodity rates on lumber, gravel and chatts from points in Arkansas, Colorado, Kansas, Missouri, Nebraska, New Mexico and Utah to Rosedale, Kan., and Westport, Mo., via Lenexa, Kan., in connection with the Missouri & Kansas Railway, leaving combination rates applicable instead.

Arthur S. Goodeve, a member of the Canadian Railway formal criticisms of and suggested changes in the conditions of the domestic bill of lading now in use by carriers in Official and Western classification territories, and, it appearing desirable that further hearing be held respecting the form and substance of the uniform domestic bill of lading proposed by carriers and submitted to the commission in prior proceedings, the commission has announced a hearing before Commissioner Woolley at Chicago on December 16.

Personnel of Commissions

Arthur S. Goodeve, a member of the Canadian Railway Board, died November 23 at Toronto. Mr. Goodeve was born in 1860 at Guelph, Ont., and in 1896 went to British Columbia, where he became identified with public affairs and was elected to the Dominion Parliament. In 1912 he was appointed a member of the Railway Board and served with that body until the time of his death.

Court News

Distribution of Coal Cars

A coal company sued the Southern Railway to enjoin the latter's practice, in time of car shortage, to deliver assigned cars, of whatever ownership, to mines with which the owners had contracts for coal, counting them against the quota of such mines under their respective ratings, under Interstate Commerce Act, § 1, as amended by Transportation Act, Feb. 28, 1920, and distributing commercial cars only to fill such quotas. The federal district court for the Northern District of Alabama dismissed the suit as presenting an administrative question for determination by the Interstate Commerce Commission, and not being within the jurisdiction of the federal district court.—Corma Coal Co. v. Southern, 266 Fed. 726.

Equipment and Supplies

Car Production—Ten Months' Figures

The production of freight cars for domestic service in October by the 23 car building companies reporting to the Railway Car Manufacturers Association, totaled 5,999, this making a total for the first ten months of the year of 33,584. The total for the month of October compared with a production of 3,529 for the month of September, and with a monthly average for the preceding months of about 3,000. The production of passenger cars for domestic service totaled 21, making a total for the year, up to October 31, of 129. The number of freight cars for domestic service on order and undelivered on October 31, 1920, was 46,051, as compared with 48,114 on September 30. The car repairs for October totaled 3,920, making a total for the year, to October 31, of 25,180. The number of car repairs on order at the end of October was 28,045; at the end of September it was 26,710. The figures for the month and the accumulated figures for the year are shown in the tables below. The names of the car building firms supplying the figures were given in the *Railway Age* September 24 (page 511). The figures follow:

TABLE I—CARS DELIVERED

	Freight cars		Passenger cars	
	Domestic	Foreign	Domestic	Foreign
January	4,482	1,904	1	9
February	3,774	1,039	4	..
March	2,796	1,994	11	28
April	2,127	1,912	15	..
May	2,630	1,387	..	..
June	2,608	708	..	21
July	2,583	380	18	27
August	3,056	1,184	21	13
September	3,529	1,088	38	..
October	5,999	668	21	13
	33,584	12,264	129	111

TABLE II—CARS ON ORDER AND UNDELIVERED
(Figures for end of month)

	Freight cars			Passenger cars		
	Domestic	Foreign	Total	Domestic	Foreign	Total
December, 1919	24,816	10,720	35,536	407	110	517
January, 1920	27,282	9,381	36,663	311	103	414
February	29,706	8,389	38,095	282	103	385
March	33,061	7,854	41,455	522	80	602
April	42,869	7,180	50,049	586	88	674
May	47,761	6,338	54,099	732	110	842
June	48,171	7,792	55,963	796	97	893
July	50,275	8,212	58,487	811	88	899
August	49,442	7,574	57,016	861	75	936
September	48,114	6,793	54,907	903	75	978
October	46,051	7,026	53,077	851	66	917

TABLE III—FREIGHT CAR REPAIRS

	Delivered during month	Delivered Jan. 1 to end of month	On order and undelivered at end of month
May	2,296	10,442	20,130
June	2,541	12,983	24,092
July	2,491	15,474	23,541
August	2,818	19,269	27,031
September	3,140	21,260	26,710
October	3,920	25,180	28,045

Locomotives

THE LONG ISLAND RAILROAD is inquiring for some 0-8-0 type locomotives.

THE QUEENSLAND GOVERNMENT RAILWAYS, AUSTRALIA, is inquiring, through the locomotive builders, for 54, 4-8-0 type locomotives.

Freight Cars

THE KAI-MUN TRADING COMPANY, 2 Rector street, New York, is inquiring for 200, 30-ton flat cars for export to China.

FOX BROTHERS & CO., 126 Lafayette street, New York, are inquiring for 36 narrow-gage flat cars, of 4 to 5 tons capacity, for export to Mexico.

THE NORTHERN PACIFIC, reported in the *Railway Age* of November 19 as contemplating the purchase of 1,000 freight cars, is now inquiring for 1,000, 40-ton box cars.

THE AMERICAN REFRIGERATOR TRANSIT COMPANY, St. Louis, Mo., is having repairs made to 100 refrigerator cars at the shops of the Western Steel Car & Foundry Company.

Passenger Cars

THE BESSEMER & LAKE ERIE is inquiring for 8 steel coaches, 4 baggage and 3 combination mail and baggage cars.

Iron and Steel

THE BALTIMORE & OHIO has ordered 20,000 additional tons of rails from the United States Steel Corporation.

THE CHICAGO & NORTH WESTERN has ordered 50,000 tons of rails from the United States Steel Corporation.

THE PENNSYLVANIA SYSTEM is reported to have placed an order for 150,000 tons of rails with the United States Steel Corporation, for 1921 requirements.

Trade Publications

SHEARING STRESSES IN CONCRETE BEAMS.—The Truscon Steel Company, Youngstown, Ohio, has recently issued a 12-page illustrated booklet devoted to the shearing stresses in reinforced concrete beams. The value and requirements of proper beam reinforcement and design are included, as well as data from numerous tests.

SAFETY AND EFFICIENT OPERATION OF MOTOR CARS.—The Buda Company, Harvey, Ill., has recently issued a booklet on the subject of the vital features affecting the safety and efficient operation of railway motor cars. This booklet deals with the uses and abuses of motor cars and contains hints and suggestions for insuring better methods.

GUNITE SLABS.—The Cement Gun Construction Company, Inc., Allentown, Pa., has issued a pamphlet containing 32 pages of data in the form of diagrams and tables on the design of reinforced concrete slabs made of "Gunite" concrete. This information is based on the results of the tests made under the supervision of M. O. Fuller, adjunct professor of civil engineering, Fritz Laboratory, Lehigh University.

MALLEABLE CASTINGS.—The American Malleable Castings Association has published a chart which is designed to show the present status of the malleable iron industry. The chart gives a graphical representation of the castings shipped by the member firms as compared with the capacity of the foundries. The association points out that it is expected that the tonnage of unfilled orders will be reduced in the near future and better deliveries will be made than have been possible since 1915.

PORTABLE ELECTRIC DRILLS.—The complete line of electric air compressors, portable electric drills and electric valve grinders made by the Black & Decker Manufacturing Company, Baltimore, Md., is described in Catalogue No. 2, recently issued by this company. The booklet includes descriptions of compressors of various capacities, electric drills for drilling holes up to ⅞ in. and reaming up to 7/16 in. in steel. The mechanical and electrical features of the equipment are quite fully described and the construction is shown by sectional views.

INDUSTRIAL RELATIONS WORK OF WESTINGHOUSE AIR BRAKE COMPANY.—An attractive illustrated book describing the agencies that have been established to promote the general well-being of the employees and to facilitate pleasant, harmonious industrial relations, has recently been issued by the Westinghouse Air Brake Company as publication 9044. The efforts of this company to co-operate with its employees have extended over more than a half century. At present the company has an Industrial Relationship Committee, a pension system, a relief department, a workmen's compensation fund, Y. M. C. A. and Y. W. C. A. buildings and other social activities. All these are outlined in a manner that makes the book valuable to anyone interested in the subject of relation between employer and employee.

Supply Trade News

George Baker, formerly general sales manager for the **Illinois Steel Company,** Chicago, who retired from active service about two years ago, died on November 18.

The **General Railway Devices Company** has been organized at Racine, Wis., with **W. H. Osborne** president, **John G. Osborne,** vice-president, and **W. V. Osborne** secretary and treasurer.

Edward Buker has been appointed representative of the car seat department of the Heywood Brothers & Wakefield Company, Wakefield, Mass., with office and exhibits at 1415 Michigan avenue, Chicago.

Harry U. Morton, president of the Morton Manufacturing Company, Chicago, formerly the Dunbar Manufacturing Company, change of whose name was noted in the *Railway Age* of November 26 (page 950), entered railway service with the Pullman Company in 1891. He served this company for 4 years in the manufacturing department, and 13 years in the operating department. In 1907, he was appointed vice-president and general manager of the General Railway Supply Company, and seven years later became vice-president and secretary of the Acme Supply Company, Chicago. The corporate name of this company was changed to the Dunbar Manufacturing Company in 1917, and on April 1 of that year Mr. Morton was elected president and treasurer of the company. **Charles D. Morton,** secretary and treasurer of the Morton Manufacturing Company, is the son of H. U. Morton, the president of the company. He is a graduate of the University of Wisconsin, class of 1917. He entered service with the company immediately upon receiving his discharge from the army in January, 1919.



H. U. Morton



C. D. Morton

The Toledo Crane Company, with main office and works at Bucyrus, Ohio, chartered in Ohio, with a capital of $500,000, will on January 1, 1921, succeed **The Toledo Bridge & Crane Company,** of Toledo, Ohio, as builders of Toledo cranes. The new company has bought all drawings, patterns, records, and every item pertaining to the crane business. **W. F. Billingsley,** who for the past 11 years has been active in the management of the crane department for the Toledo Bridge & Crane Company, will hold an executive position and be active in the management of the new company and will have with him intact the present crane department organization of the Toledo Bridge & Crane Company.

Railway Construction

CANADIAN NATIONAL.—This company is contemplating the erection of a 350-ton coaling station at Chaudiere Junction, Que.

CHICAGO & NORTH WESTERN.—This company has awarded a contract to Gaffin & Gehri, Fond du Lac, Wis., for the construction of an ice house of 15,000 tons capacity at Fond du Lac, to cost approximately $44,000.

CANADIAN PACIFIC.—This company plans to develop a local freight yard at Windsor, Ont., with team tracks for 320 cars and freight shed tracks for 40 cars. The contract for grading and track work for that portion of the team tracks to be installed this year has been let to A. E. Rigby, St. Catherines, Ont. Additional team tracks and the freight shed will probably be installed during 1921. The work is estimated to cost approximately $500,000.

CHICAGO, ROCK ISLAND & PACIFIC.—This company will construct an ice house, 30 by 150 ft., at Belleville, Kan., to replace a structure destroyed by fire.

CHICAGO UNION STATION.—This company, which was noted in the *Railway Age* of November 12 (page 861), as accepting bids for the construction of a tunnel under Harrison street, between Canal street and the Chicago river, has let a contract for this work to the W. J. Newman Company, Chicago.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—This company has let a contract to the Walsh Construction Company, Davenport, Ia., for the grading and to I. D. Tuttle, Springfield, Ohio, for the bridges on eight miles of second track under construction from Winchester, Ind., to Farm Land. This work will cost approximately $800,000. Fifteen miles of second track from Houston, Ohio, to Ansonia, were put into operation on November 15.

ILLINOIS CENTRAL.—This company contemplates the construction of new shops at Dubuque, Iowa. The company is also considering an extension to its present shop facilities at Waterloo, Iowa.

LOUISVILLE & NASHVILLE.—This company contemplates the construction of a 600-ton coaling and sanding station at Loyall, Ky. The structure will be of reinforced concrete and will provide facilities for coaling and sanding loomotives on four tracks.

PACIFIC GREAT EASTERN.—This company is constructing a line from Williams Lake, B. C., to Deep Creek, a distance of 16 miles. The company has recently commenced operation of its new line, 68 miles in length, extending from Lone Butte, B. C., to Williams Lake. Completion of the Williams Lake-Deep Creek line will permit the Great Eastern to commence train service from Vancouver to Deep Creek, a distance of 294 miles.

PERE MARQUETTE.—This company has awarded a contract to the Roberts & Schaefer Co., Chicago, for the construction of a sand storage and gravity drying plant at the engine terminal now under construction at Saginaw, Mich. This company is also building engine terminals at New Buffalo, Mich., and Plymouth, Mich.

ST. LOUIS-SAN FRANCISCO.—This company contemplates the construction of a second track near Afton, Okla., in the spring.

ST. LOUIS-SAN FRANCISCO.—This company, which was noted in the *Railway Age* of October 22 (page 726) as accepting bids for the construction of a one story, brick freight house at Ada, Okla., to cost approximately $50,000 has let a contract for this work to the Kelly-Atkinson Construction Company, Chicago.

VICTORIA, B. C.—This city is accepting bids for the construction of the substructure of a new railway bridge at Johnson street, Victoria. The project will involve one 110 ft. plate girder approach span, one 73 ft. plate girder approach span, and a Strauss bascule span 150 ft. long. Facilities for vehicles and pedestrians will also be provided.

Railway Financial News

Boston & Maine.—The Interstate Commerce Commission has approved a loan of $6,696,479 to this company to aid it in providing itself with locomotive equipment, and certain additions and betterments to existing equipment, and to its roadway and structures, at a total estimated cost of about $7,869,000. The company itself is required to finance about $1,212,000 to meet the loan of the government.

Canadian Northern.—A syndicate headed by Wm. A. Read & Co. have sold at 100 and interest $25,000,000 20-year 7 per cent sinking fund gold debenture bonds, dated December 1, 1920. The Dominion of Canada guarantees principal and interest by endorsement.

Carolina, Clinchfield & Ohio.—This company has applied to the Interstate Commerce Commission for authority to issue $5,000,000 of 15-year 6 per cent cumulative income debentures, the proceeds of which are to be used to pay $4,124,000 of short-term notes and such other current indebtedness as may be met by the balance.

Chesapeake & Ohio.—This company has applied to the Interstate Commerce Commission for an order authorizing the authentication and delivery of $2,699,000 of its first lien and improvement 20-year mortgage bonds, to be pledged with other securities for a loan of $3,759,000 from the United States for the purchase of equipment. The company also asked authority to issue $4,500,000 of 6½ per cent equipment trust certificates maturing annually from December 1, 1924, to December 1, 1935, which bonds have been sold to Kuhn, Loeb & Co. and the National City Company at 95, subject to the commission's approval.

Chicago & Western Indiana.—This company has applied to the Interstate Commerce Commission for authority to issue its consolidated 4 per cent mortgage bonds to the amount of $255,000 for the purpose of retiring general mortgage bonds.

Denver & Rio Grande Western.—The articles of incorporation granted this company by the state of Delaware on November 15, for the purpose of taking over the Denver & Rio Grande, were filed with the secretary of state of Colorado at Denver on November 30. Court confirmation of the sale of the Denver & Rio Grande to the Western Pacific will be given December 18.

Elgin, Joliet & Eastern.—The Interstate Commerce Commission has authorized this company to issue $1,800,000 of equipment trust bonds to be dated April 1, 1920, at 6 per cent, to be secured by an equipment trust agreement for the payment of 500 double sheathed box cars of 80,000 lb. capacity, and eight 8-wheel heavy switching engines which were allotted to the company by the director-general of railroads.

Jacksonville Terminal.—The Interstate Commerce Commission has authorized this company to issue, from time to time, during a period of not exceeding two years, promissory notes for $100,000, face amount, and $67,500, face amount, in renewal, respectively, of certain outstanding promissory notes for like amounts.

Missouri Pacific.—O. E. Robinson, special master under the final decree in the foreclosure of this company, has filed a report at St. Louis, Mo., announcing that he will make final payments December 21 to all holders of 6 per cent refunding bonds of the company.

Norfolk & Western.—The Interstate Commerce Commission has granted this company permission to purchase the Tug River & Kentucky and the Williamson & Pond Creek railroads. The first road will cost $53,744, and the second, $71,994. Both roads are subsidiaries of the Norfolk & Western.

Southern Pacific.—The plan for the segregation of this company's oil properties was announced by the board of directors on December 1 as follows:

"A new company, to be known as the Pacific Oil Company, will be organized under the laws of the State of Delaware with a capital stock to consist of 3,500,000 shares of no par value for which the Southern Pacific Company will subscribe at $15 per share, or $52,500,000. From the amount so realized the new company will purchase from the Southern Pacific Land Company, as of January 1, 1921, for $43,750,000:

"(a) About 259,000 acres of land now owned by the Southern Pacific Land Company, situated in the State of California, of which about 25,000 acres are proven oil lands and the remainder lands heretofore withdrawn from sale as possible oil lands, together with existing field improvements and materials and supplies.

"(b) 200,690 shares, par value $20,069,000, representing 50.48 per cent of the outstanding capital stock of the Associated Oil Company.

"By the sale of these properties the Southern Pacific Land Company, the entire capital stock of which is owned by the Southern Pacific Company, will thus receive $43,750,000 in cash and the Pacific Oil Company will retain $8,750,000 as working capital.

"Holders of the capital stock of the Southern Pacific Company registered as such on the books of the company at the close of business on January 14, 1921, will be given the right to purchase at $15 per share, payment to be made in full on or before March 1, 1921, one share of stock of the new company for each share of Southern Pacific Company stock so held.

"For the information of stockholders and the holders of the 5 per cent convertible bonds of the company it is proper to state that the stock of the new company is fixed at 3,500,000 shares to correspond as nearly as may be to the total number of shares of the Southern Pacific Company's stock outstanding, together with shares reserved for the conversion of these bonds.

"The stock of the Associated Oil Company is at present receiving dividends at the rate of 6 per cent per annum. The net earnings of the Southern Pacific oil properties above referred to, for the year 1920, after deduction of all taxes and proper reserves for depreciation, will approximate $12,000,000, and the earnings for the year 1921, based upon the present estimated oil production and prices, should considerably exceed this sum.

"The directors of the new Pacific Oil Company are: James S. Alexander, B. D. Caldwell, Henry W. deForest, Charles A Peabody, Samuel Rea, Mortimer L. Schiff, E. P. Swenson and Paul Shoup, president of the Associated Oil Company of California."

Tennessee Central.—Judge Sanford, in the federal court at Chattanooga, on November 27 denied the application of the Mississippi Valley Trust Company of St. Louis, trustee for the first mortgage bonds held by the Illinois Central and Southern railways, for an order of sale of this road, stating that the conditions of the market were not right for a sale at this time. The Tennessee Central was offered for sale five times during 1917, but there were no bidders and the receivership was continued under H. W. Stanley and W. K. McAlister.

Western Pacific.—This railroad corporation has increased its capital stock from $75,000,000, consisting of 275,000 shares of preferred stock and 475,000 shares of common stock to $100,000,000, consisting of 400,000 preferred shares and 600,000 shares of common stock.

Wheeling & Lake Erie.—This company has applied to the Interstate Commerce Commission for authority to issue $1,528,000 of 5 per cent refunding mortgage bonds to reimburse the treasury for expenditures and to be deposited as collateral for a loan from the United States and for a note representing the funding of its indebtedness to the government for the period of federal control, also to be pledged with the trustee of the National Railway Service Corporation's equipment trust. The company also asks authority to participate in the National Railway Service Corporation's equipment trust in the purchase of equipment amounting to $8,260,000.

The Government's Shipping Business.—Government out of its sphere is an easy boss and a liberal paymaster, but it is victimized in many ways and its achievements bear price-marks that would stagger an individual trained to his task. Business is a calling mastered in all its details by few persons and never by Government.—*N. Y. World.*

ANNUAL REPORT

St. Louis Southwestern Railway Company—Twenty-Ninth Annual Report

OFFICE OF CHAIRMAN OF THE BOARD OF DIRECTORS.

NEW YORK, July 15, 1920.

To the Stockholders:

Herewith is presented the Twenty-ninth annual report of your company, for the calendar year ended December 31, 1919.

In the report of Mr. J. M. Herbert, President, which follows, will be found Corporate financial exhibits, also exhibits furnished by the United States Railroad Administration, showing results from operation of the property.

In conformity with program previously outlined and authorized by officers of the railway company, the Director General of Railroads expended during the year 1919 for additions and betterments the sum of $1,773,348.58. The exhibit shows a net total of expenditures for Road and Equipment of $1,411,600.25 instead of $1,773,348.58, the difference of $361,748.33 representing a credit to the account covering equipment retired during the year.

No change was made in the capital stock of the Company during the year. The funded debt was decreased during the year 1919 in the sum of $301,000.00 through the payment of equipment trust obligations at maturity.

For the Board of Directors.

EDWIN GOULD, *Chairman.*

ST. LOUIS, Mo., July 1, 1920.

MR. EDWIN GOULD,
Chairman of Board of Directors,
New York, N. Y.

DEAR SIR:—

Report for the year ended December 31, 1919, is submitted herewith. All tables reflecting results of operation for the year were supplied by the United States Railroad Administration and are included in this report for the purpose of preserving the continuity of the exhibits.

During the early part of the year, the railway company became involved in a controversy with the United States Railroad Administration with respect to the proper and necessary maintenance of its property, particularly the roadway and structures, and in order that the matter may be understood by the company's stockholders, I am giving a brief résumé, as follows:

Effective with April, 1919, the regional director instructed the federal manager that expenditures for maintenance of way and structures would be limited to $2,000.00 per operated mile, and that this allowance would be retroactive to January, 1919.

Up to and including the month of March, the federal manager had not been limited to a specific allowance for maintenance of way and structures and the expenditures for the first three months of the year were on the basis of $2,857.48 per operated mile.

By making the allowance of $2,000.00 per mile retroactive to January 1, 1919, it had the effect of reducing the appropriation for maintenance by $1,143.00 per mile, or 40 per cent, since the expenditures for the first three months had been made at the rate of $2,857.48 per mile per annum, and by requiring the federal manager to make up the amount expended in excess of the rate of $2,000.00 per mile from January 1, 1919, it left for the remaining nine months, an appropriation equal to $1,714.00 per mile per annum.

This reduction was made effective at the beginning of the season most favorable for maintenance work, and instead of being reduced by 40 per cent, it should have been largely increased during the heavy maintenance season and the reduction made during the season of unfavorable working conditions.

Upon being advised of this policy, I immediately took the matter up with the director of operation, advising him that the property could not be maintained in condition for safe operation of trains at normal speed on this reduced appropriation, and that the property was in immediate need of an additional allowance to maintain it in safety. My statements were challenged by the Administration representatives having jurisdiction over the property, and after repeated demands that the Central Administration at Washington obtain first-hand information in regard to the condition and needs of the property, the director of operation sent two members of his staff to make an inspection of the road.

Accompanied by the local federal representatives, as well as representatives of the corporation, inspection party left St. Louis on June 13, and the trip terminated at Big Sandy, Texas, on June 19. In the report made to the director of operation under date of July 5, representative of the Central Administration made the following statement:

"The federal manager proceeded with the maintenance of way work in 1919 on the same program as in 1918, until approximately March 15, when he was notified to reduce the expenditure. This disarranged the season program and led to an *unbalanced* and *unwise* expenditure of the available funds prior to the reduction to the $2,000.00 a mile basis. The result of these conditions is that while on the whole the funds paid and appropriated for maintenance of way and structures to January 1, 1920, would be sufficient to maintain the property, there are certain items which will not be maintained, between now and the close of the year, in safety for the operation of trains at the usual speed by the expenditure of the unexpended balance available on May 1, 1919, on the $2,000.00 a mile basis."

The expenditures made during the first three months of 1919 were not only unbalanced and unwise, but in some respects were positively detrimental to the condition of the property, inasmuch as the track was disturbed in putting in ties at a season most unfavorable for this work and when the season was at hand when the work should have been prosecuted most vigorously, the allowance had been reduced by $1,143.00 per mile, so that sufficient funds were not available to carry on the work suitable to the season.

In summarizing his findings, the representative of the Central Administration made the following recommendation:

"It is recommended that additional amounts as follows should be expended during the remainder of 1919 to maintain the St. Louis Southwestern Railroad in safety for the operation of trains at the usual speed. *These amounts to be approved by and charged to the Corporation.*

Roadway maintenance and track laying and surfacing	$132,077.00
Bridges, Trestles and Culverts	212,633.00
Ties	70,817.00
Total additional allowance recommended to maintain the railroad in safety for normal operation	$415,527.00

I declined, on behalf of the corporation, to accept responsibility for the additional allowance recommended, for the purpose of maintaining the property in safety for the operation of trains at normal speed, until the physical condition of the roadway became so bad that I wired the director of operation under date of September 3, as follows:

"Your letter August twenty and telegram same date. In consideration of the numerous wrecks and derailments occurring on the lines of the St. Louis Southwestern Railway System, traceable to inadequate inspection and maintenance, resulting in death and injury to employes and others, I am willing in interest of safety of public and employes that four hundred fifteen thousand five hundred twenty seven dollars recommended in addition to unexpended portion of $2,000.00 per mile per annum be expended, leaving question of whether administration or corporation should be charged with above amount open for future determination, and with the proviso that work should begin immediately. Will appreciate prompt reply."

Under date of September 11, the federal manager was authorized to spend the additional amount recommended, but the benefit that would have accrued to the property had the expenditure been authorized at the proper time and judiciously spent, was in large part wasted, on account of the lapse of five and one-half months of favorable working season.

In order to confirm, through unbiased authority, my charges that the maintenance of the company's property had been neglected to the point where it had become unsafe for public use, I requested the Public Service Commission of the States of Arkansas and Texas to make an inspection of the property. Both of these bodies responded to this request, accompanied by corporate and federal representatives, stopping at numerous points and walking the track. The reports submitted as result of these inspections confirmed in practically every detail the charges which I had made.

I also employed Mr. J. W. Kendrick, an expert railroad engineer and manager, to make inspection and report on condition of the property.

Accompanied by officers of the company, as well as the federal representatives in charge of maintenance, inspection was made between September 24 and October 2, during which time many miles of track, selected at random, were walked over and the conditions noted in detail. The benefit of all this information was offered to the director general of railroads and he was furnished with copy of report made by the Railroad Commissions of Arkansas and Texas, but he chose to sustain the action of his subordinates rather than accept the findings of two unbiased bodies of men and a consulting engineer of undisputed standing and integrity.

After being convinced of the manner in which the director general of railroads construed his obligation for maintenance of the carrier's property, we declined to enter into the standard form of agreement, choosing to stand on our rights under the terms of the Federal Control Act, wherein it is required that the carrier's property shall be returned in substantially the same condition as when taken over by the Government.

Although we have not been officially advised, it developed in conference with the director of finance of the Railroad Administration that the director general has set up a charge against the railway company for alleged maintenance of its property in excess of his obligation to maintain it, based on a clause of the standard agreement providing that the expenditure of an amount equal to the average of the test period, equated to the basis of current prices, shall constitute a full compliance with the director general's obligation for maintenance, but not being party to this agreement the company does not recognize this interpretation of the law and we not only shall resist any such claim, but shall file and prosecute a claim for a substantial amount on account of improper and inadequate maintenance.

Since the separation of federal and corporate officers and employes, which became effective July 1, 1918, the railway company has maintained an efficient accounting and engineering staff who have been diligently engaged in checking and auditing each and every item of expense allocated to the corporate account in the segregation of the federal and corporate interests, as well as all charges for additions and betterments. In carrying out this work, numerous errors have been discovered and many thousands of dollars have been credited to the corporation. We have also filed claim with the Railroad Administration for $924,034.20 for overcharge on additions and betterments as result of this audit. This force is still engaged in this work and will continue as a separate organization until such time as the final status of the railway company's account with the railroad administration is determined and agreed to.

In this connection, it may not be amiss to state that the accounting organizations of railroads as a whole have been greatly demoralized by reason of the unprecedented demands made upon them during the period of federal control, and it will take much time and effort to restore the efficiency heretofore taken as a matter of course. The railway company is still required to furnish special and periodical accounting reports to the Railroad Administration, the burden of which constitutes a considerable handicap in the handling of the corporate affairs, and no compensation whatever is allowed for this service.

Respectfully submitted,

J. M. HERBERT, *President.*

CORPORATE INCOME STATEMENT—SYSTEM—YEAR ENDED DECEMBER 31, 1919.

Item.		Amount.
Standard Return:		
Tentative standard return (as certified by Interstate Commerce Commission)		$3,910,913.51
Non Operating Income:		
Income from lease of road	$4,676.67	
Miscellaneous rent income	39,475.24	
Miscellaneous non-operating physical property—profit	8,384.49	
Dividend income	44,600.00	
Interest income from funded securities	210,711.67	
Interest income from unfunded securities and accounts	62,289.43	
Miscellaneous income	289,602.16	659,739.66
Gross income		$4,570,653.17
Deductions from Gross Income:		
Maintenance of corporate organization	$164,657.79	
Railway tax accruals	72,607.43	
Rent for leased roads	283,600.00	
Miscellaneous rents	473.92	
Interest on funded debt	2,250,490.41	
Interest on unfunded debt	63,212.01	
Miscellaneous income charges	389,702.88	3,224,744.44
Income balance transferred to profit and loss		$1,345,908.73

CORPORATE PROFIT AND LOSS STATEMENT—SYSTEM—DECEMBER 31, 1919.

Item.	Amount.
Credits:	
Credit balance (at beginning of fiscal period)	$8,941,859.04
Credit balance transferred from income	1,345,908.73
Donations	424.54
Miscellaneous credits	15,571.53
Total	$10,303,763.84
Debits:	
Surplus appropriated for investment in physical property	$424.54
Loss on retired road and equipment—Road.....Cr.	8,344.69
Loss on retired road and equipment—Equipment	71,342.29
Miscellaneous debits	1,427.20
Balance, Credit, Carried to General Balance Sheet	10,238,914.50
Total	$10,3[illegible]

FEDERAL INCOME STATEMENT—SYSTEM—SHOWING RESULT OF OPERATION OF ITS PROPERTY BY THE DIRECTOR GENERAL OF RAILROADS, YEAR ENDED DECEMBER 31, 1919.

Item	Amount.
Operating Income:	
Railway operating revenues	$20,661,162.63
Railway operating expenses	18,332,583.36
Net revenue from railway operations	$2,328,579.27
Railway tax accruals	$780,574.93
Uncollectible railway revenues	4,182.07
Total	$784.757.00
Railway operating income	$1,543,822.27
Non-Operating Income:	
Hire of freight cars—Credit balance	$158,474.48
Rent from locomotives	157,245.48
Rent from passenger-train cars	2,597.16
Rent from work equipment	34,210.90
Joint facility rent income	260,710.72
Interest income from funded securities	20,106.10
Interest income from unfunded securities and accounts	7,292.52
Miscellaneous income (expense prior to January 1, 1918)	359,307.44
Total	$999,944.80
Gross income	$2,543,767.07
Deductions from Gross Income:	
Rent for locomotives	$30,083.19
Rent for passenger-train cars	3,711.56
Rent for work equipment	7,310.89
Joint facility rent deductions	546,967.07
Interest on unfunded debt	40,720.14
Miscellaneous income charges (revenue prior to January 1, 1918)	279,562.16
Total	$908,355.01
Balance of income	$1,635,412.06
Standard return	3,910,913.51
Net deficit	$2,275,501.45

A summary of the more important improvement work performed during the current year is as follows:

INDUSTRIAL TRACKS—Surveys for and estimates covering the construction of industrial tracks and applications for authorities for expenditures for their construction have been prepared. These tracks were required to take care of new business originating on the rails of this company.

PASSING AND SIDE TRACKS—A number of new passing, side and yard tracks were constructed or extended during the year in order to facilitate the movement of trains and to provide adequate storage for cars. A total of 49,467 feet of such new tracks and extensions, including industrial tracks, were constructed.

REPLACING TRESTLES WITH PERMANENT OPENINGS—Investigations were conducted, reports made and authorities for expenditure prepared for replacing a number of trestles with permanent openings, and a number of trestles were filled entirely, as it was found that they were unnecessary by reason of the diversion of water to new channels. A total of 1,092 lineal feet of trestle was filled and a total of 636 lineal feet of trestle was replaced with permanent openings.

RAIL—During the current year 31.27 track miles of 75 lb. rail was replaced with new 85 lb. rail as follows:

Between M. P. I-16.36 and M. P. I-22.54	6.18 miles
Between M. P. 268.69 and M. P. 269.53	.74 miles
Between M. P. 394.27 and M. P. 418.62	24.35 miles
Total	31.27 miles

BALLASTING—The work of ballasting with crushed rock between Malden, Missouri and Paragould, Arkansas, a distance of 45 miles, referred to in the last annual report, has been completed.

A total of 6,948 cubic yards of gravel ballast was applied during the year, between Camden, Arkansas and Genoa, Arkansas.

NEW BUILDINGS—New frame depots were erected during the year at Malden and Perkins, Missouri and Gillett, Arkansas.

ROAD IMPROVEMENT DISTRICTS AND DRAINAGE DISTRICTS—A considerable amount of work was performed in connection with making reports on road improvement districts and drainage districts, for which maps and other data had to be prepared.

HIGH WATER—There was some interference to traffic during the fall and winter months of 1919, not due, however, to high water and washouts, but to continuous rain, rendering the roadbed unsafe and causing slides in embankments and caving of the roadbed under the tracks. The average rain fall for 1919 was approximately 55 inches, which is 7 inches above the average normal annual precipitation.

EXPENDITURES FOR ROAD AND EQUIPMENT.

Item.	Amount.	Total.
Road—		
Engineering	$3,571.67	
Land for transportation purposes	235.76	
Grading	139,136.90	
Bridges, trestles and culverts	323,841.17	
Ties	61,266.04	
Rails	101,091.67	
Other track material	162,356.72	
Ballast	17,480.15	
Track laying and surfacing	76,998.78	
Right of way fences	2,888.39	
Crossings and signs	4,305.23	
Station and office buildings	55,936.05	
Roadway buildings	1,715.12	
Water stations	1,982.78	
Fuel stations	6,407.60	
Shops and enginehouses	42,565.38	
Telegraph and telephone lines	Cr. 8.64	
Signals and interlockers	287.95	
Paving	Cr. 617.95	
Roadway machines	2,334.85	
Assessments for public improvements	81,373.23	
Shop machinery	36,655.09	
	$1,121,803.94	
General Expenditures—		
Interest during construction	Cr. 3,681.56	$1,118,122.38
Analytical Summary of Foregoing Charges:		
Expenditures made by railway company (unfunded)	$1,117,697.84	
Donations made by individuals and companies (appropriated from surplus)	424.54	$1,118,122.38
Equipment—		
Equipment Other than Trust:		
Steam locomotives	$2,867.91	
Freight-train cars	644,920.39	
Passenger-train cars	265.00	
Work equipment	7,172.90	
	$655,226.20	
Retired Equipment—Cr.:		
Steam locomotives	$3,635.18	
Freight-train cars	358.509.95	
Work equipment	496.80	
	361,748.33	293,477.97
Total		$1,411,600.25

FEDERAL RAILWAY OPERATING REVENUES AND EXPENSES, NET REVENUE, UNCOLLECTIBLE RAILWAY REVENUES, CORPORATE AND FEDERAL RAILWAY TAX ACCRUALS, RATIOS AND AVERAGES PER MILE OF ROAD OPERATED—SYSTEM.

Item.	Year Ended. Dec. 31, 1919.	Dec. 31, 1918.	+Increase. —Decrease. Amount.	%
Average number of miles operated	1,754.5	1,783.4	—28.9	1.62
Operating Revenues.				
Transportation, Rail Line				
Freight revenue	$15,821,318.13	$14,365,854.49	+$1,455,463.64	10.13
Passenger revenue	$3,819,762.49	$4,235,868.58	—$416,106.09	9.82
Excess baggage revenue	21,304.98	18,167.65	+3,137.33	17.27
Parlor and chair car revenue	186.80	1,481.46	—1,294.66	87.39
Mail revenue	193,317.42	188,476.63	+4,840.79	2.57
Express revenue	448,478.42	441,193.67	+7,284.75	1.65
Other passenger-train revenue	9,046.21	25,063.34	—16,017.13	63.91
Total passenger-train revenue	$4,492,096.32	$4,910,251.33	—$418,155.01	8.52
Switching revenue	$60,370.75	$60,756.97	—$386.22	.64
Special service train revenue	10,603.17	3,226.80	+7,376.37	228.60
Other freight-train revenue	774.49	2,123.53	—1,349.04	63.53
Water transfers, passenger revenue	11,668.21	8,730.22	+2,937.99	33.65
Total other transportation revenue	$83,416.62	$74,837.52	+$8,579.10	11.46
Total transportation revenue	$20,396,831.07	$19,350,943.34	+$1,045,887.73	5.40
Incidental—				
Dining and buffet revenue	$37,012.39	$37,009.77	+$2.62	.01
Station, train and boat privileges revenue	9,618.98	9,372.73	+246.25	2.63
Storage, freight, revenue	27,259.20	10,704.91	+16,554.29	154.64
Storage, baggage, revenue	1,542.83	996.74	+546.09	54.79
Demurrage revenue	107,078.75	101,870.14	+5,208.61	5.11
Rents of buildings and other property revenue	32,237.19	29,076.14	+3,161.05	10.87
Miscellaneous revenue	15,926.86	19,890.35	—3,963.49	19.93
Total incidental revenue	$230,676.20	$208,920.78	+$21,755.42	10.41
Joint Facility—				
Joint facility revenue, Cr.	$35,493.66	$31,481.76	+$4,011.90	12.74
Joint facility revenue, Dr.	1,838.30	2,584.86	—746.56	28.88
Total joint facility revenue	$33,655.36	$28,896.90	+$4,758.46	16.47
Total operating revenues	$20,661,162.63	$19,588,761.02	+$1,072,401.61	547
Operating Expenses.				
Maintenance of way and structures	$4,127,515.65	$3,226,375.16	+$901,140.49	27.93
Maintenance of equipment	5,220,162.06	4,688,979.94	+531,182.12	11.33
Traffic expenses	314,113.78	376,206.76	—62,092.98	16.51
Transportation expenses	7,880,832.61	6,843,339.74	+1,037,492.87	15.16
Miscellaneous operations expenses	68,880.38	32,155.86	+36,724.52	114.21
General expenses	737,703.34	685,907.76	+51,795.58	7.55
Transportation for investment, Cr.	16,624.46	12,350.44	+4,274.02	34.61
Total operating expenses	$18,332,583.36	$15,840,614.78	+$2,491,968.58	15.73
Net revenue from railway operations	$2,328,579.27	$3,748,146.24	—$1,419,566.97	37.87
Railway tax accruals (corporate and federal)	$853,182.36	$822,610.29	+$30,572.07	3.72
Uncollectible railway revenues	$4,182.07	$2,303.18	+$1,878.89	81.58
Total	$857,364.43	$824,913.47	+$32,450.96	3.93
Railway operating income	$1,471,214.84	$2,923,232.77	—$1,452,017.93	49.67

Railway Officers

Executive

C. F. Dos Passos has been elected president of the Kansas, Oklahoma & Gulf, succeeding B. F. Hagerman, resigned. Mr. Dos Passos was born in New York City in 1889, and was educated at the New York University School of Law. He was admitted to the bar in 1909, and since that date has been practicing law in New York City. Mr. Dos Passos' headquarters will be at 20 Maiden Lane, New York City.

Financial, Legal and Accounting

R. Irwin, claim agent on the Coast lines of the Atchison, Topeka & Santa Fe, with headquarters at Los Angeles, Cal., has been promoted to general claim agent, with the same headquarters, effective October 1. **L. Jessen,** assistant claim agent, with headquarters at Los Angeles, has been promoted to assistant general claim agent, with the same headquarters, effective same date.

Operating

F. H. Garner has been appointed assistant superintendent of terminals on the Great Northern, with headquarters at Minneapolis, Minn., effective November 20.

E. F. Baker, inspector of agencies on the Southern, has been promoted to trainmaster on the Louisville division, with headquarters at Louisville, Ky., effective November 1.

F. E. Smith has been appointed superintendent of telegraph and telephone of the Eastern lines of the Atchison, Topeka & Santa Fe, with headquarters at Topeka, Kansas, effective November 1.

C. L. Mason, acting superintendent of the Missouri division of the Atchison, Topeka & Santa Fe, with headquarters at Marceline, Mo., has been appointed superintendent, with the same headquarters, effective November 1.

C. C. Schoulty, freight conductor on the Chicago, Indianapolis & Louisville, has been promoted to trainmaster of the Southern division, with headquarters at Bloomington, Ind., effective December 1, succeeding J. H. Cole, deceased.

J. J. McCullough has been appointed superintendent of the Puget Sound division of the Northern Pacific, with headquarters at Seattle, Washington, effective December 1, succeeding J. W. Allen, who has resumed his position as agent at Seattle.

J. A. Caviezel, whose appointment as assistant general manager of the Alabama, Tennessee & Northern was announced in the *Railway Age* of November 19 (page 905), was born at St. Joseph, Mo., August 19, 1884. He was educated at the Christian Brothers College of that city and first entered railway service in 1899 as an office boy for the St. Joseph & Grand Island. From 1900 to 1904 he served in various clerical positions in the auditor's office of the Chicago, Burlington & Quincy. In 1904 he went to Toledo, Ohio, as a clerk for the Toledo, St. Louis & Western, and in 1906 to Mobile, Ala., in the same capacity, for the Gulf, Mobile & Northern. In 1907 he became chief clerk to the auditor of the Alabama, Tennessee & Northern at Mobile, Ala. He was in the service of the Missouri & North Arkansas in a similar position at Eureka Springs, Ark., in 1908, when he was appointed general auditor of the Jonesboro, Lake City & Eastern, with which company he remained until 1912, when he was appointed auditor of the Alabama, Tennessee & Northern. In 1913 he became superintendent, and in 1915, general superintendent, the position he held at the time of his recent promotion.

Traffic

F. A. Bell has been appointed general agent of the Fort Smith & Western, with headquarters at San Francisco, Cal.

C. J. Helber has been appointed general agent of the Wabash, with headquarters at Denver, Colo., effective November 15.

William T. Price has been appointed general agent on the Union Pacific, with headquarters at Kansas City, Mo., effective November 15.

F. E. Godfrey has been appointed assistant general freight agent on the Southern, with headquarters at Cincinnati, Ohio, effective December 1.

J. P. O'Donnell has been appointed general agent on the San Antonio, Uvalde & Gulf, with headquarters at Dallas, Tex., effective November 1.

W. D. O'Brien has been appointed general agent of the Great Northern, with headquarters at St. Paul, Minn., effective November 16, succeeding P. J. Pheeney, deceased.

W. M. Wharton has been appointed commercial agent of the Southern, with headquarters at Memphis, Tenn., and **E. L. Behr** commercial agent, with headquarters at Chicago, effective November 1.

Edward Briggs, general freight agent on the Wheeling & Lake Erie, with headquarters at Cleveland, O., has been given jurisdiction over the freight traffic department, and **T. J. McRoberts,** general passenger agent, with the same headquarters, has been given jurisdiction over the passenger traffic department. The office of traffic manager has been abolished.

H. M. Spence, assistant general baggage agent on the Canadian National and Grand Trunk Pacific, with headquarters at Winnipeg, Man., has been given jurisdiction over the lines east of Lucerne, B. C. **E. McDonald,** assistant general baggage agent, with headquarters at Vancouver, B. C., has been given jurisdiction over the lines west of and including Lucerne, with additional jurisdiction over the Grand Trunk Pacific Coast Steamship Company.

Mechanical

Eugene R. Gorman, whose promotion to superintendent of motive power and machinery of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., was announced in the *Railway Age* of October 15 (page 679), was born on December 3, 1879, at Gorman Town, Minn. He entered railway service in April, 1900, as a locomotive fireman on the Chippewa Valley & Northern, a road owned and operated by the Arpin Hardwood Lumber Company, Bruce, Wis. In September, 1901, he became a locomotive fireman on the Western division of the Chicago, St. Paul, Minneapolis, & Omaha. He was promoted to engineman and transferred to the Northern division in February, 1907, but left the company's service in May, 1908, to go with the Northern Pacific, working out of Missoula, Mont. In May, 1912, Mr. Gorman was appointed traveling engineer on the Northern division of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at Spooner, Wis., and served in this position until December, 1915, when he was



E. R. Gorman

promoted to trainmaster on the same division. In May, 1917, he was made acting assistant superintendent of the Western division, with headquarters at St. James, Minn., this temporary promotion being made permanent in November, 1917. At the time of his recent promotion, Mr. Gorman was assistant superintendent of the Eastern division, with headquarters at Eau Claire, Wis., to which point he had been transferred in April, 1919.

H. G. Bonney has been appointed assistant master mechanic of the Lehigh & New England, with headquarters at Pen Argyl, Pa., succeeding N. R. Wright, resigned.

L. E. Fletcher, master mechanic on the Atchison, Topeka & Santa Fe, with headquarters at La Junta, Colo., has been promoted to superintendent of shops, with the same headquarters, effective November 1. **G. M. Lawler** succeeds Mr. Fletcher.

C. M. Harris, manager of the railroad shop section of the industrial department of the Westinghouse Electric Manufacturing Company, has been elected vice-president of the Hagerstown & Frederick, with headquarters at Hagerstown, Md.

Engineering, Maintenance of Way and Signaling

A. W. Hunter, supervisor of signals on the Pennsylvania, with headquarters at Toledo, Ohio, has been appointed supervisor of telegraph and signals, with the same headquarters, effective December 1. The office of supervisor of signals has been abolished.

J. N. Thompson, road master of the Pittsburgh, Shawmut & Northern, with headquarters at Angelica, N. Y., has been appointed superintendent, maintenance of way, with the same headquarters. **H. L. Newman** has been appointed maintenance engineer, with headquarters at Angelica, N. Y. These appointments are effective November 22.

T. J. Bivens, assistant division engineer on the Union Pacific, with headquarters at Omaha, Neb., has been promoted to division engineer, with headquarters at Marysville, Kan., succeeding **W. H. Lowther,** who has been transferred to Denver, Colo., succeeding **W. G. Tinney.** Mr. Tinney has been transferred to Cheyenne, Wyo., succeeding **A. R. Jurden,** who has been transferred to Kansas City, Mo., succeeding **S. H. Osborne.** Mr. Osborne has been transferred to Omaha. The appointments were effective November 19.

C. C. Hawken, instrumentman on the Joplin division of the Missouri Pacific, with headquarters at Joplin, Mo., has been promoted to assistant engineer, with the same headquarters, succeeding J. S. Bassett, who has been assigned to other duties. **C. P. Huffman,** instrumentman on the Eastern division, with headquarters at Sedalia, Mo., has been promoted to assistant engineer on the Omaha division, with headquarters at Falls City, Neb., succeeding R. M. Smith, who has been assigned to other duties. **G. W. Payne,** instrumentman on the Arkansas division, with headquarters at Little Rock, Ark., has been promoted to assistant engineer on the Memphis division, with headquarters at Wynne, Ark., succeeding **H. H. White.** The promotions were effective November 9.

Purchasing and Stores

G. W. Bichlmeir, purchasing agent of the Kansas City Southern, has been appointed purchasing assistant of the Union Pacific, with headquarters at Omaha, Nebr., effective November 15. Mr. Bichlmeir was born at Cincinnati, Ohio, September 10, 1886, and entered the employ of the Cincinnati, Hamilton & Dayton in 1906 as a clerk in the office of the purchasing agent. In 1909 he became a clerk in the department of Supply of the Missouri Pacific at St. Louis, Mo., and the following year was appointed chief clerk to the division storekeeper at Osawatomie, Kan., where he remained until January, 1911, when he became chief clerk to the general storekeeper of the Kansas City Southern. He remained in this position until 1917, when he resigned to engage in business. In April, 1918, he again entered the employ of the Kansas City Southern as chief clerk to the purchasing agent and in August of the same year was appointed assistant to the purchasing agent. Mr. Bichlmeir was appointed purchasing agent of the Kansas City Southern in March, 1920, and was holding that position at the time of his recent appointment.

Special

H. W. Moore and **D. H. Horning** have been appointed assistant chief surgeons of the Chicago & North Western, with headquarters at Chicago, succeeding J. D. Andrews, whose death was noted in the *Railway Age* of November 12 (page 864).

Obituary

J. J. Reynolds, consulting engineer of the Elgin, Joliet & Eastern, died of pneumonia at his home in Chicago, on November 28.

J. H. Cole, trainmaster on the Chicago, Indianapolis & Louisville, with headquarters at Bloomington, Ind., died at Bloomington on November 11, following an accident which occurred on Monday morning, November 8. Mr. Cole, while riding on an engine in the Bloomington yards, was struck by a pole along the right of way and fatally injured.

R. A. Campbell, general freight agent of the Southern, with headquarters at St. Louis, Mo., died at Glendale, Cal., on November 12. Mr. Campbell was born at Mason, Ill., on April 13, 1854, and entered railway service in 1872 as a telegraph operator on the Illinois Central at Odin, Ill. His subsequent service was with the Evansville & Terre Haute, the Chicago & Eastern Illinois and in 1891 he was promoted to general passenger agent of these roads, with headquarters at Terre Haute, Ind. In 1894 he was made general freight and passenger agent of the Louisville, Evansville & St. Louis, and in 1901 he went to the Southern as assistant general freight agent, being promoted to general freight agent in 1907, the position he occupied at the time of his death.

H. J. Small, for many years general superintendent of motive power and machinery of the Southern Pacific, died October 28 at Berkeley, Cal. Mr. Small was born at Cobourg, Ont., Nov. 15, 1849, and was educated at Toronto Normal School. He entered railway service in 1868 as a machinist on the Chicago North Western. A year later he became a draughtsman for the Kansas Pacific (now a part of the Union Pacific), which position he resigned in 1871 to become chief draughtsman for the Northern Pacific. In 1873 he went to Texas to become a general foreman on the International & Great Northern, which position he held until 1877, when he became master mechanic for the Galveston, Houston & Henderson. He left this position in 1879 to become master mechanic on the Texas & Pacific. In 1881 he was appointed superintendent of machinery of the Northern Pacific, and in 1887, assistant superintendent of motive power of the Philadelphia & Reading. Mr. Small became superintendent of motive power and machinery of the Southern Pacific in 1888, and, in 1902, was appointed general superintendent of motive power and machinery. He remained in this position until 1915, when he retired on account of ill health.



H. J. Small

EDITORIAL
Railway Age
EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

Ship Now!

THERE EXISTS in the United States at the present time a condition which has not existed for five years, except during a few months in 1919: The railroads are able to handle more freight than the shippers are offering to them. This is due to two causes; first, to the great increase in operating efficiency which has been made within the last six months, and, second, to the decline of general business activity which has occurred very recently. As a result of these developments, instead of the freight-carrying capacity of the railways being inadequate to demands, as it has been almost continually for five years, they now have surplus capacity.

Almost all the extraordinary measures which were adopted by the Interstate Commerce Commission and the railways to increase the amount of business that could be moved, such as orders giving priority to coal, regulations severely restricting the reconsigning privilege, etc., have been canceled. Not only can most shippers now get all the transportation service for which they ask, but for the first time since before this country entered the war the traffic departments of the individual railways are actively soliciting business.

There are, however, numerous convincing reasons for believing that this condition will not last long. Larger quantities of products are being held on the farms than ever before in the history of this country. They are being held for higher prices, but in any event they cannot be held long, and it will be only a few months until there will be a large increase in the movement of products from the farms.

Lumber is one of the very largest items of railroad traffic. It is moving now in small volume. All over the country, however, the stocks in the retail yards are very low, while in the Northwest and in the South the lumber manufacturers have upon hand much larger quantities of lumber ready for shipment than ever before. The retailers are waiting for lower prices, but many of them will have to begin to buy or go out of business within a short time.

The retail merchants of the country generally have been staying out of the market so long that their stocks are becoming greatly depleted. They, like the retail lumber dealers, will soon have to begin to buy or go out of business.

Vast appropriations have been made by the various state and municipal governments for the construction of new highways. Most of these are unspent. Highway engineers estimate that one hundred carloads of material have to be transported for every mile of improved roads that is built. The stocks of coal on hand are not large, and it is probable the coal traffic will continue to be heavy.

In view of the foregoing facts, and others that might be cited, it seems probable that within a few months there will be a great revival of railroad traffic. We recently have heard two leading railroad executives predict that within six months freight business will be heavier than ever. The country will then be confronted again with an acute shortage of transportation facilities. The railways have been going ahead rapidly for some months repairing locomotives and cars and rehabilitating their other facilities, and they undoubtedly can handle more business now than ever before, but the total increase in facilities has been small and the amount of increase which can be made in them during the next six months will be small. Therefore, if there shall be within a few months another great revival of traffic the capacity of the railroads will again be found unequal to the demands.

These facts argue powerfully for every individual or business concern that has freight that can be shipped now to begin shipping it. Most farmers will not take kindly to the suggestion that they send their products to market for present prices, which, considering the cost of production on the farms during the last year, undoubtedly are too low. It is desirable, however, that the farmers should at least recognize the fact that if they do not ship now they will later have the same difficulty they did a few months ago in getting freight cars. The retail lumber dealer has a right to delay buying if he wishes, but he should at least concede that if he does not buy lumber now, when the railways can furnish cars he cannot fairly blame the railroads later if they are unable to furnish cars to transport lumber which he has postponed buying.

Concerns engaged in construction activities, such as the construction of highways and the erection of buildings, have complained bitterly during the last year because the orders of the Interstate Commerce Commission giving priority to the use of open top cars for the transportation of coal interfered seriously with the construction business. There are several kinds of building materials which can be produced and transported almost as well at this time of year as when the weather is mild. We are told, for example, that cement can be piled up and protected from severe weather by a loose covering of boards. Construction activities require such a large amount of transportation that those engaged in them should spare no effort to ship within the next few months the largest volume of materials they can.

The shortages of coal in New England and the Northwest this year have caused demoralization in transportation. The coal simply had to be delivered to these territories, and its transportation interfered seriously with the movement of other commodities. These coal shortages existed chiefly because the consumers and coal dealers of New England and the Northwest did not begin early enough in 1920 to lay in the stocks of coal which they knew they would require. The nation ought not to tolerate a recurrence of the conditions, transportation and otherwise, which were created this year by the failure of New England and the Northwest to buy coal when they could get it. The consumers and dealers in those sections ought to begin making arrangements at once for getting their next year's supply of coal so that the railroads can begin to supply them early in the year 1921, while there is a surplus of railroad capacity. It may seem a harsh thing to say, but if New England and the Northwest do not take timely measures to provide themselves with an adequate coal supply next year they ought to be allowed to suffer the consequences.

The *Railway Age* tenders the slogan "Ship Now" as one which ought immediately to be adopted by the business interests and the people of the country. The only way it

can be made possible for the railways to handle anywhere near satisfactorily, with their existing facilities, the present normal commerce of the country, is for freight to be shipped in something approaching uniform volume throughout the entire year. The time is past and will not return again until there has been a great increase in railroad capacity, when the railroads can satisfactorily handle all the freight offered to them if, as was the case in past years, it is offered to them in only small volume in about eight months of the year and in very large volume in about four months of the year.

Shippers must, under present conditions, ship not just when they want to, but when they can get cars. If shippers who can now get cars do not ship now, they will have no just ground for complaint if, when a few months hence they want to ship, they are not able to get cars.

Extent of the Decline in Freight Traffic

The decline in freight traffic has become a decided reality and not merely something to be feared. The number of carloads of freight handled in the week ending November 27 was only 797,673. This compares with the maximum of 1,010,951, which was reached in the week ending October 23. In other words, the railways handled in the week ending October 23 26 per cent more freight than in the week ending November 27, which shows how much more business they could be handling under present favorable weather conditions than they actually are. In one sense, however, the figures look worse than they are. Freight traffic usually has reached its maximum in October and declined more or less rapidly after that month. The number of carloads handled in the corresponding week of 1919 was 739,197, and in the corresponding week of 1918, 735,628. The total traffic handled therefore continues to be larger than in the corresponding period of any previous year. However, the continued large movement of coal is mainly responsible for this. The fact that about 25 per cent of the capacity of the railways is not now being used is the best possible reason why shippers who can do so should "Ship Now."

Consider the Human Element

One of the aims of the ambitious maintenance of way officer is a capable and efficient force of track men, intelligently and wisely directed. This requirement naturally entails considerable study, the first step in which is to consider the character of present day track labor and what it may be composed of in the future. While many of the men employed are probably wanting in industry and general efficiency, two influences have tended to make them somewhat different from what they were in many cases five years ago—raw, green foreigners. In the absence of immigration until recently, these foreigners have had five years in which to absorb something of our language and methods of conducting work, if not as much of our ideals as we would wish. During the same time an unprecedented dearth of labor has given a great impetus to labor saving equipment. Consequently, there has been a trend toward the elimination of at least a part of the heavier manual operations and many laborers are gradually approaching the stage where they can be justly called workmen or even machine operators. As a consequence of these influences these men have enlarged their capacities for higher grade work and have taken a number of steps up in their mental attitude towards life. But only a beginning has been made. To gain the full advantages of this tendency it must be recognized that trackmen are as thoroughly human as any others in the railroad family. This vital human element, as it has been called, should be carefully taken into consideration by every ambitious officer for it is an important and powerful factor. When studied and well handled it leads to an efficiency which increases almost in proportion to the attention given it.

The Times Have Changed

For the last five years the man who supervised the work of others was confronted by one incessant source of worry—how to get enough help. Now, after a brief transition, he finds himself occupied in turning away a continual stream of applicants. To have a job now is to be considered fortunate. To hold it is worth some extra effort. Unfortunately, government control saddled all departments of the railways with a seniority system which serves to prevent the roads from deriving the full benefit from the present labor surplus. Nevertheless, the principle of seniority is not so thoroughly established in some departments, as for instance that of maintenance of way, but that the condition of the labor market will have a wholesome effect on the attitude of the men. This tendency, if properly fostered by the supervisory forces through the recognition of industry and loyalty whenever the opportunity affords, will do much towards restoring the old time railroad efficiency.

When Assigned Engines Are Economical

The pooling of locomotives is now an almost universal practice on American railroads. The sole advantage of the system lies in the fact that it increases the monthly mileage per locomotive and enables the traffic to be moved with the minimum number of engines. In periods of heavy traffic, this is doubtless more important than the lower maintenance cost and decreased fuel consumption that result from assigning the power, but is this also advisable when plenty of engines are available to handle the traffic? Certainly if a fair number of repaired engines are in storage available to meet emergencies, it is better to assign engines than to store some that have made part of their allotted mileage. The fixed charges are the same whether the engine is in service or out and depreciation due to the weather is often serious with stored engines. While the assigning of a locomotive to each crew may not be feasible under present conditions, good results are obtained where two or three crews operate the same engine. The men learn the peculiarities of the individual locomotive and they give more attention to correcting defects because they benefit by the extra care which they give to the power. At the present time when some roads are laying off crews, there is good opportunity for assigned engines. The general manager who thinks that enginemen no longer take as much interest in maintaining power in good condition as they did formerly will probably be obliged to change his opinion if he takes his locomotives out of the "chain gang."

Get Ahead of the Bad Order Cars

At the return of the railroads to private operation they were faced with a serious problem of handling an unprecedented volume of traffic with equipment which was both inadequate in quantity and poorly maintained. Plans were immediately formulated to clear up the traffic congestion. Transportation efficiency has been greatly increased, and a great deal has been accomplished in the carrying out of these plans. Congestion has been eliminated chiefly by securing better car mileage and heavier car loading. No such satisfactory results

have been achieved, however, in reducing the number of bad order cars. At the time the railroads were returned to private operation seven per cent of the freight cars of the country were in bad order and the plans formulated by the Association of Railway Executives contemplated the reduction of this excessive proportion to four per cent. The next two months showed a slight decrease but since May the percentage of bad orders has averaged over seven continually and the latest available data shows that on November 15, the number had increased to 7.7 per cent, or a total of 174,189 cars. The November figures undoubtedly reflect the effect of the drastic reductions in shop forces which were made in many cases, but while this may explain, it does not justify the continuance of the present excessive proportion of bad order cars in the face of the increased traffic demands which may have to be met at any time. Over 135,000 cars have been scrapped since March 1, while only a comparatively small number have been built, and the necessity of increasing the proportion of those available, which can be used is even greater than when the campaign of improvement was started.

Keep Up the Heavy Car Loading Habit

The loading of cars to capacity may become in large measure a matter of habit if the men on the loading platforms are properly trained and supervised. Unfortunately, the reverse is also true. Herein lies one of the dangers of a car surplus. In times of heavy traffic and consequent inadequate supply of cars, a shipper has an incentive to load cars to capacity for it is only in this way that he in common with other shippers can secure a sufficient number of cars for his needs. When business declines to the point that the car supply is equal to or greater than the requirements, as at the present time, this incentive no longer prevails and as it is usually more convenient to load cars light than heavy, the habit of light loading is readily acquired. The result is that when traffic again creates a demand for cars in excess of the supply, as many railway men believe will be the case next spring, it is some time before shippers again bring their loadings up to the maximum. It is economical for the railways to promote heavy loadings at all times. They can, therefore, well afford to keep this matter before the shippers and solicit their assistance in order that the lessons learned in recent months may not be forgotten.

Equipment Orders in November

On another page of this issue we show our usual monthly tabulations of orders for cars and locomotives. The figures cover the orders reported in the issues of the *Railway Age* in November, and are also given cumulatively for tne first eleven months of the year. They show that during November orders were placed by the Class I roads for only 39 locomotives and 2,000 freight cars and that no passenger car orders were reported. The total orders reported for the Class I roads for the eleven months included 1523 locomotives and 823 passenger cars. The freight cars ordered by Class I roads in the same period totaled 47,142; including orders placed by the smaller roads and by private car lines and industrial companies, the total of freight car orders for the eleven months was 65,070. It is evident that 1920 is going to be rated in the future as one of the poor years in the matter of new acquisitions of motive power and rolling stock for the railways. It has been many months now since the railroads have done any real buying of equipment. Their requirements along these lines—and there is no question about their being considerable—represent a big problem which the carriers still have before them.

Why the Railroads Should "Buy Now"

WE PUBLISH elsewhere in this issue an editorial presenting some reasons why shippers should ship as large amounts of commodities as they can now, while the demand for transportation is temporarily less than the amount the railways can supply. There are probably few railway officers who will not concur in the views expressed in our "Ship Now" editorial.

The fact should not, however, be overlooked that most of the arguments which can be advanced for shippers shipping now can be used with equal force in favor of railways buying normal amounts of materials and supplies now. The railways as purchasers and users of materials and supplies are shippers themselves. They are, in fact, among the very largest shippers in the country. When, therefore, they refrain from buying the quantities of materials and supplies they normally need for carrying on their business they help to produce the same transportation and general business conditions which farmers, retail lumber dealers, construction concerns and retail merchants do when they refrain from selling or buying and shipping the normal amounts of commodities.

It is not stating the case too strongly to say that in the past the railways have been among the worst disturbers of general business conditions. It is a by-word among railway equipment and supply companies that with respect to railway purchases it is always a case of either "feast or famine." It is almost literally true that the railroads all buy at once and all refrain from buying at once. Most of them buy in large amounts when their earnings are large and refrain from buying when they are small. But when their earnings are large this is always due to the fact that general business activity is great, and when general business is great the prices of equipment and materials usually are relatively high. On the other hand, when the traffic of the railways is relatively small, this is because general business is not active, and when general business is not active prices usually are relatively low. The result in the past has been that most railways have made the greater part of their purchases when prices have been high and have not taken advantage of the situation when prices have been low.

This purchasing policy of the railways has been one of the principal causes of the wide fluctuations of railroad traffic. Every order a railroad places for a ton of materials results in several tons of fuel and raw materials being transported to be used in the manufacture of the finished product which the railroad has ordered. Therefore, if the railways buy large amounts of materials when general business is active they thereby greatly increase the amount of freight they have to haul; while, if they largely reduce their purchases when general business slumps they greatly reduce the amount of freight offered to them for transportation.

It is a well-known fact that within recent weeks there has been a very sharp reduction in the amount of materials ordered by the railroads and that their purchases of most kinds are at the present time at a low ebb. One of the principal reasons for this is the great uncertainty which has been felt regarding the amount of net return the companies will earn under the new freight and passenger rates. Another important reason is that the railways have been hoping and waiting for lower prices.

These reasons for reducing purchases undoubtedly are valid, but their validity is not sufficient to justify from either the railway or the public standpoint a long continuance of the present policy. There is no good reason for believing that prices in general or the prices of the particular commodities that railways buy in large quantities are going much lower in the immediate future than they are now, or that there is going to be any permanent large reduction in them for a long time to come. The manufac-

turers of railway equipment and supplies are in very much the same situation as the railways themselves. Their labor and other costs are still on a very high basis, and it will take a long period to make any permanent large reductions in them. The railways may bring about further reductions in prices by staying out of the market, but the longer they stay out the more they will have to buy when they come back into the market, and the more they buy then the more they will stimulate the tendency of prices to advance again. Furthermore, by staying out of the market, the railways are substantially reducing the volume of freight shipped and the amount of their own freight earnings; and the longer they refrain from buying the more they will contribute towards increasing transportation congestion and shortage of cars when they go back into the market.

While, therefore, it seems sound doctrine that shippers who can do so should "ship now," when there is a surplus of transportation capacity, it seems for almost exactly the same reasons, to be sound doctrine that the railroads should "buy now" to as large an extent as they are reasonably able. There is another argument of great force in favor of the railroads buying now to as large an extent as they reasonably can. Every day that they postpone buying they are delaying the rehabilitation of their facilities which will be needed to enable them to handle the large traffic which seems certain to be offered to them within a few months.

From the standpoint of the welfare both of the railroads and the public a policy on the part of the railroads of making more uniform purchases from month to month and year to year is greatly needed. In the long run this would save the railroads themselves many millions of dollars and would exert a very beneficial influence as a stabilizer of general business. Since no ideal time for adopting such a policy will ever come, the present would seem to be as good a time as any for beginning to adopt it.

The Lehigh Valley Decision

IT IS NOTEWORTHY that despite the importance of the United States Supreme Court's adverse decision in the matter of the Lehigh Valley coal properties there was only a slight flurry in that company's stocks on the New York Stock Exchange. The decision in a measure was foreshadowed by the previous decision some time ago along somewhat similar lines in the Delaware, Lackawanna & Western case and in that relating to the Philadelphia & Reading. It is likely also that observers do not expect much change in traffic relationships through whatever plan the Lehigh Valley Railroad may adopt to divest itself of its coal properties to conform with the decision. The Lehigh Valley is, next to the Philadelphia & Reading, the largest of the anthracite coal carriers. In the seven months, April to October, 1920, there originated on its lines a total of 7,272,781 tons of coal, or about 18.3 per cent of the total of 39,720,654 tons originating on the lines of all the anthracite coal carriers. The Reading carried 8,026,710 tons. It is well known that the anthracite deposits are found in a very small area in north-eastern Pennsylvania.

The story of the anthracite coal industry is primarily a history of the manner in which the railroads serving this small area sought to control absolutely the traffic from these fields and of the efforts they made to secure control of the coal properties in their respective territories to the end that the coal produced along thir lines would be transported over their own rails. This they brought about in a number of ways, one of which was by securing stock control of the coal companies, as was done for example in the case of Coxe Brothers & Co., named as one of the defendants in the present case. The court's decision, in referring to this aspect, said that 95 per cent of the Lehigh Valley's coal tonnage was controlled by it in 1908, through its "complete dominance of the parent coal company which produced the tonnage." The anthracite carriers also secured control in one way or another of competing independent roads and in a number of cases by buying up the independent coal operators which backed such lines, they prevented the construction of new competing coal carriers from the coal fields to tidewater.

Thus we have outlined, we believe, the reason for the lack of apprehension concerning the results of the decision. The reasons for securing control of the coal properties are now in a measure a thing of the past; it is most unlikely, for example, that any new railways might be projected from the coal fields to tidewater under the present conditions of railroading. It will also be borne in mind that it is difficult to sever traffic relationships once made; it is unlikely that coal from the mining companies concerned in this case will go in the future over any other line than the Lehigh Valley, itself. Attention might also be called to the statement by President E. E. Loomis of the Lehigh Valley quoted elsewhere in this issue that the road has already made considerable changes as to its relations with its coal properties since 1914, on the evidence for which year, he contends, the court's decision is based.

Stealing From Freight Cars

ALL WHO KNOW anything about the subject agree that one of the principal causes of the very large increase in the item of loss and damage of freight which has occurred within recent years is a large increase in the amount of stealing from freight cars. They also seem to agree that most of this stealing is done by railway employees, or organized gangs working in connivance with employees. Nobody charges that many railway employees are thieves, but the facts show that there are enough thieves among them to result in a vast amount of pilferage by them. The railway companies maintain police departments whose duty is to protect their property and that of their patrons. The amount of stealing being done does not speak well for the efficiency of railway police forces, and the increase in it which occurred under government control does not indicate that under it the efficiency of the railway police was enhanced. Since so large a part of loss and damage of freight is due to stealing one of the best means the railways could adopt for reducing it would be to improve the efficiency of their police departments. There are many competent and honest men in their police departments, but on the whole the personnel is not of the highest character. There is reason to believe that a thorough investigation of the causes of pilfering would show that collusion between the police and thieves was not always lacking.

It is remarkable, and perhaps significant, that in spite of the large amount of stealing done from cars there have been very few cases of car thieves being sent to prison. One of the main reasons is that when arrests are made it is unusual for convictions to be secured. About a year ago a notorious character in a suburb of Chicago was arrested as the head of a gang of car thieves, and a large amount of goods which had been stolen from cars was found in his possession. He was arrested, but has not yet been even started towards the penitentiary. Between the laziness and incompetency of railway police, municipal authorities and federal authorities, stealing from freight cars is one of the safest and most profitable of outdoor sports. A nation-wide drive by the railways against thievery from cars in which "pitiless publicity" and more prosecutions were used would result in reductions of loss and damage of many millions of dollars a year.

Handling L. C. L. Freight in Interchange by Motor Trucks

IN OUR ISSUE of last week we referred to the possibilities of the use of motor trucks by the railways in the conduct of their routine railway operations, and pointed out several avenues for their employment. One of the applications to which we referred was in the transfer of less than carload freight in interchange between connecting roads.

Local package freight comprises over 100,000,000 tons annually, or over 4 per cent of the aggregate tonnage of the railways, although from the nature of the service the revenue received from this traffic and the cost of handling it bear a much larger ratio to the total earnings and expenses. Approximately one-half of this freight originates at a point on one road and moves to a point on another road. Such freight must be transferred by the originating road to the receiving line at a junction point at its expense, such freight frequently being interchanged several times before the shipment reaches its destination.

This interchange is now made either by movement from one freight house to another by trap cars or by trucking directly across the city.

As indicative of the magnitude of this interchange movement an exhaustive investigation of the traffic handled in Chicago a few years ago showed that over 6,500,000 tons of less than carload freight passed through the forwarding freight house in that city annually, of which about 60 per cent, or 4,000,000 tons, was received in interchange from other roads. Approximately one-half of this interchange freight, or 2,000,000 tons, was trucked across the streets from one freight house to another, while an equivalent amount, or approximately 6,500 tons daily, was moved by trap cars.

Owing to the relatively light loading of cars which package freight necessarily requires, the drain on the terminal capacity of the roads participating in this switching movement is self-evident.

One of the primary problems in almost all terminals now is that of adequate capacity. It has long been realized that the greatest deficiency in railway facilities is at the terminals and the experiences of the last three years have demonstrated repeatedly that the capacity of the roads is fixed by that of their terminals. Therefore, any means by which the present burden may be lightened makes possible a corresponding increase in the volume of other freight which can be passed through the terminals and in like manner increases the capacity of the railways as a whole. One means by which the terminal capacity may be increased is by relieving the terminals of the switching incidental to the transfer of this less than carload freight in interchange by substituting the use of motor trucks for that of cars. That this will afford no small saving is indicated by the experience at Cincinnati, where the substitution of motor trucks for trap cars in the transfer of interchange freight aggregating about 660 tons daily has released nearly 200 cars from continuous trap car service and eliminated approximately 300,000 switching cuts annually.

While the removal of this traffic from the already overtaxed rails of the terminals is the most important consideration, investigation probably will show that much if not all of this freight can also be handled by motor trucks at equal or less cost than by present methods, considering out-of-pocket or direct transportation costs only. Another important consideration is the reduction in the amount of time which will be required for such movements, the use of motor cars in Cincinnati effecting a reduction of 52 hours in the average time required for interchange. In view of these showings, the motor truck warrants careful consideration from operating officers as a facility for their use in increasing the capacity of their terminals, in reducing the cost of their less than carload interchange service and in expediting it and thereby promoting the interests of the shipper as well as their own.

New Books

The Locomotive Up to Date. By Charles McShane. Revised edition, 893 pages, illustrated, 6 in. by 9 in., bound in cloth. Published by Griffin & Winters, Chicago.

The remarkable development of the locomotive and locomotive appliances which has taken place since this well known book first appeared in 1899, made a revision imperative if it were to continue to be of current interest. This work has been performed by Charles L. McShane. The book is non-technical in character and in many respects perhaps too superficial in its treatment to be of value to any one but a novice in locomotive design, maintenance or operation. By far the greater part of the space devoted to descriptive material is taken up with locomotive specialties rather than with the construction of the locomotive itself and the revision has consisted largely in bringing these sections up to date. So many of the more recently developed locomotive appliances, some of them well established, are so lightly touched, if touched at all, that the volume can hardly be said to justify its title, even in the field to which most attention has been given.

In the revisions of those sections dealing with breakdowns and shop work no account has been taken of the requirements or effects of the Interstate Commerce Commission locomotive inspection rules and the revision has failed to disguise the fact that these sections are most directly applicable to the motive power of 20 years ago. Over one-third of the volume is devoted to valves and valve motions and the sections dealing with these subjects are the most thorough and complete of any in the book. The fundamentals of valve motion and the determination of valve proportions and vents have been thoroughly handled in so simple a manner that they may readily be comprehended by the novice while still offering much of interest to those of greater experience. All of the valve motions now used in locomotive service are described and instructions for valve setting are given in each case.

Explanation of Train Rules and Train Orders by O. W. Brandt, Train Rule Examiner, Union Pacific, Kansas City, Mo. 169 pages, 4¼ in. x 6¾ in. Bound in Leather. Published by the Author.

This book was prepared with the idea of making clear every rule pertaining to the duties of employees in train, engine or telegraph service and to be of help to those who want to be right or who are preparing for promotion. No book published along general lines can be taken as authority on any one railroad as they apply to all in a general way. This book covers the operating rules of the Union Pacific, St. Joseph & Grand Island, Oregon Short Line and Los Angeles & Salt Lake and is applicable to all using these tracks. It is based on instructions given by examiners when instructing or examining firemen, brakemen, engineers, conductors, operators and train despatchers. The book covers rules relative to train movements and the handling of train orders by telegraph or telephone including 35 pages of explanation of change of time table (Rule 4) with 12 examples and 56 train order examples with explanations.

Fifty questions on change of time table and 127 questions on train order examples are also contained in the pages of the book.

Letters to the Editor

To Perfect the Train-Staff System.

CHICAGO.

TO THE EDITOR:

The letter of your correspondent, R. Diefendorf (July 9, page 51), who proposes the more general use of the train staff in this country, suggests some interesting speculations. I understand that the Union and the General signal companies have both ceased pushing the staff apparatus; and it may be that they, and some railway officers, think that the staff is out of date; but it is well not to be too sure.

The length of railroad in the United States operated under the electric train staff system is not inconsiderable; it is, according to the government statistical report, no less than 461 miles. The train staff is recognized as the safest method of operating the block system, and under some conditions it is the cheapest (except the simple telegraph block, with no mechanical check); so that the fact that it is in rather limited use cannot be taken as evidence that the principle lacks merit.

The collisions or hazards of collisions which have been reported in connection with staff working have all been due to flagrant disregard of rules; and one may almost certainly predict that the only remedial measures likely to be taken, when such hazards occur, to prevent their recurrence, will be to reissue or stiffen the rules. Stiffening of the rules is proper, of course. And, as in other things in which we depend for safety on the unaided and uncensored mind and conscience of the engineman, surprise checking is also useful and desirable. But there is one element of safety that used to be found in the old English staff system (not electrically controlled) which in this country, usually, is omitted; namely, the loop tracks at the stations. With a loop of adequate length, the rules can be made more simple, and the temptation to break them is largely done away with. With no loop; with Staff A-B to be delivered and Staff B-C to be picked up, at the same station, or booth or staff crane; and in the absence of supervision by a critical and persistent inspector the system can never be at its best, and its acknowledged merits are likely to go unappreciated.

With complete installation of distant signals and track circuits such as are in use on the Great Northern (79 miles of road) the layout provides the fundamental elements of safety. The provision of pouches (which must be used), made of such sizes or shapes that they cannot be used for the wrong staff, and the slot in the pouch for rendering the staff always visible, are useful additional precautions.

With loop tracks of adequate length, all four leads to and from the single-track fitted for full speeds—or, say, 40 miles an hour—and suitable staff cranes, eastbound and westbound, separated one from the other and not on the same side of the road, the chance of error would be reduced to the vanishing point. If, in addition, the operator is required always to put the staff in the crane, never handing it to a man, and if the arrangements are such that this requirement is not too irksome, the system would provide theoretically perfect safety from the mechanical standpoint. With the further addition of low-voltage electric switch machines, enabling the station signalman to set the outlying switches without leaving his chair, the system would provide all needed celerity as well as safety.

Where staff operation is carried on under hindrances of such character that officers and trainmen consider it cumbersome, the addition of the features here suggested should be worth considering. The substitution of automatic block signals, is, of course, the natural American way of meeting any or all difficulties that may be experienced with the staff system; but, as your correspondent well says, the question of the flagman is important. It is to be remembered that not even with the automatic system, in its best estate, do we dare to do away with flagging; whereas with the staff we do put that ancient custom in the background.

The deciding difference between the two systems is in the provision for moving trains in the emergency of a failure of apparatus. With the automatic system, a train may move in spite of an inoperative signal, simply by sending a flag ahead. With controlled manual signals the despatcher or some proper authority permits a signalman to release his signal by the use of a special key. In either case the suspension of the normal method of operation is a simple and easy process—so easy that a signalman or an engineman may too readily forget the gravity of his duty and responsibilities in the premises. On the other hand, with the staff system, the special unlocking key is the staff itself, and that is in the hands of the engineman. Until he reaches a station there is no way of getting at him to take away from him his right to the road, and therefore the simplest way to meet the emergency of a signal out of order is *not to meet it;* but rather to go and get that special key (the staff). With the regulations thus simplified the rule providing for the maintenance of flagging can be abrogated.

CONSERVATIVE-PROGRESSIVE.

Newly Painted Instead of New Stations

STAMFORD, Conn.

TO THE EDITOR:

A good deal of agitation is heard from time to time from cities and towns which demand new stations. Often there is some foundation for complaint. The station, perhaps, is 20 years old and has, through neglect, become dingy. Direction boards, if they exist, have become illegible at any distance. Passengers ask directions from laborers or anyone and are, often as not, directed wrong. Altogether there is much confusion and the station gets a black eye in the minds of all who use it. The newspapers take the matter up, and after a time the road is forced to make a large appropriation for a new station.

In many cases, however, a new station is entirely unnecessary, aside from the fact that the money, even in urgent cases, could be spent, at present anyway, far better in improving transportation. The major part of the time spent on a railroad by the public is on trains and not in stations, but often there is evidence of more money being spent proportionally on stations than on rolling stock and appurtenances.

A good clean up and a few alterations and additions would frequently stop all complaints. White paint on the interior of stations and whitewash, frequently renewed on underground passages, good illumination, substitution of underground passages for overhead, which involve twice as many steps as the former and add to the difficulty in getting from one platform to another, clear direction boards both inside and outside station, are important items. The separation, as far as possible, of mail, baggage and express from the space on platforms used by passengers would also help to make passage through station easy and convenient.

W. G. LANDON.

IN JAPAN, all the wooded land is carefully guarded, practically every tree on the government forest land is listed and not one is allowed to be cut down except with express permission of the government, and then not unless another tree is at once planted in its place.—Mountain Echo.

Co-ordination of Railway and Other Transportation

Discussed by Colonel W. B. Parsons, C. A. Morse, F. W. Davis and Daniel Willard

THE FORTY-FIRST ANNUAL MEETING of the American Society of Mechanical Engineers was held at the Engineering Societies building, New York City, on Tuesday, Wednesday and Thursday of this week. In the session devoted to transportation, interesting papers were presented: Transportation on railroads, by Daniel Willard, president of the Baltimore & Ohio; on railroad feeders, by C. A. Morse, chief engineer of the Chicago, Rock Island & Pacific; on motor truck transportation, by Francis W. Davis, engineer of the Pierce-Arrow Motor Company; on terminals, by Colonel W. Barclay Parsons, consulting engineer, and on the New York terminal problem by Gustav Lindenthal, consulting engineer.

Mr. Lindenthal's paper consisted mainly of a rapid sketch of the passenger and freight terminal problem of New York City, particularly as affected by the mile-wide waterway separating Manhattan from New Jersey, and a condensed statement of his proposal to build a single bridge across the Hudson River, at or below 59th street, as being the most economical solution of the river crossing problem.

A Comprehensive Transportation System

By Daniel Willard
President, Baltimore & Ohio

If we are to have a complete and well articulated national transportation system, it can only be had, as things are now, by the co-ordination of a number of different transportation agencies, including the steam and electric railways, the utilization of coastwise and inland waterways, the full economic use of the highways, improved and unimproved, the use of the motor truck, and such other transportation agencies as may be best suited to the particular requirement. Of all the transportation agencies at this time available, particularly for interior service, the steam railroad is undoubtedly the most important.

If this country were fully developed and if we had already reached the peak load which the railroads will be expected to carry, the railroad problem would be a much simpler one than it is under conditions as they actually do exist. Our country has not stopped growing. It is far from being fully developed. Experience of the past demonstrates clearly that at least $1,000,000,000 per annum must be provided as a minimum for capital expenditures for new equipment and facilities necessary to keep the railroads abreast of the transportation requirements of the country. If the government owned the railroads, it could, of course, if the people so desired and Congress so determined, raise, by general taxation, the funds necessary to provide in whole or in part, the additional transportation facilities required, or it could fix rates sufficient to provide either in whole or in part the large sums of new capital needed on that account each year. However, Congress by virtue of the Transportation Act of 1920 has decided that the policy of private ownership and operation of the railroads shall be continued, and has undertaken to provide a plan of regulation to make that policy possible and successful. The owners of the properties, that is the railroad companies, can only obtain new capital providing they can satisfy investors of their ability not only to pay the agreed rate of interest, but can also give satisfactory assurances of their ability to repay the principal sum itself when due.

Congress undoubtedly believed when it fixed the rule for rate-making in the Transportation Act that it had provided a plan that would enable the railroads to establish and maintain a firm basis of credit, sufficient in fact to enable them to raise in the aggregate at least $1,000,000,000 of new capital each year. It was clearly developed during the hearings preliminary to the passing of the act that unless the railroads were able to raise that amount of new capital each year, they would not be able to provide adequate facilities to take care of the business of the country, and in consequence private ownership as an economic policy would fail. The people in this country cannot afford to experiment with or to have any system of ownership or control of the railroads unless such system is able by and of itself to provide, as needed, the additional facilities necessary to move the growing traffic of the country. Personally, I believe the new act will enable the railroads to do this. But if it should develop that the rate of return permitted under the law is insufficient to accomplish the end desired, it will then be necessary either to amend the law so as to provide a more liberal return or adopt some other method. The only alternative would seem to be ownership and operation by the government.

I do not believe that the people in this country as a whole desire government ownership and operation of the railroads. I do believe that they are and will be willing to pay such rates and charges as may be necessary to insure the success of private ownership and operation of the railroads, provided, however, that the railroads under private management are able to give and do give the public such service as it reasonably desires and is entitled to, but if the railroads fail to give reasonable and satisfactory service the public will undoubtedly demand a change.

The condition of the carriers' equipment at the termination of federal control was much below the standard formerly maintained by the railroads under private control. Furthermore, the government had not been able, or in any event did not provide as much new equipment during the twenty-six months of government control as the railroads had been in the habit of providing during similar periods. The result was that when the railroads were returned to their owners they were inadequately supplied with equipment, and such equipment as they had was in an impaired condition while there was a larger volume of business offering for movement than at any time before. The situation was further complicated by the switchmen's strike, which began in Chicago early in April and spread to a greater or less extent over the entire eastern region.

The carriers realizing that they were inadequately equipped to handle the unusual volume of business offering, and appreciating that even if the large amount of new capital necessary to purchase new equipment were available, time also was an element to be reckoned with and some months must necessarily elapse before new facilities could be provided, decided that the important thing to do was to make the best use possible of the facilities already available. With that thought in mind they unanimously pledged their best efforts to increase the daily movement of all freight cars to an average minimum of 30 miles per car per day; to increase the average car loading to a minimum of 30 tons per car, and to reduce the number of cars held out of service awaiting repairs to not more than 4 per cent of the total number of cars owned. If these three standards so set up could all be accomplished concurrently, it would in effect be equivalent to adding over 500,000 cars to those available for service. A number of railroads in the United States

are already making more than an average of 30 miles per car per day, and on a number of lines the average carload is much in excess of 30 tons per car, and on some lines the number of cars awaiting repairs is not in excess of 4 per cent. But the railroads have not yet been able as a whole to accomplish the standards which they have set up for themselves, and it was not expected that the standards would be immediately reached. I am confident, however, that they will ultimately be reached and exceeded. A very marked improvement has already been made. During the month of August the net ton mileage movement on Class I railroads was in excess of 47,000,000,000 ton miles, which was a considerably larger performance than ever accomplished before by the railroads in a similar period of time.

In spite, however, of all that the carriers may be able to do with the existing plant, they will not be able to handle all of the business that this country is even now capable of producing. It should be kept in mind that during the war unusual efforts were made to increase productive capacity in all directions. More ground was cultivated than ever before, and larger crops were raised, existing factories were greatly enlarged and new factories of unprecedented size were built. The productive capacity of the country was thereby greatly increased, for war purposes, it is true, but the development is there and can and will be used largely for peace purposes. During the same period the railroad facilities were not increased at all. In fact, it may almost be said that the capacity of the railroads, that is the carrying capacity, was less at the termination of federal control than it was at the beginning, for the reason that during the entire twenty-six months of federal control the Government bought only about 100,000 freight cars, which was approximately the amount that the railroads had been in the habit of buying during each twelve months' period in the past. The number of locomotives bought during the period of federal control was also considerably less than ordinarily would be purchased during a similar period. No passenger equipment at all was purchased during the period of Government control. It was found that the railroads with their existing plant could take care of the war situation, and properly all men and material available were used in other directions, but in times of peace the people are not willing to accept the character of service which the railroads gave during the war, nor is it in the interests of the people as a whole that they should be required to accept such service. In order that the carriers may be able to properly handle the business offered in the future, they must make very large expenditures not only for additional cars and engines, but for additional running tracks, and particularly for additional terminals.

So far I have assumed that the commerce of the country would depend largely, if not wholly, upon the railroads for transportation. It seems clear to me, however, that it is in the larger public interest that in developing a transportation system which will be adequate to meet the transportation requirements of our growing commerce, each suitable agency of transportation should be used to the extent that it is economically desirable. To be more specific, where a given expenditure, if applied to water transportation, will provide for the movement of the traffic offered at a lower economic cost, including interest on investment and cost of maintenance, than would be the case if an equal investment were made in any other transportation agency, then in such cases the water transportation should be developed. Also, if the use of the motor truck on improved highways in certain localities and for certain distances is shown to be cheaper, including interest on investment and cost of maintenance, than any other method available, then that form of transportation should be made use of under such circumstances.

Personally, I believe that the situation should be studied as a whole and along the lines indicated in the recommendation which I submitted to the Council of National Defense in 1917. Each transportation agency should be used to the extent that such use is economically desirable. To make less use than that of each available agency would be wasteful and uneconomic, and if a more expensive agency were used when a less expensive one might be equally available, that practice would also be wasteful and uneconomic. I think in the past there has been a tendency on the part of those who happened to be interested in some particular agency, to try to extend its use in many instances beyond the proper economic limits, and this has resulted in unwise expenditures which in the end proved to be uneconomic and consequently unprofitable. Such mistakes ought to be avoided in the future.

Again, to be specific, I do not believe that the motor truck as now developed and operating on any form of highway can compete in the carriage of long distance traffic with the steam locomotive running on a steel girder properly supported.

I do believe, however, that for short distance traffic and in sparsely settled communities the motor truck, not only on the improved highway, but even on the ordinary dirt highway, may be used in conjunction with the railway and thus afford the cheapest form of transportation. I think the same thing may be used also with reference to some of our inland waterways. I think there should be an intelligent effort to develop all agencies of transportation, each within its own sphere, but all so co-ordinated with each other as to constitute a nation-wide system which would approximate in its effectiveness the efficiency of the telephone system of which I have already spoken.

Undoubtedly it has happened at different times and places in the past that the railroads have taken business where the out-of-pocket cost, not to mention the cost of capital, has been in excess of the entire revenue. The country as a whole would be better off if such business could be handled in such a way as would give reasonable profits to those engaged in the enterprise. There was a time when railway managers were believed to be opposed to the development of other means of transportation, which might become competitors for the business which they were hauling or desired to haul. But whatever may have been the attitude of the railway managers in the past, that is not their attitude at the present time and I am certain that they will be glad collectively or individually to co-operate with all other transportation agencies in such way as will inure to the greatest public good, because in the end all enterprises of an individual character must be tested by that rule. Whatever contributes to the public good is likely to endure, and anything inimical to the public good is certain to fail.

Feeders for Railroads

By Charles A. Morse
Chief Engineer, Chicago, Rock Island & Pacific

The railroads in this country were originally started as private enterprises and the majority of them started in a small way, and there were as many theories as to development as there were railroads. Unrestricted competition developed abuses and gradually there was developed the theory that railroads were not private enterprises but public utilities; and today the railroads can not raise rates without permission of regulatory bodies.

The operation of the railroads by the Government soon showed that it was lack of facilities and rolling stock rather than private ownership that was handicapping the railroads, and under the new law it becomes the duty of the Interstate Commerce Commission and the railroad managements to make a study of the situation and to see, first, that adequate facilities are provided to give the public the best transportation possible and, second, to see that this is done at the least cost to the public.

In the past, due to unrestricted competition, many facilities have been duplicated, such as tracks from two or more railroads into the same industry, branches of two or more railroads running side by side where one railroad could do double the business done by all. Many branch lines less than 50 miles in length were built to control competitive territory. These were built, as a rule, in the days when all teaming was done with animals. Today, with the advent of the automobile, the motor truck and "good roads," passenger automobiles can travel 25 to 50 miles an hour and loaded motor trucks 15 miles an hour, and in all kinds of weather. The comparatively small cost of motors has permitted their application to single units, so that each unit could be operated independently, and the horse is fast disappearing from road use. With locomotives that require no rails and which can be used by the public at large, the use of the railroad must become less and less as good roads are constructed.

The public is paying for the good roads; it owns the automobiles and motor cars; and now, under the Transportation Act, it must pay for the maintenance and operation of the branch lines of railroads. In many localities the passenger travel on the railroads, especially on slow branch line trains, has been reduced 50 to 75 per cent by the automobile. If the public were required to pay freight rates on the branch line that would pay the cost of upkeep, operation and interest, it would pay as much in many cases as it costs to haul the freight to the main line by motor trucks. The public will have to pay heavy taxes to cover cost of construction and upkeep of its good roads; why should the people in addition to this be obliged to pay in railroad rates the cost of upkeep, operation and interest on the cost of a branch line of railroad which is not needed? With a good hard surface road and no branch line of railroad, some one would operate a motor bus for passengers and motor express for package freight. A careful study should be made of branch lines, and where there are good hard surfaced roads, over which the business now handled by the railroad can be done by motor trucks and buses, the matter of dismantling the railroad should be given serious consideration.

Branch lines were formerly cheaply built, at from $12,000 to $15,000 per mile; they had narrow roadbeds, light rail, light bridges and less ties per rail than main lines; they were equipped with locomotives that had become too light for main line traffic, but handled the short branch line trains. With the constant increase in the weight of the locomotives on main lines for the past 15 years, there are no light engines to put on branch lines, and the result is that what are now perhaps light main line engines, but are heavy for branch line service, are sent to the branches.

This, and the rapid increase in the size and axle load of cars, has meant that the branch lines have had to be strengthened with heavier rail and stronger bridges; more ties to the rail; wider banks and cuts; ballast has had to be applied; with the result that the $12,000 to $15,000 branch now costs $20,000 to $30,000 a mile, with the increased interest charge on the investment and the increased tax on the public to be added to their taxes for good roads.

The cost per ton mile for transporting freight and the cost per passenger mile on the short branch lines are far more than the amount received by the railroad, the result being that the revenue from main line business must be enough to pay for its cost, and in addition must be enough to cover the deficit on the operation of the branch lines.

If many of these branches that are tributary to a territory within the limits of auto bus and auto truck service could be taken up and abandoned, it would mean a reduction in the cost of main line service. Every large railroad has many branches of this kind which do not reach any large towns or connect with any other railroad which could be taken up with economy to the public.

Where branch lines cannot be replaced with motor service and do not connect with other railroads, there should be a rate on the branch that would yield an amount sufficient to cover cost of upkeep and operation, and to pay the required return on the value of the line, there is no reason why the public at large should be required to pay an increased rate on main lines to provide cheap rates on a branch line to accommodate a few people. This is discrimination against the many in favor of the few, but it is one of the things that has been going on in this country for years.

With the completion of such a program there would be large reduction in investment in these useless branch lines, which would go a long way toward taking care of the investment necessary in the construction of lines that are required to develop new territory.

Branch lines are a necessity and it should not be understood that any attempt is being made to belittle their importance, but the transformation that is constantly going on in large cities in connection with suburban train service, by which stations near the center of the city are abandoned, due to rapid transit on elevated railroads or subways, furnishing as good or better facilities, is also taking place where short branch lines are being operated, where the business can be taken care of as well, if not better, by motor cars on hard surfaced wagon roads.

The business of the country is constantly growing and it should be handled by whatever method gives the best service and is the cheapest to the public.

The abandonment of short branch lines of railroads and the delivery of freight at main line stations will mean an increased use of cars, as a car sent to a branch line station means, as a rule, a day going and a day returning to the main line, which is two car days lost for each car, which will be saved if the car is loaded at a main line station.

The abandonment of these branch lines will do away with a lot of small mechanical locomotive terminals, which are expensive to maintain, also many men employed as station agents and helpers on the branch lines, and it will increase the force at many main line stations where better supervision can be given to their work.

Tracks built to a single industry should be owned by the industry served and they should pay all cost of upkeep and all cost of operating the track, the latter as a switching charge that will cover the cost. Where there are tracks that load to several industries these should be limited to a single industrial track, which should be operated by one railroad, and all expense of upkeep and operation should be paid by the industries served by the line. In cities L. C. L. freight should be collected for all railroads at the various stations in the city and should be taken to a central point by one railroad or terminal company, and there made up into carloads and billed over the railroads to which it is assigned. The cost of this service should be kept separate and added to the carload rate from the consolidation point.

Those desiring to deliver L. C. L. freight to the point of consolidation by motor truck would save this special charge for collecting the L. C. L. freight.

The whole matter should be analysed and worked out so that those getting special service pay for that service, and those who do not use the special service but perform a part of it themselves should not have to participate in the cost of this special service.

With the special service paid for separately, there could be a reduced rate for main line service. In the western portion of the country there are large areas that are not within 50 miles of a railroad, where the quality of the land is just as good as that adjacent to the railroad, but which is not cultivated for lack of transportation facilities. With present wastes eliminated, feeder lines could be built into this undeveloped territory. Some of the more prosperous railroads have systematically constructed feeder lines, and

their prosperity under the adverse conditions was largely due to this policy having been carried out for a number of years.

With the requirements of the Transportation Bill that the Interstate Commerce Commission shall pass upon all new extensions, railroads that have undeveloped territory adjacent to their lines which will warrant the construction of feeder lines and increase their main line business, thus reducing the cost per ton mile of all business over the main line, should apply to the Interstate Commerce Commission for authority to construct such lines and for a freight and passenger rate over the new lines that will pay the proper return on the investment and the cost of maintenance and operation of the line.

With the development of the country along a new line, the business will increase, which will permit of a gradual reduction in the rates.

In order to get a uniform treatment for the railroads of the country it looks as though the question of rates, both interstate and intrastate, should be vested in the Interstate Commerce Commission, and that the State Public Utility Commissions and State Legislatures should have no power over railroad rates.

Motor Truck Transportation

By Francis W. Davis

Waterways, where available, present the most economical form of transportation, especially for bulk material. The railways are our main reliance for overland transportation, handling approximately 400,000,000 ton-miles a year. Despite the complexities of their present problems they are discharging a remarkable service, when compared with foreign railway systems. But they are not able at the present time to take care of all the traffic. For various reasons the increase in railway equipment during the past five years has not kept pace with the increase in traffic. To meet existing shortages, provide for retirements and for the normal growth in traffic, it is estimated that the railroads would require in the next three years something like 25,000 passenger cars, 700,000 freight cars, 14,000 locomotives, not to mention side tracks, signals, shop equipment, engine houses, etc. The above requirements will cost five or six billion dollars. It is doubtful if the railroads can add this equipment in that time for two reasons:—first, because of inability to secure the necessary capital, and, second, the impossibility of manufacturing so vast an amount of equipment within a reasonable time; the problem is perplexing.

In the "short haul" and at terminal points where the railways are at a disadvantage, motor transportation comes in as a help, and releases cars for the long hauls, where they are most efficient. The railways and the motor truck co-operate far more than they compete; but where they do compete, as in the short haul, the problem is to determine which is best suited to discharge the service.

The relative cost of shipping by rail and by truck varies by lengths of haul, and other elements, and the point where railway transportation becomes the cheaper is governed by special conditions and no general limit can be given.

With the proper co-ordination, the motor truck can aid materially in lowering terminal and transfer charges. In Cincinnati, 16 motor trucks with 225 unit-container demountable interchangeable bodies are operated in connection with electrically operated hoists at the terminal points, and removing one filled body and replacing with another requires only about five minutes. Under the old system it took an average of 62.4 hours to move freight by trap car between connecting lines, 55.2 hours by trap car between main and sub-stations, and 72 hours by transfer company—an average of 62.4 hours. Now 98 per cent of the freight reaches destination in time for loading into main line cars, or for consignee's delivery at substations within the current 10-hour day. Over 50 per cent has been saved in platform space. Walker D. Hines, Director General, reports in connection with this installation, in addition to quickness of despatch, a "saving of two handlings, 50 per cent decrease in damage to freight in loading and unloading, and decrease of about 15 per cent per ton in cost of handling."

B. F. Fitch, president of the Motor Terminals Company of New York and Cleveland, estimates that the installation of a terminal system in New York City similar to that at Cincinnati would save $45,000,000 in freight costs yearly. It is reported to cost $35 to deliver a car in Manhattan after it reaches the Jersey terminal, while in Chicago it costs approximately $10.35, and in a smaller city like Binghamton, N. Y., $1.80. These are mentioned merely to indicate the great margin for possible savings.

At St. Louis, the Columbia Terminals Company has a transporting operation similar to that at Cincinnati, but uses tractor and trailers, with a fifth wheel and automatic coupling device, permitting great flexibility of operation without necessity for the overhead electric hoists used in Cincinnati, and the transportation of eight to ten tons, instead of five, on each movement.

The railroads are wary of store door delivery because they fear that this may be harnessed on them without adequate increase in rates. Store door delivery, however, is fundamentally sound and represents an ideal toward which we should strive. The motor truck offers the solution. The motor bus should supplement the street railway, very much as the motor truck supplements the railway. The London buses carry more passengers than all the *surface* railway lines of the boroughs of Manhattan and the Bronx in the City of New York. The theory that the car systems in any one of the large cities can be supplanted by a standard size of bus now obtainable is absurd and not worth any serious discussion.

There are, in round numbers, in the United States, 15,000 miles of canal and inland waterways, 260,000 miles of railways, and 2,500,000 miles of highways, outside of municipalities. Approximately twelve per cent of the highways, or about 300,000 miles, are classed as surfaced roads, and would be considered available for motor traffic. Improvements in design of trucks, however, are permitting their use on roads heretofore considered impassable. There are approximately 800,000 trucks in operation. If each of these average five tons a day for 300 working days a year the total tons moved by truck would be about 1,200,000,000. The Firestone Company estimates that certain fleets of from one to forty trucks, all of 5-tons capacity, make an average daily mileage of 40.5 miles per truck.

On a six-mile haul a five-ton truck, with loading time plus unloading time of 60 minutes, would take approximately 95 minutes per round trip and make approximately six trips a day. By reducing the loading and unloading time to five minutes, the truck should make 20 trips a day, an increase of 300 per cent.

As the haul grows shorter, the importance of reducing the loading and unloading time becomes still more accentuated. For a one-mile haul, with 60 minutes loading plus unloading time, the truck accomplished nine trips a day. With a five-minute loading and unloading time, the number of trips is increased to 60, or 660 per cent. With a further decrease of the loading and unloading time to one minute, which is quite possible, the number of trips increases to 90, an increase of 1000 per cent. The increase in the number of trips increases the tons handled and lowers the cost per ton.

The ability of the modern truck to meet difficult road conditions is not generally understood. Today, a good truck will grind its way over poor roads offering a resistance as high as several hundred pounds per ton, and up grades as steep as 20 per cent. The Bureau of Public Roads, Department of Agriculture, is conducting a series of tests on the

relative impact of solid tires and pneumatic tires on motor trucks under all conditions, and also making a study of the relative wearing qualities of different types of pavements and sub-grade materials. This work will have an important bearing on the road construction and truck operation of tomorrow. The ideal in highway development is a comprehensive system of National highway under Federal control.

Terminals and Terminal Yards

By Colonel William Barclay Parsons

Terminals form the largest item in railway construction cost and the most expensive item of cost in railway operation. A high officer of one trunk line entering New York recently made the guess that perhaps the reproduction cost of the company's end and intermediate terminals, together with equipment, would be as much as all the balance of the road with its equipment, does it seem unlikely that 30 per cent of the physical valuation of the railways in the United States would be represented by terminals and terminal yards? As to operation there is no segregation of cost figures that will give a reliable estimate. Can it be safely put as less than 30 per cent (average)?

No matter what is the actual figure, it is certainly very great and at times such as these when the total cost of transportation is one full of worry for the officials of transportation companies and the shippers, it is well worthy careful consideration and scientific investigation by both classes. But considering that the terminal operating cost forms so great a part of the total transportation expense, perhaps a greater part than any other item, it is a field full of hope, if not of promise for finding substantial economies.

Not long since a committee of the American Railway Engineering Association on Yards and Terminals stated in an official report that "the united operation of railroad terminals in large cities is one of such importance that it could well engross the best efforts and thoughts of the Committee."

The terminal cost is not limited so far as the man who pays the freight is concerned to the extent of passing cars through a terminal yard and the unloading of goods through freight houses. To the consignee, although his place may be quite near by, his consignment, as long as it is in a railway freight house, is still far distant. We must get it and under the present authorized method of charges must get it promptly and remove it to its destination.

Again, the author would like to give figures as to such cost of final delivery, but conditions vary so much in different cities that no reliable statistics can be given. In one investigation, in New York, the cost of trucking from the railway freight house to the consignee's warehouse was found to be as much as 80 per cent of the whole railway charge for carriage from Buffalo or Pittsburgh to New York. Place any figures you like within reason as the part of the total railway charge that should be allocated to the cost of passing a car through a New York terminal yard and the unloading of the goods, it is evident that it costs much more to handle a ton of freight through New York to the point of ultimate destination than it does to haul that same ton some 400 miles, including in the latter expense the cost incurred in handling the goods in the originating and intermediate terminal yards.

There was a time when this question of railway terminal charge was largely one of dispute between shipper and railway companies. At strongly competitive points the companies held rigorously to any special convenience of advantageous location that they might enjoy to the exclusion of other lines, or made rates below a fair distribution of cost, charging the necessary excess at other points to compensate for the loss at the competitive points. Such practice was not just to anyone concerned. Today competition is, to a great extent, removed, and there is established the base principle that terminal rates must be not only geographically equitable, but should be so fixed by governmental authority as to give a minimum net return which is also substantially a maximum net return on physical valuation, but the managers still make every effort to obtain business that is profitable, though they must see that rates are not raised so as to check traffic, and the shipper, like the railway manager, is directly concerned to see that economy is secured. The shipper can aid by focusing public attention on unnecessary burdens placed by legislation or the failure of the transportation companies to use their properties in the best manner. Public authorities must co-operate with the transportation companies and with each other. This last point is important because frequently public authorities fancy that their local interests clash, in which case both the transportation companies and the shipping public are the sufferers. These and other similar evils can be corrected by the great weapon of public opinion provided it is only properly instructed and well directed. The capital invested in terminals and terminal yards is probably 30 per cent of all railway capital, and the cost of operation is perhaps as high a proportion of the total operating cost. Manifestly, there is something worth attacking. Every reduction in cost of terminal operation, therefore, will result in a sensible reduction in operating expense, which reduction inures first to the benefit of the shipper and only to the benefit of the company when the critical point is reached, that is, when an increase in rates no longer produces an increase in gross returns.

How can savings in terminal expense be obtained? Is there not great waste in duplication of service and in the use of badly located facilities? In the old competitive days it was necessary for each company to have its own complete terminals, and to prevent competitors from obtaining facilities as ample or so well located. There resulted, consequently, as many terminal yards as there were companies and frequently each terminal yard had its own separate arrangement for the handling of every class of commodity, such as food stuffs, dairy products, general merchandise, fuel, etc. If all the railways in any large American city had been combined, would the manager of such a combined system have maintained, for a moment longer than necessary to complete the physical changes, the previous methods of duplicated service? Under the present law the systems are not actually combined, nevertheless the cut-throat competition has been removed, and the companies are not only free, but are encouraged to eliminate wasteful duplication. The Chicago Terminal Commission has already answered this question by saying that "there are decided advantages in co-operative operation." In 1918, the railways of the country began co-operative operation, and in the northwestern, central-western and southwestern sections, covering 28 states, annual savings amounting to $5,750,000 were shown. Although only the surface has been scratched, would there not be really great savings if all the terminal facilities in all our cities should be pooled and duplication be avoided?

How can terminals be more economically operated is another question. Many of our passenger terminals are seriously over-burdened, and yet on account of surrounding urban development the facilities cannot be enlarged. The man in the street as a commuter, seeing our great stations crowded morning and evening, is impressed with the great business and with the skill with which it is handled, but does not realize that the splendid facilities which are used at our passenger terminals are operated at full load for only four hours a day. The electric locomotive does not have to be taken to a round-house after a limited performance, and with it the use and consequent extent of intermediate terminals could be diminished. What can the shippers do? High demurrage charges rigorously enforced have greatly reduced waste of cars, but in fairness to all parties this should be stopped entirely. There is perhaps only one way in which this can be done, and that is by store door delivery. The operation of

London's freight terminals impress one with the huge amount of business done on small areas. At about 5 a. m. the morning freight seems to arrive at each freight station. By 7 a. m. the freight house and delivery tracks are full. Then an army of railway drays attacks the ordered pile of merchandise and by noon everything has been removed and delivered to the consignees. At 4 p. m. out-going freight begins to arrive by drays. By 8 p. m. the freight house is full again, but by midnight the contents will have been loaded into cars. Buildings, drays, tracks, plant and men are all worked to maximum efficiency.

New York's terminals are really the affair of the whole country. In what can be called the Metropolitan district embracing a part of New Jersey, as well as the City of New York, there are located nearly one-twelfth of the whole population of the United States, and this same district is the greatest manufacturing center of the United States. Not only can no one city be compared with it, but no one state. More persons are employed, more wages paid, and the value of the products is greater than the similar figures for the whole state of Pennsylvania. In addition to this 40 per cent of the export and import traffic of the whole country passes through the port, and there is a large tonnage received in New York to be distributed coastwise by vessels east and south. This export tonnage lays a serious handicap on terminal operation. It is rarely that cargo can be sent on arrival direct to the vessel's side; it must be held on cars awaiting ship. Such demurrage is permissible by rule. Every railway coming from the west maintains on the Jersey shore great yards occupying valuable space, and no less than 25 per cent of Manhattan dock front is occupied by railway terminals, or landing places where no one does business, but to which and from which the city's incoming and outgoing merchandise must be trucked daily. Is this necessary? Should not the terminal facilities of the several roads be pooled, thus concentrating operation on the part of the railways? Instead of maintaining special delivery stations in New York, can there not be a combining there, with perhaps a further segregation into places for delivery according to commodities?

Should the question of unified operation be answered affirmatively, and also the question of store door delivery, then another question: "Why adhere to the water front yards and points of delivery?" New yards with switching connections at both ends can be constructed with modern freight houses and unloading tracks equipped with freight handling, labor-saving machinery. These could be located in any convenient place, even on the wide expanse of the Jersey meadows. To them motor trucks with trailers, carrying not part but full loads, would transport merchandise between cars and points of origin or destination in any part of the Metropolitan district. Already New York's harbor terminal facilities are over-taxed and there is danger of surplus foreign traffic seeking against natural laws other and consequently less well-situated ports.

The Government and Inland Waterways

By Frank T. Hines

Late Brigadier General, U. S. A., Chief of Transportation, Inland & Coastwise Waterways Service.

The presence of the federal government in an operating role on inland waterways, long after the railroads have been turned back to private ownership, has caused opponents of government operation of public utilities to ask if the implied intent of the Transportation Act in this connection is not being evaded; but the work which the government is now doing is actually paving the way for profitable private operations on those waterways. After several weeks of intense study, the Committee on Inland Waterways recommended the acquisition by the government of all suitable existing floating equipment and the construction of such additional boats as conditions demanded. The Director General of Railroads, commandeered all available privately owned craft, and set up the necessary operating organizations. At the same time the construction of fleets of larger and better barges and towboats was undertaken.

For the Mississippi River between St. Louis and New Orleans, this building program called for 40 barges of about 2,000 tons capacity each and six towboats. With this and other incidental equipment, estimated to cost in all about $6,500,000, it was believed that net earnings in the neighborhood of $1,000,000 per year could be secured, or an income equal to at least 15 per cent on the investment.

For the Warrior River, 20 wooden barges and three towboats were contracted for, designed especially for bringing coal down from central Alabama to Mobile, and contracts were let for four self-propelled barges, staunch enough to proceed directly through the Gulf of Mexico to Violet, La., with coal for New Orleans. This equipment was estimated to cost $1,500,000, but it was believed that these boats could easily be made to earn a substantial revenue on the initial investment. For the New York Barge Canal, the contracts let by the Railroad Administration, called for 21 concrete and 51 steel cargo barges, each of about 500 tons capacity on a 9-ft. draft, and for 20 barge towboats each having capacity for 300 tons. With this latter fleet, costing about $4,000,000, it was estimated that sufficient operating revenue from the movement of eastbound grain alone could be secured to pay, at the outset, about 15 per cent on the initial investment.

As a matter of actual fact, none of these earnings originally estimated as possible have to date been produced by these boats. However, it is doubtful if the knowledge of this fact would have deterred the Railroad Administration from entering upon this boat-building program. Peace seemed distant and victory demanded facilities for unlimited transportation. . . . The government eventually requisitioned about 250 canal boats of the old Erie Canal type

On none of the lines were the results obtained at the start as satisfactory as had been hoped for. Still, a tangible beginning in waterway transportation on a large scale had been made, while the tonnage actually transported on these inland routes resulted in materially relieving the railroads. The maintenance of these lines by the government has been a hard, up-hill fight. In no instance have they, until the present summer, shown actual operating profits in any one month. Construction of the new equipment, particularly power units, has been delayed far beyond the original delivery dates, and it has been necessary to use old boats necessitating exorbitant operating costs. On the service between New Orleans and St. Louis, the average monthly deficits up to October, 1920, have been about $50,000. On the Warrior Line, they everaged over $30,000 each month. On the New York Barge Canal, however, with the delivery of the new types of power units, actual profits have this year, for the first time, been earned. For the whole, year, however, taking into consideration the five months during which these boats must be tied up, the total earnings will be little more than the expenses.

Congress has already appropriated $2,000,000 to be spent within the next year in building necessary terminals particularly along the Mississippi and Warrior Rivers for the handling of waterway freight. Once these individual lines have reached a stage where they are actually producing profits, the physical operation may well be given over to private ownership on much the same basis as the Shipping Board is disposing of its war emergency fleets. Until that time, however, the money spent by the government in pioneering the way toward profitable large-scale waterway transportation may be considered as an investment which will in the near future bring splendid returns.

The American Railway Association — Signal Section

Large Attendance at New York Meeting—Proposal to Hold Annual Meeting in June—Many Reports

THE SIGNAL SECTION—heretofore the Signal Division—of the American Railway Association held its regular meeting, the seventh since the former Railway Signal Association became a part of the American Railway Association, at the Hotel McAlpin, New York City, on December 2 and 3, with an attendance of about 300. F. W. Pfleging, (U. P.) chairman of the Section, presided, and H. S. Balliet, secretary of the Section, acted as secretary of the meeting.

On recommendation of the Board of Direction, the meeting instructed the secretary to send out at once a letter ballot on a proposal to change the time of holding the "stated" meetings so that they will come in March and November, and to hold the annual meeting in June. If the change is approved, it will go into effect in 1921. When the annual meeting is held, as now, in the month of July, there is not sufficient time to prepare the record of proceedings and secure the necessary letter ballots in time for presentation to the annual meeting of the American Railway Association in November. The month of June also has an advantage over July in the better chances of securing a suitable meeting place.

The Board of Direction proposed, and the meeting approved the proposal, that the sectional or district meetings of members should, as a rule, be held not more than four times a year. There was objection to this on the ground that maintainers, for whose benefit mainly the meetings are held, cannot always accommodate themselves to the dates appointed; they ought to have more opportunities in the course of a year so that if one meeting is missed special effort can be made to be present at the next one. The quarterly rule prevailed, however, by unanimous vote. Many of the committeemen, who prepare material for the district meetings, feel that with less frequent meetings more interesting programs could be provided.

The Committee of Direction has appointed a committee to confer with the president of the American Railway Association on the subject of the relations of this Section to the Association, the letter ballot, taken since the July meeting, having shown a large majority in favor of the proposal presented at that meeting. On this letter ballot the number of active members voting was: 285 affirmative and 12 negative; junior members 20 affirmative, no negative; associates 102 affirmative, one negative.

The secretary announced that the March meeting would be held at the Congress Hotel, Chicago, on Monday and Tuesday, the 14th and 15th.

The secretary announced that all of the 67 subjects referred by the July meeting to letter ballot had been approved, the total number of votes cast being 1,064. On most of the subjects the vote was nearly or quite unanimous; but on certain propositions of committee No. 5 and committee No. 9 there were considerable minorities. On questions for maintainers concerning track circuits, the negative vote was 83. The various specifications for rubber-covered wires and cables, aerial and submarine, received from 297 to 353 negative votes, and in some cases the majority in favor of the specifications was only one more than the necessary two-thirds.

Committee No. 3, Power Interlocking, F. B. Wiegand (N. Y. C.), chairman, through a sub-committee, of which B. J. Schwendt (T. & O. C.) was chairman, asked for instructions concerning the views of the membership in relation to a proposed specification for wiring for electric interlocking; and this brought out a long discussion on various phases of laying wires, the merits of single conductors versus cables, etc. The committee proposes to provide rules for use with all classes of interlocking; to prescribe multiple conductor cable as extensively as practicable and to limit the use of wood trunking. The main purpose of the committee, so far as developed, will be to recommend the best practice in only a few general lines, with a view to doing away with the excessive variety in practices which now is general.

W. H. Elliott (N. Y. C.) is opposed to the use of aerial cables for controlling circuits, believing also that their cost is greater than that of single wires.

J. C. Mock (M. C.) believed single wires the more expensive.

W. M. Post (Penn.), reviewing his experience with underground wires and comparing with aerial, found many points, especially from the maintainers' standpoint, more favorable to aerial construction.

F. P. Patenall (B. & O.) reported satisfactory results from the use of home-made cables which have been in service eight years.

W. H. Elliott (N. Y. C.) told of experience with a cable between Albany and Buffalo, 300 miles long, in use since 1892. The most troublesome feature with this cable is the occurrence of occasional crosses of wires in the cable which are caused by sportsmen (or boys) who perforate the cable with shot.

A. H. Rudd (Penn.) has made plans for electric interlockings at single track grade crossings, with all connections to be made by cable, which he believes will prove economical.

G. H. Dryden (B. & O.) cited the practice of the Western Union Telegraph Company as favorable to the increased use of aerial cables in place of single conductors. The Western Union has lately put in service, between New York and Washington, about 224 miles, a cable containing 30 or 40 conductors. It has been reported that the old wires, which were sold, paid the cost of this new cable.

A. H. Rudd (Penn.) for trunking, favored wood, fireproofed and sanded, properly painted, and protected where necessary by a beveled top. This ought to last twenty years. In running beneath tracks the lumber should be creosoted and have a metal cover.

W. H. Elliott (N. Y. C.) uses concrete trunking, believing this the only proper substance to properly resist fire where the line has to be laid in cinders. The life of concrete is longer than that of cypress.

Committee Reports

Aside from the foregoing, the time of the several sessions was devoted wholly to the consideration of committee reports, all of which were in the nature of requests for criticisms and further information, with the view of revising the reports for presentation to future meetings and finally to the annual meeting. The Section for the time being resolved itself into a committee of the whole, and the discussions were informal.

Committee No. 12, R. C. Johnson (B. R. T.), chairman, presented a form of contract for block signal and interlocking work which, after brief discussion, was approved; also a form of invitation to be sent to prospective bidders and a form of bond. On these a number of suggestions were made to the committee.

Committee No. 2, C. J. Kelloway (A. C. L.), chairman, presented a revision of the specification for mechanical interlocking machine, style "A" locking, which, after the presen-

tation of numerous criticisms and suggestions, was approved. The same is true of a number of designs presented by this committee and of a specification for concrete trunking.

Committee No. 5 presented a specification for a circuit controller for drawbridges which, after brief discussion, was returned to the committee for revision and submission to the annual meeting.

Committee No. 4, C. F. Stoltz (C. C. C. & St. L.), chairman, presented a revision, filling about 20 pages, of a specification for direct current automatic block signaling, and a revised drawing, No. 1,086, of a channel pin, in which the allowance for variation in dimensions is a little more liberal than that provided by the present standard. This was approved, and the proposed specification, after a long discussion and numerous criticism, was left in the hands of the committee to be prepared for the next meeting.

Committee No. 6, F. P. Patenall (B. & O.), chairman, presented a number of standard designs including a dwarf signal and details, a round target to give the day indication on a lamp, and an electric lamp case; also a list of gages for sheet metal and wire. The dwarf signal, with spectacles below the arm, was sharply criticized and the relative merits of different designs were discussed at some length; but the design presented (page 108, of the program) was finally accepted.

This committee presented a tentative report on electric lamps, asking for criticism. This report was prepared following a discussion held by railroad men and manufacturers at Ogden, Utah, on August 28. The committee expects to make drawings to go with the report, and to present the whole at the March meeting. The committee took under consideration a large number of objections made by members.

Committee No. 10 presented, through F. P. Patenall, chairman of a sub-committee, a proposed brief code of rules on the application of an aspect indicating that a train must take the siding at a non-interlocked switch. This was submitted for discussion, but it was not discussed and apparently was tacitly approved.

Committee No. 8, C. H. Morrison (N. Y., N. H. & H.), chairman, presented a report containing information for calculating power supply and distribution for an alternating current signal system, the presentation of the matter in this way having been decided upon, by the committee, as more suitable than to attempt a rigid specification, as had been the expectation when the subject was assigned to the committee. The report was tentative and was left in the hands of the committee for revision. Numerous suggestions were made by members, including one that steel-cored aluminum wire is superior to copper as a conductor. In view of the strength of this wire it was suggested that poles might be set farther apart.

Committee No. 13, P. M. Gault, chairman, presented a code of rules for testing electric motor signals in service (bottom of mast, first range, d. c. push clear type), and a specification for portable a. c. volt meters. These, after brief discussion, were approved for presentation to the annual meeting.

Seven committees made brief informal reports of progress. Committee No. 9, Rubber Covered Wire, is holding conferences with the Bureau of Standards, Washington, and with the Massachusetts Institute of Technology. Committee No. 15, Valuation, is working on various subjects. The discussion brought out a strong demand for a report from this committee to guide railroads in making a suitable classification and suitable adoption of units for signal material in giving orders for new work. There is much diversity of opinion as to the right course to pursue. Committee No. 7, Direct Current Relays, reported progress. Committee No. 16 is considering a specification for making better oil for use in long time burners. This committee was instructed to assign numbers to its specifications for lubricating oil. Committee No. 17, on Pole Lines, is working in conjunction with a committee of the Telegraph & Telephone Section.

Committee No. 18, D. C. Track Circuits, expects to make a report at the March meeting. A questionnaire is to be sent out for information concerning insulation, resistance, etc.

Committee No. 5 reported progress and is working on rules for maintainers covering the use of motor cars, oil lamps and maintenance of storage batteries. A report will be presented at the March meeting. Various suggestions were made concerning the best method of arranging rules, questions and answers.

St. Paul Leases C. T. H. & S.

The Chicago, Milwaukee & St. Paul has leased the Chicago, Terre Haute & Southeastern, running from Chicago to Westport, Ind., a distance of 374 miles, and passing through the southern Indiana coal fields, for a period of 999 years. Under the terms of the lease the St. Paul guarantees the payment of $18,465,000 of bonds and will pay $10 per share for the 43,000 shares of outstanding capital stock. The final details of the transaction have not yet been fully worked out; however, F. O. Wetmore, vice-president; M. J. Carpenter, president, and B. A. Eckhart, director of the Terre Haute, will form an executive committee to complete the arrangements.

The acquisition of this line by the St. Paul will give the latter line access to the unlimited coal supplies produced in the southern Indiana bituminous fields. The location of the St. Paul has heretofore interfered with the accumulation of adequate coal stocks. Now, however, it is believed that this difficulty will be overcome and the St. Paul, instead of having to depend upon connecting carriers for its coal supply, will be amply supplied on its own lines.

The Terre Haute was incorporated in Indiana in November, 1910, taking over the properties of the Southern Indiana and the Chicago Southern, both of which roads were in the hands of the receivers and were sold to the new company under foreclosure. In 1913 a lease with the Baltimore & Ohio Chicago Terminal was agreed to, giving the Terre Haute two terminal connections into Chicago.

Approximately 90 per cent of the road's traffic is in coal, passenger service being maintained only between West Dana, Ind., and Westport. The company has in operation 72 locomotives, 64 passenger cars and 6,859 freight cars, practically all of the latter of which are coal and flat cars.

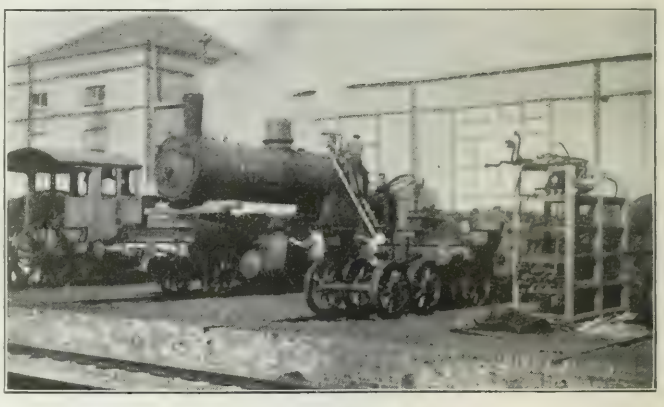


Photo by International

Locomotive Plant at Spandau, Germany, a Portion of a Former Munitions Factory

Lehigh Valley Modernizes the Laying of Rail

Increased Output Secured and Costs Reduced by Adoption of Improved Labor Saving Equipment

THE PROBLEM of laying new 100 to 136 lb. rail on a modern railway is not by any means a routine matter though in many cases it has been handled along those lines. Large numbers of men are usually employed for this work where any considerable amount must be laid and in general the unit cost has been high because of the uneconomical methods which it is necessary to employ. In order to reduce this cost to a minimum and at the same time to speed up the amount of rail laid in a given time the Lehigh Valley has developed a method in which there has been incorporated the use of such labor-saving equipment as locomotive cranes, air compressors, and drills, etc. As a result daily averages have been made and are now being made of from 80 to 110 rail lengths per hour, all completely bolted, spiked, etc., and ready for service, while in special instances as many as 159 rails have been laid in one hour.

In conducting this work the necessary labor has been secured by assembling the section forces employed in the locality where the rail is to be laid. The work is then so planned as to be carried on in a series of progressive stages or steps, such as, pulling spikes, throwing out old rail, etc., each step being assigned to a required number of men. In practically all but a few cases the individual gangs or sub-divisions of the forces are composed of section gangs complete with their foremen or multiples thereof. The foremen work with their men as well as supervise them. This feature in itself has been found to speed up the work materially.

With the forces and equipment assembled and all assignments understood the track upon which rail is to be laid is taken over completely and operations commenced. During the period of laying the remaining track is operated as a single track section. Through the close co-operation of the operating department little delay has been caused by the adoption of this method, even under comparatively heavy traffic. It is a question whether or not the delays caused by laying rail under traffic do not equal or exceed the delays when the track is given over entirely.

As stated before the method is based on progressive steps with all new materials distributed previously along the section to be laid. The old track is not disturbed under any circumstances until the time when it is taken over. The sequence of the various stages is in general as follows: Joints are broken every 10 rail lengths, spikes pulled, one rail thrown out, old tie plates removed, creosoted wood plugs placed in old spike holes, ties adzed, new tie plates placed, new rail laid with locomotive crane, rail center spiked and gaged, joints placed and bolted, holes drilled and bond wires installed, track gaged and full spiked, signals connected up and work generally finished up. Where one crane is used a force of about 200 men are required to keep the crane working to its capacity and the work proceeds one rail at a time, the crane being moved back to the point of starting at the completion of the laying of the first line of rail and starting on the second rail. With two cranes a duplicate organization follows the first crane preparing the other rail for the second crane, both of which are followed by a finishing gang of about double the size.

Rail bonding is carried on by means of portable units of air compressors and their drills. One compressor generally handles four drills requiring a crew of six men. The saving of labor in this item has been very marked and a much greater output has been obtained in addition to increasing the life of the drills from five to eight times. In connection with this class of equipment several pneumatic wrenches were



Modernizing Rail Laying on the Lehigh Valley

1. *Throwing out old rail.* 2. *Preparing the ties for the new steel.* 3. *Locomotive cranes laying new 136-lb. rail.* 4. *Running up track bolts with pneumatic wrenches.* 5. *A typical outfit for drilling bond wire holes.*

[illegible] recently for the purpose of running up the nuts on the track bolts. The average time consumed for running up one track splice and moving to the next was about 30 seconds.

Figuring on a one-crane basis, as any multiple up to four can be used efficiently on one set of tracks provided there are sufficient men available, the following is a typical organization in detail: The men comprising this organization are listed in the exact sequence under which they pass over the track.

[illegible] Organization

[illegible]
men driving spikes on outside of rail after laid.
[illegible]
[illegible] The locomotive crane was followed by the following gang
[illegible]
men removing rail anchors from old rail.
[illegible]
[illegible]
men operating air drills.
men operating motor cars and distributing bond wires.
[illegible]
[illegible]
men checking up on tie plates, spiking and joints, etc. One foreman included.
[illegible]
1 man changing wire at signal connections.
[illegible]

With the experimental introduction of the pneumatic wrenches the organization was changed slightly from that shown above, the 30 men assigned to bolting being removed and the following substituted for them:

[illegible] pneumatic wrenches
1 man tapping joints into place.
1 man on air hose.
[illegible]
1 man operating air compressor.

In the particular instance mentioned above a stretch of track between two switches located nearly 2½ miles apart was laid with 136-lb. rail in a total elapsed time of 7 hr. 10 min., or at the rate of 107 rail lengths per hour for a total of 770 rails. The force shown totals up to 205 men in the first case and 180 men with the introduction of the wrenches.

Treasury Files Mandamus in Guaranty Case

WASHINGTON, D. C.

THE SECRETARY of the Treasury on December 7 filed an answer to the mandamus proceedings instituted by the Grand Trunk Western to compel the Treasury to honor a certificate for $500,000 issued by the Interstate Commerce Commission on account of the road's guaranty for the six months following the termination of federal control. This is a test suit filed in the Supreme Court of the District of Columbia in an effort to collect approximately $400,000,000 remaining unpaid of the guaranty for all the roads. The Secretary in the answer pointed out that the guaranty provisions of the law contain no authority for partial payments on account of guaranty except the advances which were to be applied for by September 1 and that the wording of the paragraph seems to indicate that only one warrant is to be drawn for the claim of each company after a final audit and certificate from the commission. It was argued that mandamus will lie only to compel the performance of a clear and imperative duty and with the intent of Congress apparently against the relief asked, with an adverse ruling from the comptroller, the Secretary submits that no case of a clear and imperative duty has been made out and that the writ should be refused. It is understood that counsel for the railroad will ask that hearing on the petition and the answer be set down for December 16.

The petition filed by the railroad says: "The extended nature of the accounting necessary to determine what does, and what does not, enter into railway operating income makes it certain that many months will elapse before the Interstate Commerce Commission can ascertain and certify to the respondent, the Secretary of the Treasury, the final amount due the relator under the guaranty of railway operating income provided in said Section 209 of said Transportation Act, 1920. In the meantime, a specific amount, that is to say, Five Hundred Thousand Dollars ($500,000), certainly due the relator, has been ascertained and certified by the Interstate Commerce Commission to the respondent under Section 209 of said Transportation Act, 1920, leaving for further ascertainment and certification such additional amounts as may be due the relator. By reason of the refusal of the respondent, the Secretary of the Treasury, to draw a warrant upon the Treasury of the United States as above recited; the operating expenses of the railroad and system of transportation of the relator are accumulating, and serious operating difficulties are threatened because of a lack of funds to meet operating expenses, so that the injury to the relator by the failure to obtain at once the amount of money definitely ascertained by the Interstate Commerce Commission and certified by it to the Secretary of the Treasury as above recited to be due the relator by the United States under the guaranty of railway operating income under said Transportation Act, 1920, will be irreparable.

"That the Interstate Commerce Commission having ascertained and certified to the respondent, the Secretary of the Treasury, that the sum of Five Hundred Thousand Dollars ($500,000) is an amount necessary to make good the guaranty to the relator, Grand Trunk Western Railway Company, as provided by Section 209 of the Transportation Act, 1920, the relator is advised and therefore avers that the said respondent, the Secretary of the Treasury, was and is without discretion in the premises, but it was and is the plain duty of the respondent to draw a warrant in favor of the relator, Grand Trunk Western Railway Company, upon the Treasury of the United States for the sum of Five Hundred Thousand Dollars ($500,000), and to deliver the same to the said relator, but the said respondent has utterly failed, neglected and refused, and still fails, neglects and refuses, so to do, although requested."



General Offices of the Chinese Eastern Railway at Harbin, Manchuria

Annual Report of Interstate Commerce Commission

Review of Year's Activities Under New Law, Including Exercise of Emergency Car Service Powers

WASHINGTON, D. C.

THE ANNUAL REPORT of the Interstate Commerce Commission for the year ending October 31, made public on December 9, in addition to the usual routine report of the activities of its various bureaus, contains an interesting review of some of the principal developments of the year affecting the railways and particularly of the transportation conditions which required the commission to exercise its emergency powers over matters pertaining to car service. The commission's recommendations to Congress are summarized as follows:

1. That provision be made to authorize and require certification and payment of partial amounts under sections 204 and 209 (g) of the transportation act, 1920, and to authorize the making of a reasonable estimate of the net effect of deferred debits and credits to railway operating income, and the use of the resulting amount, when agreed to by the carrier, in making final certification of the guaranty under 209 (g) of the act.

2. That section 1 of the interstate commerce act be amended to provide for the punishment of any person offering or giving to an employee of a carrier subject to the act any money or thing of value with intent to influence his action or decision with respect to car service, and to provide also for the punishment of the guilty employee.

3. That the boiler-inspection act, as amended, be further amended to provide for increases in the number and salaries of inspectors.

4. That appropriate legislation governing the transportation of explosives and other dangerous articles as outlined elsewhere in this report be enacted.

For the reasons stated in previous annual reports, we renew our recommendations to the effect:

5. That the power to award reparation be placed wholly in the courts; that a condition precedent to an award of reparation by a court for unreasonable rates or charges be that we have found such rates or charges unreasonable as of a particular time; that the law affirmatively recognize that private damages do not necessarily follow a violation of the act; that provision be made that sections 8, 9 and 16 of the interstate commerce act shall be construed to mean that no person is entitled to reparation except to the extent that he shows he has suffered damage; and that the law should provide that if a rate is found to be unreasonable the rule of damages laid down in the International Coal Case, 230 U. S., 184, should control.

6. That the use of steel cars in passenger-train service be required, and that the use in passenger trains of wooden cars between or in front of steel cars be prohibited.

Partial Abstract of the Report

The following is a partial abstract of some of the principal items of the report. The remaining part of the abstract will appear in next week's issue.

Exercise of Emergency Powers

Under the transportation act, 1920, we were given enlarged powers with respect to car service. A short review of the critical period through which we have passed may well precede a statement of the steps taken under the emergency powers thus conferred.

Bureau of Service

For the purpose of handling informally the numerous car service matters which are brought to us, and of enforcing the various orders made by us under such powers, we organized a bureau of service soon after the termination of federal control. That bureau is in constant and daily touch with carriers by railroad both through their car service division and directly.

Following the armistice, until August 1, 1919, there was for the most part a surplus of cars. Since August 1, 1919, the revival of industry, has resulted in a demand for cars which has continually exceeded the available supply. Such was the condition on February 29, 1920, at the termination of federal control, and to a lesser extent is the condition now. That condition was accentuated to some extent by bad weather which lasted until after April 1, 1920, but was enormously magnified after that date by strikes which began early in April and lasted well into the summer. These strikes greatly augmented congestion at many important gateways and terminals and necessitated the placement and maintenance of numerous embargoes. Hundreds of thousands of cars were held stationary. In effect it was as if about 750,000 cars for the time being had ceased to exist as facilities of commerce. The April congestion caused by the strikes had the effect of reducing by fully one-third the equipment available as compared with that available on the resumption of private control.

The latest general statistics show that railroads under our jurisdiction own approximately 2,368,876 freight cars used in revenue service, of which 1,062,836 are box cars, 1,009,871 open-top cars with sides, 107,824 flat cars, 83,000 stock cars, and 60,204 refrigerator cars, and 45,141 miscellaneous cars. In addition there are many privately owned tank cars, coal cars, stock cars, and refrigerator cars which bring the total freight cars on railroad lines to approximately 2,500,000. During federal control the director general purchased approximately 100,000 freight cars and 4,226 locomotives, which have since been taken by the railroad corporations. Against these additions to equipment must be placed the offset of equipment retired during federal control. With the return of the railroads to their owners, the problem was forced upon the carriers and upon us as to how the demands of commerce for the movement of an extraordinary amount of tonnage could be met with an impaired transportation machine. This difficult situation was soon complicated by widespread strikes and cessation and diversion of railroad labor. The effects of a shortage of equipment can be minimized by increasing transportation efficiency and by car conservation. This end has been sought unceasingly by us, though it is clear that the problem can not be solved without substantial additions to equipment.

In anticipation of the return of the railroad properties to their owners, the railroads, acting through and by the American Railroad Association, promulgated a code of car-service rules, effective March 1, 1920. Cars have been distributed primarily without regard to ownership. The movement of traffic has been the first consideration. So far as not incompatible with the movement to traffic, efforts were made even during the acute period of congestion to move the scattered cars toward their home lines.

The railroads, realizing the necessity for fair and equitable distribution of cars, voluntarily established a car service division of the American Railroad Association, with offices at Washington, known until September 3, 1920, as the "Car Service Commission" and thereafter as the "Car Service Division." This agency began functioning upon the termination of federal control. By voluntary action of the carriers that division has been given power to issue directions to them in the matter of car distribution, which they have undertaken to follow. It also acts as the statutory agent for the members of the association in receiving service of orders entered by us; and, by its officers and committees, speaks to us the collective voice of its constituents as to all matters of car service. On November 1, 1920, the situation had so improved that the car service division of the American Railroad Association pointed out to its members the necessity for bringing about an orderly return of home cars and a general application of equalization rules, as warranted and necessary to avoid possible future confusion, and in anticipation of a prospective surplus of car supply. We have cooper-

ated with the railroads in transportation matters through that agency.

On May 12, 1920, the principal rail carriers filed with us an informal petition in which they stated their urgent need for additional freight cars and locomotives, that there was no immediate opportunity to procure the same; and that relief in the movement of the commodities most essential at that time, namely, foodstuffs, perishable products, live stock, coal, and newsprint paper, could only be afforded by the current daily use and movement in the most effective manner of the existing equipment. It would require many months to provide the needed additions to equipment and a much larger outlay than the carriers were then able to provide. An enormous volume of traffic of all kinds awaited transportation. A considerable portion of the agricultural products of the year 1919 remained to be moved, and the new crop of the present year would be offered for shipment soon. There was country-wide need for the movement of coal for current purposes and for the coming winter, especially to the upper lake ports before the close of navigation. There was, and had been for some time past, a general shortage of competent railroad labor, lately made more pronounced by the suspension of work by large bodies of certain classes, which added to the difficulty of maintaining maximum operation of the railroads and contributed to the growing public distress on account of the delay in the movement of necessary products and raw materials for the commerce of the country.

The petition set forth that these conditions promised to continue for some period of time, and in the public interest the carriers called upon us to exercise the emergency powers granted to us by the transportation act, 1920, with respect to (*a*) the giving of priority and preference in movement of necessary food, fuel, and other vital commodities; (*b*) the relocation of empty equipment; (*c*) the necessary postponement and delay of loading or movement of other less important commodities; and (*d*) the reduction of existing passenger service as far as might be necessary; in order (*e*) that to the extent necessary to accomplish these purposes the carriers might be relieved from the operation of federal and state laws and orders recognized under ordinary transportation conditions.

Acting upon that petition and upon information as to the situation already in our possession, we determined that an emergency existed of so exigent a nature that these powers ought to be exercised immediately and without the holding of any hearing at the time.

Service Orders Nos. 1, 2 and 3

Service orders Nos. 1, 2, and 3 were entered May 20, 1920, and from time to time other service orders have been entered. As occasion showed the necessity, these orders have been continued, amended, modified, suspended, or superseded. The foundation of each of these orders has been the finding that, because of shortage of equipment and congestion of traffic, an emergency has existed which required immediate action and order. These service orders being of an emergency character have generally been made to run until our further order. In making the orders we have felt it incumbent upon us to act promptly. We have kept informed currently as to service conditions so that with improved conditions we could with equal promptness modify or suspend the action taken by us.

Service order No. 1 required that until our further order or direction all common carriers by railroad should forward traffic to destination by the routes most available to expedite its movement and relieve congestion, without regard to the routing thereof made by shippers or by carriers from which the traffic was received, or to the ownership of the cars; and car service rules, regulations, and practices were suspended and superseded in so far as conflicting with such directions.

By service order No. 2 we required various western carriers to deliver within a period of 20 consecutive days, beginning May 25, 1920, about 30,000 open-top cars to their eastern connections. Service order No. 3 required eastern carriers to deliver approximately 20,000 serviceable box cars, preferably cars owned by western carriers, to their western connections within a period of 30 consecutive days, beginning May 25, 1920. The initial relocation of cars so accomplished has been continued, in varying degrees, by the directions of the car service division of the American Railroad Association; and compliance with the directions of that organization has been so general that it has not been necessary to issue further formal orders of this character.

Thus, the initial relocation of box cars to railroads in the central western, northwestern, and southwestern districts accomplished by our formal order covered 19,800 cars; following such relocation, and in continuance of the policy, 109,830 box cars were similarly relocated on the directions of the car service division, without formal orders from us.

In order to obtain full and accurate information as to transportation conditions throughout the country, our representatives were directed for a time to furnish daily reports concerning such conditions in the territory in which they were located. It was soon found that the services of local interests at important gateways and terminals would be helpful. Accordingly, we organized terminal committees at 30 railroad and traffic centers. Each of these committees was expected to do what could be done informally, by conference, advice, and negotiation, to keep its gateway open, and to advise us as to needs. Each committee acted in close contact with a committee consisting of operating officers of the railroads entering the terminal or gateway, and these committees played an important part in relieving the unprecedented congestion. As the congestion was relieved the importance of these committees decreased. Certain of them have been discontinued, others now maintain a skeleton organization, while a few in the more important terminals are still functioning actively. We now have in contemplation the establishment and maintenance of service agencies throughout the country at points where experience has shown that congestion and transportation disabilities are most likely to occur. Our plans call for the maintenance of a sufficient number of local terminal committees to insure the fullest possible co-operation between the railroad carriers, the shipping public and commercial organizations, local and state authorities, and ourselves.

The terminal committees and carriers have made considerable use of the rerouting privileges under service order No. 1; and this has brought about a marked reduction in terminal congestion. On February 27 the accumulations of freight were 103,237 cars. For April the daily average accumulations of freight were 208,698 cars, and immediately following the outbreak of the strike mounted to more than 287,000 cars. The daily average in July had been reduced to 101,612 cars, and by October 22 the accumulations were reduced to 39,807 cars, which approximates normal conditions.

Preference for Coal

The petition of the carriers suggested the setting up of a list of essential commodities entitled to priority in the use of transportation. Following the filing of that petition, requests and demands of most insistent character for priority orders, so called, were laid before us from every quarter and as to substantially every important commodity. It appeared to us that the attempt to classify commodities generally, and to assign relative priorities to them for either the supply or movement of cars, would create an unnecessary confusion and disturbance of industry, and would add to the existing congestion and decrease the aggregate amount of tonnage which could be moved. But we were impressed with the imperative need of special consideration for the movement of coal.

The year 1920 began with no substantial coal stocks, and the demand for bituminous coal could be met only by large production. Moreover, coal production this year has been considerably retarded by strikes and by the wide dispersion of coal-carrying equipment. Not only was there an urgent call for unusually large amounts of coal on the part of the railroads, public utilities, and industries generally, but it soon became apparent that unless we took special measures to insure the movement of coal to certain sections the coal which must go into those sections would be forced through unusual routes, with loss of efficiency of equipment and further congestion of already clogged gateways. We felt it to be our duty to avoid such effects by adopting appropriate means within our emergency powers to insure a prompt, steady, and economical use of transportation facilities in the movement of coal.

On April 15, 1920, prior to the receipt of the petition of the railroad executives, we found it necessary to enter an order authorizing the railroads to restore the assigned car rules which had been approved by us. The assigned car is designed to enable the railroads to secure a regular and adequate supply of coal. Our order has since been sustained by the circuit court of appeals for the fourth circuit in *Lambert Run Coal Co.* v. *B. & O.*, not yet reported, and by the district court for the northern district of Alabama, southern division, in *Corona Coal Co.* v. *Southern R. R.*, 266 Fed., 726.

Service order No. 7 was issued June 19, 1920, and has been amended by service order No. 9, and succeeded by service order No. 20. The original order was designed to be kept in effect for 30 days, but was continued from time to time by supplemental order.

The effect of these orders was to require coal-loading carriers to use coal cars primarily for the transportation of that commodity and to require roads not loading coal to deliver such cars to their coal-loading connections, to the extent of the ability of such connecting lines to receive and absorb that class of equipment. The railroads were also required to place an embargo upon consignees who detained coal cars unreasonably. The cars designated as coal cars were permitted to move under load in the direction of the mines, on the return trip, upon routes not materially out of line.

Originally these restrictions applied only to carriers east of the Mississippi river. Effective October 15, 1920, the restrictions were extended to cover the territory east of the states of Montana, Wyoming, Colorado, and New Mexico. By amendment effective at midnight, November 16, the territory west of the Mississippi river was taken out from under the restrictions and all flat-bottom gondola cars were released.

The demand for the class of equipment described in the orders as "coal cars" was very great, due to the large road building and construction programs under way. Every effort has been made to mitigate the inevitable hardship. From time to time, as the emergency seemed to warrant, by amendments to the definition of "coal cars," various types of flat-bottom gondola cars have been released; and permits have been issued authorizing the use of specified numbers of such cars for commodities other than coal when the public interest seemed to require such action. It has been constantly recognized that priority for one class of traffic necessarily means deferring other traffic, and that real hardship must follow the preference given coal. But fuel is a first essential to the life of the individual as well as of industry, and without an adequate supply of fuel there would be no transportation of either raw materials or finished products and no operation of industries. Under the stress which is now relaxing it was impossible to transport all that was offered, and the designation of that which should be moved first was necessarily based upon considerations of sound public policy.

From the outset it was apparent that the situation as to bituminous coal for sections ordinarily served by means of the Great Lakes required special consideration. The quantity of bituminous coal needed by these sections to be moved via the lakes is approximately 25,000,000 tons annually. To effect movement of the supply for this territory in large part by all-rail routes would produce deplorable results. It would involve a longer rail haul, a greater detention of each car, and add to the congestion in gateways which are usually overcrowded and which were only beginning to recover from the partial paralysis brought on by the April strike. The detriment would have been to traffic generally and not merely to the movement of coal to the northwest.

To facilitate movement to the lower lake ports for transshipment we suggested and urged the formation of a pool or pools of coal at the ports, such as had been created and maintained during the war, for the purpose of promptly receiving and transshipping lake cargo and bunkerage coal. Considerable opposition was encountered at first, but this was overcome and the pool was formed.

By service order No. 5, entered June 9, 1920, we prescribed that railroad carriers serving Lake Erie ports should, in the transportation of bituminous coal consigned to such ports, give preference to carload shipments consigned to the manager of the Ore & Coal Exchange for transshipment by water as a part of a pool of lake cargo or bunkerage coal.

We also provided for an embargo to be laid upon the movement of bituminous coal to such ports for transshipment by water except upon a permit or direction which should be issued upon a showing of the ability of the consignee to unload without delay to the rail equipment and without impeding the preference and priority in the transportation of coal for the pool.

Thereafter, when it appeared that service order No. 5 was not having the effect of sufficiently increasing the movement of coal to the Lake Erie ports, conferences were had between the operators, the carriers, and prospective purchasers of coal destined to the northwest, and a completed program was laid before us whereby, from a specific district, coal should move in a given volume, aggregating for all the districts affected 4,000 cars a day, to the Lake Erie ports for transshipment by water. Service order No. 10, entered July 20, 1920, gave effect to the program. The primary preference in transportation from the mines in the district affected was given to the lake movement; after any shipper had on any given day shipped his proportion of cars for the lakes, he might ship the remainder of the cars to which he was entitled to any destination.

With various modifications, increasing or diminishing the territory and carriers affected thereby, this service order remained in effect until October 27, 1920, and was then indefinitely suspended by us, as it appeared that the emergency had been sufficiently relieved.

A somewhat similar situation existed as to coal needed by New England, which normally requires about 25,000,000 tons of bituminous coal annually. Not more than 10,000,000 tons of such coal can be moved efficiently by all-rail routes each year, and the remainder customarily must be moved by rail to tidewater, and thence by coastwise vessel or barge to New England. The gateways through which coal must pass in the movement all-rail to New England and the New England rail lines and terminals are continually overtaxed; and when they are clogged by an unusual volume of traffic the resulting placement of embargoes and detention of cars made empty seriously impede the general movement of traffic. The movement of coal to New England by the tidewater route was considerably below normal during the first five months of the present calendar year. To meet the situation and induce the movement of coal by the usual route, on June 19, 1920, we entered service order No. 6, whereby in effect preference was given to coal transported by rail to tidewater piers at and north of Charleston, S. C., when consigned to James J. Storrow if for New England or to anyone as a part of a pool for shipment to any other United States coastwise destination, over coal consigned to such ports for water transshipment in any other manner. Mr. Storrow had been designated to us by the governors of the New England states as the agent in whom they desired to have these functions vested.

This order not being availed of, on July 26, 1920, service order No. 11 was entered. Service order No. 11 was generally similar to service order No. 10, which had been issued with respect to the movement of coal to the Great Lakes. It proved efficacious, and, the emergency which caused the issuance of the order having been measurably relieved, with the consent of the New England interests, was suspended, effective September 17, 1920.

Public Utilities

The effect of the shortage of equipment and congestion of traffic was felt severely by public utilities in the territory east of the Mississippi river. The demand was such that some mine operators having large contracts with such utilities at comparatively low prices delivered the coal they produced to other buyers at the higher market prices, and other mine operators found themselves in fact unable to complete their contracts. A critical condition resulted. In Michigan a number of public utilities were closed down for several days, and in many cities utilities and public institutions were down to the point where but a few hours' supply of fuel was on hand. It was imperative in the public interest that public utilities and public institutions be given such preference in car supply as was necessary to enable them to secure coal for current needs, so that they might continue to serve the public. By service orders No. 9, entered July 13, 1920, and No. 16, which superseded it, effective September 19, 1920, we authorized the railroads to give a sufficient supply of cars for the current use of public utilities and public institutions under certain conditions intended to safeguard against abuse. As a result these utilities and institutions have been kept going and generally have been able to accumulate some stocks of coal. This result having been reached, and in order to avoid the inequalities in distribution of cars at the mines which necessarily result from a priority order, service order No. 21 was entered, effective October 15, 1920, suspending the existing priorities.

Wagon Mines

A factor detrimentally affecting the coal-car supply has been the great increase during recent years in the number of coal mines, while there has been no similar increase in the equipment available for mine distribution. There are now approximately 3,000 more coal mines in operation than prior to the war. The total number of coal mines is estimated to be 10,634. Of these, 5,888, or 55 per cent, produce less than 10,000 tons of soft coal apiece per year, and an aggregate yield of 10,449,000 tons, which is less than 2 per cent of the entire production. Many of the so-called country bank or wagon mines are not equipped with tipples or arrangements for the dumping of coal into cars. Many are not equipped with private sidings. More than 98 per cent of the needed bituminous coal must be produced by established tipple mines, which number about 4,746. To the extent that the limited and fixed number of cars are distributed among 5,888 mines, which produce less than 2 per cent of the total, the general utility and efficiency of car service is decreased.

In an attempt to overcome the adverse effect of such dispersion of equipment we issued our service order No. 14 of August 25, 1920, prescribing that upon any day when a common carrier by railroad was unable to supply any mine upon its line with the required open-top cars it should not furnish or supply open-top cars to wagon mines not equipped to load such cars upon private tracks from a tipple, or other arrangement which permitted the coal to be dumped from an elevation into the car, until all other mines were fully supplied with open-top cars. We also required the carriers to count open-top cars furnished and supplied to wagon mines so equipped against such wagon mines under the same uniform mine ratings and car distribution rules as were applied to established mines.

By our service order No. 17, entered September 16, 1920, effective September 19, 1920, we required common carriers to establish and observe a rule that upon any day when a common carrier by railroad is unable to supply any mine upon its line with the required open-top cars, open-top cars shall not be furnished or supplied by it to any other mine which customarily does not load or is unable to load such open-top cars with coal within 24 hours from and after the time of placement for loading by the carrier, until all

cities which have been fully supplied with coal for cars.

Although the railroads became entirely free from embargoes on anthracite mines have continued fairly with nearly 100 per cent of the cars ordered, and although the anthracite production up to October 16 exceeded that of the same period last year the production this year has been retarded by the recent coal miners' strike in Pennsylvania and by the April strike in the yards. The recent anthracite strike retarded production to the extent of about 2,000,000 tons. There has been shortage of anthracite coal in some of the New England states, due largely to embargoes maintained by certain New England railroads during a substantial part of the time between April 1 and August 24. Those embargoes have now been modified, and it is hoped that the rail movement of anthracite coal to New England will proceed unhampered. During the period of rail embargoes anthracite coal could have moved to New England by rail and water. The existing rail-and-water rates to New England are higher than the all-rail rates, a fact which has perhaps acted as a deterrent in the movement of coal rail-and-water to New England. We have no jurisdiction over the water rates. Prior to the war the rail-and-water rates to New England were, generally speaking, substantially lower than the all-rail rates. Since the war they have been higher.

The demand for coal for exportation to European countries has been unusually great, and the bidding of foreign buyers against each other and against American consumers has doubtless had a marked effect in increasing the demand for coal in this country and to an even greater extent the price of free coal.

Repeated and insistent demands have been made upon us that we prohibit the exportation of coal, especially to European countries. Nothing has been found in the law which authorizes such action upon our part.

The foregoing is a review of the formal steps taken for the relief of the emergency. It was upon us and had to be met. We met it by such means as were available or could be improvised from day to day.

But to the extent that emergency in the fuel situation can be traced to the failure of dealers or consumers in regions remote from their sources of supply to purchase or make firm contracts for that supply in season, it is to be hoped that timely and effective action will be taken to prevent recurrence. They can hardly expect that our regulatory powers, which have to do with transportation rather than with distribution of commodities, should be relied upon to relieve them from the consequences of their own inertia, to the inconvenience or detriment of other regions and derangement of the orderly movement of general traffic.

Operating Efficiency

In addition to the activities above outlined, continuous efforts have been made to bring about improvement in operating efficiency. In this respect there has been close co-operation between the bureau of service and the car service division of the American Railroad Association, with the carriers, and with numerous organizations of shippers throughout the country. Statistics bearing on efficiency of operation have been analyzed day by day and the attention of the operating executives of the railroad carriers has been called with good results to many situations warranting attention. A special effort has been made to conserve and increase the efficiency of car by increasing the average carload, by reducing the amount of equipment held for repairs, and by increasing the average daily mileage of each car. Much progress has been made in these respects.

Comparing August, 1920, with July, 1920, the increased mileage had the effect of releasing 118,645 cars. Comparing August, 1920, with June, 1920, there were released 219,036; with May, 1920, 292,048; with April, 1920, 730,118.

Comparing August, 1920, with August, 1919, the increased mileage had the effect of increasing the car supply 287,694 cars; with July, 1919, 296,891; with June, 1919, 305,855; with May, 1919, 413,848; with April, 1919, 575,788.

The comparisons with various months in 1920 are based on 2,500,654 cars, the average number of cars on line daily during the months of April, May, June, July, and August, 1920.

The comparisons with operations in 1919 are based upon 2,465,091 cars, the average number of cars on line daily during the months of April, May, June, July, and August, 1919.

The consequent improvement in the general operating situation is clearly evident, and the figures for September so far available show further progress in car mileage with resultant improvement in the general car supply.

The improvement in the general situation has been materially aided by the steady decrease in the number of cars under load with railroad material.

During the early part of the summer the railway executives established as their ideal for achievement in number of tons per loaded car an average of 30 tons.

The increased tonnage per car during August, 1920, as compared with July, 1920, had the effect of releasing approximately 11 346 cars; with June, 1920, 47,179 cars; with May, 1920, 89,695 cars.

Comparing August, 1920, with August, 1919, the increased tonnage per car had the effect of increasing the car supply approximately 104,942 cars; with July, 1919, 112,904 cars; with June, 1919, 130,003 cars; with May, 1919, 116,687 cars.

The increased and steadily increasing operating efficiency, as previously indicated, has made possible an increase in the number of loaded freight cars handled as follows:

Total revenue freight loaded:	Cars.
Jan. 1 to Oct. 16, 1920	34,083,610
Jan. 1 to Oct. 16, 1919	31,992,189
Cars increased compared with 1919	2,091,421
Four weeks ended—	
Oct. 23, 1918	3,778,862
Oct. 23, 1919	3,888,896
Sept. 25, 1920	3,798,416
Oct. 23, 1920	4,002,357
Increase compared with—	
September, 1920	203,941
October, 1919	113,461
October, 1918	223,495

Bureau of Finance

Sixteen applications for extensions of existing lines or construction of new lines of railroad have been filed; of these, two have been withdrawn, hearings have been had in respect of six, and eight remain to be heard. Nine applications for abandonment of existing lines have been filed; of these, one has been withdrawn, hearings have been held in respect of three, and five remain to be heard.

Acquisition of Control by One Carrier of Another Carrier—Consolidation of Carriers.

Paragraph (2) of section 5 of the interstate commerce act provides for the authorization by us of the acquisition of control by one carrier of another carrier, both engaged in transportation of passengers or property subject to the act, under such conditions as may be found just and reasonable and which do not involve the consolidation of such carriers into a single system for ownership and operation.

Two applications have been received, both of which have been granted in whole or in part. A form of questionnaire required of applicants is in course of preparation.

Paragraph (6) of section 5 of the interstate commerce act provides for the consolidation, in harmony with and in furtherance of a complete plan of consolidation to be approved by us, of two or more carriers by railroad into one corporation for ownership, management, and operation. Such carriers and any corporation organized to effect such consolidation are relieved from the operation of the anti-trust laws and of all other restraints or prohibitions by law, state or federal, in so far as may be necessary to enable them to do anything authorized or required by any order made by us under and pursuant to the provisions of section (5) of the interstate commerce act. Such a general plan of consolidation is in preparation.

There have not been as yet any authorizations under paragraph (6) of section 5 of the interstate commerce act.

Issuance of Securities— Assumption of Obligations

Section 20a of the interstate commerce act provides for the authorization by us of the issue by carriers by railroad, subject to the act, of securities or the assumption by such carriers of any obligations or liabilities in respect of the securities of others.

Sixty-one applications have been received, 28 have been granted, 1 has been withdrawn, and 32 are pending.

Reimbursement of Deficits During Federal Control

Section 204 of the transportation act, 1920, as amended, provides for reimbursements of deficits in railway operating income of carriers not under federal control but which connected with or competed with carriers which were under control of the director general of railroads.

Carriers subject to the provisions of this section were required to submit statements of account in prescribed form, affording evidence which, taken together with statistical reports already on file with us, enabled the approximate determination of amounts due. Statements have been filed by 229 carriers, upon which payments aggregating $1,171,928 have been certified to 24 carriers under an arrangement for partial payments pending a final audit of the carriers' accounts.

Such certifications have been discontinued owing to a ruling of the comptroller of the treasury to the effect that partial payments under this section may no longer be made.

Guaranty of Income After Termination of Federal Control

Section 209 of the transportation act, 1920, provided in respect of practically all carriers for the guaranty for the six months succeeding the federal control period of a railway operating income measured by one-half the average income for the three-year period ended June 30, 1917. This guaranty, however, was extended only to such carriers as accepted the provisions of the section on or before March 15, 1920, and by such acceptance bound themselves to pay over to the gov-

ernment any excess in railway operating income above the guaranteed amount. Acceptances were filed within the prescribed time by 666 carriers.

During the guaranty period 243 applications for advances were filed by 148 carriers, upon which advances aggregating approximately $254,000,000 were certified for payment. According to the sworn monthly reports of Class I carriers, the amount payable by the United States to make good the guaranty is approximately $600,000,000, or $346,000,000 in excess of the amount already certified. It must be understood, however, that no exact estimate of the amount payable can be given at this time for the reason that many adjustments will necessarily be made in the reports as rendered. Under the transportation act, 1920, we are required to fix the amount of maintenance that may be allowed for each carrier in computing income for the guaranty period and it may be found that in many cases more has been charged for maintenance than can be allowed under the law. Other adjustments will be necessary.

The Treasury Department will honor our certificates issued for advances under subdivision (h) of section 209 of the transportation act, 1920, as amended, to meet fixed charges and operating expenses, and based upon estimated amounts necessary to make good the guaranty where carriers applied for such advances during the guaranty period even though the certificates are issued after the close of the period, but the comptroller of the treasury has ruled that payments may not be made upon our certificates issued under subdivision (g) of the section for amounts definitely ascertained to be due carriers to make good the guaranty unless such certificates are final and that only one final certificate may be issued to any carrier under this subdivision.

Many of the carriers to which amounts are due under this section made no application for an advance during the guaranty period; claims affecting railway operating income upon which the guaranty is based may be filed at any time within two years after the close of the period; the adjustments, restatement, and eliminations of accounts which we are required by law to effect in determining the amounts of the guaranty may require many months, and in the meantime, although we are able to certify that specified amounts are without question necessary to make good the guaranty in the case of each carrier, the carriers which did not apply for advances during the guaranty period can not now, under the ruling of the comptroller of the treasury, obtain these amounts undoubtedly due them without foreclosing them and us against the assertion and certification of other amounts which may hereafter be found to be unquestionably due under the terms of the statute.

The immediate payment to some of these carriers of the amounts or parts of the amounts which we can now determine to be certainly due them under the guaranty provisions of the transportation act, 1920, is vital to their meeting operating expenses, fixed charges, and other obligations which they must meet in order properly to serve the public as common carriers, and it is desirable that in case of deferred overcharge and loss and damage claims and other items which affect operating income and the final effect of which can not be definitely determined at this time, we be authorized to make a reasonable estimate of the net effect of such items and, when agreed to by the carrier, to use it in certifying the amount as final settlement of the guaranty.

It is therefore recommended that the Congress clearly provide:

(1) So as to permit and require the certification and payment under section 204 of the transportation act, 1920, of partial amounts ascertained in the case of each carrier to be due such carrier under that section;

(2) So as to permit and require the certification and payment under subdivision (g) of section 209 of the transportation act, 1920, of partial amounts ascertained in the case of each carrier as necessary to make good the guaranty to it; and

(3) So as to permit us in the case of deferred debits and credits to railway operating income which can not presently be definitely determined to make a reasonable estimate of the net effect of such items and, when agreed to by the carrier, to use it in certifying the amount as final settlement of the guaranty under this section.

Loans to Carriers During Transition Period

Section 210 of the transportation act, 1920, as amended, creates a revolving fund of $300,000,000 for the purpose among others of loans during the transition period immediately following the termination of federal control to carriers by railroad subject to the act, to meet maturing indebtedness or to acquire equipment or to make other additions and betterments, and provides that loans for equipment may be made to or through such organization, car trust, or other agency as may be determined upon or approved or organized for the purpose by us as most appropriate in the public interest for the construction and sale or lease of equipment to carriers.

The Association of Railway Executives and the American Short Line Railroad Association indicated to us that their associations would submit recommendations in respect of the loans to be made to the several carriers members of their respective associations out of the apportionment for each general purpose, in accordance with our rules of apportionment. The loan committee of the Association of Railway Executives met on June 25, July 15, and July 22, 1920, and made final report of recommendations as of July 28, 1920. The loan committee of the American Short Line Association is making individual recommendations for the carriers which are members of that association.

Pursuant to our announcement of June 7, 1920, that the allotment of $75,000,000 from the revolving fund for freight cars would be apportioned in such manner as to result in the acquisition of the largest number of such cars, efforts have been made looking to the formation of equipment corporations to supply the carriers with needed equipment. The principal developments in this direction have been, with respect to the trunk-line carriers, through the National Railway Service Corporation under the auspices of the National Association of Owners of Railroad Securities, and, with respect to the short-line carriers, through the Consolidated Railway Equipment Corporation under the auspices of the American Short-Line Railroad Association.

One hundred and forty formal applications for loans have been filed, of which 36 have been approved either in whole or in part. Thirty-one have been withdrawn, and two have have been denied.

Loans are being certified as rapidly as the carriers complete their applications and enable us from the record to make the findings required by the statute, namely, that the loan is necessary to enable the applicant properly to meet the transportation needs of the public, that the prospective earning power of the applicant and the character and value of the security offered are such as to furnish reasonable assurance of the applicant's ability to repay the loan within the time fixed therefor, and to meet its other obligations in connection with the loan, and reasonable protection to the United States, and that the applicant is unable to secure the necessary funds from other sources.

The following loans have been approved:

Ann Arbor	[illegible]
Arkansas Harbor Terminals	[illegible]
Atchison, Topeka & Santa Fe	5,493,600
Atlanta, Birmingham & Atlantic	[illegible]
Baltimore & Ohio	3,000,000
Bangor & Aroostook	[illegible]
Boston & Maine	[illegible]
Carolina, Clinchfield & Ohio	[illegible]
Central New England	[illegible]
Central of Georgia	[illegible]
Chesapeake & Ohio	[illegible]
Chicago & Western Indiana	[illegible]
Chicago, Burlington & Quincy	[illegible]
Chicago Great Western	[illegible]
Chicago, Indianapolis & Louisville	200,000
Chicago, Rock Island & Pacific	2,000,000
Delaware & Hudson	[illegible]
Erie	9,840,700
Great Northern	[illegible]
Hocking Valley	1,665,000
Illinois Central	4,440,000
Kansas City, Mexico & Orient	2,500,000
Long Island	[illegible]
Maine Central	[illegible]
Missouri Pacific	[illegible]
Northern Pacific	6,000,000
Pennsylvania	6,780,000
Salt Lake & Utah	[illegible]
Seaboard Air Line	6,073,400
Terminal Assn. of St. Louis	896,925
Texas & Pacific	3,000,000
Virginian	[illegible]
Western Maryland	2,422,800
Wheeling & Lake Erie	2,460,000
Total	[illegible]

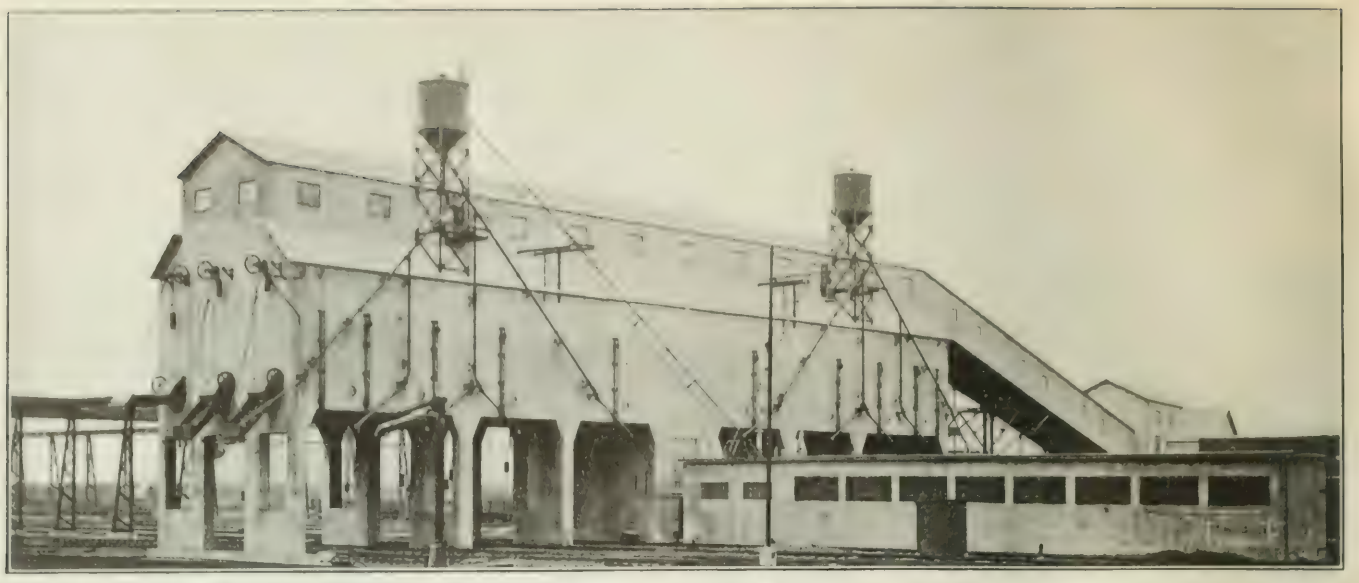
The purposes for which loans were approved are as follows:

To meet maturing indebtedness	[illegible]
To aid in the acquisition of locomotives and cars	28,608,745
To aid in the making of other additions and betterments	29,278,215
Total	[illegible]

Bureau of Accounts

While the accounting examinations required by the federal control act have confined the activities of the bureau along necessarily restricted lines and thus have had the effect of suspending our more extended examinations covering all phases of carriers' accounts, they have nevertheless accomplished much in the interest of uniform accounting and have resulted in a clearer understanding by carriers' accounting officers generally of the principles embodied in our accounting regulations. Similar, benefits will accrue from the bureau's work in connection with sections 204 and 209 of the transportation act, 1920.

Section 20 of the interstate commerce act now requires us to prescribe as soon as practicable for carriers subject to the act the classes of property for which depreciation charges may properly be included under operating expenses and the percentages of depreciation which shall be charged with respect to each of such classes of property. For the purpose of carrying out these requirements a special section of the bureau has been created which will devote its entire time to the consideration of depreciation. That section is now engaged on preliminary work so that the necessary studies and analyses may be systematically and efficiently undertaken.



Coaling Station of 1,600 Tons Capacity Serving 10 Tracks with 3 Kinds of Coal

Modernizing Existing Locomotive Terminals*

Modern Facilities Make for Economy and Reduce Time Required to Prepare Locomotives for Service

By G. W. Rink
Asst. Supt. Motive Power, Central Railroad of New Jersey

LOCOMOTIVE TERMINALS play an important part in the operation of the railroad, as the transportation department is at all times entirely dependent upon them for its supply of serviceable power for the movement of both passenger and freight cars. Should the capacity of the terminal or the facilities for making repairs be inadequate, the result will soon reflect itself in more time being required to prepare engines for service and more frequent detention on the road due to failures.

The general layout of engine terminals, also the extent of shop facilities provided, depends entirely on their location with reference to the general locomotive repair shop. When located in close proximity it is necessary to provide only such facilities as may be necessary to make the general run of roundhouse repairs, depending upon the main shop for the manufacture and supply of a large percentage of materials required for use at the terminal. But when engine terminals are located some distance from the general locomotive repair shops, they should be provided with enlarged facilities so as to perform all the necessary machine, blacksmith, and boiler-shop operations required when making more extensive repairs, and be entirely independent of the main shop. It is important, however, to eliminate at the terminals the manufacture of such standard parts as may be produced elsewhere at less cost. At outlying points where only light repairs are made to maintain locomotives in serviceable condition, such facilities as described above are not necessary.

At all important terminals the measure of efficient operation is the time required to prepare locomotives for service and the mileage which can be obtained between shoppings for class repairs. Any saving in time of course permits more intensive use of locomotives when transportation requirements make it necessary, but this saving can only be accomplished by providing a first-class terminal layout with proper equipment so as to enable the terminal organization to handle all engines with promptness and despatch. This requires a properly balanced organization to perform the various classes of work required, and coupled with modern labor- and time-saving facilities, should tend to reduce congestion materially and maintain the equipment properly.

Repairs at Locomotive Terminals

The location of the engine terminal with reference to the general locomotive repair shop will have some bearing on the necessity of performing relatively heavy repairs at the terminal. Where they are within reasonable distance of each other, it may be desirable to have a considerable part of the heavy repair work transferred to the main shop, where the repairs can be performed more expeditiously and the engine returned to service. On the other hand, this class of work has a tendency to interfere with the output of the locomotive repair shop, and especially so if it is found difficult to maintain the necessary quota of class repairs, considering the equipment as a whole. In such cases it would appear more desirable to increase the engine-terminal forces and provide sufficient facilities to at least make Class 5 repairs and the general run of heavy running repairs, including the removal and reapplication of a part or complete set of flues.

Where it is found desirable to perform such heavy repair work, it should preferably be done in a small building located adjacent to the machine shop, and provided with several tracks for holding engines and an overhead crane or power-driven locomotive screw hoist to facilitate the removal of all wheels.

This feature is very desirable, especially if heavy locomotives are to be handled. It also increases the track capacity within

*From a paper presented at the annual meeting of The American Society of Mechanical Engineers, December 8, 1920.

the roundhouse to that extent and repairs can be made more promptly and economically.

With reference to existing terminals, a careful study of the property will no doubt disclose the fact that improvements can be made whereby greater efficiency may be obtained. Modern facilities should be installed wherever it is possible to produce a saving in time and labor.

Coal, Sand and Ash Handling Facilities

The type of coaling stations selected must depend on the number of engines handled, the number of tracks which may be available for coaling engines and the kind of coal to be handled. Some roads in the East use bituminous, broken anthracite, and buckwheat. Where the quantity of coal handled is small, the locomotives can be coaled from an elevated platform using one-ton buckets or by means of a locomotive crane direct from car. When it is necessary to deliver coal to two or more tracks, a mechanical type of coal-handling apparatus is generally installed. Marked improvements have been made in receiving, hoisting and distributing equipment, which has resulted in smaller operating forces being required. Measuring devices are also installed for recording the amount of coal delivered to tenders. An electric winch should be provided at large terminals at the loaded coal-car track so that cars can be hauled to position over track hopper.

The sandhouse should be located at the coaling station. Sufficient wet-sand storage space should be provided as well as means for drying the sand by coal stove or steam. Compressed air should also be available so that the sand can be delivered to overhead storage bins, having suitable outlets to deliver the sand direct to engine by gravity. All important engine terminals should have a complete installation of this character.

During recent years the tendency when constructing large terminals has been to install pits filled with water. The cinders drop directly into the water and move toward the center of the pit, due to the outer wall sloping inwardly, and are removed either by a locomotive crane or by an overhead crane traversing the entire length of the cinder pit, the cinders being deposited by means of grab buckets directly into cars located on the loading track. The pit is filled with water to a depth of about five feet, water being admitted at one end of the pit and overflow provided at the opposite end. Provision is made to protect the floor of the pit against injury by the grab bucket, by imbedding old rails in the concrete. Due to the quantity of water required for large installations of this character, provision should be made if possible for a supply from a nearby stream or other natural source.

Steam-jet ash conveyors can be installed to advantage where ample supply of steam is available. The system consists of an 8-in. cast-iron pipe made exceedingly hard to withstand wear, with intakes provided at suitable intervals. The cinders are drawn by suction through the main pipe line and then propelled by means of the steam jet direct to car or storage bin, suitably located. Cinders handled in this manner are not wetted down until they enter storage bin, where a water spray is provided. This type of cinder conveyor has proved very satisfactory for handling cinders in power houses and should give good service when installed in connection with small engine terminals.

Inspection Pits

Inspection pits are now being installed at a number of large engine terminals. These are located on the inbound tracks with the view of making inspection of locomotives before they are placed over the cinder pit. Fires can then be withdrawn when the engines pass over the cinder pit, if inspection develops defects which warrant this procedure, thus saving time and expense involved if engine was inspected within the roundhouse after passing over cinder pit. There are many advantages in having inspection made at this time as the foreman by means of pneumatic tubes can be furnished with both the engineer's and inspector's reports showing work to be done before engines are placed in the shop.

These inspection pits are generally made about 100 ft. long, two in number, and covered with a protection shed. Special arrangements are provided to permit inspectors to enter the pits. Proper drainage and lighting facilities are also provided. In lieu of reporting on inspectors' reports such work as loose nuts, missing cotters, etc., it would be desirable to station at these inspection sheds mechanics who can perform this work at once, thus saving time in locating these defects in the shop after being reported.

Heating and Ventilation

Heating and ventilation is of first importance in a modern and efficient roundhouse. With the possible exception of small isolated houses in mild climates a properly designed system combining heating and ventilation should be adopted. An installation of this kind consists of a blower drawing air through hot-blast heaters located in a fan room which forms a projection on the outer wall of the roundhouse. The heated air is discharged through an underground concrete duct system.

A combined heating and ventilating system should supply sufficient air for the quick removal of smoke, gas and vapors. Ventilating sash, louvers and other openings should be provided at the high points of the room to supplement the forced system by directing the flow of air currents and facilitating the removal of hot gases. This feature should be carefully considered, for in roundhouse ventilation it is not so much a question of diluting the air as it is of establishing a positive flow of air which will carry the gases along with it.

It is sometimes necessary, due to the requirements of local ordinances or because the type of house prevents the use of smoke jacks above the locomotive stacks, to install an exhaust system so as to remove gases directly from the locomotive smokestacks. In the latter case connections are made to the smokestacks by means of swinging hoods. This system is not necessary from a ventilating standpoint, and should only be installed where conditions compel its use.

With the usual type of indirect system the fan rooms, one or two in number depending on the size of the house, should be located midway of the length of the house to be served, thereby reducing the temperature drop of the air in the duct as well as the friction head against which the fan must work. The quantity of air supplied together with the number, size and location of air outlets depends largely on the type, size, and location of the roundhouse. The amount of heat to be supplied with the air is also a variable factor and should have careful study so as to provide a comfortable working temperature under the conditions obtaining in roundhouse operation.

The question as to whether the fan should be motor- or engine-driven depends on the quantity of exhaust steam available for heating and whether or not it is desired to operate the fan for ventilation in the summer time. The hot-blast heaters should be operated through a two-pipe vacuum system, particularly where exhaust steam is available, so as to reduce the back pressure and provide a positive circulation of steam through all parts of the heaters. The temperature of the air can be regulated to suit the variable outside temperature by subdividing the heater into units with a control valve on each. The fan should be operated at a constant speed so as to make the ventilation independent of the heating and to provide a uniform condition at all times.

Lighting

Adequate daylight facilities through large window areas together with light, cheerful surroundings are highly desirable. The windows should be spaced and located so that daylight

conditions are fairly uniform. They should also provide sufficient daylight so that artificial light will be required only during those portions of the day when it would naturally be considered necessary. Good natural and artificial light will reduce accidents, provide greater accuracy in workmanship and simplify the supervision of the men.

Much needed improvement is desired in connection with artificial lighting of engine terminals. In the roundhouse proper, lights mounted on the outer wall and reflected between engine pits have given satisfactory results when augmented by sufficient lights suspended from the ceiling to afford general illumination. Machine shops, etc., should be provided with a general or overhead lighting and also supplemented by individual lamps conveniently placed, preferably on brackets so that they may be adjusted.

For lighting the roundhouse circle, flood lights should be used whenever possible as general illumination will add considerably to the safe movement of locomotives to and from turntable and engine house. Ash pits can be illuminated by rows of reflector lights placed on poles, and similar provisions should be made at other points beyond turntable or by the use of flood lights on the tops of coaling stations. The introduction of many new types of lamps has made it possible to provide better illumination when changing from an old to a new lighting system. A study should be made of the conditions and proper lamps selected for the purpose.



Modern Ash Pit on the Central of New Jersey

Hot-Water Washout and Refilling System

Facilities should be provided for washing out boilers, using hot water under pressure and refilling with hot water after washing. There is an actual saving in time as compared to the old system of washing out and refilling with cold water; with this system boilers are washed out more thoroughly and strains within the boiler due to expansion and contraction are considerably reduced, with the result that the cost of boiler maintenance is reduced.

There are two types of installations for this purpose in general use, one of which utilizes the blow-off water for washout purposes only, while the other utilizes as much of the blow-off water as necessary for this purpose and the remainder, after being clarified, for refilling purposes. As blow-off water is always soft and becomes clarified soon after storage, it is of course the best water for the generation of steam and its reuse in this manner is responsible for the greater efficiency of the latter type of installations.

Hot-water washout and refilling systems can be economically installed in any size to meet the requirements in any engine terminal of moderate size. The usual practice is to deliver washout water at temperatures varying from 100 deg. to 140 deg. The refilling water generally has an average temperature of approximately 210 deg. Where such systems have been introduced, there is a material reduction in time required to do this work. Boilers have been blown off, refilled, fired, and steam pressure brought up to 100 lb. within from two to three hours. This does not include such time as may be required to make necessary repairs to boilers.

Wheel-Dropping Facilities

The usual wheel dropping facilities consist of a drop-pit system which provides for depressed pits at right angles to shop track, using telescoping pneumatic or hydraulic jacks for lowering and raising wheels, separate pits and jacks being installed for handling driver and engine-truck wheels.

Screw-jack locomotive hoists especially designed for unwheeling locomotives are being more extensively used at engine terminals, and their use has made possible a large saving in both time and labor. These hoists operate with a high degree of safety as compared with the drop-pit system; furthermore they can be located within the roundhouse or installed in a separate building, in which case it would be desirable to also install the wheel lathe and other tools and appliances for taking care of heavy running repairs.

When screw-jack locomotive hoists are installed, it does not eliminate the necessity for providing drop pits in the roundhouse, which may be needed in order to prevent loss of time in making repairs to locomotives which may only require the dropping of a single pair of drivers or engine-truck wheels.

Machine, Boiler, and Smith Shops

Old and obsolete tools should be replaced by modern machine tools, which insure increased production at lower costs and the work being done more accurately and promptly and power maintained in better condition. Individual motor drive for the larger machines and group drive for the smaller machines is preferable. Facilities should include steam hammer, forges with down-draft hoods (number and size to suit work to be performed), punch and shear, plate-bending rolls, straightening plate, flange fire, etc.

Autogenous cutting and welding outfits are also considered indispensable and are used principally in making repairs to locomotive fireboxes, engine frames and in reclaiming miscellaneous parts which can readily be repaired by means of this process.

The Power House

Important engine terminals should be provided with a power plant of sufficient size to take care of the future as well as immediate needs of the terminal. In a number of cases this plant is required to provide steam for thawing snow at switches on main-line track leading to the terminal passenger station and supply heat and light to station buildings, and function in general as a service station. Labor-saving devices should be installed in the way of coal- and ash-handling machinery, automatic stokers and large-capacity overhead coal-storage bunkers. Consideration should be given to operating with condensers, requiring a cooling tower if fresh water is used, the surplus water being delivered to flood ash pit for locomotive cinders if this type is used. Tanks of ample capacity should be located at power house with water mains of proper size supplying water for shop use and filling of tenders at terminal tracks, locating water columns away from switches in cold climates to prevent freezing. At smaller terminals, discarded locomotive boilers are used to furnish steam for power and heat. A close study made of

these installations will reveal the fact that in many cases money can be saved by the use of modern water-tube boilers.

Discussion

The discussion of this paper was featured by the remarks of a representative of the operating department of the Pennsylvania Railroad, Mr. Wm. Elmer, division superintendent at Altoona. Mr. Elmer discussed the most important phases of the locomotive terminal situation with particular reference to its effect upon locomotive performance on one of the busiest railroad divisions of the United States. Confronted with the problem of getting the utmost service out of every available locomotive, Mr. Elmer has developed a unique system of records indicating the service performed by each locomotive on his division which he described at some length in the course of his discussion.

The paper on Modernizing Locomotive Terminals was also discussed by representatives of the Robinson and Austin Construction Companies who have recently been engaged in very extensive terminal development. Appropriate emphasis was laid on some of the most vital features in terminal construction and an attempt was made to demonstrate that the value of terminal improvements can be arrived at by capitalizing the enhanced earning power derived from locomotives handled in modern vs. obsolete terminals.

The discussion was closed by L. G. Plant, associate editor of the *Railway Age,* who stated that consideration of the locomotive terminal from any angle would be incomplete if it did not place sufficient weight on the outstanding function of the terminal, which is to expedite the movement of locomotives, and emphasized those features of terminal development which have the most direct bearing upon the time element involved in handling locomotives. It is predicted that the trend in locomotive terminal development, which is undoubtedly toward facilities for executing a greater proportion of heavy repairs, will eventually comprehend a development that will supersede many of the functions of the central erecting shop.

America's Foreign Competition

By Robert E. Thayer

European Editor of the *Railway Age.*

LONDON.

DURING THE PAST TWO YEARS American manufacturers interested in foreign business have not had to go far nor seek very hard for it. The war left the European countries, especially France, Belgium and Germany, in such a position that they were unable to produce sufficiently to meet their own respective requirements. The principal European manufacturing countries which participated more directly in the war have gradually readjusted themselves so that now they are able to handle export business, and from this time on American industry will find it hard to maintain its foreign business unless it is willing to make some sacrifices in order to retain the foothold it now has.

Take the locomotive building industry for example. As has been previously reported in these columns, both the United States and England have lost a number of locomotive orders for the Java State Railways to Germany, the prices of the Germans on account of the difference in the then money values being 40 per cent cheaper than the bids of the American and English competing companies, with the guaranteed deliveries the same. The situation today has been stated to be approximately as follows: Germany can beat American prices, under the present money values, anywhere from 15 to 21 or 22 per cent. Prices for main line locomotives delivered to vessels for export are about the same in England and the United States. England has somewhat the advantage on small contractors' locomotives. In the case of the main line locomotives, England has the advantage over America where the freight rates to the point of delivery are cheaper. Furthermore the German competition is constantly assuming more serious proportions. It has been reported on very good authority that the large locomotive builders, Henschel of Cassel, Germany, have obtained control of the Winterthur locomotive works in Switzerland, and in order to remove the "curse" of locomotives being supplied by Germany, orders are now being filled through the Winterthur works with material furnished from Germany.

It is not the locomotive industry alone that is feeling the effects of this resuscitation of European industry. American machine tool builders who have during the war and even before the war enjoyed a large business in Europe, are feeling the effects of this competition sadly.

The primary underlying factor in the entire export situation is of course the rate of exchange. A study of the published rates of exchange showing the value of the dollar in various European countries will indicate more clearly than anything else the seriousness of the situation. Contrary to all hopes a year ago, the exchange situation does not improve for the American exporters. Our government does not seem inclined to assist in bringing the exchange rate back to normal conditionus.

The situation requires some very serious consideration on the part of the American exporters if they are to continue in the export developments that they have already undertaken. If they are to retain the hold they have already obtained in foreign markets they must be prepared to sacrifice profits or even to sustain losses until conditions become more normal. It is a great pity that the foreign trade development work of the past few years should be allowed to distintegrate.

Congress in Session

WASHINGTON, D. C.

THE FINAL SHORT SESSION of the 66th Congress was opened on December 6, but very little activity affecting the railroads is expected during this session. Senator Cummins, chairman of the Senate committee on interstate commerce, has announced that he proposes to press at this session the proposed amendment to the valuation act to omit the requirement that the Interstate Commerce Commission shall report the cost of condemnation and damages of railroad land, but at an informal conference of leading members of the interstate commerce committee it was decided not to undertake any amendments to the transportation act at this session, until the act has been given a further trial, and Chairman Cummins is to leave this week for a month's rest in Florida. It is expected that numerous bills to amend the act in various particulars may be introduced by various individual members, but unless some unforeseen general demand for a change in the act appears, these will probably not get beyond the committees. An effort may be made to amend the provisions of the act relating to the six months' guaranty to provide specifically that partial payments of the guaranty may be made, because the comptroller of the treasury has ruled that such partial payments cannot be made under the act as it stands, but such an amendment would require very little discussion and is in line with what it is generally understood that Congress intended when the act was passed.

If the decisions of the Interstate Commerce Commission ordering increases in intrastate rates corresponding to those authorized for interstate traffic are sustained by the courts, it is certain that a vigorous effort will be made by the states' rights extremists to amend the provisions of the law under which the commission acted, and bills to that effect will prob-

ably be introduced before the Supreme Court has had an opportunity to pass on the case, but it is not expected that a real fight will be made until the court has rendered a decision.

The principal business of the short session of Congress will be the passing of appropriation bills. The book of estimates of appropriations for the fiscal year ended June 30, 1922, provides for $5,574,500 for the Interstate Commerce Commission, as compared with $4,693,100 for this year, including $2,000,000 for valuation, as against $1,750,000 for this year. The proposed appropriation for the Railroad Labor Board is $550,000, as against $450,000 for this year. An appropriation of $4,000,000 for the Alaska railroad is proposed.

In his message to Congress on December 7 the President said: "The relation between the current receipts and current expenditures of the government during the present fiscal year as well as during the last half of the last fiscal year has been disturbed by the extraordinary burdens thrown upon the Treasury by the transportation act, in connection with the return of the railroads to private control. Over $600,000,000 has already been paid to the railroads under this act—$350,000,000 during the present fiscal year—and it is estimated that further payments aggregating possibly $650,000,000 must still be made to the railroads during the current year. It is obvious that these large payments have already seriously limited the government's progress in retiring the floating debt."

Senator Cummins and Representative Esch introduced in the Senate and House, respectively, on December 7, bills to extend the effective date of Section 10 of the Clayton law from January 1, 1920, to January 1, 1922. The effective date of this section has been postponed several times before.

Senator Pittman of Nevada has introduced a bill to amend the long and short haul clause of the interstate commerce act to remove discretion from the Interstate Commerce Commission in granting relief from its provisions.

Car Loading Shows Further Decrease

WASHINGTON, D. C.

REVENUE FREIGHT CAR LOADING for the week ending November 27 was 82,000 cars less than for the week before, according to reports compiled by the Car Service Division of the American Railway Association. The total was 797,673, as compared with 739,197 in the corresponding week of 1919 and 735,628 in 1918. This was the largest decrease reported for any week this year since the loading figures began to fall, in the last week of October, but a large part of the decrease is attributed to the Thanksgiving Day holiday. While the total is still greater than for the corresponding weeks of the last two years, the fact that it was larger than for 1919 is due to the fact that coal loading last year was small on account of the miners' strike. The number of cars loaded with coal in the week of November 27 this year was 89,000 greater than for the corresponding week of 1919. The loading of all the other classes of commodities except coke and ore was smaller than for the corresponding week of 1919. The report is given below.

Freight car accumulations for the week ended November 26 had been reduced to 26,324 or 2,300 less than for the previous week. Of the total, 8,270 were held awaiting export or coastwise movement.

For the week ending November 30 the railroads reported a surplus of 49,695 cars and shortages amounting to only 19,673 cars. This represents an increase in the surplus in a week of 17,000 cars and a reduction in shortage of 11,000. Of the surplus 34,756 were box cars while a large part of the shortage consisted of 11,091 coal cars.

A new record for the year in the production and transportation of bituminous coal was made during the week ending on December 4; according to preliminary estimates compiled by the Car Service Division, production during the week was estimated at 12,675,000 tons. This is 1,259,000 tons or 11 per cent more than were produced the week before. During the week, it is estimated, 229,016 cars were loaded with bituminous coal, which would be an increase of 21,020 over the preceding week and 5,000 more than were loaded during any one week so far this year. The nearest approach to this total was reached during the week which ended on October 30 when the number loaded was 223,717 cars.

This was the first week in more than a month that the railroads have been called upon to furnish transportation facilities for a production of more than 12 million tons of bituminous coal. In October, production for four consecutive weeks went above that mark but during November observance of various holidays in the coal fields caused a decrease in production. Comparisons of the amounts produced on the various working days, however, show that had the mines put in full weeks, production last month would doubtlessly have continued to exceed the 12 million mark.

THE GRAND TRUNK has sent a message to its station staffs and track forces expressing appreciation of their efforts in caring for the flower beds and lawns around stations and tool houses during the past season.

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS; COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO, FOR WEEK ENDING SATURDAY, NOVEMBER 27, 1920

										Total revenue freight loaded			Received from connections		
Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L	Miscellaneous	This year, 1920	Corresponding year, 1919	Corresponding year, 1918	This year, 1920	Corresponding year, 1919	Corresponding year, 1918
Eastern	1920	5,496	3,296	51,508	2,539	5,060	6,288	40,824	67,006	182,017	.....	.....	230,182	.....	.....
	1919	6,022	3,425	27,678	3,881	7,002	2,907	30,430	96,964	.....	178,309	177,612	.....	226,201	227,108
Allegheny	1920	2,915	3,451	61,874	7,451	3,248	6,235	33,727	56,461	175,362	.....	.....	130,959	.....	.....
	1919	3,070	3,594	34,381	4,913	4,066	3,757	38,596	65,364	.....	157,741	171,068	.....	126,633	160,736
Pocahontas	1920	107	123	20,878	636	1,623	129	2,340	5,750	31,586	.....	.....	16,740	.....	.....
	1919	207	146	24,667	596	1,899	259	139	8,731	.....	36,644	32,508	.....	18,630	21,584
Southern	1920	2,566	1,882	31,227	1,358	15,818	2,583	32,977	33,247	121,658	.....	.....	67,157	.....	.....
	1919	2,533	2,092	11,023	253	15,752	2,052	16,568	52,510	.....	102,783	103,017	.....	71,828	68,010
Northwestern	1920	10,751	8,535	9,903	1,662	12,595	13,476	23,485	26,856	107,263	.....	.....	50,640	.....	.....
	1919	11,312	10,090	10,852	637	13,278	5,524	18,837	37,321	.....	107,851	104,005	.....	54,543	67,617
Central Western	1920	8,675	10,397	25,206	562	4,043	2,547	26,297	38,614	116,341	.....	.....	60,254	.....	.....
	1919	10,120	13,061	6,933	479	4,134	2,837	21,343	43,077	.....	101,984	99,325	.....	67,271	56,693
Southwestern	1920	3,412	2,160	5,389	130	7,767	187	14,308	30,093	63,446	.....	.....	49,014	.....	.....
	1919	4,185	2,787	1,451	130	5,999	200	12,744	26,389	.....	53,885	46,093	.....	46,767	39,731
Total all roads	1920	33,922	29,844	205,985	14,338	50,154	31,445	173,958	256,027	797,673	.....	.....	604,966	.....	.....
	1919	37,449	35,195	116,985	10,889	52,130	17,536	138,657	330,356	.....	739,197	.....	.....	611,793	.....
	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	735,628	.....	.....	641,479
Increase compared	1919	.....	.....	89,000	3,449	.....	13,909	35,301	.....	58,476	.....	.....	.....	.....	.....
Decrease compared	1919	3,527	5,351	.....	.....	1,976	.....	.....	72,329	.....	.....	.....	6,827	.....	.....
Increase compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	62,045	.....	.....	.....	.....	.....
Decrease compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	29,686	.....	.....

*L. C. L. merchandise loading figures for 1920 and 1919 are not comparable as some roads are not able to separate their L. C. L. freight and miscellaneous of 1919. Add merchandise and miscellaneous columns to get a fair comparison.

Heavy Slide Badly Deranges Train Operation

Pennsylvania Railroad Overcomes Impending Destruction of Main Line Tracks at Pittsburgh, Pa.

THE THREATENED CUTTING in two of the Pennsylvania's main line by the slide at Pittsburgh, Pa., has been at last safely averted and in a large measure its worst effects have been overcome. All of the tracks have been cleared of the material brought down by the slide, though all of them are not as yet being operated. There are two yard tracks yet to be placed in service. Starting with December 7, train service of the Monongahela division will be again handled in and



Photo by Underwood & Underwood.

Steam Shovels Working on the Flanks of the Slide

out of the Union station, and shortly after that it is expected that normal operations will be resumed.

The Pennsylvania, east from its Union station, follows closely the base of a large hill composed of slate, shale and clay, and at numerous places along its lines this hillside is retained by heavy masonry walls. The slide, however, which caused so much damage was not a movement of the natural hillside, but was the result of the failure of a retaining wall and the subsequent pouring out of a large mass of filled material occupying what is known as Jones' Hollow, about three-quarters of a mile east of the station. This hollow or gully originally extended back into the hillside for a considerable distance, and when Bigelow boulevard was constructed along the hillside the hollow was partially filled in and a better support obtained for the roadway which followed around the contour of the gully.

At that time a heavy retaining wall was built, and as the filling increased a rock-filled crib was added some distance up from the retaining wall to help maintain the fill and the wall. With the widening of the boulevard and from other causes various materials were dumped into the gully until the land had been built well out beyond the original boulevard. A city stable was subsequently built upon this, and plans made for eliminating the curvature of the boulevard at this point. Further filling was made until finally the great mass of water-soaked earth overflowed the ends of the retaining walls and shortly after broke down the entire structure.

The Destructive Action of the Slide

At the base the retaining wall was completely destroyed, and as parts fell and were forced out over the tracks of the Pennsylvania they carried away the west 230 ft. of a large 290-ft. inspection and supply building, demolishing that much of it completely. With the removal or breaking down of the retaining wall the only restraint was removed and the earth fill, rendered more or less plastic by numerous rains, moved rapidly out over the tracks to a depth of from 40 ft. to 50 ft. and covering a front of over 100 ft. in length.

As the wall had previously given indications that it might fail, the Pennsylvania had arranged for and kept a temporary organization of steam shovels in readiness. The movement was so fast, soon reaching a maximum of about one foot an hour, and the amount so large, that this force had to be greatly increased and in a short time the railroad had nine steam shovels and two ditchers working day and night by the aid of floodlights in an attempt to keep ahead or at least even with the progress of the slide.

In all, eight tracks, including the main line tracks, were completely buried, and as the material flowed out over them the tracks ahead of the slide and to the sides were upheaved as high as 15 ft. in some cases. In order to make any progress and at the same time to safeguard the shovels, they were arranged in a semi-circle around the edges of the small hill which had been created by the outflow of the materials. The disturbance of the roadbed, however, was so great that the tracks upon which the shovels operated were destroyed regularly, and at times it required considerable work to save the shovels themselves.

Train Operation Necessitates Rerouting

In addition to the eight tracks buried by the slide, three more of the nineteen tracks at this point were rendered unavailable for traffic by the necessity of having loading tracks,



Photo by Underwood & Underwood

A Typical View of the Advance of the Slide

etc., for the shovels. This left only eight tracks to handle the large amount of traffic which passes over the Pennsylvania in this vicinity. To make matters still more complex all telegraph and signal wiring, etc., had to be moved or replaced as the progress of the slide interfered with or destroyed parts of it. In order to facilitate the operation of traffic, all trains on the Monongahela division were rerouted to leave the Fourth avenue station, and all trains on the Conemaugh division were received and sent out from the Federal street station. The main line tracks from the east

and leading into the yard at this point of the slide were cut into the remaining eight passenger yard tracks and an independent organization built up to take care of this phase of the train operation. As it was feared that continued rains might accelerate the slide and thus cut the entire yard in two, plans were made for the prospective rerouting of all trains. These included the continued use of the Union station for all trains west and the use of the East Liberty station for all trains east, beginning and ending at Pittsburgh, while all through trains were to be diverted by way of the Brilliant cut-off and Port Perry branch.

On the city's side of the problem, the settling and moving out of the fill at the crest of the slide caused the failure of the boulevard for a distance of about 125 ft. A city stable located on the filled-in part of the gully was demolished, while a large warehouse located on the opposite side of the boulevard, but near the point of failure of the boulevard, was considerably undermined at one corner and settled appreciably. Large earth cracks developed even for some distance back of the boulevard. In order to take care of the vehicular traffic a two-way trestle was built across the settled portion of the boulevard and carried on piles driven to depths of from 40 ft. to 70 ft. As the movement of the slide increased the piles showed some corresponding movement, but to date have remained sufficiently firm and the trestle is still considered safe. The action of the slide, however, was so treacherous that it was thought that it might possibly continue, especially if heavy rains were to follow, to such an extent that it would cross the Pennsylvania's yard, break down the retaining wall on the far side, and cut Liberty avenue in two. This would then result in two of the main vehicular arteries of the city being inoperative.

The situation became so serious that General George W. Goethals was called in by the city for consultation. After studying the situation, he rendered a report on the slide which is given in abstract below:

General Goethals' Report on the Slide

"The original boulevard was constructed on a fill built across a ravine in the hills. During its construction the material slipping down endangered the Pennsylvania railroad tracks at the foot of the slope and an injunction was secured by the railroad company. The difficulty was overcome by the construction of a retaining wall. As the fill progressed additional precautions became necessary and a timber crib, probably filled with rock, was built higher up the slope to relieve the overcharge on the retaining wall. While some attempt was made to drain the fill and to carry off water that had access to the slope, the drawings exhibited show that it was not adequately accomplished and this is confirmed by the consistency of a part of the material being removed by the steam shovels.

"The saturated condition of the material, due to lack of proper drainage, combined with overloading the bank resulted in overcoming the resistance offered by the crib and retaining wall caused the slide. While the additional load was undoubtedly the straw that broke the camel's back, I have no doubt from the fluidity of part of the mass that it was only a question of time when the slide would have occurred.

"There is nothing that now can be done to stop the movement; the only thing remaining is to dig out the material as it reaches the lower level. No satisfactory method can be devised or used to reduce the weight on top.

"From Mr. Richey's records I agree with him that upheaving of the tracks at the foot of the slope is caused by the forward movement of the mass of the retaining wall which remains intact, shoving the material out ahead of it, similar to the action to a plow. The present indications are that this upward movement will cease when the old retaining wall is removed.

"It is difficult at this time to say what the exterior limits of the slide will be. All the material within the cracks that now appear on the ground will move, and the bulk of it will have to be taken out. As the material move out, allowing a settlement at the top, additional cracks may develop and will then become the bounding lines for the slide or unstable area. I should not be surprised if it took in all of the material in the old ravine up to the retaining wall in the rear of the stable.

"Efforts should be made to keep all the water possible from the slide area and none of it should be allowed to stand in pools on the surface if it can be carried off economically. Cold weather may, to some extent, retard the movement, but unless water is kept off freezing is liable to produce additional difficulties.

"The situation is serious from the railroad standpoint, not so from the highway standpoint. The engineers can proceed with their borings to determine the location and character of rock over all of the area except that which is in motion, and with the preparation of their plans based on the data obtained, so that there need be no delay in the preparation of the budget."

Efficient Shovel Operation Difficult

The work of removing the material continued day and night, but due to the many interruptions resulting from destroyed tracks, necessary train operation, etc., efficient steam shovel operation was exceedingly difficult to maintain. The normal capacity of the shovels under ordinary circumstances would have been about 30,000 cu. yd. a day, but considering the many difficulties which had to be overcome it was only possible to secure an average of 6,000 to 7,000 cu. yd. At the time of the clearing of the last two tracks a total of between 110,000 cu. yd. and 115,000 cu. yd. had been removed since the start of the slide on October 29.

With the advent of drier and slightly colder weather the advance of the slide decreased greatly, and the rate of movement fell from a maximum of one foot per hour to an approximate minimum of about ½ in. or less per hour. Every attempt has been made and is still being made to carry off any water which might accumulate or work its way into the material remaining in the gully. While there is still some movement, it is believed that unless heavy rains start that the slide is well under control, though not necessarily near its end. Test holes are now being drilled at different locations to ascertain the probable depth at which bed rock is located. Prospective plans for future work at this point are now taking into consideration either the construction of a new retaining wall which extend down to bed rock, firmly anchored thereto, and the gully again filled or the building of a viaduct across the ravine and the abandoning of the fill.

The work of the Pennsylvania has been under the direction of W. D. Wiggins, chief engineer maintenance of way of the Central region, while the actual work in the field has been under the control of C. W. Richey, division engineer. The work of the city has been under the direction of John Swan, director of public works, and N. S. Sprague, chief of the bureau of engineering.

Lehigh Valley Combination Ordered Dissolved

WASHINGTON, D. C.

THE SUPREME COURT of the United States in a decision rendered on December 6 ordered the dissolution of the combination effected through intercorporate relations between the Lehigh Valley Railroad, the Lehigh Valley Coal Company, Coxe Brothers & Co., Inc., the Delaware, Susquehanna & Schuylkill Railway and the Lehigh Valley Sales Company, with such provisions for the disposition of all shares of stock, bonds or other evidences of indebtedness and of all property of any character of any one of said companies owned or in any manner controlled by any other of them as may be necessary to establish their entire independence of and from each other. The decision was rendered on the ground that the combination has constituted a restraint of trade in violation of the Sherman anti-trust law and has resulted in a violation of the commodities clause of the interstate commerce act. The decision of the court reversing that of the lower court was unanimous on the part of the seven members participating. Justices Brandeis and McReynolds took no part in the consideration of the case and Chief Justice White and Justice Holmes, while concurring in the decision, did so because of previous decisions of the court and not because of their present views, it was stated.

After reciting the history of the case and of the company's organization, the court said that the coal company was organized and conducted as a mere agency or instrumentality of the railroad company for the purpose of avoiding the legal infirmity which it was thought might inhere in the owning of coal lands and in the conducting of coal mining, shipping and

selling operations by the railroad company, and that the policy of purchasing and leasing coal lands tributary to its lines for the purpose of controlling interstate trade and commerce in anthracite coal and of preventing and suppressing competition therein was deliberately entered upon by the railroad company and, in combination with its agency, the coal company, was consistently pursued with increased energy and scope after the passage of the anti-trust act until the commencement of this suit, unless these purposes and results in point of law were modified and cured by the organization in 1912 of the sales company. The court then proceeded to discuss the latter point.

The decision continues in part as follows:

It is too plain for discussion that with a company thus organized and officered, the making of a contract by the coal company for the sale of all of its coal to the sales company was, in substance and effect, making a contract with itself, the terms of which it could determine in its discretion.

Immediately after the organization of the sales company the anticipated contract between that company and the coal company for the purchase of all the coal which the latter might mine or purchase was entered into and bears date March 1, 1912. This contract was to continue for 10 years unless terminated in the manner which it provides for, and its terms so nearly identical with the earlier Lackawanna contract, which is considered in United States c. Delaware, Lackawanna & Western R. R. Co., 238 U. S. 516, that the judge who tried this case below, with entire propriety, says that the differences between the two are wholly unsubstantial (225 Fed. Rep. 401). This court held that the contract in the Lackawanna case was void because violative of the provisions of the anti-trust act and the commodities clause of the act to regulate commerce.

The discussion of the Lackawanna contract is so full and satisfactory in 238 U. S. 516, that it would not serve any useful purpose to comment in detail upon the contract which we have here.

It will suffice to say that the provisions of the Lackawanna contract, which were clearly determinative of the former decision by this court, are plainly the same in substance, and almost exactly the same in form, as those in the contract we are considering, viz: The agreement of the coal company (1) to sell and of the sales company to buy all of the coal mined by the coal company from lands owned or leased by it, together with all coal which it might purchase; (2) that the prices to be paid for the more important grades of coal shall be 65 per cent of the New York prices—the two contracts are in precisely the same words in this respect; (3) that, with negligible exceptions, the sales company is to sell no other coal, for itself or for any other, than that purchased from the coal company; (4) that the coal company shall lease all of its facilities, structures and trestles to the sales company; (5) that either party shall have the right to abrogate and cancel the contract upon giving to the other six month's notice of its desire so to do; (6) that the sales company shall not buy coal except from the coal company—a provision which excludes the sales company, potentially a strong competitor, from the market. The coal company purchased 2,960,000 tons of coal in 1911 in addition to that which it mined.

These are the contract provisions which led this court, in the former case, to hold that a corporation organized and circumstanced as is the sales company which we have here—subject to be stripped at the will of another of all of its business and of all of its facilities for carrying on the business for which it was incorporated was neither an independent buyer nor a free agent.

Being entirely satisfied with the reasoning upon which the Lackawanna case proceeds to its conclusion, we hold now, as it was there in principle held: that the purchase in form by the sales company did not so dissociate the railroad company from the transportation of coal in which it was interested as to meet the requirements of the law, that the contract, nominally of purchase, was so calculated to restrain interstate trade as to be obnoxious to the anti-trust act of Congress, and that for this reason it is unlawful and void.

It will be of service in determining the purposes of the defendant railroad company with its corporate subsidiaries in the activities thus discussed, to recall the history of the defendant railroad company, as it appears in the decisions of this and of other courts.

In 1892 the defendant railroad company and the Central Railroad Company of New Jersey leased their lines of railway for the term of 999 years to the Reading Railroad Company, a parallel competing carrier extensively engaged in mining, marketing and selling anthracite coal. This combination, had it become operative, would have gone far toward monopolizing the interstate transportation and trade in anthracite coal of our entire country, but all operations under the lease of the Central Railroad Company of New Jersey were enjoined by the New Jersey courts, for the reason that it was deemed to be in restraint of trade, against public policy and calculated to partially destroy competition in the production and sale of anthracite coal, a staple commodity of the state. Thereupon the lease of defendant's property was abandoned and surrendered.

Six years later, in 1898, the defendant railroad company combined with the Reading and four other railway companies to contribute a large sum of money, which was successfully used to prevent the construction of a projected, competing line of railroad from the anthracite fields to tidewater. Of this enterprise this court said: "We are in entire accord with the view of the court below in holding * * * that the transaction involved a concerted scheme to combine for the purpose of restraining commerce among the states, plain violation of the act of Congress of July 2, 1890."

Four years later, in 1902, the defendant railroad company united with the Reading and four other anthracite carriers in a combination to control the entire tonnage of coal produced by independent operators along the lines of their respective railways. The device this time resorted to was a contract to purchase all the coal produced by independent mines, then opened or which might thereafter be opened by the vendors, and to pay therefor 65 per cent of the market price prevailing at tidewater points at New York, to be computed from month to month by an arbitrator to be selected by agreement. These contracts were elaborately considered and unsparingly condemned by this court in the case which is cited, and the conclusion reached was that the defendants in that case had unlawfully combined, by and through the instrumentality of the 65 per cent contract, for the purpose of controlling the sale at tidewater of the independent output of anthracite coal. The contracts were declared to be unlawful and were ordered cancelled.

In 1911, in Meeker & Company v. Lehigh Valley R. R. Co., 21 I. C. C. 129, 154, 163, the Interstate Commerce Commission held that the only line of demarkation between the Lehigh Valley Railroad Company was one of bookkeeping; that the railroad company "had monopolized the coal field served by it" and that it had been guilty of unjust discrimination and of charging unreasonable rates for which reparation was awarded. This decision was sustained by this court in Meeker & Company v. Lehigh Valley R. R. Co., 236 U. S. 412.

And yet again, in 1915, the Interstate Commerce Commission, after an investigation extending over three years, in which the defendant railroad company and all other initial carriers of anthracite were parties, held that the rates charged by the defendant and other carriers to tidewater and to certain interior points were unreasonable; that by trackage and other arrangements they had extended advantages to their subsidiary coal companies, to the prejudice of other shippers; and that concessions as obnoxious as direct cash rebates had been made to such coal companies.

This history of almost 25 years casts an illuminating light upon the intent and purpose with which the combination here assailed was formed and continued.

Without further comment, this discussion of the record requires us to conclude that it is clearly established that prior to the enactment of the anti-trust act, the railroad company, in combination with its coal company subsidiary, deliberately entered upon a policy of making extensive purchases of anthracite land tributary to the railroad company's lines, for the purpose of controlling the mining, transportation and sale of coal to be obtained therefrom and of preventing and suppressing competition, especially in the transportation and sale of such coal in interstate commerce, and that this policy was continued after the passage of the anti-trust act with increasing energy and tenacity of purpose, with the result that a practical monopoly was attained of the transportation and sale of anthracite coal derived from such lands.

The area of the anthracite territory is so restricted that to thus obtain control of the supply of such coal on a great system of railway (the amount transported exceeded one-fifth of the entire production of the country for the year before this suit was commenced) by a combination of corporations, such as we have here, and by such methods as we have seen were employed, effected a restraint of trade or commerce among the several states and constituted an attempt to monopolize and an actual monopolization of a part of such trade or commerce in anthracite coal, clearly within the meaning of the first and second sections of the anti-trust act as they have frequently been interpreted by this court.

Since we have also found that the contract between the coal company and the sales company was a mere device to evade the commodities clause of the interstate commerce act and therefore

void, it results that the decree of the district court must be reversed and the case remanded with instructions to enter a decree, in conformity with this opinion, dissolving the combination effected through the intercorporate relations subsisting between the Lehigh Valley Railroad Company, the Lehigh Valley Coal Company, Coxe Brothers & Company, Inc., the Delaware, Susquehanna & Schuylkill Railroad Company and the Lehigh Valley Sales Company, with such provisions for the disposition of all shares of stock, bonds, or other evidences of indebtedness, and of all property of any character, of any one of said companies owned or in any manner controlled by any other of them as may be necessary to establish their entire independence of and from each other. The contract of March 1, 1912, between the coal company and the sales company must be decreed to be void and all contract relations between the two companies enjoined which would serve in any manner to render the sales company not entirely free to extend its business of buying and selling coal where and from and to whom it chooses with entire freedom and independence, so that it may in effect, as well as in form, become an independent dealer in coal, and free to act in competition, if it desires, with the defendant coal company or railroad company.

As to the New York & Middle Coal Field Railroad & Coal Company the G. B. Markle Company, the Girard Trust Company and the individual defendants, the bill must be dismissed.

That the Lehigh Valley has during the past four years operated its coal properties in conformity with the ruling of the Supreme Court in the case of the Delaware, Lackawanna & Western was the assertion of E. E. Loomis, president of the Lehigh Valley. That this fact had no bearing in the recent ruling which calls for segregation of the Lehigh Valley's coal properties developed when Mr. Loomis pointed out that the court's decision was based solely on evidence submitted six years ago.

Mr. Loomis indicated that the decision of the court was somewhat of a surprise in view of the knowledge on the part of that company's officials that a general cleaning up process had been started several years ago and that at the present time the company was being operated in strict conformity to the law. It was intimated that had the attorney of the Lehigh been given an opportunity to submit new evidence the ruling might have been altered.

Mr. Loomis also stated: "It appears that we have a busy winter ahead of us between studying how to form combinations as the new Transportation Act provides and to break up combinations which have existed more than a quarter of a century but which the Supreme Court now declares a monopoly in restraint of trade as a result of a suit instituted over six years ago."

It was pointed out also that at present one-third of the coal of the Lehigh Valley is handled by independent operators.

Hearing on Maintenance Allowance

A HEARING WAS HELD before the Interstate Commerce Commission at Washington on December 4 on the application of Paragraph 3 of Section 209 of the transportation act relating to the allowance for maintenance to be made during the six months' guaranty period from March 1 to September 1 in computing the net operating income guaranteed to the carriers. Briefs filed with the commission on this subject by the Association of Railway Executives and the Railroad Administration were abstracted in the *Railway Age* of September 3, page 397. The arguments made at the hearing were in general along the lines followed in the briefs. Arguments were made on behalf of the railroads by Alfred P. Thom, general counsel of the Atchison, Topeka & Santa Fe, and chairman of the adjustment committee of the Association of Railway Executives, while the argument on behalf of the Railroad Administration was made by J. C. Davis, its general counsel.

The principal contention of the railroads was that the maintenance allowance, as well as the director general's obligations to maintain the railroads during the period of federal control, should be based on the sum necessary to produce the physical equivalent of the maintenance work performed during the test period, while the Railroad Administration argued that the provisions of the standard contract which also govern the maintenance allowance for the guaranty period, provide for an accounting test of the sufficiency of the expenditures made.

Mr. Thom made the contention that the engineering test should be applied so far as practicable and that the money test should be applied to items as to which the actual physical reparation cannot be definitely measured. The railroads also contended that the equation of expenditures for maintenance to represent increases in the cost of labor, materials, etc., should also be applied to depreciation.

Mr. Davis, on behalf of the Railroad Administration, said that the differences between the railroads and the administration as to the interpretation of the maintenance provisions of the standard contract represent a possible difference of $1,000,000,000. The gross amount asked of the Railroad Administration by eight large railroads whose claims are now under consideration is $203,943,000, of which $138,000,000 represents claims for maintenance, a great part of which depends upon the construction placed upon the word "cost" instead of "price" in the standard contract. Mr. Davis pointed out the great difference in maintenance standards and conditions on different roads and the difficulty of applying the engineering test to maintenance. He said that one railroad in Mississippi had based its claim on an affidavit of an expert who had been over the line at the time the road was taken over by the government and who went over it again immediately after the termination of federal control and stated that it would cost about $3,000 a mile to put the road in the condition in which it was taken over, or a total of $1,800,000. He also referred to the wide differences in the claims made by the different railroads as to the inefficiency of labor during the period of federal control. He said that perhaps because of the different conditions during the period of federal control a railroad did not need the same quantity of rail as was placed on it during the test period, but needed something else and it was necessary to use the accounting test to determine whether the expenditure of money for some other purpose was the equivalent of the expenditure which might have been made for rail.

In arguing that depreciation accounts should be equated up, Mr. Bledsoe said that, for illustration, the Railroad Administration had used up the equivalent in years of car life of 4,300 cars on the Santa Fe without replacing a car. It had allocated new cars to the company at the increased cost, but was willing to pay for depreciation only an amount based on the original cost of the cars. Members of the commission pointed out that if the railroads had remained in control of their properties they would have continued to charge depreciation at the old rates, but Mr. Bledsoe and Mr. Thom argued that the obligation of the government under the standard contract did not depend on what the railroads would have done.

THE WATER SERVICE DEPARTMENT of the Illinois Central, in an effort to check waste, has prepared a graphical chart showing the consumption of water at the various terminals on the basis of the quantity used per engine handled during the year. This chart, which was prepared from meter records without advance notice shows a consumption ranging from 8,300 gal. per engine handled to 15,100. By presenting this information graphically and distributing the comparative results to all divisions, interest in the detection and elimination of wasteful practices is encouraged

Takes Issue with the Farmers' National Council

Association of Railway Executives Refutes Assertions Relative to Railways Made by G. P. Hampton

IN A LETTER TO A NUMBER of the important farmers' organizations of the country, T. DeWitt Cuyler, chairman of the Association of Railway Executives, has called attention to the weakness of certain arguments advanced by the Farmers' National Council in a recent letter to several of the more conservative associations of farmers, in which it advocated, among other things, "government ownership and operation of the railroads for service and not for profit."

The letter of the National Farmers' Council alleges that the farmers of the country are being compelled to pay about $900,000,000 annually in higher rates, which they say, would not be necessary if the railways were owned and operated by the government instead of by private owners who, "emboldened by their success in securing a 6 per cent. guaranteed dividend upon the aggregate value of the roads, including billions of watered stock, are requesting that they may be granted a higher dividend." Mr. Cuyler, in his letter, points out the weakness of the council's contention and shows wherein the railways are being operated with greatly increased efficiency under private control.

The organizations addressed by the Farmers' National Council and Mr. Cuyler in their letters are International Farm Congress, Kansas City, Mo.; American Farm Bureau Federation, Chicago; National Grange, Fredonia, N. Y.; National Farmers' Union, Union City, Ga.; National Milk Producers' Association, Coldwater, Mich., and Farmers' National Congress, Kearney, Neb.

The Farmers' National Council Letter

The letter of the Farmers' National Council is signed by George P. Hampton, managing director, and that part of it relating to railways reads as follows:

"The average increase in freight rates of nearly one-third necessitated by the return of the railroads under the conditions of the terms of the Cummins-Esch law, has placed a crushing burden upon the American farmers. Farmers pay at least 40 per cent. of the general freight revenues of the railroads, as they constitute close to 40 per cent of the population. In addition, they have to pay all the freight on shipments of farm products, since farmers can not fix prices of their products. The Cummins-Esch bill, therefore, compels farmers to pay directly about $900,000,000 more a year than would be necessary under unified government operation of the roads for service and not for speculative profit, even if there is no further increase in freight rates. The recent increase in rates has resulted in reducing the gross revenues of the railroads, by reducing shipments and travel, so that there is a considerable deficit, and the owners of the railroads, emboldened by their success in securing a 6 per cent. guaranteed dividend upon the aggregate value of the roads, including billions of watered stock, are requesting that they may be guaranteed a higher dividend which in all probability will necessitate an increase in freight rates to an average of 40 to 50 per cent. for the country, over the rates charged during the war. You, of course, know what a blow such an increase would be to farmers, yet unless the roads are restored to unified government operation, there is no escape from precisely such an increase. The Interstate Commerce Commission recently reported that six months of private operation of the railroads, from March 1 to September 1 of this year, will cost the taxpayers $656,000,000. The total deficit under war-time conditions during twenty-six months of federal control of the railroads, was about $902,000,000, including the excessive rentals paid by the government, estimated at about $500,000,000 for the period. It is clear, therefore, that six months of private operation of the railroads have cost the American people considerably more than two-thirds as much as twenty-six months of federal control of the railroads. This six months of private operation has cost farmers directly over $400,000,000. In addition, do we need to remind you that the farmers have not secured adequate service since the return of the railroads to private competitive operation, and that the unavailability of freight cars, not so much due to the actual shortage of cars as to the fact that under private operation they could not be pooled and used where needed, thereby increasing their effectiveness, has caused the farmers scores of millions of dollars of losses through inability to move their crops promptly.

"Will your organization officially work for legislation to restore the railroads to government operation, and for government ownership with a clear majority of the board of directors appointed by the government representing the public, and all economies effected through unified operation and co-ordination of equipment to insure to the benefit of the American people?

"This would save American farmers, unquestionably, at least $900,000,000 a year directly, and two or three times that amount indirectly, and permit paying railroad employes fair living wages."

Mr. Cuyler's Refutation

Mr. Cuyler's letter to the farmers' organizations follows:

"I understand that on or about November 10 there was addressed to you a letter by Mr. George P. Hampton, managing director of the Farmers' National Council, in which, among other things, he asked you to place your organizations behind the movement for so-called "government ownership and democratic operation of the railroads for service and not for profit." In urging this course upon you, Mr. Hampton made a series of misstatements which I think it is due to you to have corrected.

"In the first place, he states that the Cummins-Esch bill is responsible for the recent increase in freight rates. Of course, the truth is that an increase in freight rates would have been necessary in any event, whether the government had retained the railroads or whether they had been returned to private operation. That increase would have been necessary because the cost of railway operation had so increased that the rates in effect prior to the recent increase were no longer capable of making the railroads self-supporting, either in the government's hands or in the hands of their owners.

"He next states that the railroads succeeded in securing a 6 per cent guaranteed dividend upon the aggregate value of the railroads, including billions of watered stock. The railroads have no 6 per cent guaranteed dividend whatever. The Cummins-Esch bill, now known as the Transportation Act, 1920, directs the Interstate Commerce Commission to fix rates at such a level as will permit honestly, efficiently and economically operated railroads to earn either 5½ or 6 per cent, in its discretion. The basis upon which these earnings are allowed are not the securities of the railroads, but the actual value of the property which they are devoting to the public service of transportation, and the Interstate Commerce Commission has already ascertained that the aggregate value of that property is not less than $18,900,000,000, and it has

set rates which it hopes will enable the carriers to earn 6 per cent upon the amount with the most efficient operation. But, whether any carrier succeeds in earning this is entirely due to its own efforts.

"He next states that the railroads are requesting they be granted a higher dividend. This statement is entirely untrue. Putting aside his misuse of the word 'guaranteed,' the railroads have made no request for rates in excess of those which have been established by the Interstate Commerce Commission, and are loyally co-operating in trying to carry out the Transportation Act in good faith, and to so increase the efficiency of operation as to earn a 6 per cent income out of existing rates.

"I know of no report of the Interstate Commerce Commission stating that the six months of private operation of the railroads from March 1 to September 1 will cost the taxpayers $656,000,000. You will recall that, when the railroads were returned to private operation, rates were entirely inadequate, and equipment and property somewhat deteriorated, and that the government therefore established the six months above referred to as a 'transition period,' during which it undertook to assure to any railroad company desiring it a six months' income identical to that which it received during the period of federal control. It is true that the railroads failed to earn that income by about $668,000,000. Whether or not this was due to the inferiority of private operation as opposed to government operation, I leave for you to judge from the following facts:

"1. On July 20, 1920, the United States Railroad Labor Board awarded an increase in wages for railroad employees amounting to approximately $625,000,000 a year. These increases were retroactive to May 1, 1920. During the four months from May 1 to September 1, they added approximately $208,000,000 to the operating expenses of the railroads. This was done by government authority, and presumably would have been granted to the railroad employees whether they had been in the employ of the railroad companies or in the employ of the government.

"2. During the six months from March 1 to September 1, 1920, the railroads expended $175,000,000 more than during the same six months of last year in increased maintenance of roadway and structures essential toward partially restoring the properties to more efficient condition.

"3. During the six months from March 1 to September 1, 1920, the railroads spent approximately $220,000,000 more in maintenance of equipment than during the similar six months of 1919. This was necessitated by the fact that approximately 27½ per cent of the locomotives of the country were in bad order and unfit for operation, and approximately 6½ per cent of the cars.

"Therefore, approximately $600,000,000 of the $668,000,000 deficit from March 1 to September 1 was either paid out for wages increased by government authority, or to make good a part of the deterioration caused by the war during the period of federal control.

"It is, therefore, not in the least clear, but obviously quite untrue, that six months of private operation of the railroads have cost the American people considerably more than two-thirds as much as federal control of the railroads.

"Mr. Hampton also reminds you that the farmers have not secured adequate service since the return of the railroads, and states that the unavailability of the cars was not to much due to actual shortage, but to the alleged fact that under private operation they could not be pooled and used where needed.

"It is true that for some six or seven months there has been a gradually lessening shortage of cars. This was not at all due to the alleged fact that they could not be pooled and used where needed. On the contrary, when the railroads resumed private operation, they took over intact the Car Service Section of the United States Railroad Administration and constituted it a Car Service Commission, and the distribution of cars has been carried out throughout the entire period with primary reference to the amount of equipment available of various kinds and the needs of different portions of the country for this equipment at different times.

"During the course of private operation, during the last eight months, the railroads moved 162,056 open-top cars from the West to the East, in order to keep up the production of coal; and from July 1 to November 4 they moved 129,630 box cars from the East to the West, for the purpose of carrying grain and other farming products.

"When the government ceased operating the railroads on March 1, there was an accumulation of loaded but unmoved freight cars amounting to 103,237, which, during the outlaw switchmen's strike, increased to the great sum of 288,152. On October 29 this accumulation had been reduced to 40,040, and on November 12 to 30,735 cars. So that, in substantially eight months of private operation, the entire congestion of the railroad system has been cleared up.

"This has been done not by adding billions of dollars to the capital investment account of the railroads, on which the public has to pay a return through rates, and would have to pay a return in some form even under government ownership, but by increased efficiency.

"When the government ceased operating the railroads, the average mileage per car per day was 23.3. On the first of October the railroads had raised this to 28.1. Each additional mile on the average daily movement is equivalent to the work of 100,000 additional freight cars moving a mile less per day. By increased rapidity of movement, therefore, which was only possible thanks to the great expenditures on maintenance of equipment previously referred to, the railroads added the equivalent of over 400,000 additional freight cars, without the addition of a dollar of capital investment.

"When the government ceased operating the railroads, the average load per car was 28.3 tons. On the first of October the railroads had raised this to 30 tons. Every ton added to the average load of the freight cars of the country is equivalent to adding some 60,000 to 70,000 cars loaded a ton less, and by this heavier loading, the railroads have therefore added the equivalent of some 100,000 additional freight cars. Taking faster movement and heavier loading together, the railroads under private operation, by increased efficiency, have given the country the benefit of the equivalent of substantially 500,000 additional cars. If this increase in the transportation capacity of the railroads had had to be provided by the purchase of 500,000 new cars, with the necessary quota of locomotives, it would have added something like two and one-half billion dollars to the property investment account of the railroads on which the public would have to pay a return, through rates. The fact that the investment of this stupendous sum was made necessary, and that this increase in transportation capacity was manufactured out of improved efficiency, instead of out of additional cars and locomotives, is one of the genuine and striking savings accruing to the country from the resumption of private operation.

[Mr. Cuyler here quoted a part of an address delivered by Clyde B. Aitchison of the Interstate Commerce Commission before the National Association of Railway and Utilities Commissioners at Washington on November 10, pointing out the effects of the outlaw strikes in April and the improvement in service subsequent thereto.]

"In writing this letter I am not attempting to argue the question of government ownership. If you are interested in discussing it, we shall be glad to discuss it with you, but the purpose of this letter is to put you in possession of certain plain facts, all of which are matters of public record, and any of which could have been ascertained by Mr. Hampton before he wrote you."

William J. Harahan

William J. Harahan, formerly president of the Seaboard Air Line, was, on December 7, elected president and a director of the Chesapeake & Ohio and the Hocking Valley, succeeding the late George W. Stevens. Mr. Harahan is an executive of wide experience. He has had training in both the operating and engineering departments and has held important executive positions with three large railway systems. He was at one time, fourth vice-president and general manager of the Illinois Central and later, vice-president of the Erie, in charge of engineering. He was elected president of the Seaboard Air Line in September, 1912, and during the period of Federal control, was continued in charge of the operation of the property as Federal manager.

Mr. Harahan will occupy a position on the Chesapeake & Ohio similar to that which he held on the Seaboard, to the extent that he will be the operating head of the property reporting to a chairman of the board in New York. In his new position, however, he should have a considerably wider scope for his abilities as a railroad manager. The Seaboard Air Line has 3,563 miles of line as compared with the Chesapeake & Ohio's mileage of 2,506, it is true, but the operating revenues of the former in 1919 were $41,183,532, as compared with operating revenues of the latter totaling $71,475,016. This is excluding from our comparison the Hocking Valley, which, operating 350 miles of line, had, in 1919, operating revenues of $11,654,517. This indicates a great difference in traffic density per mile of line as between the Seaboard and the Chesapeake & Ohio systems, but it only begins to state the problem that lies before the new operating executive. The development of the Chesapeake & Ohio of late years has been, comparatively speaking, extensive rather than intensive. The present or the next step is to carry out the work of intensive development of its mileage.



W. J. Harahan

There are two things in particular that stand out in Mr. Harahan's career. One is his popularity with his men and the respect that he has been able to secure from those who work with him. This is the result of a pleasing disposition combined with the fact that, having worked up through the ranks, he understands the attitude of the railway employees and knows how to get them to do their best for the railroad for which they work. The other point in his career has been that he has had to work in recent years under somewhat adverse conditions. Neither the Erie nor the Seaboard Air Line is a rich road. Mr. Harahan's experience with them has shown him how to get the most out of a railroad dollar and how to make a little money go a long way. The Chesapeake & Ohio is not a poor road, but no one would deny that this training should prove of value to Mr. Harahan in his new work notwithstanding.

George W. Stevens, the late president of the Chesapeake & Ohio, was an able operating man. He was in absolute charge of the operation of the road and the discretion allowed him by his principals, whoever they may have been, was great. It will be borne in mind that during his 30 years as the operating head of the road, the property was in successive control of no less than three different interests, not counting the Railroad Administration. Mr. Stevens was well liked and popular with officers and men alike and the loyalty which he inculcated on the road was noteworthy. Mr. Harahan succeeds to these things and should be able to continue equally happy conditions.

The Chesapeake & Ohio is one of the most important coal carriers in the United States. On this railroad the bituminous coal tonnage is approximately 65 to 70 per cent of all the freight. Naturally the intensive development work referred to above, will deal with the handling of coal. The Chesapeake & Ohio is now going through something of a transition period with its coal traffic. Its coal comes from four regions. The most easterly of these is the New River district, supplying about one-quarter of the total tonnage. This coal is a low volatile fuel; it moves east, principally, and makes up a large proportion of the coal delivered to coastwise vessels at Newport News. It does not now play as important a part in the road's coal traffic as it once did. There has been a considerable decrease in the tonnage originating on the Chesapeake & Ohio in this region and naturally it supplies a smaller percentage of the total tonnage moved. The other three districts in the order of their importance are the Logan, Kanawha and Kentucky fields. These fields supply a high volatile coal which has been found in special demand for export trade and which of late has seen considerable development for use as a by-product coal. The coal from these fields supplies the better part of the westbound movement—to Cincinnati and beyond or to the lake ports and territory served by the Hocking Valley. The interesting feature to which particular attention should be drawn is the increasing amount of this coal moving east. The dumpings at Newport News this year have broken all records, totaling, for the first ten months of 1920, over 7,000,000 tons. Something like 60 per cent of the coal dumped has been for export trade.

This brings attention to the advantageous position the Chesapeake & Ohio is in to handle export trade, not only in coal, but in other commodities. The newest coal pier at Newport News is of the most modern type. Hampton Roads is pre-eminently the tidewater coal center, whether for export, bunker or coastwise trade. The Chesapeake & Ohio should be able to hold its own with the Norfolk & Western and the Virginian in this trade. The Chesapeake & Ohio has a considerable number of 55 and 70-ton cars in use in its coal traffic to tidewater, and has recently ordered some 100-ton cars, which will no doubt enable it to handle this coal even more efficiently in the future than it has in the past.

Mr. Harahan will have before him the development of the

Chesapeake & Ohio to the west as well as to the east. The Chesapeake & Ohio owns the Hocking Valley and has derived great benefit from this ownership. Traffic from the former to the latter moves over the Chesapeake & Ohio Northern and thence over the Norfolk & Western, reaching the Hocking Valley at Columbus; it is understood that it is contemplated eventually to extend the Chesapeake & Ohio Northern to fill this gap now bridged by the Norfolk & Western. The building up of traffic on the Chesapeake & Ohio of Indiana, the system's connection between Cincinnati and Chicago, is another problem confronting Mr. Harahan, and as to its being a big one there is no question. The owners of the Chesapeake & Ohio feel that many sections of the road are being called upon to handle a considerably greater traffic than that for which they are best fitted. A big program of physical improvements is in contemplation, and it is not unlikely that in securing Mr. Harahan the directors had in mind that he had had considerable engineering experience. In this connection it should be noted that on account of his early connection with the Chesapeake & Ohio as a division engineer, Mr. Harahan acquired an intimate knowledge of some of the most important physical characteristics of that railroad. Due to the proximity of the Seaboard Air Line to the Chesapeake & Ohio, and the fact that large quantities of fuel coal required by the Seaboard have originated on the Chesapeake & Ohio, it may be assumed Mr. Harahan is intimately acquainted with the current situation on the road of which he has now become president, and appreciates that the most vital problem of that railroad is to provide a more adequate outlet for a coal territory that is developing with great rapidity. The conditions on the Chesapeake & Ohio and Mr. Harahan's knowledge of these conditions, combined with his particular combination of engineering and operating training, would seem to make the choice of him for president most fitting.

William J. Harahan, like other well-known railroad executives of the present generation, has qualifications which cannot be learned in the schools: either the university or the school of experience, for he was the son of an all-round operating officer. Such boys begin their railroad education from five to fifteen years earlier than is possible with boys less favored—long before they can begin to have "experience"—and their superior mental equipment, though usually not measurable on the surface, always counts. The elder Harahan's career as president of the Illinois Central, preceded by many year's experience on other prominent roads, his leading position in the American Railway Association and his tragic death in January, 1912, will be remembered by our older readers.

William J. Harahan was born December 22, 1867, at Nashville, Tenn. He began railway work in 1881 as a messenger and clerk in the superintendent's office of the Louisville & Nashville at New Orleans. In 1884 he went as apprentice into the Louisville & Nashville shops, and in 1886 into the engineering department. For two years, beginning in 1889, he was engineer of maintenance of the Cincinnati division of the Chesapeake & Ohio. In 1890 he was placed in charge of structures on the Baltimore & Ohio Southwestern, and two years later became roadmaster and trainmaster of the Pontiac division of the Illinois Central. In April, 1895, he was appointed assistant superintendent of the Freeport division, and in October of the same year, superintendent. In 1896 he became superintendent of the Louisville division, and in May, 1901, was appointed chief engineer of the Illinois Central. A little over a year later he was appointed assistant general manager, in 1904 general manager, and, in 1905, fourth vice-president and general manager. He was appointed assistant to President Underwood of the Erie in 1907 and was later elected vice-president in charge of engineering. He was elected president of the Seaboard Air Line in September, 1912, and served as federal manager of that property during the period of federal control.

Hearing on Car Distribution "Graft" Charges

WASHINGTON, D. C.

GIBBS L. BAKER, a Washington attorney and general counsel for the New York Wholesale Coal Trade Association, who had been quoted in various newspapers as charging many irregularities in connection with the issuing of permits and the distribution of cars for the shipment of coal, was called as a witness at a hearing before Commissioner Aitchison of the Interstate Commerce Commission at Washington on December 4 in an investigation ordered by the commission as to the truth of the charges. The witness denied having made statements attributed to him in the newspapers and said he had only hearsay evidence of any irregularities. He testified to having been told in conversation of several specific instances of irregularities. Chief Counsel Farrell of the commission read newspaper interviews quoting the witness as stating that some mines were getting far more cars than their rating allowed, that car distributors for the railroads had received large sums in "graft," and that there were indications of collusion in the clerical force of the Interstate Commerce Commission itself. Mr. Baker denied having made the statements, but said he had discussed with some newspaper men certain statements that had been made to him by others regarding irregularities in the use of coal permits.

He said that at a hearing before the Tidewater Coal Exchange, which he did not remember very definitely, one coal company had been asked to explain why it had shipped to tidewater more coal than was allowed by its permit, and another company as to why it shipped coal on a permit issued to another company. He also said that William F. Coale, president of Coale & Co., had told him in conversation that the American Fuel & Shipping Company of Baltimore had obtained from the Baltimore & Ohio a permit for the shipment of approximately 100,000 tons of coal to tidewater for the account of Coale & Co., on a statement that certain ships were waiting for the coal, the names of the ships being fictitious, and that this permit had cost the company $4,000. He understood that the Baltimore & Ohio had made an investigation of the matter and he suggested the name of a witness whom the commission might call who would know more definitely about the case. On the strength of that information, he said he had doubtless said to newspaper men that there had been abuses by railroads and coal men of orders of the Interstate Commerce Commission. He also said he had been told by an assistant United States attorney at New York that car distributors had been receiving large sums of money from coal men.

Commissioner Aitchison asked the witness particularly about a statement quoted in the New York Herald referring to collusion among employees of the Interstate Commerce Commission. Mr. Baker said he had never heard of any such assertion and he had no reason to believe that any officer or employee of the Interstate Commerce Commission had anything to do with irregularities. Commissioner Aitchison said that there was no way in which any employee of the commission could add to or take away from the supply of cars to any mine.

The hearing was then adjourned, subject to further call.

A SURVEY of the transportation facilities of the Pittsburgh (Pa.) District is being made by the United States Department of Commerce. Inspectors of the Bureau of Foreign and Domestic Commerce of the department will study railroad facilities, inland waterways facilities, terminal costs, expense of loading and unloading, river transportation cost, etc. Col. James F. Bell, United States engineer in charge of the Pittsburgh District, is accompanying the government inspectors.

General News Department

The shops of the Southern Pacific at Houston, Tex.—the paint shop, air brake shop, storehouse and office—together with a number of cars, were badly damaged by fire on December 7. Estimated loss $350,000.

The Charleston Division on the Eastern Lines and the Ohio Division on the Western Lines of the Baltimore & Ohio are declared the winners in the recently closed 30-day no-accident campaign on that road.

The Pennsylvania Railroad reports for September that the time lost per 10,000 passenger car miles on account of car failures, fell from 5.1 minutes in April and 3.9 minutes in August, to 3.5 minutes in September. In September there was one car failure detention for every 45,700 car miles. The total number of passenger train detentions due to car failures was reduced from 994 in August to 841 in September, a reduction of 15 per cent.

The Northern Pacific has leased a part of its land holdings in Montana to an oil concern, which expects to make a thorough investigation of the property. The eastern extension of the anti-clinal structure of the Cat Creek oil field lies within the limits of the land grants of this road and although no wells have been completed in this territory, and there is no immediate activity, considerable work has been laid out for next season which should serve to disclose the presence of oil should it exist. There are nine wells now producing oil in the Cat Creek field, seven of these wells having been brought in with a flush production of over 1,000 barrels per day and the oil is of extremely high grade. The acreage of proven oil ground so far is quite small and the quantity of oil issuing from the present wells is gradually declining.

Two of Chicago's leading technical institutes, with the co-operation of the American Society for Steel Treating, will offer evening courses in the subjects of forging and heat treatment of steel. These courses are specially planned for the benefit of the practical men in the forge shop or heat treating departments or those who wish to qualify for such work. The course will embrace the following phases of the work: pyrometer, microscope, forging, annealing, alloy steels (dealing with the effects of different alloys and treatments upon the physical characteristics of steel), hardening and drawing of tool steel and case hardening. The plan and formation of this course was carried out by the Chicago chapter of the society through their educational committee and its seven sub-committees. The texts, lectures and demonstrations were prepared voluntarily.

The Southern Pacific has just completed a motion picture depicting graphically the story of oil, tracing its history from production to consumption. The film will be shown at all terminals and at principal points of the System as an aid in teaching the conservation of this product, of which the Southern Pacific uses 60,000,000 gallons a month, or about 16 per cent of all oil produced in California. The company, in notifying its employees of the picture, states that there is a message to be learned by all who see this film. Further, that the fuel industry faces a crisis; that those who depend upon the industry must take heroic measures if they would stave off disaster and that the picture shows what these measures are. It is further stated that the consumption of fuel oil now exceeds production by 30,000 barrels a day and reserve stocks in California are being depleted by 1,000,000 barrels a month.

A 33 per cent reduction in rear collisions is reported by the Pennsylvania for the year 1919, as compared with 1918, a fact which is taken to prove that such collisions can and should be presented. This fact, in a circular to employees, is supplemented by a quotation from Benjamin Franklin, the patron saint of Pennsylvania, embodying his well-known aphorism that "experience keeps a dear school, but fools will learn in no other." Continuing, the circular says that the fact that there are 10,000 accidental deaths and 175,000 injuries to passengers, employees and trespassers yearly on the railroads of the United States, most of which are preventable, proves the wisdom of this maxim. One of the illustrations in the circular, designed, evidently, as a hint concerning what classes of persons are pupils in the school referred to, shows the flagman of a halted freight train, who ought to be going back to stop following trains, sitting on the rail about ten feet back of his caboose, reading a newspaper.

A. S. C. E. Annual Meeting

The sixty-eighth annual meeting of the American Society of Civil Engineers will be held at the headquarters of the society, 33 West Thirty-ninth street, New York City, on Wednesday and Thursday, January 19 and 20, 1921.

British Syndicate to Operate Roumanian Railways

LONDON, BY RADIO.

It is definitely rumored in London that a British syndicate has completed preliminary negotiations to operate the Roumanian railways for a period of 35 years. It is said that locomotives will be ordered from Henschel & Company in Germany and that the German firm of Krupp will do the repairing of locomotives.

B. O. Cars Reduced

The Pennsylvania Railroad System has reduced the ratio of unserviceable freight cars to total freight cars on line from 11.9 per cent on October 1, 1919, to 3.6 per cent, as of October 1, 1920—10 per cent better than the 4 per cent which was set as a goal for the entire country by the Association of Railroad Executives. The average daily number of freight cars in bad order on the whole system has been brought down from 25,531 in March, 1920, to 10,136 in September.

New York Railroad Club Dinner

The New York Railroad Club will hold its second annual dinner at the Hotel Commodore, New York, on Thursday evening, December 16. The speaker of the evening will be James A. Emery, counsel of the National Industrial Council; his topic will be, "Transportation and the Public's Interest." The musical program will be in charge of Miss "Bobby" Besler. Reservations may be made through F. T. Dickerson, Central Railroad of New Jersey, 143 Liberty street, New York.

Mechanical Associations' Plan for Joint Exhibit

At a meeting of the official representatives of a number of minor railway mechanical associations and the associations of supply men exhibiting at the conventions of the railroad organizations, schedules were arranged for holding the conventions of a number of the associations at the Hotel Sherman, Chicago, during a continuous period of two weeks beginning September 6, 1921. The railroad organizations definitely committed to the plan are the Traveling Engineers' Association, the International Railway General Foremen's Association, the American Railroad Master Tinners', Coppersmiths' and Pipe Fitters' Association and the Chief Interchange Car Inspectors' and Car Foremen's Association. Others may possibly be included at a later date.

In order to carry out the details of the plan for conducting a continuous joint exhibit and to arrange for simultaneous meetings of some of the associations, a resolution was passed that a committee be organized consisting of a representative from each of

the railway and supply associations interested, to take care of features of the arrangement which would not regularly be handled by the individual associations, and that this committee be prepared to present a report at a joint meeting to be held in September, 1921, recommending the form of a permanent joint organization, if such an organization seems to be desirable.

American Association of Engineers

At the meeting of the national railroad council of the American Association of Engineers on November 27, the following resolution was adopted:

"Resolved: That the chairman of the national railroad council be authorized to arrange through proper channels to undertake a plan of establishing contact with the Association of Railway Executives for the purpose of developing an understanding with them relative to the position and status of engineers in railroad service, satisfactory and mutually advantageous to both."

It was also decided to appoint a sub-committee to consider revisions of the American Association of Engineer railway salary schedule, together with further classifications and a more elaborate statement of the duties of various positions and a more advantageous grouping of positions.

The Wood Preservers' Association

The following members have been nominated or the offices indicated or the ensuing year: For president, C. M. Taylor, superintendent treating plant, P. & R. and C. R. R. of N. J., Port Reading, N. J.; for vice-president, F. J. Angier, superintendent timber preservation B. & O., Baltimore, Md.; for second vice-president, H. S. Valentine, superintendent Eppinger & Russell Company, New York City; for secretary-treasurer, G. M. Hunt, U. S. Forest Products Laboratory, Madison, Wis. For members of executive committee for three years (two to be elected), Walter Buehler, engineer of wood preservation, the Barrett Company, New York City; R. J. Calder, secretary-treasurer, International Creosoting & Construction Company, Galveston, Texas; H. S. Sackett, assistant purchasing agent, C. M. & St. P., Chicago.

Labor Board Refuses Marine Employees' Demands

Marine employees of the Northwestern Pacific, the Southern Pacific, the Atchison, Topeka & Santa Fe, and the Western Pacific operating in the port of San Francisco, Cal., were denied increased wages by the United States Railroad Labor Board in a decision handed down on November 23. The men's demands were presented by the Masters, Mates & Pilots of America, the Marine Engineers' Beneficial Association, and the Ferry Boatmen's Union of California. The Board's decision is applicable to employees on railroad operated equipment in the port of San Francisco. The Board found that the wages now being paid and the rates which were in effect at the date of the termination of federal control were and are reasonable, fair and just. The Board did not undertake to consider or change the rules and working conditions.

Illinois Central Studies Electrification

The Illinois Central has appointed a commission to study electrification of the Chicago terminal facilities of that road and to advise on numerous technical questions involved. This commission will be composed of A. S. Baldwin, vice-president of the Illinois Central, chairman; D. J. Brumley, chief engineer of Chicago terminal improvements of the Illinois Central; Bion J. Arnold, consulting engineer, Chicago; George Gibbs, consulting electrical engineer. New York; Cary T. Hutchinson, consulting engineer, New York, and W. M. Vandersluis, formerly signal engineer of the Illinois Central, who will be engineering secretary of the commission. It is understood that the scope of work of this commission will be to consider and make recommendations on technical electrical problems arising in the electrification of the Illinois Central passenger and freight terminals in Chicago as outlined in an ordinance of the city of Chicago, passed July 21, 1919. These problems will include consideration of (1) the general trend of development in the various electrical propulsion systems and the probable influence of future development upon installation and operation of lines of the Illinois Central, and (2) the relative advantages of the alternative systems considered in connection with the electrification of (a) suburban service, (b) switching service and through freight service, (c) through passenger service, and (d) interchange with other railroads.

Tenth Anniversary of the Pennsylvania Passenger Station, New York City

Friday, November 26, marked the completion of the first ten years of the Pennsylvania Railroad station in New York City, and the use of the Hudson River tubes. The first train over the Long Island had started out of the terminal and through the East River tubes three months before. The through rail connection between New England and the South by way of the Hell Gate Bridge and the New York Connecting Railway, was put in service in April, 1917, and in January, 1918, the freight extension of the New York Connecting Railway to Bay Ridge, Long Island (opposite Greenville, N. J.), was opened to traffic.

The New York improvement of the Pennsylvania System had been authorized by the Board of Directors in 1902. In the ten years the number of passengers carried to and from the Pennsylvania station has increased over 200 per cent, or from 9,861,427 in 1911 to 30,343,205 in 1919. Pennsylvania Railroad traffic has increased 188.3 per cent and Long Island 214.2 per cent. The Long Island passengers are about two-thirds of the whole.

How the ferry has gone out of business as a passenger carrier is seen in the fact that in 1910, the last year of exclusive ferry service, the Pennsylvania ferries transported 9,372,028 rail passengers, while last year this dropped to 169,772 passengers. The Hell Gate bridge route, with four trains in each direction, carried, in October, 44,561 passengers.

October Earnings

Total operating revenues of 197 large roads for October, as reported to the Interstate Commerce Commission, show an increase of only 26.2 per cent as compared with October, 1919, in spite of the increase in rates and an increased volume of freight traffic. Operating expenses increased 28.8 per cent and net operating income increased 22.5 per cent. The 197 roads, operating 224,000 miles, had a net income of $88,169,565. The figures by districts are as follows:

	1920	1919	Per cent of income 1920 over 1919
Total operating revenues:			
Eastern District	$289,209,000	$219,522,664	31.7
Southern District	93,219,778	76,349,398	22.1
Western District	235,530,967	193,659,618	21.6
United States	617,959,745	489,531,680	26.2
Total operating expenses:			
Eastern district	243,955,895	184,526,505	32.2
Southern District	79,283,402	64,491,015	22.9
Western District	180,064,782	141,822,187	27.0
United States	503,304,079	390,839,707	28.8
Net income:			
Eastern District	32,167,807	23,436,640	37.3
Southern District	11,429,981	9,151,176	24.9
Western District	44,571,777	39,400,275	13.1
United States	88,169,565	71,988,091	22.5

	No. of roads represented	Average miles operated
Eastern District	78	58,741.52
Southern District	36	43,821.51
Western District	83	121,486.61
United States	197	224,049.64

Note: Foregoing returns do not take into account Federal lap-over items growing out of settlements with the U. S. R. R. Administration.

Traffic on the Southern Pacific

In a message addressed to employees and the public, J. H. Dyer, general manager of the Southern Pacific, states that the Southern Pacific Company moved more than 26,000,000 tons of freight during the nine months ending September 30, exceeding the record of any previous similar period by nearly 752,000 tons. Sixty per cent of this tonnage originated on the company's lines. More than 38,000,000 passengers were carried during the nine months noted, an increase of nearly 212,000 passengers over the same period in 1919, the next highest period, and 17,452,000 more than during a similar interval in 1915, the year of the Panama Pacific Exposition at San Francisco. In discussing the use and condition of equipment, Mr. Dyer said that locomotives in freight service during September, 1920, were on the road on an average of 11 hours and made 102 miles, in each 24 hours. This, considering the idle time of the large number of locomotives in exclusive helper service, the time required at terminals and in shops to receive necessary inspection and repairs and awaiting suitable train loading, is an exceptionally good record in time on road and miles run. Passenger locomotives were on the road eight hours and made 182 miles in each 24 hours. The 48,500 freight cars

on the line made an average of 38.6 miles per day, as compared with 30 miles per day which railroads are urged to reach. Only 9.99 per cent of all locomotives and 4.11 per cent of all freight cars on the line were in bad order on September 30, compared with the 15.08 per cent and 4.54 per cent, respectively, for March, 1920. In reviewing the status of carloading, Mr. Dyer says that evidence of good work done by station agents with the help and co-operation of the shippers, is reflected in the carloading report for September, which shows that 79,300 cars were loaded with an average of 26.3 tons per car. This is an increase of 1.5 ton per car over September, 1919, and the best record of this year.

Operating Statistics for September

The Interstate Commerce Commission has issued its monthly table of operating statistics for September and the nine months ended with September. Freight movement for the month on the railroads covered by this report amounted to 40,651,000,000 net ton miles, including non-revenue, an increase of 5.1 per cent as compared with September, 1919. These figures vary slightly from those reported earlier by the Bureau of Railway Economics, whose statistics cover a slightly larger mileage.

For the nine months' period, net ton miles aggregated 330,964,000,000, an increase of 15.4 per cent, as compared with 1919. The average train load for September was 767 tons, as compared with 778 in September, 1919. This was also less than the train load for August, which was 788 tons. The percentage of loaded car miles was 66.8, as compared with 69.6 in September last year, and the percentage of serviceable cars on line daily was 93.2, as compared with 91.4. The car miles per car day averaged 28.4, as compared with 26.7, the net ton miles per loaded car mile 30.1, as compared with 28.4, and the net ton miles per car day averaged 568, as compared with 527 in September last year. This figure establishes a new record for a month. For the nine months' period the net ton miles per car day averaged 486, as compared with 429 in 1919. The average cost per freight train mile for selected accounts was $2.10 in September, 1920, as compared with $1.60 in September, 1918. The cost of locomotive repairs per train mile shows an increase of 7.2 cents; wages of enginemen, 8.2 cents; fuel, 20.1 cents; other locomotive and train supplies, .7 cent; enginehouse expenses, 2.9 cents, and trainmen, 11 cents. The average cost per passenger mile for selected accounts was $1.11, as compared with 90.3 cents. The average cost of coal per net ton was $4.54, as compared with $3.10. For the nine months' period the average cost per freight train mile was $1.97, as compared with $1.62, and the cost per passenger train mile was $1.06, as compared with 88.6 cents.

Jersey Central to Replace Newark Bay Bridge

One of the important railroad structures in the vicinity of New York, the mile and a half trestle of the Jersey Central over Newark Bay, is now being reconstructed under difficult traffic conditions. It is also planned to replace this present low level bridge with a four-track high line of steel and concrete, but the magnitude of the undertaking is such that the present bridge must remain in service for some time. The reconstruction was brought about by the recent acquisition of some heavy Mikado freight locomotives which made it necessary to place a new deck on the present bridge in order to bring the entire line up to the modern specifications of loading and speed.

As deliveries of yellow pine were uncertain, Douglas fir was purchased and transported by boat from the Pacific Coast. It is interesting to note that the timbers were in place in the bridge in less than 60 days from the time they were cut from the trees in the forests of Oregon. The work was divided into eight independent operations, in each one of which a length of track was to be torn up and rebuilt, while trains in both directions ran around the abandoned section on a single track. Freight schedules, as far away as Mauch Chunk, were altered in order to keep slow-moving trains away from the bridge during rush hours, and passenger trains, where possible, were rerouted by way of Newark transfer. To carry the trains of one of the busiest four-track roads in the world on one track only seemed an impossibility, and the success which has been reached and the slight delay occasioned speaks much for the perfection of the plan. An important factor in this has been the modern signal-locking devices for the protection of the single track. Study has been made in great detail as to what trains shall be given superior right, and very costly delays have been deliberately caused to freight trains so that commuters could be transported without delay.

The construction of the new steel bridge will be started as soon as necessary arrangements will permit. This bridge will allow a large proportion of the harbor traffic to pass underneath without the operation of the draw span, and freedom from this delay, together with the additional tracks, will vastly increase the train-carrying capacity of the line.

A. S. C. E. Nominees

A second ticket of officers for the American Society of Civil Engineers has been placed in nomination in opposition to the ticket presented by the nominating committee and published in our issue of October 15, page 667. The second set of nominees is as follows:

President—J. Waldo Smith, Chief Engineer, Board of Water Supply (Catskill Project), New York City.

Eastern Vice-President—Allen Hazen, Consulting Engineer, New York City.

Western Vice-President—Col. Frank G. Jonah, Chief Engineer, St. Louis-San Francisco, St. Louis, Mo.

Treasurer—Arthur S. Tuttle, Deputy Chief Engineer, Board of Estimate and Apportionment, New York City.

Directors—Dist. 1—Col. John P. Hogan, chief of engineering staff, State Water Power Investigations, New York City; Robert S. Parsons, General Manager, Erie Railroad, New York. 4—Harry A. Lane, Chief Engineer, B. & O., Baltimore, Md. 9—Alexander Maitland, Jr., president, Kansas City Bridge Co., Kansas City, Mo. 10—Frank T. Darrow, Assistant Chief Engineer, C., B. & Q., Lincoln, Neb. 11—Richard D. Parker, Engineer, Railroad Commission of Texas, Austin, Tex.

Railroad Section at the Annual Meeting of the A. S. M. E.

In connection with the annual meeting of the American Society of Mechanical Engineers, the railroad section of this society met in the Engineering Societies' building, in New York, Wednesday afternoon, December 8. The meeting was presided over by Mr. E. B. Katte, chief engineer of electric traction, the New York Central lines, and was addressed during the session by Major Fred. J. Miller, retiring president of the American Society of Mechanical Engineers, who has taken a prominent part in the successful inauguration of the technical sections.

The first paper presented at this session related to the static adjustment of trucks on curves. This paper was prepared by R. Eksergin of the Baldwin Locomotive Works and dealt very fully with a mathematical analysis of this phase of locomotive design. Commenting on this paper, Mr. Lawford H. Fry of the Standard Steel Works took exception to a statement appearing in the paper to the effect that adequate consideration of this subject has been wanting in locomotive design. Mr. Fry contended that the uniformity of results arrived at by various locomotive designers indicated a close approximation to a true analysis of the situation. In fact, the very definite requirements placed upon locomotive builders with respect to the design of running gear early necessitated very careful consideration of this subject from a practical standpoint.

Mr. Woodward of the Lima Locomotive Company stated that in the design of locomotive running gear, greater emphasis should be put upon stability to the locomotive operating at high speeds on tangent track than the question of compensating for stresses induced by operation of the locomotive around curves. In the latter case, the wheel flanges on one side of the locomotive lie against the ball of the rail in such a manner as to steady the locomotive, whereas on tangent track the synchronous nosing of modern locomotives operating at high speeds is decidedly the most difficult problem to contend with. Mr. Woodward believes that if this problem could be successfully met in the design of the running gear, no difficulty would be encountered through operation on curves.

The paper was further discussed by L. K. Sillcox, general superintendent of motive power on the Chicago, Milwaukee & St. Paul. Mr. Sillcox's discussion dealt with some of the practical phases involving flange and lateral wear and also outlined at some length the situation as related to electric locomotives in operation on his railroad. In the discussion submitted by Mr. G. R. Hen-

derson of Philadelphia, a very practical method for determining the height of the center of gravity of any locomotive was outlined. This method involved placing the locomotive on a section of track, one side of which rested on scale beams, thus registering the weight imposed by one side of the locomotive. Following this the relative elevation of the rails was altered and the locomotive re-weighed, thus admitting determination by means of a very simple mathematical calculation.

"Increasing the Capacity of Old Locomotives," by C. B. Smith, mechanical engineer of the Boston & Maine Railroad, was the second paper presented at this session. The last paper presented at this session dealt with modernizing locomotive terminals and is published in this issue together with an abstract of the discussion. The other papers, together with an abstract of the ensuing discussion, will appear in an early issue of the *Railway Age*.

At the meeting of the Forest Products Section of the A. S. M. E., which was held on Tuesday afternoon, papers were presented on Machining Railroad Crossties, by D. W. Edwards; The Use of Wood in Freight Car Construction, by H. S. Sackett, and Creosoted Wood for Factory Floors, by L. T. Ericson.

The Co-ordination of Railway and Marine Terminals

The Terminals Committee of the Western Society of Engineers, Chicago, has recently submitted a report to that organization on the convention of the American Association of Port Authorities held in Chicago recently, in which certain conclusions relative to the co-ordination of rail and marine terminals were presented which are of interest to railway men. Among the outstanding points in the report of the committee were the following:

That the port problem involves as much the essential element of railroad terminal movement as of marine movement and that the rail problem should receive concurrent study in equal detail. To this end the following resolution was submitted by the committee and adopted in substance unanimously:

"Resolved, that, in view of the evident growing importance of terminal planning and rail-water movements in port, the American Association of Port Authorities appoint a committee to co-operate with such technical bodies as deal with this subject, to the end that such co-operative effort should bring about more rational development of the terminal service feature."

That the functions of warehousing in accelerating port movement and reducing the cost burden on commerce passing through it is very important, especially required in addition to transit sheds for seasonal commodities and tonnage held beyond the normal time limit.

That the long prevailing policy of using steam railroad rolling stock for storage and merchandising should be abated and that this rolling stock should be kept in maximum circulation to lessen the burden of terminal congestion, especially at times of heavy arrivals and departures of vessels.

That the zoning principle in large ports should be developed and applied to both rail and water facilities, i.e., that the design must incorporate special features required to suit special service and commodities, as few harbor works can in fact be successfully designed as a jack-at-all-trades.

That proper handling equipment may be essential to the economic success of competitive ports and when designed for the purpose may distinctly modify the relationship of pier and warehouse construction, floor levels, connecting thoroughfares, etc.

That the Mississippi barge service and the Great Lakes-St. Lawrence water route have a definite basic regulative function to perform in the transportation system of the country, the importance of which should have been long since appreciated before the necessity arose of, in effect, isolating further the great producing interior through the greatly increased rail rates of the present time.

That the distribution of overseas tonnage throughout the Mississippi basin needs careful study and analysis for the purpose of securing more economic and direct movement through port and the minimum cost of haul to destination.

That the two variable elements of (1) differential port charges and (2) competitive water hauls will have an important effect upon the policy of routing tonnage from the interior producing districts for quickest despatch and minimum cost of transportation.

That joint rail-water routes as already effective throughout the major portion of the Mississippi basin have, in effect, established a transportation policy which may likely become of great importance in the future commercial development of the interior.

That the port of Chicago exists largely as a potentiality and calls for immediate consideration in all its various aspects, involving the distinct features of a passenger, commercial and industrial port in which, perhaps, the major aspect is that the rail-water gateway and transshipment point, lake to rail, rail to barge and barge to rail.

That the national policy of conservation should express itself definitely in the most complete possible co-ordination of rail and water operations, rather than the policy of destructive competition, too often advocated as a purely partisan expression of opinion.

Government Ownership Suggested

Hon. Joseph B. Eastman, of Massachusetts, a member of the Interstate Commerce Commission, in a speech at Boston on Tuesday, November 30, advocated government ownership of railroads. He said, in part:

"At every point the railroads are hedged in by the authority of appointees of the President of the United States. The Interstate Commerce Commission may fix rates and divisions; may route freight, control their service, open up their terminals. Their accounts must be kept as it prescribes. No share of stock, no bond may be issued, no new line may be constructed, no old line may be abandoned without its consent. * * * The wages of employees are fixed by the Railroad Labor Board. If the railroads are to meet the needs of the country new capital must flow in at the rate of more than half a billion dollars yearly. For many years private capital sought this field of investment in the hope of speculative rewards, but the growth of public regulation has diminished both the danger and the attraction of railroad investment. The possibility of large speculative rewards has been shrinking until it has all but been eliminated by the legislation of this year.

"The Esch-Cummins Act is a step toward the final goal. I have no faith in the magic of any legislation or of any policy. This is a government of laws and not of men, but the man behind the law is as vital as the man behind the gun. No railroad policy will succeed without the support and earnest effort of the people of the United States.

"Our present railroad policy magnifies private enterprise in word, but minimizes it in deed. It is a partnership of private management and public regulation, but public regulation has at length so outgrown its partner that we are told every day by railroad executives, with a great deal of truth, that the real responsibility for the success or failure of the transportation system rests with the Interstate Commerce Commission. I presume they say the same thing to the Railroad Labor Board. It is my belief that the time will eventually come, if it has not come already, when we must recognize frankly that railroad transportation is a governmental function, and deal with it directly as such.

"Government ownership is by no means the same thing as government management. The crucial test of the present policy will come in the securing of capital. What do we need capital for? Millions are required every year for new cars, new tracks, new stations; and in a future not remote I think I can see also a need for a gradual but complete change in motive power. * * * With electrification, I think I can see in our great cities radical changes, with smoke and noise eliminated, streets laid out over depressed rights of way, and great buildings rising over railroad yards.

"Whether I am right or wrong in this estimate of the possibilities of the future, the continual need for capital no one will deny, or the fact that it is a national need. If the government owns the roads, whatever capital is needed can be secured at relatively low cost. If the roads are left in private hands, the cost of capital will be greater, but more important than this is the doubt whether it can be secured at all when it is needed and where it is needed.

"The question of management is more difficult. The problem has never been faced and dealt with courageously and constructively. It is not a problem which the American nation, with its creative and inventive genius, needs to fear. It is not as difficult as the successful functioning of a dual system of private management and rigorous public regulation. * * * I suggest representation in the management not only of the government but of the two great groups which have most reason to desire the safe and efficient operation of the roads—organized business and organized labor. I feel confident that if thought be given to the question, a way can be found for securing representation of these groups which will be more satisfactory in its operation than the methods by which widely scattered and unorganized stockholders of great railroad companies now select their directors."

Traffic News

Tourist travel to the winter resorts on many lines is breaking records. One or two of the limited trains to California are already running extra sections, two and three times a week and the regular trains on all roads are operating to capacity almost daily.

The Transportation Club of Louisville, Ky., at its regular dinner and meeting, on December 8, discussed the coal question from the angles of production and transportation by rail and by water. Among the speakers were Col. W. W. Harts, division engineer, U. S. Army, Cincinnati; E. L. Douglass, president of the Hazard Coal Operators' Exchange, Cincinnati, and W. L. Mapother, executive vice-president of the Louisville & Nashville, Louisville.

The traffic committee of the American Face Brick Manufacturers and the Dealers Association, in convention at French Lick, Ind., entered a protest against the increase in freight rates. This petition is said to be the largest against increased freight rates on clay products ever presented to the Interstate Commerce Commission. It is jointly signed by the face brick, paving brick, and hollow building tile manufacturers' organizations of the entire country.

The subject for the "Get Together Traffic Discussion" of the Traffic Club of Chicago on December 7, was "Claims with Special Reference to the McCaull-Dinsmore Decision." Leaders of the discussion for the carriers were C. H. Dietrich, freight claim agent on the Chicago, Milwaukee & St. Paul, and J. H. Howard, general claim agent of the Chicago & Alton; for the shippers, G. A. Blair, general traffic manager of Wilson & Co.; J. A. Brough, traffic manager of the Crane Company, and L. F. Berry, traffic manager of Reid, Murdoch & Co.

The injunctions issued by the New York State Supreme Court, prohibiting the railroads from advancing intrastate passenger fares 20 per cent (from 3 cents a mile to 3.6 cents) are still in force, the hearing of arguments at Kingston having been postponed to December 11. Because of a shortage of sheriffs the injunctions were not served promptly on all the roads, and the Erie, having received no order, advanced its rates on December 5. On the New York Central there is a heavy passenger traffic, due in part, it is said, to reports of the increase on the Erie. The railroads' counsel are anxious to press the case to an early hearing, but it is expected that Attorney General Newton will ask for postponement on the ground that the 61 defendants are not co-operating.

Coal Production

The total production of soft coal during Thanksgiving week declined, but the rate per working day increased, according to the weekly bulletin of the Geological Survey. The output is estimated at 11,416,000 tons, which was the largest for any Thanksgiving week of the last four years. Production of bituminous coal during the first 281 working days of the year has been 499,662,000 net tons, less than 5,000,000 tons less than that for 1917 and 36,000,000 tons less than that for 1918. Cumulative lake shipments for the season now stand at 22,958,000 tons.

Passenger Travel on the N. Y. C.

The New York Central Lines, eleven railroads, carried, in the nine months ended October 1, a total of 78,617,456 passengers, an increase of 10,179,378, or 15 per cent over the same period of 1919. The increases on the five principal roads were as follows:

Railroad	1920	1919	Increase	Percentage of increase
New York Central.....	45,903,827	39,682,219	6,221,608	15.65
Boston & Albany	12,615,060	10,628,343	1,986,717	17.16
C. C. C. & St. L.....	6,887,158	6,065,397	821,761	13.54
Pittsburgh & Lake Erie..	5,031,957	4,381,685	650,272	14.84
Michigan Central	5,337,483	4,829,399	508,084	10.52

The Twentieth Century, Limited, for the five months from June 1 to November 1, carried eastbound out of Chicago 33,262 passengers, an average of 218 daily, and westbound out of New York 27,214 passengers, or 177 daily.

Commission and Court News

Interstate Commerce Commission

The commission heard the oral arguments at Washington on December 2 and 3 in the case involving transcontinental freight rates instituted by the Intermediate Rate Association.

The commission has suspended from December 8 until April 7, 1921, the operation of certain tariff changes on iron and steel articles, c. l., from Houston and Galveston to destinations in Louisiana, the result of which would increase the rates from points intermediate to Houston and Galveston.

The commission has suspended until April 3, the operation of certain schedules appearing in Agent F. A. Leland's tariff, indicated to become effective December 4 and 25, which provide for increased rates on glass fruit jars, etc., from Sand Springs, Sapulpa and other points in Oklahoma and Texas, to destinations in Louisiana, Mississippi, Tennessee, Kentucky and Alabama.

The commission has rendered a decision in the case of the Inland Empire Shippers' League vs. the director general, the Oregon-Washington Railroad & Navigation Co., et al., holding that the rates on grain and grain products, c.l., from certain points in Idaho, Eastern Washington and Eastern Oregon to Portland and Astoria, Ore., and intermediate points, and to Vancouver, Wash., and rates on classes and commodities between Portland and Vancouver on the one hand, and points in the Columbia river basin on the other, are not unreasonable. The rates on classes and commodities between Portland and Vancouver on the one hand and points in the Columbia river basin south of the Snake river on the other, are found unduly prejudicial to the extent stated in the report.

Commission Recommends Uniformity in Minimum Weights

The Interstate Commerce Commission on December 4 addressed a notice to all state commissions urging uniform adoption of an order relating to minimum weights on grain and grain products. At the suggestion of several state commissions a conference was held at St. Louis on November 15 to consider minimum weights on grain and grain products. The minima on interstate traffic are now, generally speaking, the marked capacity of car on grain and 48,000 lb. on grain products, which minima also apply on state traffic in a number of states. Tariffs containing these minima expire December 31, 1920, and on January 1, 1921, unless other steps are taken, the minima in effect in 1919 will be restored, which minima were far from uniform.

The commission says:

"Following general conference of shippers and carriers, an executive conference of all the representatives of state commissions present (nine in number) with the representative of this Commission, was held, following the principles of Section 13 of the Interstate Commerce Act. At that time an understanding was reached that all such representatives would recommend to their respective commissions a reduction in the minimum on grain products from 48,000 lb. to 40,000 lb., and upon grain a continuance of the marked capacity minimum, modified by reduction upon oats and ear corn to 80 per cent of marked capacity, by the adoption of a rule requiring protection of the minimum applicable to the size of car ordered, when the carrier furnished a larger car than ordered by the shipper (subject to reasonable restrictions against ordering cars smaller than generally in use) and certain other modifications of the rules designed to meet most of the objections presented by shippers to a continuance of the marked capacity basis.

"This commission has now approved substantially the basis agreed upon at the St. Louis conference and has issued Special Permission No. 51215 authorizing all carriers to establish said basis effective January 1, 1921, upon not less than 10 days' notice in lieu of the varying minima and rules which otherwise would become effective on that date.

"It is hoped that this order is such that its provisions may be made effective upon state and interstate traffic alike.

The commission requests copies of orders issued on this subject.

Equipment and Supplies

Locomotive and Car Orders—11 Months

The locomotives ordered by Class I roads in November, according to the compilation made by this paper, totaled 39. Including orders placed by other roads and industrials, the total for the month was 55. For the 11 months, including November, the total orders for locomotives placed by Class I roads were 1,523, and for all purchasers, 1,656.

The freight car orders for the month of November totaled only 2,250, of which 2,000 were ordered by Class I roads. The total for the year to date is: for Class I roads, 47,142; for other roads, 256; and for private car lines and industrials, 17,672, a total of 65,070.

No passenger car orders were reported in November.

The figures for the month, and the cumulative figures for the 11 months, follow:

TABLE I—LOCOMOTIVES ORDERED IN 1920

	United States					Canada	
	Domestic						
Issue	Class I roads	Other roads	Car-lines or industrials	Total Dom.	U. S. export	Dom.	Export
January	19	9	4	32	206	....	7
February	283	6	4	293	86	85	.....
March	201	14	13	228	89	32	.....
April	414	17	2	433	108	28	.....
May	188	2	7	197	8	3	.....
June	64	1	.....	65	40	4	.....
July	86	.....	9	95	77	2	.....
August	11	.....	3	14	24	.....	.....
September	137	.....	14	151	31	.....	.....
October	81	8	4	93	79	15	.....
November	39	11	5	55	31	4	.....
Total, 11 months	1,523	68	65	1,656	779	173	7

TABLE II—FREIGHT CARS ORDERED IN 1920

	United States					Canada	
	Domestic						
Issue	Class I roads	Other roads	Car-lines or industrials	Total Dom.	U. S. export	Dom.	Export
January	1,300	6	914	2,220	1,000	....	80
February	5,992	....	400	6,392	516	....	....
March	3,069	100	500	3,669	625	6,567	....
April	18,018	....	1,304	19,322	350	4,206	....
May	5,010	100	2,292	7,402	207	....	....
June	1,000	....	2,757	3,757	375	....	....
July	2,850	....	2,618	5,468	66	....	....
August	1,000	50	5,106	6,156	900	....	....
September	2,015	....	771	2,786	408	....	....
October	4,888	....	760	5,648	405	....	....
November	2,000	....	250	2,250	100	....	....
Total, 11 months	47,142	256	17,672	65,070	4,952	10,773	80

TABLE III—PASSENGER CARS ORDERED IN 1920

	United States			Canada	
	Domestic				
Issue	Class I roads	Total Dom.	U. S. export	Dom.	Export
January	107	107	...	...	...
February	35	35	...	...	...
March	148	148	...	102	...
April	328	328	50	...	...
May	57	57	...	72	...
June	...	...	...	...	...
July	60	60	10	...	...
August	...	...	...	...	...
September	79	79	...	...	...
October	9	9	14	...	...
November	...	...	...	...	...
Total, 11 months	823	823	74	174	...

Locomotives

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for a second-hand freight locomotive, to weigh between 75 and 100 tons.

THE WEST PENN POWER COMPANY, Pittsburgh, Pa., has ordered 1 four-wheel switching locomotive from the American Locomotive Company. This locomotive will have 16 by 24 in. cylinders and a total weight in working order of 99,000 lb.

THE OLD BEN COAL COMPANY, Chicago, Ill., has ordered 2 four-wheel switching locomotives from the American Locomotive Company. These locomotives will have 16 by 24 in. cylinders and a total weight in working order of 99,000 lb.

THE AMERICAN AGRICULTURAL CHEMICAL COMPANY, Boston, Mass., has ordered 1 four-wheel switching locomotive from the American Locomotive Company. This locomotive will have 13 by 20 in. cylinders and a total weight in working order of 65,000 lb.

THE HETCH HETCHY RAILROAD has ordered 1 Prairie type locomotive from the American Locomotive Company. This locomotive will have 18 by 24 in. cylinders, and a total weight in working order of 127,000 lb.; it will be equipped with a superheater.

Freight Cars

THE NEW YORK CENTRAL is asking for prices on from 1,000 to 5,000 steel center constructions, for freight car repairs.

THE NEW YORK QUEBRACHO EXTRACT COMPANY, 80 Maiden Lane, New York, is inquiring for 100 acid tank cars of 8,000 gallons capacity.

THE EGYPTIAN DELTA LIGHT RAILWAYS, LTD., are inquiring, through the car builders, for 260 platform cars; also for spare parts for 48 cars.

THE NORFOLK & WESTERN, reported in the *Railway Age* of October 29, as asking for prices on specialties for 1,000, 120-ton hopper cars, has authorized the construction of these cars in its shops at Roanoke, Va.

THE WESTMORELAND COAL COMPANY, Philadelphia, Pa., has ordered 50 new 55-ton steel hopper cars from the American Railway Equipment Company. These are in addition to the 100 ordered from the same company and reported in the *Railway Age* of October 8.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for 4 second-hand, all-steel, 40-ton capacity, drop-bottom gondola or hopper cars; also for one second-hand, four-wheel caboose car, and for one second-hand steel underframe flat car, 36 to 40 ft. long, of 50 tons capacity.

Passenger Cars

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street Philadelphia, Pa., is in the market for a second-hand all-steel mail and baggage car, or one of wooden construction, if up-to-date.

Iron and Steel

THE NORTHERN PACIFIC has ordered 35,000 tons of rails from the United States Steel Corporation.

THE NORFOLK & WESTERN has ordered 50,000 tons of rails from the United States Steel Corporation.

THE BUFFALO, ROCHESTER & PITTSBURGH has ordered 5,000 tons of rails from the United States Steel Corporation.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS has ordered 5,000 tons of rails from the United States Steel Corporation.

THE BALTIMORE & OHIO's orders for steel rails aggregate 85,000 tons, for next season's delivery, of which 50,000 tons were previously reported in the *Railway Age*. The orders were distributed between the United States Steel Corporation's plants at Pittsburgh, the Illinois Steel Company at Chicago and the Bethlehem Steel Corporation at Sparrows Point. The total orders involve an expenditure of between $3,500,000 and $4,000,000.

THE SOUTHERN PACIFIC has ordered 2,000 tons of 90-lb. manganese steel rails from the Manganese Steel Rail Company, Hillburn, N. Y., which will be manufactured and rolled at the electric furnaces of the Illinois Steel Company at its south works, Chicago. The rails, which will contain from 0.95 to 1.35 per cent of carbon and from 10.5 to 15 per cent of manganese, are to be used on curves of eight degrees or over in the mountain districts of California.

Supply Trade News

M. J. Rice, formerly general freight agent of the Harvey district on the Baltimore & Ohio, has been appointed traffic manager of the **Buda Company,** Harvey, Ill., effective December 1.

The Air Reduction Sales Company, New York, has just completed building a four-story addition to its apparatus plant, Jersey City, N. J. It is of brick construction with reinforced concrete floors.

J. B. French, formerly connected with T. S. Leake & Co., and more recently with Mellon-Stuart Nelson Company, has been appointed chief engineer of **Joseph E. Nelson & Sons,** railroad building contractors, Chicago.

The **T. J. Moss Tie Company,** St. Louis, Mo., will construct a new tie treating plant at East St. Louis, Ill. The project, which includes the construction of 1⅓ miles of standard gage track and 2 miles of narrow gage track, will cost $200,000 complete.

Alexander S. Greig, formerly vice-president of the St. Louis-San Francisco and recently appointed vice-president of the **H. Channon Company,** Chicago, was born in Aberdeenshire, Scotland, on October 25, 1864, and entered railway service in 1883 in the purchasing department of the Denver & Rio Grande. After successive service in the mechanical and operating departments he became assistant to the general superintendent. In 1895, he was appointed trainmaster on the Atchison, Topeka & Santa Fe, and in 1897 was appointed general superintendent of the El Paso & Northeastern, now a part of the El Paso & Southwestern. For the succeeding five years he was in charge of the construction and placing in operation of 500 miles of line which included the Alamogordo & Sacramento Mountain Railway. He was appointed special assistant to the president of the Chicago, Rock Island & Pacific in 1902 and three years later became assistant to the president of the St. Louis-San Francisco. He was elected assistant to the chairman of the Rock Island-Frisco system in 1907 and at the same time served as chairman of the Committee on Standardization and Economies for these lines. He was promoted to vice-president of the Frisco lines in 1909, in charge of purchases, material and supplies, was assistant to the president and was also at this time president of the New Mexico & Arizona Land Company. When the Frisco went into receivership he became assistant to the receiver. Mr. Greig was a member of the General Conference Committee of railroads to handle the eight-hour day demands of the trainmen and enginemen and also chairman of the Statistics Committee of that body. In November, 1917, he was elected secretary of the General Operating Committee appointed to operate the Eastern railroads and on January 1, 1918, when the government took control, was transferred to the staff of the regional director of the Eastern region and served in that capacity during government control.



A. S. Greig

A. E. Lee has been elected vice-president of the **Reliable Coal & Mining Company,** with offices at 708 Fisher building, Chicago. Mr. Lee was formerly general freight agent of the Chicago & Alton.

Anatole Gollos, electrical engineer of the Chicago Union Station Company, has been granted leave of absence and has sailed for Europe to look after his interests in connection with his automatic train stop. Mr. Gollos has recently made a radical improvement in his design.

J. C. Kopf, formerly manager of the engineering department of the **Duff Manufacturing Company,** Pittsburgh, Pa., has been appointed research engineer, in charge of a newly established research department. **F. W. Schwerin** has been promoted to manager of engineering.

A report has been published in some trade papers that the operation of the foundry of the **Modern Steel Casting Company,** Milwaukee, Wis., had been suspended because of a fire. The company states that this report is not true, as the damage was slight and the foundry is running at normal capacity.

The Falls Rivet Company, Kent, Ohio, has bought from **The Ohio Wire Goods Manufacturing Company,** Akron, Ohio, all its machinery, patents and patterns relating to the manufacturing of cotter pins and flat spring keys. The machinery has been moved from Akron to Kent and is now in operation.

E. R. Gassman, formerly superintendent of telegraph, and later in charge of operation and maintenance of way on the Trinity & Brazos Valley, has been made manager of the order and shipping departments of the **Sinclair Refining Company,** with headquarters at Chicago. Prior to his appointment to this position, he was connected with the transportation division of the Bureau of Markets.

H. H. Cosley, for 15 years in the Chicago sales office of the Cambria Steel Company, has been appointed contracting engineer for the **Decatur Bridge Company,** of Decatur, Ill., with headquarters in the Westminster building, Chicago. Mr. Cosley graduated from the Ohio State University in 1901, and for the succeeding five years was with the Illinois Steel Company, which concern he left to enter the service of the Cambria Steel Company.

P. C. Cady, who was for several years with the mechanical engineering department of the New York Central, has opened an office at 133 Greenwich street, New York, and will represent the following concerns: Guilford S. Wood Company, Chicago; J. Faessler Manufacturing Company, Moberly, Mo.; Coale Muffler & Safety Valve Co., Baltimore, Md.; W. C. Dunn Company, Cincinnati, Ohio, and the Virginia Equipment Company, Oak Harbor, Ohio.

Western Electric Company Gives Employees Opportunity to Buy Bonds on Installment Plan

Twenty-two thousand employees of the Western Electric Company are being offered an opportunity to be among the holders of bonds of their corporation. The board of directors has approved an extension of the plan to enable its personnel to purchase Western Electric 5 year 7 per cent convertible gold bonds. Instead of limiting its investment arrangements to its older employees as has been the custom in the past, the company is encouraging those who have six months or more continuous service by December 1 to acquire their quota of the securities.

The older employees will also benefit under the new offer. Those who did not subscribe when the bonds were issued originally can apply for their share now. In no case, however, can the total face value of any employee's holdings in the issue exceed $100 for each $300 of his annual rate of pay.

The sale to the employees is on an installment basis, payment being made in a manner similar to that used during the Liberty Loan drives. The subscribers receive interest on the money they pay in and also on the bonds themselves so that instead of paying the full subscription price of $98.50 the employee's cost is only $89.84 on each $100 bond or about 8.9 per cent a year return on the investment. These bonds are now quoted at about 99.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company has applied to the Interstate Commerce Commission for authority to abandon a part of its Barnwell branch in San Bernardino County, Cal., a distance of 15 miles.

ATCHISON, TOPEKA & SANTA FE.—This company is constructing 10 additional stalls at its engine house at Amarillo, Tex., each stall to be 120 ft. long. The company is also lengthening 12 of the present engine stalls from 92 to 120 ft. The construction is of concrete and will cost approximately $125,000.

BOSTON ELEVATED.—This company is constructing a storage yard at Forest Hills, Mass., which will cost approximately $630,000. A car house and inspection shop at Forest Hills, to cost approximately $500,000, and a general repair shop at Everett, complete with equipment for machine, wood and blacksmith work, a foundry and a paint shop, to cost altogether approximately $3,500,000, are contemplated.

CANADIAN PACIFIC.—This company has awarded a contract to Stewart & Welch, Calgary, Alta., for grading in connection with the construction of a line from Acme, Alta., east to Drumheller, a distance of 37 miles. The project, which is already under way, will involve the construction of four bridges with steel and concrete abutments of 100 ft., 110 ft., 130 ft. and 150 ft. lengths, respectively.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—This company, which was noted in the *Railway Age* of October 29 (page 773), as contemplating the construction of car repair shops to cost approximately $140,000, at Lafayette, Ind., has awarded the contract for this work to A. E. Kemmer, Lafayette. The structure, which will have dimensions of 85 ft. by 440 ft., will be of brick and steel construction.

DENVER & SALT LAKE.—This company is rebuilding its shops at Utah Junction, Colo., which were destroyed by fire, at a loss of $250,000.

EASTERN TEXAS.—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon its line between Lufkin, Tex., and Kennard, Tex., a distance of 30.3 miles. The people of the community served by the line objected to the granting of the certificate, offering testimony as to the prospects for further increases in tonnage, but made no definite showing, the Commission says, that within any reasonable time there would be sufficient tonnage to pay the operating expenses of the road. To meet their objections the company has offered to sell its line to any local interests for $50,000 and the Commission's order is made subject to the right of persons interested in the community served to purchase the property at a figure not in excess of $50,000.

GREAT NORTHERN.—This company has awarded a contract to the N. W. & W. A. Nelson Co., Minneapolis, Minn., for grade elimination work at East Hennepin avenue, Minneapolis, where the roadway and street-car tracks will run under the railway. The project, which is to cost about $400,000, involves raising the grade of the railway, the construction of concrete abutments and the placing of a steel bridge.

GULF COAST LINES.—This company is constructing eight miles of line southwest of New Iberia, La., to serve the salt mines being developed on Jefferson Island.

GULF, MOBILE & NORTHERN.—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon its Ellisville branch in Jones County, Miss.

ILLINOIS CENTRAL.—This company is accepting bids for the strengthening and raising of its levee at Helena, Ark., at a cost of approximately $30,000.

LEHIGH VALLEY.—This company has purchased at public auction, for $142,000, a 40-acre tract of land at East Penn Junction, Pa., with the purpose in view of constructing on it a large freight yard. Definite plans for undertaking this work have not been announced as yet.

NORTHERN PACIFIC.—A contract has been let by this company to the Bay City Foundry & Machine Company, Bay City, Mich., for the machinery for a coaling station at Hinckley, Minn.

OAHU RAILWAY & LAND COMPANY.—This Hawaiian line will build a modern passenger station at Honolulu, including a restaurant and providing space for the general offices of the company.

PERE MARQUETTE.—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of a branch line of this company from Rapid City, Mich., to Kalkaska, 11.47 miles. An answer to the petition of the railroad was filed by the Michigan Public Utilities Commission stating that the Michigan laws provide that no common carrier shall abandon any portion of its line except by permission of the Michigan commission. The state commission took the position that inasmuch as the line proposed to be abandoned lies wholly within the state of Michigan, its permission is a condition precedent to the granting of any certificate by the Interstate Commerce Commission. The position of the state was that there is a concurrent control which should be exercised in the matter; that the railroad is engaged in intrastate, as well as interstate, commerce, and that before the line in question can be abandoned an application for permission to abandon must also be made to the state commission. Beyond stating these facts, the Interstate Commerce Commission does not discuss the position taken by the state authorities, but finds that the present and future public convenience and necessity permit the abandonment of the line and says that a certificate will accordingly be issued.

PENNSYLVANIA.—This company has let a contract to the Roberts & Schaefer Company, Chicago, for the construction of a 1,200-ton reinforced concrete coaling station and two concrete sanding plants at Wilmington, Del.

PHILADELPHIA, NEWTON & NEW YORK.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the abandonment of a short line in Philadelphia for which it is proposed to substitute a new connection.

SPOKANE, PORTLAND & SEATTLE.—This company has let a contract for a 300-ton automatic coaling station to be erected at Fallbridge, Wash., to the Bay City Foundry & Machine Company, Bay City, Mich.

SPOKANE & BRITISH COLUMBIA.—This company has applied to the Interstate Commerce Commission for a certificate authorizing it to abandon a line in Ferry County, Wash., 36.3 miles, which has been paralleled by a line of the Great Northern and which for some time has failed to pay operating expenses.

UINTAH.—This company contemplates the construction of a line from Walton, Utah, to Bonanza, a distance of 20 miles.

UVALDE & NORTHERN.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of a line from Uvalde to Camp Wood, Tex., a distance of 37 miles.

WICHITA FALLS & SOUTHERN.—This company, which was noted in the *Railway Age* of November 26 (page 951) as applying to the Interstate Commerce Commission for certificates authorizing the construction and operation of a new line from Newcastle to Breckinridge, Tex., a distance of 44 miles, has begun the construction of this line. The road will be built to Breckinridge, by way of Graham, South Bend and Eliasville.

THE NATIONAL PARK SERVICE, according to the annual report of the Secretary of the Interior, in 1920 handled the largest volume of tourist travel in the history of the parks; 1920 season, 919,504; 1919 season, 755,325; 1918 season, 451,661; 1917 season, 488,268; 1916 season, 356,097; 1915 season, 334,799; 1914 season, 235,193. Automobile travel to the parks during the 1920 season was 128,074; 1919, 97,721; 1918, 53,966; 1917, 54,692; 1916, 29,358. There was also handled the largest volume of tourist travel in the history of the national monuments; 1920 season, 138,951; 1919 season, 56,191.

Railway Financial News

BUFFALO & SUSQUEHANNA.—An extra dividend of 3 per cent has been declared on the outstanding $3,000,000 common stock, in addition to the regular quarterly dividend of 1¾ per cent, both payable December 30 to holders of record December 15. Extra dividends aggregating 2 per cent yearly were paid in 1919, 1918 and 1917.

CENTRAL OF GEORGIA.—This company has applied to the Interstate Commerce Commission for authority, if the commission considers it necessary, to execute and authenticate $998,000 of its 6 per cent refunding and general mortgage bonds under its mortgage of April 1, 1919, to be placed in the treasury to be used as collateral when needed for a loan from the United States government or as security in connection with its guaranty.

CENTRAL WISCONSIN.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the acquisition and operation of the railroad now known as the Fairchild & Northwestern, operating from Owen to Cleghorn, Wis.

CHICAGO & NORTH WESTERN.—This company has applied to the Interstate Commerce Commission for authority to create an equipment trust for $10,000,000 and to sell $9,630,000 of 7 per cent equipment trust certificates, dated February 1, April 1 and May 1, 1921, and payable in 15 annual installments, for the purchase of equipment amounting to $9,684,093. The company proposes to invite bids for the sale of these securities at not less than 97 per cent of par.

CHICAGO GREAT WESTERN.—The Interstate Commerce Commission has approved a loan of $240,000 to this company to enable it to meet the interest on bonds of the Mason City & Ft. Dodge, a subsidiary line.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—This company has filed an application with the Interstate Commerce Commission for authority to guarantee a 10-year, 6 per cent promissory note of the Louisville & Jeffersonville Bridge & Railroad Company for $108,000, payable to the Secretary of the Treasury.

DELAWARE & HUDSON.—This company has applied to the Interstate Commerce Commission for authority to issue $9,634,000 of capital stock from time to time for conversion purposes.

DETROIT & TOLEDO SHORE LINE.—This company has applied to the Interstate Commerce Commission for authority to increase its capital stock from $1,500,000 to $2,500,000 to reimburse the treasury for expenditures for additions and betterments out of income and to provide additional stock to be issued upon the payment of $501,000 of promissory notes for the purchase of 200 steel hopper cars allocated by the Railroad Administration.

FERNWOOD, COLUMBIA & GULF.—This company has applied to the Interstate Commerce Commission for authority to issue $300,000 of refunding mortgage bonds dated January 1, 1921, to capitalize improvements heretofore made out of income and to be available as security for an equipment loan and a loan from the United States.

FORT SMITH & WESTERN.—The receiver has been given authority by the Interstate Commerce Commission to issue and pledge as collateral security for a loan of $156,000 from the revolving fund, a receiver's certificate for that amount at 6 per cent maturing November 1, 1925.

FT. SMITH & WESTERN.—The Interstate Commerce Commission has approved a loan of $156,000 to the receiver to aid the company in the purchase of equipment and in making additions and betterments to existing equipment and ways and structures at a total estimated cost of $425,356. The company itself is required to finance about $270,000 to meet the loan of the government.

GULF PORTS TERMINAL RAILWAY.—The Interstate Commerce Commission has denied the application of this company for a loan from the revolving fund of $300,000 on the ground that it is not a common carrier, subject to the interstate commerce act, and that it has failed to show that the loan is necessary to enable the applicant properly to meet the transportation needs of the public or that the prospective earning power and character and value of the security offered are such as to furnish reasonable assurance of ability to repay the loan.

LEHIGH VALLEY.—See editorial and article elsewhere in this issue.

LOUISVILLE & JEFFERSONVILLE BRIDGE & RAILROAD COMPANY.—This company has applied to the Interstate Commerce Commission for authority to issue $162,000 of its 4 per cent first mortgage gold bonds, to be pledged with the Secretary of the Treasury as security for its note for a loan.

MILLEDGEVILLE RAILWAY.—This company has filed an application with the Interstate Commerce Commission for authority to increase its capital stock from $30,000 to $60,000 for the purpose of retiring its outstanding first mortgage bonds.

PITTSBURGH & WEST VIRGINIA.—This company has filed an application with the Interstate Commerce Commission for a certificate authorizing the acquisition of the property and franchises of the West Side Belt, of which it had previously acquired a majority of the capital stock. The company also filed an application for authority to increase its capital stock from $39,600,000 to $47,000,000 for the acquisition of the West Side Belt.

ST. JOSEPH BELT.—The Interstate Commerce Commission, Division 4, has rendered a decision denying the application of this company for a certificate representing the amount of its losses during the federal control period as provided in Section 204 of the transportation act, holding that the road was not under private operation during any portion of the federal control period and that its operation was in legal effect operation by the government. No compensation has been paid the owners of the road by the director general under the provisions of the federal control act on the ground that the road was under private operation during the entire period. The road was advised in a letter from the regional director of the Central Western Region on March 25, 1919, that the road was not under federal control and that the Railroad Administration exercised no jurisdiction over the line, but the company declined to recognize this as a relinquishment. The company filed a statement indicating a net deficit in railway operating income for the federal control period amounting to $165,901, of which about $115,000 accrued in the period from April, 1919, to February, 1920. The American Short Line Railroad Association contended that the road was not at that time under federal operation, although under federal control, and is, therefore, entitled to the benefit of Section 204 for the entire period of federal control. The report says it is a well-known fact that the extent to which the director general found it necessary to change existing organizations and practices varied greatly with the different railroads. Under these circumstances, an attempt to draw a line of distinction between roads taken over by the government, classifying some as federally operated and others as privately operated, would meet great difficulties. A more practical view is to regard the taking over of the roads by the President, the appointment of the director general and the assumption of authority by him and his representatives as supplying the necessary elements to constitute federal operation as well as federal control. In the case of the St. Joseph Belt, the report says, the director general exercised control in the most important matters affecting the income of the carrier.

TRANS-MISSISSIPPI TERMINAL RAILROAD.—The Interstate Commerce Commission has authorized this company, the Texas & Pacific, and the Missouri Pacific to enter into a contract extending the maturity date of 6 per cent, three-year gold notes heretofore extended to November 1, 1920, with interest at 7 per cent, issued by the Trans-Mississippi Terminal Company, a predecessor of the Trans-Mississippi Terminal Railroad Company, from November 1, 1920, to November 1, 1923, with interest increased from 7 to 7½ per cent. The Texas & Pacific and the Missouri Pacific were also authorized to assume obligation in respect to the notes as guarantors.

VIRGINIA SOUTHERN.—This company has applied to the Interstate Commerce Commission for authority to issue $150,000 of 6 per cent mortgage bonds, of which $76,000 is to be deposited with the government as security for a loan of $38,000, and $34,000 is to be used as collateral for a loan from the First National Bank of Richmond, Va.

Railway Officers

Executive

A. C. Mann has been elected vice-president of the Illinois Central, in charge of purchases and supplies, with headquarters at Chicago, effective December 10.

F. P. Brady, general manager of the Canadian National, headquarters at Montreal, has been appointed assistant to the executive, with headquarters at Toronto, effective December 1.

D. J. Kerr, assistant to the vice-president, executive department, of the Great Northern, has been appointed assistant to the vice-president in charge of operation, effective December 1.

A. Miller, general counsel of the Kansas, Oklahoma & Gulf with headquarters at Kansas City, Mo., has been appointed receiver of the Missouri, Oklahoma & Gulf, with the same headquarters, succeeding Alexander New, who has resigned.

Financial, Legal and Accounting

J. W. Connell has been appointed assistant freight claim agent on the Western lines of the Canadian National, with headquarters at Winnipeg, Man.

Operating

J. D. MacNutt has been appointed assistant superintendent of the Canadian National, with headquarters at Truro, N. S.

W. L. Whiter has been appointed acting assistant trainmaster on the Fort Wayne division of the Pennsylvania, with headquarters at Fort Wayne, Ind., effective December 1.

W. I. Munro, superintendent of the Canadian National at Saskatoon, Sask., has been transferred to Winnipeg, Manitoba, succeeding J. C. O'Donnell, promoted, effective December 4.

M. L. Jennings has been appointed trainmaster of the Sacramento division of the Southern Pacific, with headquarters at Sacramento, Cal., succeeding F. J. Berry, resigned, effective December 1.

L. F. Cabell has been appointed terminal trainmaster of the Chesapeake & Ohio with headquarters at Ashland, Ky. **G. P. Gibbs** has been appointed trainmaster of the Big Sandy division with headquarters at Paintsville, Ky.

W. W. McCauley, chief clerk to the assistant general superintendent of transportation of the Northern Pacific, with headquarters at St. Paul, Minn., has been promoted to assistant general superintendent of transportation, with the same headquarters, effective November 16.

H. L. Hungerford, general superintendent of the Eastern district of the Southern with headquarters at Charlotte, N. C., has, at his own request, been relieved of his duties as general superintendent and has been appointed superintendent of the Charlotte division with headquarters at Greenville, S. C., effective December 1.

P. L. Gaddis, trainmaster of the Northern division of the Florida East Coast with headquarters at New Smyrna, Fla., has been promoted to assistant superintendent of transportation, with the same headquarters. **C. C. Thorpe**, assistant trainmaster of the Northern division, succeeds Mr. Gaddis as trainmaster and **J. S. Douglas** succeeds Mr. Thorpe. These appointments are effective December 1.

P. H. McCauley, whose appointment as general superintendent of transportation of the Northern Pacific was noted in the *Railway Age* of November 5 (page 819), entered the service of the Northern Pacific in 1889 as a junior clerk in the car accountant's office. Later he was promoted to chief clerk of the statistical division of that office and afterwards to chief clerk to the car accountant. In 1910 he was appointed superintendent of transportation and held this position until his recent promotion.

J. H. Redding, assistant superintendent of the Pittsburgh division of the Pennsylvania with headquarters at Cresson, Pa., has been appointed superintendent of the Wheeling division with headquarters at Wheeling, W. Va. **W. C. Higginbottom** succeeds Mr. Redding as assistant superintendent of the Pittsburgh division. **G. W. Curtis** has been appointed freight trainmaster of the Pittsburgh division with headquarters at Pittsburgh and **J. C. Armstrong** has been appointed trainmaster of the Monongahela division with headquarters at Uniontown, Pa.

Edwin I. Ford, whose resignation as general superintendent of the Chesapeake & Ohio terminals at Newport News, Va., and election as vice-president and traffic manager of the Consolidated Pocahontas Coal Co. was announced in the *Railway Age* of November 19 (page 953), was born April 18, 1871, in Goochland County, Va. He received a public school education and began his railway service in 1886 as a water boy for the Chesapeake & Ohio at Newport News, Va. Shortly thereafter he became a messenger boy in the general agent's office, and subsequently served as a clerk in the yard office, as chief yard clerk and as a switchman. In 1892 he became night yardmaster, in 1897 general yardmaster, in 1907 trainmaster, and in 1909, superintendent at Newport News. From 1913 to 1915 he was superintendent of the Richmond division, but was called back to Newport News in the latter year to take charge of the terminal. The operations of the Newport News terminal under Mr. Ford's direction were greatly increased during the war by the heavy increase in the volume of traffic entering and leaving that port. Early in 1920 he was appointed general superintendent at the Newport News terminal, the position he held at the time of his resignation.



E. I. Ford

W. C. Hudson, superintendent of the Charlotte division of the Southern, has been appointed general superintendent, eastern district, with headquarters at Charlotte, N. C., effective December 1. Mr. Hudson was born at Scottsburg, Va., November 9, 1873. He received a common school education and entered railway service in 1889 as an extra telegraph operator and relief agent with the Richmond & Danville, now a part of the Southern. He remained in this service until 1894, when he went to the Asheville division of the Southern as an agent and operator. In 1897 he was promoted to despatcher at Asheville, N. C., and, in 1905, to chief despatcher with the same headquarters. Another promotion, in 1907, took him to Charleston, S. C., as trainmaster, and, the following year, he returned to Asheville as chief despatcher. In 1909 he was again appointed trainmaster, this time at Knoxville, Tenn. In 1912 he was appointed superintendent of the Charleston division. Subsequently he served in the same capacity on the Columbia, Washington, Asheville, and Charlotte divisions. Mr. Hudson was superintendent of the Charlotte division when he was promoted to general superintendent.

W. A. Kingsland, assistant general manager of the Canadian National with headquarters at Montreal, has been appointed general manager, with the same headquarters, succeeding F. P. Brady promoted. **L. S. Brown**, general superintendent with headquarters at Moncton, N. B., has been

appointed assistant general manager, Eastern Lines, with headquarters at Montreal, succeeding Mr. Kingsland. **W. R. Devenish,** superintendent with headquarters at Moncton, N. B., has been appointed general superintendent of the Ontario district, with headquarters at Toronto. **J. C. O'Donnell** has been appointed general superintendent of the Maritime district with headquarters at Moncton, N. B., succeeding Mr. Brown. **A. P. Gorbell,** car accountant with headquarters at Moncton, N. B., has been appointed superintendent of car service, lines east and south of the St. Lawrence River, with the same headquarters, succeeding **W. N. Rippey,** who has been appointed superintendent of transportation of the Maritime district, with headquarters at Moncton. **A. C. Barker,** superintendent of telegraph with headquarters at Moncton, succeeds Mr. Devenish as superintendent of the Moncton division. These appointments are effective December 1.

F. G. Gurley, whose appointment as superintendent of the Wymore division on the Chicago, Burlington & Quincy, with headquarters at Wymore, Neb., was announced in the *Railway Age* of November 19 (page 905), was born at Sedalia, Mo., in February, 1889. He entered railway service in July, 1904, as a clerk and stenographer on the Burlington, being stationed in the trainmaster's office at Milan, Mo. In 1906 he was transferred to the office of the superintendent at Sheridan, Wyo., and served there and in the office of the general superintendent at Alliance, Neb., until 1911. In that year he was promoted to train and station inspector of the Wyoming district, with headquarters at Alliance, Neb. In 1913 he was again promoted and transferred to Sterling, Colo., as yardmaster. After serving for two years in this position, Mr. Gurley was promoted to trainmaster, and during the next 3½ years he served in that capacity on the Casper, Alliance, Lincoln and Omaha divisions, successively. In 1918 he was assigned to special staff work, being associated with the general manager of the lines west of the Missouri river, with headquarters at Omaha, Neb. At the time of his recent appointment Mr. Gurley was serving on the staff of the vice-president in charge of operation, with headquarters at Chicago, a position to which he had been appointed in 1919.

Traffic

H. E. Larsen has been appointed commercial agent on the Southern, with headquarters at Oklahoma City, Okla., effective December 1. **M. Martin** has been appointed commercial agent, with headquarters at Houston, Tex., effective November 15.

H. A. Benjamin, assistant general freight and passenger agent of the Waterloo, Cedar Falls & Northern with headquarters at Waterloo, Iowa, has been promoted to general freight and passenger agent, with the same headquarters, effective December 1, succeeding C. M. Cheney.

J. Waugh, commercial agent on the Grand Trunk, with headquarters at San Francisco, Cal., has been appointed commercial agent of the Canadian National and Grand Trunk Pacific Coast Steamship Company, in addition to his former duties, succeeding **W. F. Barry,** who has been transferred to the passenger department.

The New York Central has appointed general agents in its freight department as follows: **J. H. Love,** Kansas City, Mo.; **A. W. Cassels,** Seattle, Wash.; **H. R. Ballard,** St. Paul, Minn.; **A. C. Huggins,** New Orleans, La.; **M. A. Greding,** Dallas, Tex.; **A. L. Evans,** Minneapolis, Minn.; **T. C. Porteous,** Los Angeles, Cal.; **W. F. Greaves,** Birmingham, Ala.; **J. L. Carleton,** Oklahoma City, Okla.; **R. J. Nicoud,** Milwaukee, Wis.; **W. W. Dickinson,** San Francisco, Cal.; **M. J. Sweet,** Omaha, Neb.; **G. H. Johnston,** Memphis, Tenn.; **J. J. Ford,** Denver, Colo.

J. F. Vosburg, general freight agent of the Chicago & Alton, with headquarters at Chicago, has been promoted to freight traffic manager, effective December 1, succeeding **C. W. Galligan,** resigned to become chairman of the Illinois Freight Association. **E. L. Carr,** chief clerk to the vice-president, has been promoted to general freight agent, succeeding A. E. Lee, resigned. **J. L. Behrle,** chief of the tariff bureau, has been promoted to assistant general freight agent, with headquarters at Chicago. **C. R. Davidson,** chief clerk, passenger department, has been appointed assistant general passenger agent.

Edward L. Carr, who has been promoted to general freight agent of the Chicago & Alton, with headquarters at Chicago, effective December 1, was born at Peosta, Iowa, in September, 1884. He was educated at Epworth Seminary, Epworth, Iowa, and entered railroad service in September, 1902, in the claim department of the Chicago, Milwaukee & St. Paul, where he was employed in various clerical positions until October, 1906. At that time he left the service of the St. Paul to accept a position with the Chicago & Alton as a stenographer in the freight department at Chicago. After serving as stenographer and clerk until September, 1912, Mr. Carr was transferred and promoted to chief clerk in the tariff department. In May, 1916, another promotion made him chief clerk to the vice-president in charge of traffic. He was serving in this position at the time of his recent promotion.



E. L. Carr

Augustus Brostedt, who has been promoted to general freight agent on the Canadian National, with headquarters at Vancouver, B. C., was born in Sweden, In 1877, and was educated at Carleton College, Northfield, Minn. He entered railway service in 1898 as an operator, cashier and agent on the Great Northern at Moorehead, Minn., where he served until 1901, when he was made traveling passenger agent, with headquarters at Philadelphia, Pa. In 1903, he was promoted to district passenger agent, with headquarters at Pittsburgh, Pa., and in 1905 he was made northern passenger agent and transferred to Duluth, Minn. After serving for two years in this capacity, Mr. Brostedt was promoted to district freight and passenger agent, with headquarters at Winnipeg, Man. He left the service of the Great Northern in 1913 to become district freight agent on the Canadian Northern, with headquarters at Calgary, Alta. He was transferred to Vancouver, B. C., in 1915, and promoted to district freight and passenger agent. At the time of his recent promotion, he was serving as assistant general freight and passenger agent of the Canadian National, with headquarters at Vancouver, a position to which he had been appointed in 1919.



Augustus Brostedt

Joseph G. Kerr has been appointed assistant general freight agent of the Louisville & Nashville, with headquarters in Louisville, effective December 1. Mr. Kerr began service with the Louisville & Nashville in 1903 as stenographer in the freight claim department and since then has advanced through various positions in the traffic department. In October, 1918, he was transferred to Washington as traffic assistant to the

director of traffic, United States Railroad Administration, and upon return of the railroads to their owners in March of this year, he returned to Louisville as assistant to the vice-president, representing the Louisville & Nashville in rate litigation before the state and Interstate Commerce Commissions.

C. R. Davidson, who has been promoted to assistant general passenger agent of the Chicago & Alton, with headquarters at Chicago, effective December 1, was born at Madison, Wis., and was educated at the University of Wisconsin. He entered railroad service in December, 1881, with the Chicago & North Western, but left that road in 1882 to accept employment with the Chicago, Burlington & Quincy, and served as rate clerk and chief clerk to the general passenger agent of the Burlington until 1897. In that year, he was appointed secretary of the Western Passenger Association, with headquarters at Minneapolis, Minn., a position which he held until February, 1898, when he was transferred to Kansas City, Mo., where he served until January 1, 1900. On that date he entered the service of the Chicago & Alton as chief rate clerk. At the time of his recent promotion, Mr. Davidson was serving as chief clerk in the general passenger office.

John F. Vosburgh, who has been promoted to freight traffic manager of the Chicago & Alton, with headquarters at Chicago, effective December 1, was born in Wisconsin, and after receiving a normal school education, entered railway service in 1899 in the operating department of the Chicago, Milwaukee & St. Paul, at Minneapolis, Minn. During the next four years, Mr. Vosburgh was successively employed in the passenger departments of the St. Paul, and the Minneapolis, St. Paul & Sault Ste. Marie, and in the operating department of the Chicago, Rock Island & Pacific. In 1903, he entered the service of the Minneapolis & St. Louis, being employed in the traffic department. After serving in various clerical positions in the traffic department, he was promoted to chief clerk to the traffic manager, with headquarters at Minneapolis, but left the Minneapolis & St. Louis in 1914, to accept a position as chief clerk to the general traffic manager of the Chicago & Alton, with headquarters at Chicago. In May, 1916, Mr. Vosburgh was promoted to assistant general freight and passenger agent of the Alton, and was serving in this position at the time of his recent promotion.



J. F. Vosburgh

Mechanical

J. W. Johnston, chief inspector of car lighting of the Canadian National, with headquarters at Toronto, has had his jurisdiction extended to include the Grand Trunk Pacific.

L. C. Tyler has been appointed road foreman of engines of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Urbana, Ill., succeeding Charles McCarty, transferred, effective November 4.

W. M. Green has been appointed road foreman of engines of the Big Sandy division of the Chesapeake & Ohio with headquarters at Paintsville, Ky., succeeding **D. S. Baals,** resigned. **W. A. Mordica** has been appointed road foreman of engines and assistant trainmaster, Shelby coal district, with headquarters at Shelby, Ky. These changes are effective November 22.

Engineering, Maintenance of Way and Signaling

H. F. McFarland, Jr., chief engineer of the Wichita Falls, Ranger & Fort Worth, has been appointed chief engineer of the Wichita Falls & Southern, with headquarters at Graham, Tex.

D. W. Dower has been appointed signal supervisor of the Los Angeles division of the Southern Pacific, with headquarters at Los Angeles, Cal., effective November 1, succeeding **C. A. Veale,** who has been assigned to other duties.

G. N. Toops, assistant engineer on the Kansas, Oklahoma & Gulf, with headquarters at Muskogee, Okla., has been promoted to chief engineer, with the same headquarters, effective December 1, succeeding **W. O. Galbreath,** who has resigned.

W. H. Penfield, engineer of track maintenance on the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has been appointed engineer maintenance of way, with the same headquarters, effective December 1. The position of engineer of track maintenance has been abolished.

J. N. Thompson, whose appointment as superintendent maintenance of way of the Pittsburgh, Shawmut & Northern was announced in the *Railway Age* of December 3, 1920 (page 1002), was born in 1877 at Scio, Ohio. He was graduated from the Scio High School and College in 1900, having entered railway service in 1896 as a trackman with the Pittsburgh, Cincinnati, Chicago & St. Louis. From 1901 to 1903 he served as a rodman and chief clerk to the engineer maintenance of way of the Cleveland, Cincinnati, Chicago & St. Louis at Galion, Ohio, and Springfield, Ohio. In 1905 and 1906 he served as an accountant in the chief engineer's office of the Brooklyn Rapid Transit, Brooklyn, N. Y. In 1907 he became chief clerk to the engineer maintenance of way of the Pittsburgh, Shawmut & Northern. In 1911 he was appointed general foreman and roadmaster and in 1914 chief clerk to the chief engineer. From 1917 until the time of his recent promotion Mr. Thompson has served as secretary to the receiver in the engineering department.

Purchasing and Stores

F. Osterman, chief clerk of the purchasing department of the Chicago Great Western, has been appointed assistant purchasing agent of the Pere Marquette, with headquarters at Detroit, Michigan.

H. W. Concannon has been appointed division storekeeper of the Salt Lake division of the Southern Pacific, with headquarters at Ogden, Utah, succeeding S. J. DeGraff, assigned to other duties, effective December 1.

H. P. Buchenery, assistant division storekeeper of the Southern Pacific, with headquarters at Sparks, Nev., has been promoted to division storekeeper, with headquarters at Tracy, Cal., succeeding **V. R. Taylor,** transferred to Tucson, Ariz. **J. F. McAuley** succeeds Mr. Buchenery. These appointments are effective December 1.

Obituary

V. S. Crosby, treasurer of the Union Pacific, died at his home in New York December 2. Mr. Crosby was born March 15, 1860, at Troy, N. Y. He was educated at the Columbia College School of Mines and served six years as a secretary in the American legation at Berlin. Returning to this country, he went into the mining and brokerage business in Colorado. In 1898 he was appointed treasurer of the Union Pacific and served until the time of his death.

Robert Speer Miller, master car builder of the New York, Chicago & St. Louis, died suddenly of heart failure at his home at Cleveland, Ohio, December 1. Mr. Miller was born in Washington county, Pennsylvania, September 13, 1856. He entered railway service in 1879 with the Pittsburg, Cincinnati, Chicago & St. Louis as a rodman in the engineering department. In 1882 he entered the service of the New York, Chicago & St. Louis and subsequently he served as foreman, general car inspector and master car builder of the same road, which latter position he held at the time of his death.

EDITORIAL
Railway Age
EDITORIAL

The Table of Contents Will Be Found on Page 5 of the Advertising Section

The Blindness of Virtue

The management of a certain small railroad operating in a territory exposed to unusually rigorous winters was recently confronted with a considerable increase in the cost of locomotive fuel due to an unavoidable increase in the contract price of coal at the mines. The management appreciated the necessity for economies that would tend to counteract this increase in the cost of fuel and at once instructed that all fuel supervisors and other officers, whose salaries were charged to the fuel account, be laid off. It would be difficult to cite a more flagrant exposition of the want of plain common sense, and the total absence of a consistent and constructive attitude toward the whole fuel problem that has characterized the conduct of many railroads during a period in which the cost of locomotive fuel has doubled and tripled. If the management of this particular railroad believes that a fuel supervisor cannot save enough coal to pay his salary, why did they pension these men for months preceding the rise in the price of coal? There are many fuel supervisors who are not applying themselves to the extent to which they are capable but in nine cases out of ten this is due to the absence of a definite objective, the lack of organized supervision under competent direction and failure on the part of the management to exercise a constructive and consistent policy toward the fuel problem.

Motor Cars in Trap Car Service

In our last issue we referred to the use of motor trucks for the handling of less than carload freight in interchange between railroads as a means of relieving congestion on the tracks in terminals. Closely related to this is the handling of freight between outlying freight stations and central points of assembly. In almost all of the larger cities, it is the practice for a railway to maintain freight stations to serve local industrial areas. The tonnage received at these individual stations is seldom sufficient to enable cars to be loaded direct for many points. To secure satisfactory loading of cars it is therefore the common practice to move this freight in trap cars to a central freight station or transfer platform where it is consolidated with that from other stations into full cars for movement to destination. While the movement of these cars is confined to the individual railroad and is not, therefore, as serious a burden on a terminal as interchange freight which must necessarily move over two or more railways, it nevertheless constitutes a tax on terminal capacity, a capacity which frequently cannot be increased except at very heavy expenditure. As in the handling of interchange, the motor truck has demonstrated its practicability for the movement of freight of this character at Cincinnati, where it has been given a thorough trial for more than three years. Here it has not only reduced the cost of transportation of this freight but has so greatly expedited its movement that a large part of the business received at outlying freight stations during the day is delivered at the point of concentration in time for forwarding the same day, a thing impossible with trap car service. That this method can be used elsewhere with equal advantage is self-evident. At the present time when the need for increased terminal capacity is so generally realized, taking terminal traffic off the rails offers a certain limited source of relief which warrants careful consideration.

Revenues and Expenses

The *Railway Age's* monthly tables of revenues and expenses appearing on another page of this issue are shown in a form differing considerably from that used in the past. The changes made are so great that a brief explanation is in order concerning what has been done and the reasons therefor. Under the new arrangement the figures for the month and the cumulative figures for the year including the month in question are now shown together instead of in a separate table. An effort has also been made to show the roads by systems rather than in merely alphabetical order. Some changes have also been made in the figures which will be shown in the table. There are 15 columns, as there were formerly. The first twelve of these 15 have not been changed. The last three, however, are different. They are now respectively the operating income (net after taxes), the net railway operating income (net after rentals) and the increase or decrease from last year of net railway operating income. The column of taxes has had to be omitted because typographical considerations do not permit of the inclusion of more than 15 columns. It is believed that the new arrangement whereby the monthly and cumulative figures are shown together and the carriers reporting are shown by systems will make the tables more convenient for the uses to which they are put by so many of our readers. The changes in the columns shown are, of course, explained by the fact that thereby the tables show in better form the information that is contained in the monthly reports to the Interstate Commerce Commission. More particularly, the change is advisable because the tables will henceforth show the net railway operating income which is given an entirely new importance by the terms of the Transportation Act.

Psychology of the Purchasing Agent

"Scarcely a railroad purchasing agent in the United States can see over the tops of the piles of requirements on his desk, which sooner or later must be turned into substantial orders for materials which are necessary for railroad operation. But little business is being handed out. Psychology among railroad buyers is the same as in any other field." The New York Times from which the above is quoted comments further as follows: "You probably refused to pay your tailor $125 for a suit of clothes six months ago and last week when he offered to make the same suit for $65 you refused to order it because you figured that he will eventually cut his price still lower. It's the same thing with railroads. Purchasing agents are not buying because they feel that lower prices will come." Psychology among railroad buyers may be the same but the situation with the railroads differs radically from any other industry. The railroads are the largest users of materials and a concerted buying movement on the part of the railroads is in itself a tremendous market factor that must

be reckoned with. There are certain physical improvements which must obviously be effected if the railroads are to deal effectively and efficiently with the traffic that will surely come with a revival in business activity. Purchases which are not made now must be made later and if the railroads act in unison it is not at all certain that in the long run this postponement will result in lower prices. The railroad purchasing agent knows when the railroad should buy and increase its stock of materials but his recommendations are not always followed and not unfrequently the credit situation of individual carriers has restrained purchases at the very time they should be made. Generally, however, the railroads have lacked a fixed policy with respect to expenditures designed toward achieving maximum efficiency and capacity. Failure or inability to make substantial purchases during periods of business depression and eagerness to accumulate large stocks of material when business was booming has proved an expensive practice. No result from the recent constructive legislation is more to be desired than a degree of financial stability that will enable the railroads to elect an even trend of expenditures for physical improvements. No single factor would have a more pronounced effect toward stabilizing the business of this country and nothing would reflect more credit upon the railroads or bring them greater prosperity.

Why the Railways Are Not Buying Now

IN AN EDITORIAL in its last issue the *Railway Age* presented some of the reasons why it is desirable that the railways should now be buying the normal amounts of equipment and supplies. The question of the future of prices is, however, one which is uppermost at the present time in the minds of buyers of all kinds of things, including railway purchasing agents and executive officers.

It is essential before one person can sell a thing and another can buy it that they shall agree upon the price to be offered and accepted. One of the principal reasons why the railways are not making their normal purchases now is that they believe the prices of most things they want to buy are too high, and that sooner or later they are bound to be reduced. Before extensive buying by the railways can be expected to be renewed the railway equipment and supply companies will have either to reduce present prices or convince railway officers that purchases ought to be made at present prices.

The attitude of many railway executives regarding this matter is indicated by letters which the *Railway Age* recently has received from several presidents and vice-presidents. The president of a western railway who was asked to give us his budget figures for the year 1920 sent them to us, but at the same time said in his letter:

"A thought has occurred to me in connection with your plan of publication and that is whether or not, if you are able to show that the railroads are going to purchase several hundred thousand freight cars and several thousand locomotives, it would be an inducement to the equipment companies to advance their prices before orders are placed. If this should occur, of course, we would possibly reduce very largely our equipment purchases, or defer them altogether."

The president of an eastern railroad said recently in a letter to this paper:

"Who has the nerve to buy a thousand freight cars at $3,200 to $3,500 a car, or locomotives at $55,000 to $70,000, or undertake large construction jobs with an eight-hour day program and existing rates of wages for artisans, mechanics and laborers? Who will build extensions to railroads with steel at $55.00 to $57.00 a ton? Frankly, I shall hesitate and consider most carefully before plunging ahead, when I feel morally certain that within sight ahead of us there will be prices and conditions more attractive."

The president from whom the foregoing is quoted had said in an earlier part of his letter: "It is an absolutely 100 per cent statement when I say that all railroads are not only willing, but anxious, to go ahead with construction and purchase of additional equipment, and the extension of terminals and the erection of adequate facilities."

The executive head of a large railway in the south has written us as follows:

"The present prices for equipment of all classes are, in my opinion, quite excessive and unless material reductions are brought about we may not be able to increase our ownership on the scale now in contemplation. Moreover, I am somewhat fearful that any public announcement of our plans with respect to the purchase or construction of additional locomotives and cars in advance of the negotiation of necessary contracts would tend to unduly inflate the equipment market. We have some very pretentious ideas as to additional equipment, but I am afraid that we shall be obliged to go rather slowly."

The letters from which the above extracts are quoted were all written by officers of railway companies which solely from a financial standpoint would be able in the immediate future to make purchases in normal amounts, and which, if they refrain from doing so, will be influenced chiefly by the consideration of prices. The letters were not written for publication or to influence the market. They unquestionably express the actual views of other writers.

We have recently heard the question frequently asked by men in the railway equipment and supply business as to why the railways are not now buying at the normal rate. The letters from which we have quoted doubtless give the principal answer.

It is for the railway equipment and supply manufacturers to determine the prices at which they can afford to sell. It is for the railway companies to determine the prices at which they can afford to buy. It would promote the welfare of both of them, and of the country as a whole, if they would soon get together on a basis which would be satisfactory and reasonable for both. It is hardly exaggerating to say that in the railway field, as in many other fields of business, the sellers and buyers of many commodities are practically deadlocked. It is hardly probable that in this or any other field the deadlock will be broken as long as either side waits for the other to make all the concessions.

Where the Money Is Going

THE RAILWAYS HANDLED more freight in October than in any previous month in their history. They should have had in that month a net operating income of $113,000,000 for that month to have contributed its share toward an annual return of 6 per cent. The statistics thus far compiled indicate that the Class I railways earned only about $83,000,000 net return. This was 25 to 30 per cent less than the amount expected.

The reason why the net return expected was not earned is apparent upon the face of the figures. It was not because the total earnings were less than was anticipated, but because the operating expenses were greater than was anticipated. The operating efficiency of the roads has been in many respects greatly increased within recent months, and was at its height in September and October. The average miles traveled by each freight car, the average load per freight car and the average tons per train in those months broke all records. Why, in spite of these facts, were the operating expenses so high?

No detailed statistics of operating expenses in October are available, but some detailed statistics of expenses in September are available, and they throw much light on the situation. The three large classes of operating expenses are those for maintenance of way and structures, maintenance of equipment and transportation. The expenses for maintenance of way in September were 38 per cent greater than in the same month of last year; the expenses for maintenance of equipment 7 per cent greater, and the expenses for transportation 37 per cent greater. These figures show that large increases in expenses have occurred in every department. The expenditures for maintenance of equipment were sharply reduced in September by an actual reduction of work. If this had not been done they would have shown a much larger increase. In the first nine months of the current year they were 30 per cent greater than in the first nine months of last year.

It is impossible with the data available to analyze any of the increases in expenses except those for transportation. The Interstate Commerce Commission has compiled data regarding the increases in most of the important costs that enter into transportation expenses. Since transportation expenses constituted in September almost exactly one-half of the total operating expenses, the commission's statistics regarding the various items of transportation expenses merit careful study. This is especially true of those regarding the cost of transporting freight. The unit costs given by the commission are those for locomotive repairs, wages of enginemen, fuel, other locomotive and train supplies, engine house expenses, and wages of trainmen. These items for each freight train mile totaled in September, 1919, $1.60, while in September, 1920, they totaled $2.10, an increase of over 31 per cent. For each freight train that was moved one mile in September, 1919, the cost of locomotive repairs was 43.6 cents, while in 1920 it was 50.8 cents, an increase of 14 per cent. This accounted for approximately $6,300,000 of the increase in transportation expenses.

The increase in the wages of enginemen per freight train mile was from 23.3 cents to 31.5 cents, or 35 per cent. This accounted for over $5,000,000 of the increase in transportation expenses. The increase in the cost of fuel per freight train mile was from 45 cents to 65 cents, or 45 per cent, and accounted for over $12,150,000 of the increase in transportation expenses. This advance in the cost of fuel per train mile was entirely due to an advance in the average price of coal. The average price per net ton paid in September, 1919, was $3.10, while in 1920 it was $4.54, an advance of 46 per cent. Trainmen's wages per freight train mile in September, 1919, were 26.6 cents, and in September, 1920, 37.6 cents, an increase of 41 per cent. This accounts for more than $6,700,000 of the increase in transportation expenses.

The foregoing figures do not include all the items that enter into the cost of moving freight trains and do not include any of the costs of moving passenger trains. The items mentioned do, however, account for over $30,000,000 of the $69,000,000 increase in total transportation expenses which occurred in September. They will indicate to anybody who is used to studying statistics regarding railway expenses the difficulty of the problem with which railway officers are confronted. Very much the largest item of increased transportation expenses is that for fuel. It seems fair to assume that the average cost of coal per ton will in future months decline substantially, but railway officers cannot control coal prices. The increases of 35 per cent per freight train mile in the wages of enginemen and of 41 per cent in the wages of train men are due not merely to the large advance in wages granted to these and other employees by the Railroad Labor Board last July, but also to the "punitive overtime" granted by the Railroad Administration to employees in freight train service. The labor cost of moving a freight train one mile cannot be materially reduced without either reducing the wages of the train service employees or increasing the average speed the trains are moved, and while punitive overtime gives the management an incentive to get trains over the road in a shorter time, it affords to employees an incentive to get them over the road in a longer time.

In spite of the obstacles in the way, it is evident that railway expenses must be reduced and reduced greatly. One of the largest items of expense which must be reduced is the cost of fuel. The roads are failing at the rate of $25,000,000 to $30,000,000 a month to earn their estimated net return. A very large part if not most of this failure is due to the fact that fuel is costing them much more than was estimated at the time the statistics on which they based their application for advances in rates were made up. Fuel prices already are declining, but there is need for much greater efforts to economize in the use of fuel by better supervision and by the more extensive use of fuel-saving devices. There must be secured a greater increase in the efficiency of labor. This also must be obtained by better supervision and by the more extensive use of labor saving devices and machinery in all departments.

One of the most important things that should be done is to keep up the heavy loading of cars. This can be done only if the co-operation of shippers can be secured. It can be secured if shippers can be made to understand what heavy loading means to them in the cost of transportation. The progress which has been made and the results which have been obtained in increasing the average loading of cars within recent years are remarkable. In the year 1915 the average number of tons hauled per train was 474½ tons, while in September, 1920, it was 767 tons, an increase of 61 per cent. This increase in tons per train was mainly due to the increase in the number of tons per car. The average number of cars per freight train in 1915 was 34, while in September, 1920, it was 39, an increase of 15 per cent. The average number of tons per loaded car in 1915 was 21.2, while in September, 1920, it was 30.1, an increase of 40 per cent. What did it mean to the railways, and through them to the shippers, to secure these increases in the average load per car and per train? With an average train load of 767 tons, the railways ran 53,017,000 freight trains one mile in September to handle the business of that month. If they had had only the average carload and train load of 1915 they would have had to have run in order to have handled the freight business of that month an additional 32,654,233 freight trains one mile.

As we have shown, the cost of locomotive repairs, wages of enginemen, fuel and wages of train men amounted in September to $2.10 for each freight train run one mile. Therefore, if the railways in September had run 32,654,333 more freight trains one mile, as they would have had to do if they had had only the average carload and train load of 1915, locomotive repairs, wages of enginemen, fuel, and trainmen's wages in freight service alone would have cost $68,639,200, more than they actually did. Furthermore, the running of 33,000,000 additional trains one mile would have caused enormously greater costs for maintenance of way and structures, maintenance of equipment and return upon investment in the additional facilities that would have been required.

The unprecedentedly large car loads and train loads in which the railways recently have been handling freight have been saving them, and through them the shippers and the public, literally hundreds of millions of dollars a month, and there ought to be exerted the utmost effort and co-operation by the railways and shippers to maintain and increase them.

Letters to the Editor

Increasing Car Loading of Mutual Interest to Shipper and Railway

Chicago.

To the Editor:

Maximum loading of freight cars is so desirable a factor in increasing transportation facilities that shippers should be only too glad to co-operate with the railroads. They are doing it now. From February to August of this year, the average loading of freight cars increased from 28.3 tons to 29.8 tons or 1½ tons a car. As a result of this co-operation on the part of shippers, there was a gain of carrying capacity equal to 112,500 cars— a necessary achievement in view of the fact that last year developed an increased shortage of 100,000 freight cars due to the fact that something like 135,000 old cars were scrapped and approximately only 35,000 new cars were constructed.

The return of the railroads to the management of the capable railroad men who made such a success of their operation before the war, has been marked by a gratifying measure of efficiency. Shippers and railroad executives have pulled together. They will continue to work in harmony just as long as each side thinks it is being treated fairly. The railroads want adequate compensation for carrying freight; the shippers feel that in return for the increased compensation the railroads have been accorded, they are entitled to cheerful, expeditious service.

In theory, cars should be loaded to their maximum capacity, and, as has been stated, there has been an increase of 1½ tons per car. There is a point in loading capacity, however, beyond which shippers should not be asked to go unless the railroads keep step with them.

The additional tonnage carried by the freight cars of this country this year has been largely at the expense of the shippers, who, in order to load their cars heavier, have been obliged to supply a greater amount of dunnage. This dunnage consists of timbers erected in cars to prevent loads from shifting. Sometimes it weighs from 3,000 to 4,000 lb. Shippers are not only put to the expense of erecting this dunnage including the cost of the material which they never recover, but they are actually obliged to pay for its transport. Suppose the dunnage should be erected in a car transporting steel products from Chicago to the Pacific Coast; the rate on this class of freight is something like $1.50 per 100 lb. so you can see that the shipper, in such an event, would be charged $60 freight for the transportation of dunnage erected to prevent the load from shifting and in order that the car might be loaded heavily to meet the wishes of the railroad and to prevent damage to the shipment.

It seems to me that if the carriers wish to co-operate fully with the shippers, they will, of their own volition, put into effect a rule allowing shippers at least the free transport of this dunnage. Heavy loading of cars unquestionably results in damaged shipments due to shifting loads, in consequence of rough handling of the cars; this is indicated by the fact that the railroads in the last year had something like $106,000,000 loss, damage and theft claims growing out of freight transport.

A rule allowing shippers free transport of this dunnage would encourage heavier loading, especially at the present time when there is a tendency on the part of consumers to curtail their buying or at least to keep it within their actual and immediate needs on a declining market. The consignee does not want a heavily loaded car unless he has a ready market for the commodities, and he does not want to pay freight charges on a shipment that may exceed his immediate needs unless there is some inducement.

Shippers can co-operate effectually with the railroads in the matter of heavier car loading by making their trade units correspond to the capacity of the cars. I understand that this has been done with cement and a number of other commodities. The trade unit in cement shipments has been made 144 bbl. for a 50,000 lb. capacity car; 173 bbl. for a 60,000 lb. capacity car; 231 bbl. for an 80,000 lb. capacity car, and 289 bbl. for a 100,000 lb. capacity car. The establishment of this standard encourages loading cars to capacity. If this could be done with other commodities, it would be a great help to the railroads. It happens, however, that the railroad companies themselves are the heaviest offenders in their own purchases for they buy in trade units rather than in car units.

The *Railway Age* is doing an important work in presenting this subject so that the railroad managers can obtain the viewpoint of shippers and if it can bring about the two reforms mentioned, there will be increased loading of freight cars. It is all a matter of education and co-operation.

John M. Glenn,
Secretary, Illinois Manufacturers Association.

Economies at Small Expenditures

El Reno, Okla.

To the Editor:

Because of the present money stringency and rather doubtful outlook for an improvement in the near future, the railroad managing officer is seeking the man with a new and successful method of handling railroad work that can be put into effect without the expenditure of a great deal of money. It does not take much thought on the part of any practical railroad employee to suggest an improved way of handling that branch of the railroad work in which he is experienced, by the expenditure of a large amount of money, but to work out and put into effect a method of handling the work which will give the same or better results and requires little or no expenditure of money, is something that requires study, serious thought and practical experience in the work.

Employees at staff meetings should be encouraged to make suggestions as to improved methods of handling their work. There are today a great many employees in train, engine and yard service and in clerical positions who have a college education and, consequently, have trained minds, and they should be encouraged to use their training to advantage to themselves and to the benefit of the company they serve. Officers should be careful to analyze every suggestion made and not treat it lightly. Frequently the first thoughts of an employee are followed by other thoughts more valuable. Every improved method of handling railroad work was suggested by some one, and there are many more suggestions in the minds of the employees just as valuable, if they are encouraged to work them out.

Every railroad officer can recall to mind specific instances where a yardmaster, agent, warehouse foreman, roundhouse foreman, in fact in almost every railroad position, a new man was installed and by improved methods the work was handled by the new man just as well and more economically with only a slight change in methods and no expenditure of money. The railroad employees in the ranks today are the railroad officers of tomorrow. Endeavor to inspire them with a spirit of honor, confidence and loyalty to their officers, fellow employees and the company they serve, and the economic methods will come through the feeling that they are employees of the best railroad in the land and that the company's interest is their interest.

H. L. Reed,
General Superintendent, Rock Island Lines.



After the Flow Stopped. The Shovel at the Right Is Casting to the One in the Center

How Railroad Forces Met a Serious Emergency

Well Organized Plan of Attack Enables Pennsylvania to Use Large Plant to Overcome Slide

AFTER SPENDING the entire month of November in fighting a most remarkable landslide that threatened to cut its Pittsburgh-New York line in two, the Pennsylvania has restored to operation all of the eight tracks which had been buried under a great mass of earth. A study of the situation indicates the possibility of a recurrence of trouble at the same site at any time, but under conditions so modified that the same spectacular results or serious consequences are essentially precluded. This noteworthy slide, which occurred on terminal tracks about one mile east of the Union Station at Pittsburgh, was described in the *Railway Age* of December 10, page 1029, where the primary causes of the difficulty and the manner of overcoming them were discussed. Information subsequently available throws more light on the conditions responsible for this accident and also permits of a more detailed account of the organization and methods instituted in marshalling a most extraordinary force of earth moving equipment in a small operating area. Not the least among the problems involved was that of the disposal of the spoil, which was a soft clay high in water content, foul with foreign matter and difficult to unload.

Virtually the Failure of a Dam

This costly accident can be compared most favorably with a failure of a dam, for it was the destruction of a high retaining wall which allowed the impounded fillings and dumpings behind it to debouch onto the property of the railway below. This operation was not completed for several days because the material was earth instead of water. The principles involved, nevertheless, are essentially the same. Therefore, to study the causes of this landslide it is necessary to go back 22 years to the time when this retaining wall was built.

The tracks of the Pennsylvania for some distance east of the station at Pittsburgh lie at the base of a high bluff of rock, shale and clay and at the point where the slide occurred the cliff was scored by a gulley of somewhat flatter slope than the face of bluff. When, in 1898, the city undertook to build a public highway on a shelf in the bluff, some 200 ft. above the tracks, this hollow introduced a serious obstacle. Although the roadway was placed as near the natural contours at the head of the ravine as possible, it was found that a 60-ft. embankment was necessary. At first, it was decided to build a retaining wall along the edge of the highway for the support of this fill; in fact, a portion of such a wall was built and the rock surface was cleaned off, preparatory to the construction of the remaining portions. However, this plan was abandoned and instead the embankment was allowed to take its natural slope with the consequence that considerable of this material spilled out onto the railway tracks. This led the railroad to secure a restraining order, preventing any further work until proper measures were taken to hold the embankment.

Following this, it was found that, by building a retaining wall about 200 ft. long at a narrow part of the gulley about 125 ft. back from the nearest railway track and with its top about 90 ft. above rail level, support could be had for a fill sloping upward and back some 400 ft. to the roadway. This wall was of ashlar masonry of a maximum height of 55 ft. above its footing and was built in three different sections, giving it a peculiar shape. The wall developed difficulties very shortly after the back filling was applied, cracks appearing in the two wings. So the work was stopped and weep holes drilled through the bottom and a French drain placed at the back, after which the filling was again continued. As an additional precaution, a heavy timber crib was built some distance up the slope. After the work had been carried out in this manner engineers of the railroad made observations on the wall for a year subsequent to its construction, but no additional movement was noticed.

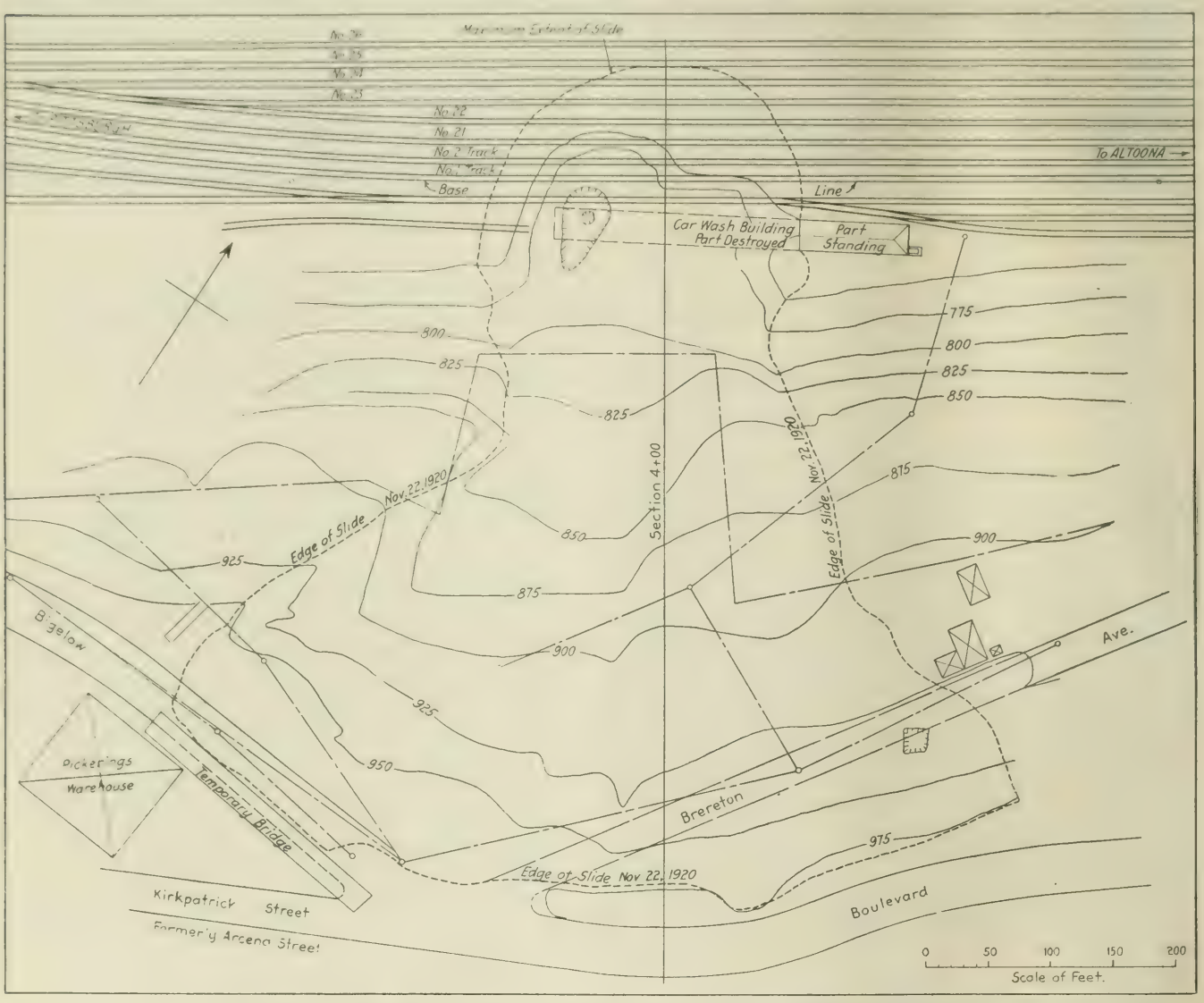
There are a number of springs in this ravine and, at the

time that the highway was built, provision was made for them in the construction of several drains. The presence of these springs was again noted recently when test holes were drilled on the site of the boulevard and indicates one reason for the large amount of water in the earth fill.

From the time that this wall and highway were constructed until the present, filling operations were continued almost incessantly. The inhabitants of the neighborhood used this hollow as a dumping ground, while various contractors used it as a spoil bank for excavations. During the present year this filling was prosecuted with increased vigor, for the purpose of widening the highway embankment to improve the alignment. This work and improvements carried on elsewhere resulted in the deposit of about 30,000 cu. yd. of additional surcharge on the old retaining wall. About October 8, 1920, information was received by the railroad officers to the effect that cracks were developing in the fill alongside the boulevard, indicating a possible slip of the entire mass. Efforts were made to get in touch with the city authorities at once, but because of unavoidable circumstances a conference between the railroad and city officers was not held until October 18. In the meantime, the mass of filling had started to slide and considerable quantities of earth slipped down to the retaining wall and flowed over the top of it. About the same time, the cracks, which had originally developed in this wall, showed indications of opening up again and in a short time they evidenced a movement of one inch per day.

Efforts were made at once to relieve the situation by placing a force of men on top of the wall in an effort to remove as much of the load behind it by throwing the earth in front of the wall and thus adding weight at that point for additional support. Notwithstanding this, the wall kept moving forward with a corresponding settlement of the ground behind it. This movement of the wall was directly forward, without any tendency toward tipping until the entire wall was carried far enough to move it entirely off its original foundation. Overturning then followed.

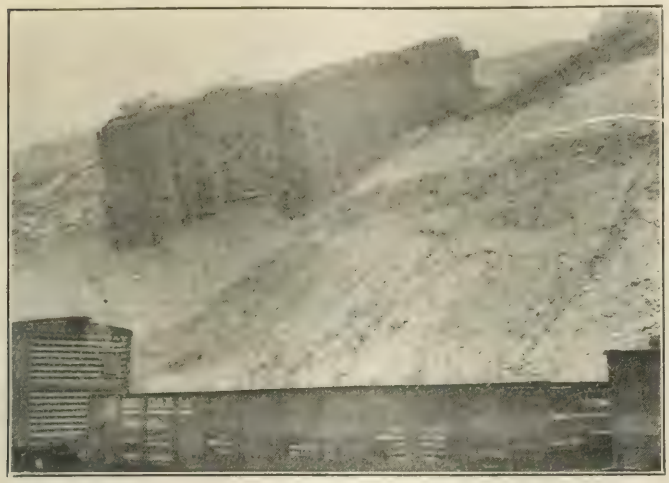
These conditions had not progressed very far before it became apparent to the railway officers that serious consequences were to follow. Unfortunately, a two-story brick building, 60 ft. wide and 290 ft. long, used for the service and stores of the coach cleaning and repair forces, stood directly in the path of the moving retaining wall, while the two main passenger tracks were located just beyond this building. When it became apparent that the wall would fail, arrangements were made for detour of passenger trains as soon as this should become necessary. The railroad also placed 150 men in the storage building to remove some $150,000 worth of materials stored therein, and on the morn-



General Plan With Contours of the Location of the Pittsburgh Slide

ing of October 29 this force had cleaned out the contents of the building with the exception of a small amount of stores in the basement.

An inspection of the conditions at 9 a. m. on that day indicated an early failure of the retaining wall. These conditions became so alarming by 10:30 a. m. that the men



The Wall With Wings Gone and a Large Central Section About to Fall

engaged in removing the slide from the retaining wall were ordered to abandon the work. This precaution proved well founded for about 11:15 a. m. the wall began to disintegrate. All employees were warned out of the building and reached the point of safety before the wall finally failed at 11:45. It fell over in sections, the first part dropping out of the east end, the west end falling next, and the center portion going last. The falling masonry caused serious damage to the west end of the stores building, knocking in about 30 ft. of the rear wall and pushing out about 20 ft. of the front wall. About 80 ft. of the building was pushed 6 in. off the foundation and seriously racked. The fall of the upper portion of the wall and the wrecking of the west portion of the storage building resulted in fouling the No. 1 passenger track but service was resumed as soon as debris was cleaned away. However, because of danger that further disturbances would result in the wrecking of other portions of the stores building and cause it to fall on the track, a section 80 ft. in length was pulled down with the aid of a bridge derrick.

The portions of the wall to fall comprised essentially the top 30 ft., leaving a lower portion 25 to 30 ft. in height still in place but this portion gradually tipped over until it reached an angle of about 45 deg. and was pushed forward by the great mass of earth behind it in approximately this position. Anticipating that a large mass of earth would soon flow out over the tracks and require extensive excavation operations, it was seen that the presence of the large masses of stone masonry of the retaining wall would introduce a serious obstacle. Consequently steps were taken as quickly as possible to dynamite this masonry and efforts in this direction were well along before the flow of earth made it necessary to discontinue them. Following the fall of the retaining wall, the movement of the earth became rapid and averaged about one inch per hour.

An Intensive Excavation Project

When it became apparent that a slide would take place, arrangements were made to muster a force of excavating equipment and two steam shovels were on the ground before the retaining wall failed and commenced work at once. As the situation developed, further calls for equipment were made and eventually the complement consisted of 9 large steam shovels, 2 small ditching machines, 14 locomotives, 120 40-yd. steel dump cars, 300 12- and 16-yd. wooden dump cars and about 500 gondola cars. At first, an attempt was made to operate two steam shovels on opposite sides of the slide, loading cars in a train on a through track immediately adjacent and directly in front of the slide but it became apparent very soon that this method of operation could not be carried out successfully. The difficulty in the way of this was a characteristic heaving of the ground immediately in front of the slide, making it impossible to maintain a track



Steam Shovels and Ditchers Fighting the Slide

in that position. Moreover, the movement of the slide was so rapid that it would envelop the tracks in front of it before anything could be done to prevent. As a consequence, a different method of attack was undertaken. This consisted in placing as many steam shovels on each side of the slide as possible, occupying alternate tracks and using the tracks between for loading. This entailed the use of a rather cumbersome stub-end method of loading but proved to be the only practical method as long as the slide was actually moving forward. In fact, it was necessary to withdraw the shovels several times a day to prevent them from becoming enveloped by the slide. This mode of attack was continued until the slide reached the limit of its movement, when it covered the eighth track, and the ninth shovel was placed in use directly in front of the moving earth. This was the status of the operations when, on November 18, evidences pointed to a slackening of the movement to an extent which indicated that some progress was being made in clearing the tracks.

Following this, it became possible to institute a more progressive method of handling the shovels. Under this arrangement, two shovels were placed on adjacent tracks on



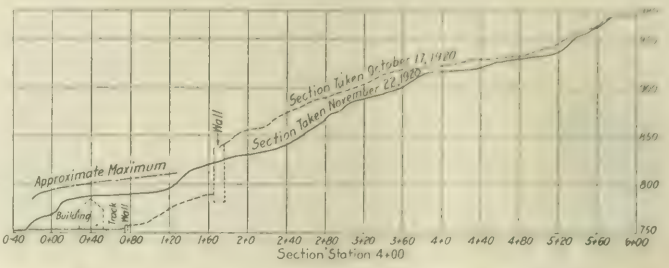
After the Wall Fell and Before the Earth Followed It

each side of the slide with the two inner shovels slightly in advance. These inner shovels then cast the material where it could be picked up again by the outer shovels, which in turn deposited it in cars on a through track. This method was obviously not the most economical but it made for the greatest possible speed in clearing up the debris. The tracks were finally cleared of the earth on November 26.

Throughout the entire operation, the work was constantly being hampered by the soft, mushy character of the material, the shifting and heaving of the tracks and the presence of a large amount of water that could not be readily drained away and, therefore, resulted in very soft tracks. One of the steam shovels was caught in the slide and it required two days' work with the aid of a large McMyler locomotive crane, equipped with a clam shell bucket to dig it out. The operations were also hampered by the lack of sufficient space for switching the material cars, since adequate provision had to be made at all times for the operation of passenger trains.

One of the most important features of the excavating work concerned the dumping of the loaded cars. Arrangements had to be made for spoil banks at various places on the line and a complete transportation organization built up for despatching the dirt trains. It was also necessary to make a number of changes in the track layout to facilitate the movement of cars to and from the shovels and for making up trains destined for the various dumps. These had to be classified as between bottom dump and gondola cars to suit the facilities for unloading. The work of handling trains was in charge of a yard master, assisted by two assistant yard masters. Close communication was maintained with each of the dumping locations, so that the cars would be despatched in a manner to avoid congestion.

The work progressed continuously from the time that the slide cut the main tracks until they were again placed in service at 7 a. m. on December 6. During this time, approximately 1,400 gondola cars, 500 steel dump cars, and 1,600 wooden dump cars were loaded and despatched, removing



A Cross-Section Taken at the Point of the Slide

about 130,000 cu. yd. of earth. Every precaution was taken for the quick despatch and unloading of the cars to prevent the lading from freezing but favorable weather obviated this difficulty and it was also found possible to have no car under load over 24 hours.

The maximum width of the slide measured along the main tracks which it covered was 310 ft. The maximum height attained by the mass of earth was 55 ft., or some 15 ft. higher than was the case at the time that the levels shown on the profile were taken.

The maximum encroachment of the slide on to the railroad property was 200 ft. from the mouth of the ravine



What the Falling Wall Did to the Storage House

but measurements taken during the progress of the slide showed that this movement amounted actually to 305 ft. The difference in the above figures represents the extent to which the large force of steam shovels was able to beat the slide back while it was in motion.

The entire attack on the slide was under the direction of C. W. Richey, division engineer, Pittsburgh terminal division, under the general supervision of W. D. Wiggins, chief engineer maintenance of way, Central region.

The Co-ordination of Rail and Water Transport*

Railways and Waterways Not Naturally Competitors and Should Work Together—Railway Ownership of Boat Lines

By Charles H. Markham
President of the Illinois Central Railroad

I THINK IT WILL be agreed that the question of the development of inland waterways should be considered as a part of the entire transportation problem of the United States. We need better and more adequate transportation to carry the products of our farms, forests and mines to the places in our own country where they are to be consumed or to be used as the fuel and raw materials of manufacture. We need better and more adequate transportation for distributing the products of our manufacturing industries from the great centers of population and industry to all parts of the country. Our people within recent years have enjoyed a great export trade. Their prosperity requires that a large part of all of this be retained; and the efficiency and adequacy of our inland transportation and our merchant marine will largely determine the amount of export business we shall do.

It is important not only that our means of transportation, inland and overseas, shall be adequate and efficient, but that all our transportation service shall be rendered as cheaply as possible.

If our industries are to grow, and to compete successfully with those of other nations, we must get our raw materials and manufactured products to tidewater for delivery to an American merchant marine at a cost which will enable prices to be made for our commodities which will compare favorably with the prices charged by other nations. To do this we must make use of those instrumentalities of transportation which are in fact the most efficient and economical.

We have available three means of inland transportation—highway, railroad and waterway. Good roads and the motor truck have begun to play an important part in transportation. For some years the railways have found it difficult, and at times impossible, to handle all the freight offered. Trucks have helped to relieve the situation by handling substantial amounts of freight in congested areas. In many cases they have hauled freight, and especially high grade freight, considerable distances. Probably, however, the future of the motor truck as a carrier of freight will be found in handling it short distances in congested areas, and in bringing it to railways or waterways from points not reached by them. Practically all the freight moving long distances will go by rail and water.

Best Kind of Transportation Depends on Conditions

The public's welfare demands that transportation shall be rendered in any particular territory, or between any particular points, by that means which can render it most economically, due allowance being made for differences in the speed, regularity and other features of the service. There are many parts of the country in which water transportation cannot be provided. There are others in which it can be provided, but not under conditions that would render it desirable or even feasible to have the freight business transferred from the railways to the waterways.

There are still other parts where transportation by water has such great advantages over transportation by rail that the railways stand no chance of getting any considerable part of the business. Take, for example, the supplying of coal to the Northwest. The advantages of water transportation on the Great Lakes for bulky commodities moving in large volume are so great that the natural source of the Northwest's coal supply is the mines in the Pittsburgh district, in Ohio and in West Virginia, and the natural route for it is by rail from the mines to Lake Erie ports, and by boat to the head of the lakes. Only a small part of the coal going to the Northwest moves entirely by rail.

There are, however, many parts of the country in which it is still debatable whether, if the waterways were developed, transportation by rail or by water would have the advantage in cheapness and efficiency. I do not wish to say anything against the governmental waterway policy which has been followed in the past. There is, however, one point regarding it on which I think all will agree. This is that it has not been carried out in such a way as definitely to determine where transportation by water, and where transportation by rail, are preferable. If the nation is to continue to spend many millions of dollars upon waterway development, the greatest immediate need seems to be the formulation of a definite and constructive policy under which waterway expenditures will be concentrated where physical and commercial conditions are favorable to the development of a large water borne traffic.

The development of waterways often has been advocated to regulate railway rates. Doubtless in many cases railway officers have assumed an attitude of antagonism to it because they feared the effects it would have on their earnings. Railway officers are able now to take a more detached view of this subject than in the past. One of the products of the war is a new point of view toward the railroad problem as expressed in the Transportation Act under which the roads were returned to private operation. For the first time in the history of the country there is recognition of the fact, not only by the general public but by the law regulating railways, that to take care of the country's business the railroads must be enabled to provide adequate facilities, and that to provide adequate facilities they must be enabled to earn adequate returns.

The Transportation Act directs the Interstate Commerce Commission to so fix the rates as to enable the railroads of each group, if efficiently and economically managed, to earn a return of 5½ to 6 per cent on their aggregate valuation. It follows that if waterways should be so developed in some parts of the country as to take freight business from certain lines of the railways, the Interstate Commerce Commission would have to make the rates high enough on the business left to yield the returns specified in the law. While, therefore, the development of waterways in certain parts of the country might make the cost of transportation lower to shippers located on the waterways, it might, because of the diversion of business from the railroads, actually make the rates of shippers located exclusively on the railways higher than they otherwise would be. However, as I have said, the government should consider the policy adopted in relation to its effects on the public as a whole, and not in relation to its effects on only part of the public.

You may say that water competition would force the rail-

*An address delivered before the River and Harbor Congress at Washington, D. C., on December 8, 1920.

ways to reduce their rates at least between points where the competition existed. I think there is a good deal of misunderstanding regarding competition between railways and waterways. My observation is that there never has been for any considerable time actual competition between them. When freight may move between certain points by either rail or water it always is but a short time until either the rail route gets it all or the water route gets it all.

Waterways and Railways Not Naturally Competitors

Take, for example, the case I have cited of coal moving to the Northwest. The water route via the Great Lakes is better and more economical than the all-rail route. In consequence, practically all the coal is moved by water. Because of the fact that the water route is better and more economical, the railways not only do not compete, but do not provide facilities for competing. In consequence, if conditions arise which interfere with the movement of sufficient coal by water, it is practically impossible to get the coal to the Northwest. Somewhat the same situation existed before the war with respect to the movement of coal from the West Virginia mines to New England. The coastwise route from Norfolk and Newport News always had been better and cheaper than the rail route, and practically all the coal moved by rail to tidewater, and thence by water to New England. In the midst of the war many of the coastwise steamships were transferred to transoceanic service, and it was found almost impossible to get enough coal to New England by rail.

Take, again, the conditions that have existed between Savannah, Ga., and New York and Boston. Until the carriers by water were commandeered for war purposes the people of Savannah knew nothing about shipping by rail, either from New York and Boston to Savannah, or vice versa, any commodity that could be handled by water. You might occasionally find a large piece of machinery that could not be gotten into the hold of a vessel and that had to be handled by rail on two freight cars. I do not know of any cases of the kind, but there doubtless were some. The same general conditions exist between New York and all the South Atlantic and Gulf ports. The railroads are there and yet all the traffic moves by water. There is no real water and rail competition.

On the other hand, when the railroads have been able to provide better and cheaper service than parallel waterways there has been an irresistible tendency for the business to leave the water routes and go to the railways. It may be well, in this connection, to refer briefly to the early history of the development of some railroads, and the consequent destruction of traffic on parallel water routes. Almost all the railways built in the early history of this country were constructed to serve communities already served by water. They were built to serve these places, first, because these places had become the principal centers of population and industry, and, secondly, because transportation by rail was regarded as more speedy and efficient than by water. The railroads having been constructed, and having almost no source except places located on the waterways from which to draw business, and the total business available being insufficient for both the railways and the waterways, it was inevitable that either the railway or the waterway would survive at the expense of the other.

In our early history the Erie Canal was a very large carrier of freight. When railways were built paralleling it they had to get all the business they could to live. They therefore rendered service and made rates which speedily took practically all the traffic from the Canal.

Effect of Climatic Conditions

Climatic conditions have been among the chief reasons why the railways have taken from many waterways practically all their business. A railway can operate throughout the winter in our northern states, while the waterways are closed to navigation. The Mississippi river north of Cairo, and for some distance south, often freezes over and becomes unnavigable for two months or more. The season when navigation is closed on many other inland waterways is longer. In order that a railroad may be in a position to give the public at all times the service it needs, the railroad ought to be equipped to permit it to take care of the peak load of its traffic just as should any other public utility such as an electric light or a water plant.

It is, however, a question of public policy as to the extent to which railways should be expected to provide surplus capacity to handle traffic thrown upon them by waterways becoming temporarily unnavigable. The condition mentioned is certainly one of those influences which have been potent in enabling the railways to take the business from certain waterways. When these waterways are closed the shippers make arrangements for having their traffic handled by rail, and usually find it inexpedient to divert their business from the railways to the waterways when navigation is closed, and then divert it back again when the waterways are open.

As I have said, the transportation problem should be approached from the standpoint of the welfare of the entire public. All the people must bear in the first instance the cost of waterway development carried on by the national government. The total cost of handling traffic on canals and canalized rivers includes interest on the money invested in constructing them and the cost of maintaining them, as well as the cost of providing the boat service. Should not the users of water service be required to contribute in the form of tolls toward a return on the investment and toward the maintenance of the facilities? It seems only fair to all of the people of the country that if government money is to be used to provide facilities for the movement of traffic by water, the users of the water service should contribute toward the cost of constructing and maintaining the waterways, just as those who use transportation by rail are required to contribute toward the cost of the construction and maintenance of the railways.

Since there never is for any considerable time actual competition between water and rail carriers—as one or the other, when they are pitted against each other, always will take practically all of the business—there is evident need for comprehensive study to determine where transportation by water and where transportation by rail will be preferable. It is as questionable a policy to make expenditures on waterways where the conditions are such that they probably will never be able to take the business from the railways, as to provide a large surplus capacity on the railroads to be used only in emergencies when the waterways are closed. The object of a national policy should be not to foster competition between railways and waterways, but such development of both as will enable them to co-ordinate their facilities and work together to give every section of the country the best, most adequate and cheapest transportation service practicable.

Railway Ownership of Boat Lines

When we find, after proper experiments have been made, that transportation by water in any part of the country is in fact more efficient and economical than by rail, the railways should not be forbidden, but encouraged, to use the waterways as auxiliaries. The railroads are already organized and engaged in the business of transportation. They have agencies and connections with other railroads throughout the country, as well as connections with steamship lines throughout the world. They therefore have facilities for gathering traffic from every direction to turn over to water carriers. It may be said that if the railways are allowed

to operate boats they will drive off boat lines owned by independent companies, but the Interstate Commerce Commission has power to prevent this. It has the same authority to regulate rates applying partly by rail and partly by water as to regulate rates applying entirely by rail. It has authority to require the railways to establish reasonable through rates and to make reasonable division of rates with water lines. In addition, the Interstate Commerce Act provides that if a railway reduces a rate to meet water competition, it shall not be allowed later to advance it merely because the water competition has been destroyed. With all these safeguards there does not seem any good reason to fear that if the railways were allowed to own and operate boat lines there would be any serious danger that they would drive out independent lines. In fact, boat lines owned by railways did, for years, operate side by side with boat lines owned by independent companies on the Great Lakes. When legislation forced the railways to cease operating boats on the Great Lakes, it impaired the service rendered the shippers without benefiting the independent boat lines. As long as the Interstate Commerce Commission has such great authority in respect to rates and general transportation practices, it ought to be competent to determine the conditions under which the railroads could be permitted to use the waterways in such a manner as to further the most efficient and economical handling of the transportation of the country.

The officers of the railroads and the water lines, in cooperation with the Interstate Commerce Commission, should be able to determine whether it would be more economical and beneficial to the country for certain traffic to be handled by rail or by water. The argument often is made in favor of waterway development that it would relieve railways of their bulky, low grade traffic, which, it is contended, is handled at a loss. Many persons even use the word "cooperation" as if it means that the railroads voluntarily should turn over part of their business to the waterways, and especially this low grade traffic, such as lumber, grain and coal. The fact is that if any large railroad system were relieved of all of its low grade tonnage the returns from its remaining business would not permit its continuing operation. It is the low grade business which can be handled in large trainloads at slow speeds, and at a cost much less than that of handling high grade traffic; and because this low grade traffic can be handled at low cost it is often the most profitable part of a railroad's business. Proper development of waterways and co-ordination with the railways would result, as I have tried to point out, not merely in the transfer of part of the business of the railroads to parallel waterways, but in the development of waterways and railways as parts of a single transportation system, each handling the business in those places where it could do it most efficiently and economically.

A comprehensive study of the development and use of waterways and railways not as competitive, but as co-ordinate and complementary parts of a single transportation system, would prevent in future many mistakes which have been made in the past. If the same company owned both a rail and water line there would not be competition between them which would be carried on until one or the other was driven out. The railway would be able to develop the service of its boat line to whatever extent experience might show was necessary to help its railway lines carry business in seasons of heavy traffic, without developing either rail or water facilities to such an extent as to result in large economic waste. Of course, where railways own boat lines they are more likely to use them as connections and feeders for bringing to their rail lines traffic that they might otherwise be unable to get, than in rendering water service which would merely parallel and duplicate their rail service.

I am unable to see any difference in principle between railroads being permitted to own and operate boats upon inland waterways and their being permitted to own and operate motor trucks upon highways or streets. There are conditions in our large centers of population and industry owing to which it may be found more economical and efficient for the railways to own and use trucks to pick up and deliver freight to yards at outlying points than to continue the practice of loading merchandise at large central warehouses and switching the cars to freight houses for reclassification and distribution. No one, I suppose, would question that it is the right and duty of the railroads to acquire trucks and use them over highways and streets if this will enable them to render more economical and efficient service. If a railway may properly use motor trucks at one end of its line, can there be any valid reason why it should not be allowed to own and operate boats from the other end of its lines if this will enable it to render more economical and efficient service? Nevertheless, as you know, while there are no legislative restrictions upon the ownership and use of motor trucks by railways, there are legislative restrictions upon their ownership and use of water carriers. The main thing I have sought to emphasize has been the necessity for the development of a comprehensive and constructive transportation policy which will include highways, railways and inland waterways, and which will result in such co-ordination of all these means of transportation as will cause the commerce of the entire nation to be handled with the utmost efficiency and economy.

Necessity for Fair and Constructive Policy

We have entered a new epoch in our country's history—one in which the greatest efficiency in production will be necessary to enable us to provide, by our domestic industry and our domestic and foreign commerce, the necessities, comforts and luxuries needed for the welfare of our people.

Transportation is one of the most important factors in industry and commerce. Therefore, upon the adequacy, efficiency and economy of our transportation service will largely depend the future welfare of our people. I know that many persons, including many advocates of the development of inland waterways, are disposed to regard with suspicion and questionings the policy of the railroads and any suggestions concerning a national transportation policy which may come from a railroad source. Undoubtedly, there have been reasons for this. I am not contending that the policy pursued by the railroads in relation to waterways or many other matters always has been right. I admit there have been abuses in their management, and that some of these have risen in their relations with the water carriers. I also believe, however, and think you will agree with me, that many millions of dollars have been wasted in efforts to promote navigation on some of our inland waterways which would not have been wasted if a constructive policy in dealing with this important question of transportation had been pursued; and what I am now advocating is the adoption of a policy of developing and using the waterways which will recognize the fundamental principle that traffic should be permitted to move by that route, whether highway, rail or water, which is in fact the most efficient and economical.

In this connection, reference should be made to a provision of the Transportation Act of 1920, which applies only to railways, but which is predicated on a principle which seems equally applicable to waterways. The Transportation Act provides that no railway shall in future construct any new line of railroad, or extend any old line, without first obtaining from the Interstate Commerce Commission a certificate that the present or future convenience and necessity of the public require, or will require, the construction and operation of the new or extended line. The purpose of this provision is to prevent increase of railway facilities when and where the means of transportation already provided are suffi-

cient, and when and where, therefore, increase of them would impose an unnecessary burden upon the public. Doubtless in the administration of this provision the commission would refuse authority to construct a railway line paralleling a waterway, if the waterway already was able to render all the transportation service public necessity and convenience required. From the standpoint of the economic welfare of the public, unnecessary duplication of transportation service by rail lines is no more undesirable than unnecessary duplication of service by water and rail lines. If, as Congress has decided, the Interstate Commerce Commission is the best authority to determine where additional railway lines are, or are not, needed, it seems to follow that it would be the best authority to determine where additional water transportation service was or was not needed. I raise for your consideration, therefore, the question whether the future development of transportation service by water as well as by rail ought not to be placed under the general supervision of the Interstate Commerce Commission by so amending the Transportation Act as to provide that before any waterway is constructed, improved or extended, a certificate must be obtained from the Commission to the effect that the public convenience and necessity require its construction, improvement or extension. Only in some such way, it would appear, can co-ordination in the development as well as in the operation of the railways and waterways be brought about which will in the greatest measure promote the public interest.

Speaking for the railroad system I represent, we are ready to co-operate with the waterways in every legitimate and useful way. I am not prepared to say we will turn traffic over to them which we can handle, and which we believe we can handle better than they can, but to the extent that the patrons of our railroad desire us to work in co-operation with the waterways I am prepared to say that we will participate in every reasonable arrangement that may be suggested for the establishment of through rates and through routes by rail and water, and for the transfer of freight between the rail and the water carriers. The Transportation Act, as I have already indicated, permits railway officers to take a somewhat more detached view of the general transportation problem than they could in the past, and, as public spirited citizens, the owners and officers of the railways consider it their duty to co-operate in future with all who are striving to promote a general transportation policy which will further the best interests of all the people and all sections of the country.



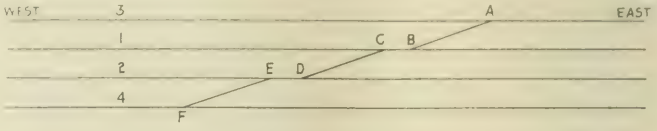
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A Memory of French Transportation at the First Division Reunion at Camp Dix. General Pershing May Be Seen in the Foreground

Report on Erie Collision

The Interstate Commerce Commission has issued a report, dated November 9 and signed by W. P. Borland, Chief of the Bureau of Safety, on the collision at Erie, Pa., on the New York Central, on October 20, when eight passengers were killed and 18 passengers, three employees and one Pullman porter were injured. This accident was briefly noticed in the *Railway Age* of October 2, page 715.

The collision occurred about 10:39 a. m. just west of the Erie station while both trains were moving at low speed, about 15 miles an hour. The line is four-track and the general situation is indicated in the sketch. Eastbound train No. 60 ran into the side of westbound train No. 23 and one sleeping car of the westbound train was overturned, one side being torn out. Both trains were made up of steel cars. The switches are not interlocked and train No. 60, on track No. 2, was turned to the left at switch *D* which was left misplaced.



About fifteen minutes before the time of the collision a locomotive had been moved westward through the crossovers from *A* to *F* and then eastward on track No. 4; and Switchtender Bell, riding eastward on this engine, left switches *D* and *E* to be set straight by Signal-maintainer Larson, who was working at that point, renewing a switch box. It appears that the maintainer straightened one switch, *E*, but did not straighten *D*; and he says he did not promise to attend to both. Bell assumed that Larson would attend to both and that was the primary cause of the collision. The line is equipped with automatic block signals and there is a signal 220 ft. west of the switch that was open; but this signal indicated all-clear because Larson had cut out the circuit breaker, which, if undisturbed, would have caused the automatic signal to indicate stop. Train No. 60, therefore, received a false clear indication. The weather was clear and there appears to have been nothing to obstruct the engineman's vision, but he did not see either the switch target (which was on the left-hand side of the engine) or the switch rails which were in the wrong position; neither the engineman nor the fireman realized the situation until their engine actually entered the crossover. The fireman was sitting on his seat box at the time.

Signal-maintainer Larson has an experience of several years, and a good record. He had with him two assistants, Carlson and Truax, neither of whom seems to have understood the importance of the circuit breaker in the switch box. All three of these men saw the clear indication of the block signal and one of them was within three feet of the misplaced switch; but apparently they took no interest in the position of the switch rails. Truax knew that switch *D* had been opened and left open, but this fact had apparently gone out of his mind before train No. 60 approached.

The report puts the blame primarily on Bell and Larson, but points out the neglect of Truax in not looking at the switch at which he was at work when train No. 60 approached. This man had been a helper for three years, but a maintainer only four days. Bell is twenty years of age and had been switch tender for about eighteen months, prior to which he was a yard clerk.

The American Association of Engineers will hold a national conference on engineering publicity. February 25, 1921, has been tentatively selected as the date for this meeting.

The Payment of Wages by Divisional Paymasters*

Prompt and Efficient Payments Effected on the Seaboard Air Line by Use of a New Check System

By T. W. Mathews
Assistant Treasurer, Seaboard Air Line

MOST RAILROADS now pay a majority of their employees by check. Some roads have been using pay checks for 20 years or more. The argument as to which is the best method, cash or pay check, has been largely settled in favor of the pay check. It is contended that the pay check method is cheapest. The cash payment adherents are inclined to contest this point. Their arguments, however, have been weakened considerably by the increased cost of train service and the impossibility of running two pay trains each month. Practically all roads now pay semi-monthly, which require one pay train and crew continuously for each 1,000 miles of line. There is also, the constant objection to cash payment because of the danger inherent in the handling of large sums of money.

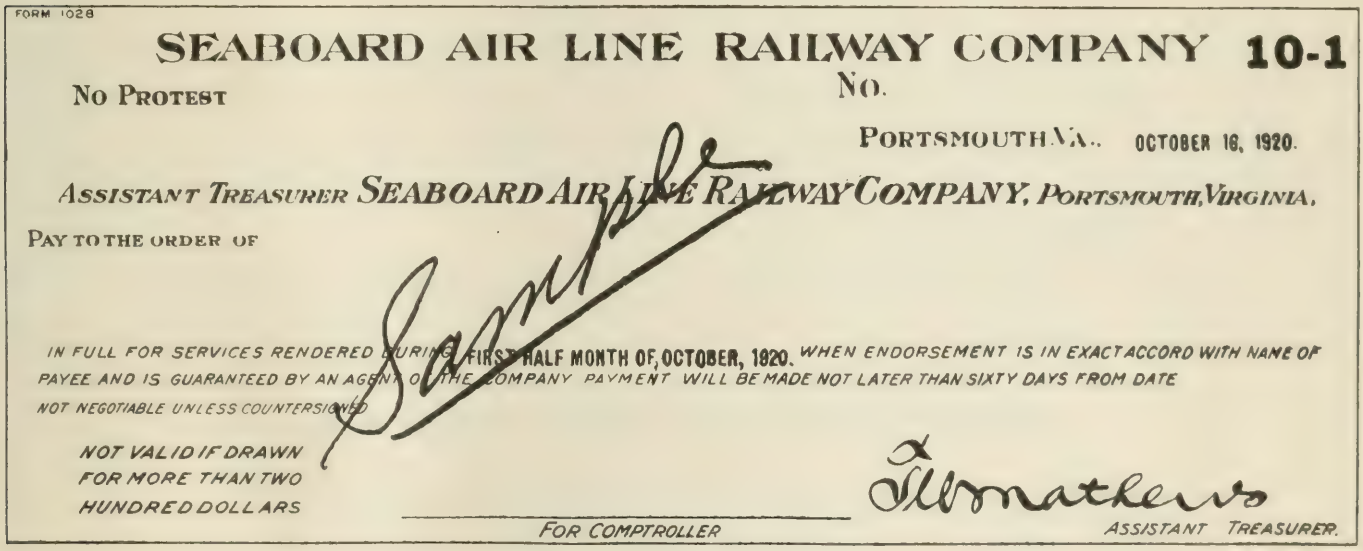
The advantage of cash methods over the pay check system has been the delivery of the cash to the employee by the paymaster. On some roads the pay checks have been delivered by pay car, while on others occasional surprise deliveries, as it were, have been made by paymasters. This is done to keep down the practice of putting straw men on the rolls for the unlawful profit of the foreman or some other person, and in this respect, a system by which the cash or pay check is delivered directly to the employee by the paymaster is much the best plan.

On most large roads where pay checks are used, these are made out at a central point and sent out by express or railroad mail to agents at all stations who thus become paymasters. This plan is all right at small stations, but not a good one at points where several hundred men are employed or have their division headquarters. It will be found at such large stations that the agent is spending a large number of hours as paymaster, or he may be using most of the time of a cashier, or assistant cashier, for paying off. Another objection at such points is that the employees paying off are in the operating department, and have not the same interest as a treasury department employee would have. Care is not always taken to see that checks are delivered to the payee, or to others under proper circumstances, or to see that bona fide employees are being paid, and not "straw" men.

On the Seaboard Air Line, the general offices are nearly 900 miles from one division headquarters, and over 600 miles from others. Other roads may have to contend with greater distances. Payrolls were formerly sent in to general office twice each month, and pay checks written and sent out to the station agents twice each month as above described. This plan caused considerable congestion.

On this railroad we now have a division paymaster on each division. He is a direct representative of the treasury department, and numerous benefits are anticipated from this arrangement. In any event, the superintendent and other division officers are in closer touch with the treasury department, and the treasury department is closer in touch with the men who are being paid. By this plan of decentralization pay checks are under preparation all over the system at the same time, and twice each month on the 12th and 27th we are able to pay our 20,000 employees on the same day. The plan now in operation enables seventy-five per cent of the checks to be delivered personally by the division paymaster. Moreover, it was previously the practice to put in the hands of a number of chief clerks a draft form to pay off employees who left the service ahead of pay day. These forms are now only issued by paymasters.

There are eight large shop, division and general office points on the Seaboard Air Line. The road is divided into two general superintendent's districts. There is a paymaster for each of the two districts with eight division paymasters—four for each district. On heavy divisions the division paymaster has one clerk. With five clerks in the general office,


FORM 1028

SEABOARD AIR LINE RAILWAY COMPANY 10-1

NO PROTEST

No.

PORTSMOUTH VA., OCTOBER 16, 1920.

ASSISTANT TREASURER SEABOARD AIR LINE RAILWAY COMPANY, PORTSMOUTH, VIRGINIA.

PAY TO THE ORDER OF

IN FULL FOR SERVICES RENDERED DURING FIRST HALF MONTH OF, OCTOBER, 1920. WHEN ENDORSEMENT IS IN EXACT ACCORD WITH NAME OF PAYEE AND IS GUARANTEED BY AN AGENT OF THE COMPANY PAYMENT WILL BE MADE NOT LATER THAN SIXTY DAYS FROM DATE

NOT NEGOTIABLE UNLESS COUNTERSIGNED

NOT VALID IF DRAWN FOR MORE THAN TWO HUNDRED DOLLARS

FOR COMPTROLLER

ASSISTANT TREASURER.

Fig. 1. A Sample Pay Check

*Abstract of a paper read before the annual meeting of the Society of Railway Financial Officers at Richmond, Va., November 10 to 12, 1920.

including one adding machine clerk in the accounting department, a total of 20 employees have to do with pay check preparation, delivery or accounting. This involves 40,000 pay checks each month. This same force pays weekly labor in cash at eight points and has taken care of the delivery of liberty bonds to 30,000 subscribers.

From time to time without advance notice the paymaster

4. Roadway laborers must be identified by section foreman, who must sign as witness to "his mark" signatures. Shopmen must be identified by timekeeper who must sign as witness to "his mark" signatures.

5. Checks must be endorsed by payee in presence of agent and signature guaranteed by agent.

6. The signature must correspond exactly with the name of the payee as written on the face of the check. If a check is not drawn

SEABOARD AIR LINE RAILWAY COMPANY

Register of Pay Checks for _____ PERIOD of _____

SERIES _____ Division _____ Name of Roll _____

No.	Amount	Date Paid	No.	Amount	Date Paid	No.	Amount	Date Paid	No.	Amount	Date Paid
00			25			50			75		
01			26			51			76		
23			48			73			98		
24			49			74			99		

Fig. 2. Register of Pay Checks

takes the checks for a section of his territory and delivers them personally from a motor car, or local train. Even a surprise check of one or two stations has its effect on the entire territory.

The paymaster takes the pay roll along with him, and frequently the division auditor goes along. The employees shown on the roll are seen personally and questioned as to the time made by each. All apparent discrepancies are carefully considered. A copy of the circular of instructions to agents who are sent pay checks to deliver is handed to the agent by the paymaster. These instructions are read over carefully so as to see that they are understood by the agent.

properly return it to division paymaster for correction. Signatures by cross mark must be witnessed in addition to the guarantee.

7. Under no circumstances should an agent guarantee a check until it is endorsed by the payee. Guarantee must be in writing, never by stamp signature.

8. When practicable employees should be paid in the presence of employees who work with them. The names and amounts should be called out, which aids in identification and serves to detect errors.

9. Great care should be used in seeing that employees absent at the regular time of distribution are bonafide employees before checks are finally delivered.

10. Orders of absentees must not be recognized except when duly authorized by the division paymaster. Under no circum-

SEABOARD AIR LINE RAILWAY COMPANY

Register of Pay Certificates for _____ PERIOD of _____

_____ Division

Name of Roll	Number	Amount	Date Paid	Name of Roll	Number	Amount	Date Paid

Fig. 3. Separate Register of Time Checks and Pay Certificates

The instructions to agents on the Seaboard Air Line are as follows:

1. Pay checks sent to an agent should be delivered by him, the cashier or a bonded member of the force, to the persons in whose favor drawn, and to no one else.

2. An employee delivering a check to the wrong person will be held responsible under his bond. The duty of distributing checks is a responsible one, for in this you are acting as a paymaster of the company.

3. An effort should be made to deliver checks to the employees promptly but before making any delivery agents must satisfy themselves of the identity of the payee. Should there be any doubt on this point, check must be withheld and application made to division paymaster for instructions, giving full particulars.

stances may checks except their own be delivered to foremen or others who hire men or prepare time.

11. Checks may be forwarded to other stations by express for delivery, with a letter of enclosure. Paymaster must be notified on form provided.

12. Every pay check not delivered in two weeks must be returned to the division paymaster by express stating why not delivered.

A brief description as to how the checks are prepared, and how the account is kept and balanced may be of interest. A pay check (Fig. 1) is used which is numbered by the printer. The number is split much the same as on automobile licenses. This saves much time in putting checks in consecutive order. We do not find it necessary to use a roll and line number, nor

to show the occupation. One line is provided for the name and one other line for both the written and figure amounts.

All pay rolls are made at division headquarters by division auditors, and audited there. They were formerly made under supervision of the chief clerk to the superintendent. So our plan could be followed where the division auditor plan is not in effect. Pay rolls in duplicate are delivered to division paymasters all over the system on scheduled dates. The names are typewritten on the checks by the paymasters, except at the largest point, where an addressograph is used. The amounts are put in by a check writing machine which prints both the written and the figure amounts at one operation. This saves a double verification, as mechanically the two amounts cannot be different. This machine uses chemical ink, which makes raising difficult even by an expert. A patent copy holder machine is used to hold the rolls before the operator for entering both the names and amounts, and is found to be a great help.

The checks are called back by the clerk to the division paymaster to verify the accuracy of names and amounts. The first and last check number are entered at the top of each pay roll page. Checks are not issued for amounts previously paid by time checks or pay certificates. Checks are next listed on the register sheet (Fig. 2) by the adding machine. The register sheet has the numbers 0 to 99 printed in four columns of 25 numbers each, which makes it necessary to record only the century series at the top of the page instead of printing the individual check numbers. A separate form (Fig. 3) is used to list the time checks and pay certificates. A balance of all checks and rolls is made on a recapitulation sheet (Fig. 4).

Checks bear a fac-simile signature of the assistant treasurer, and after being completed and balanced are countersigned by the division auditor. They were countersigned by the chief clerk to the superintendent before the division auditor system was installed. This countersigning is done with a multigraph fac-simile at the largest point. Checks are now ready for personal delivery by the division paymaster or to be sent to station agents. The pay check register sheets, time check and pay certificate sheets and recapitulation sheet are sent to the general paymaster's office on pay day and are there ready to be marked paid as the pay checks come in from the banks. Original pay rolls are sent on the same day to the auditor of disbursements. In former years it was thought necessary to list to each agent the checks to be delivered by him, giving number and amount. The pay roll, of course, shows where the checks are to be sent. A card (Fig. 5) is used which merely states that so many checks are enclosed and which calls for a report as to delivery or return of checks. A record is kept of the number of checks sent each station, and the agent is required to make his report in two weeks.

The Seaboard Air Line pay checks are all drafts on the assistant treasurer at headquarters, and on the back appear the names of 25 local depositary banks at which they may

SEABOARD AIR LINE RAILWAY CO.

Recapitulation of Pay Checks and Pay Certificates for_____ PERIOD of_____

_____ Division

Name of Roll	Check Numbers		Net Amount of Roll		Amount of Pay Check		Amount of Pay Certificates	
	From	To						

Fig. 4. Recapitulation Sheet

Form 1062—Revised

This Form is to be Returned to the Division Paymaster not later than_____ (Be sure you receive the correct number of checks.)

Division Paymaster,

I have received_____ pay checks sent me by you. The checks have been delivered by me, or by those authorized by me, directly to the persons in whose favor they are drawn, except as noted below.

Name_____

Title_____ Station_____

CHECKS RETURNED HEREWITH			CHECKS RETURNED HEREWITH			CHECKS FORWARDED ELSEWHERE		
CHECK No	AMOUNT	WHY RETURNED	CHECK No.	AMOUNT	WHY RETURNED	CHECK No.	AMOUNT	SENT TO

IF YOU RECEIVE CHECKS LISTED HEREON THAT IN YOUR OPINION BELONG ELSEWHERE WIRE DIVISION PAYMASTER AT ONCE, ASKING DISPOSITION

Fig. 5. Agent's Report of Checks Not Delivered

be cashed. The checks, therefore, all come into the assistant treasurer's office from the various banks. From the usual analysis of the bank letters the total of pay checks for the day are determined. A careful examination of endorsements is made. The checks are then placed in consecutive order. Here is where the automobile license number scheme is very helpful. The amounts of the checks are now listed on an adding machine tape and if the total proves for the day, the assistant treasurer's office is through with them.

The checks now go to the paymaster, where as they are paid they are stamped off the morning following the day they are paid. This is done from the original check to the register sheets made by the division paymaster, and previously referred to as having been sent in on pay day. The checks for each month are placed in consecutive order each day after being posted on the registers. Checks are limited as to payment to 60 days. At the end of this time a list is drawn off the registers showing the checks remaining unpaid. The total of this list, of course, must balance with the difference between the total of all pay checks issued for the month and the total paid for the month. We are now ready to dispose of the pay checks and they are all turned over to the auditor of disbursements with the list of unpaid items. In the office of the auditor of disbursements an adding machine clerk makes a tape of all pay checks paid for the particular month. When this total agrees with the total as shown by the assistant treasurer on the cash book the accounting department has audited the account as completely as could be done in any more laborious or detailed way.

It is believed that in this plan for the establishment of division paymasters a great improvement has been effected in the pay system on the Seaboard Air Line without burdening the company with additional expense.

Annual Report of the Postmaster General

WASHINGTON, D. C.

THE ANNUAL REPORT to Congress of the Postmaster General for the fiscal year ending June 30, 1920, attributes a part of the deficit of $17,172,396 incurred during the year to the decision of the Interstate Commerce Commission increasing the compensation of the railroads for mail transportation, although he places most of the responsibility on Congress for increasing the salaries of postal employees. The commission's decision, the Postmaster General says, required additional payments aggregating $8,103,889 for the transportation of mail in prior years, because the decision was retroactive to November 1, 1916. The report does not give the amount of the increase in payments to railroads, but a statistical appendix estimates the net payments for a year, based on the service authorized as of June 30, 1920, at $83,731,068. The compensation of the railroads for the fiscal year ending June 30, 1920, is reported as $70,714,391, of which $14,633,607 was on account of previous fiscal years. "This sum," the report says, "is far in excess of what was anticipated by anyone at the time the act of July 28, 1916, was passed, as the increase is directly chargeable to the increased cost of operation of the railroads growing out of the World War." A resume of the further comments of the report on the commission's decision follows:

"The result of the long investigation and test of operation under the system is a complete vindication of the department's contention for the space-basis system. In its decision and order the commission approved the space-basis system as inaugurated under authority of the act of July 28, 1916, and directed its continuance and its extension to all railroad mail routes. As they did before the committees of Congress, the railroads opposed the system before the commission also; but the results of the application of the system to the service justified all the claims made by the department for it, notwithstanding the very trying and unfavorable railroad operating conditions arising out of the war.

"The order of the commission directs a substantial increase in the aggregate pay to the railroads. When the legislation was urged upon the Congress by the department for an improved system of authorizing and paying for railroad mail service, the pre-war conditions prevailed, and under them it was believed that the railroads were being overpaid for the service if placed upon the most economical basis of authorization but still insuring an entirely adequate transportation service. While by reason of the radical changes in railroad operating conditions and in the cost of operation the result of the investigation increases the mail pay, it is demonstrable therefrom that the department's contention was correct. The apportionment of unallocated costs on car-mile ratios was materially affected by the reductions in the rates of increase in car-miles in the railroad service as a whole and in the passenger service particularly. The mails suffered in every instance, for the relative estimated cost of the passenger service per car-mile increased thereby, and, as the passenger service failed to maintain its normal ratio of car-mile increase while the mails maintained normal volume and took over a large addition from express, the mail car-mile ratio was consequently abnormally increased. Cost ascertainments based upon these ratios abnormally increased the estimate for the mails. Furthermore, there are many general expenses in which the mails are in no degree interested.

"It is indisputable that incidental to the prosecution of the World War material changes in industrial conditions were taking place, and the cost of transportation, in common with other costs, was steadily increasing. The department, however, insists that the rates fixed are too high, even under the circumstances related, and at once petitioned the Interstate Commerce Commission for a rehearing of the case in accordance with the provisions of the statute, and it is believed that the operation of the service under the new rates will demonstrate that they are excessive and illogical, and that the commission will ultimately make equitable adjustment.

"As to the rates so fixed for the mail service, the department in its petition last mentioned did not complain of the increased cost resulting from increased cost of operation, but did complain with respect to the basic rate applying prior to January 1, 1918, and which became the base for the 25 per cent increase thereafter."

About the railway mail service, the report says, in part:

"During the past fiscal year the railway mail service was subjected to the severest transportation test in its history. The several strikes of express companies' employees and the strike of railroad switchmen last spring caused the already large volume of parcel post to be increased 30 to 50 per cent in the larger area of the country, and in some sections the increase was more than 100 per cent. However, the railway mail service had undergone a thorough reorganization in placing it upon a scientific and businesslike footing permitted by the space system and as a result it was possible to respond to the most extraordinary demands, and tons of merchandise, formerly moved by express and freight, were transported more expeditiously than such shipments were ever handled by the express companies. At certain periods when other traffic was caught in jams, resulting in delays of weeks, there was no congestion or delays in the railway mail service which were not broken within 24 hours. The best evidence of this is the fact that the larger part of the traffic that was thrown to the parcel post continues to be handled by the postal service.

"With the rapid growth of the parcel post system after the revision of the weight limit and a reduction of the rates by the present postal administration, radical changes in the distribution and transportation schemes were necessary if the enormous volume of this mail was to be handled satisfactorily and on a sufficiently economical basis to maintain the reduced scale of rates.

"It is the policy to take advantage of the best schedules for the despatch and distribution of mail matter and in this connection it is well to again call attention to the fact that the Post Office Department has no jurisdiction over the fixing of schedules. This is a matter exclusively within the control of the railroad companies. Neither has the department any power to enforce the maintenance of schedules. Trains formerly operated on fast schedules carrying mails are not now operated at all, or they are operated on a schedule so much slower as to miss connections formerly made. It has been represented by certain interests that these trains would not have been withdrawn or placed upon a slower schedule had the department not reduced the space devoted to the handling of the mails. A single instance cannot be shown where the space was reduced to less than actual needs of the service. That the transportation of the mails is profitable is proven by the fact that in practically every case where the volume of mails was sufficient to constitute the major volume of the traffic of any train, such train is still operated on practically the same fast schedule.

"The service rendered by the railroads has steadily improved over that rendered during the war. However, there is yet room for improvement, especially with respect to the practice of railroad officials to order the departure of trains on schedule time even though letter mails for connecting trains in the same station may not be loaded. Statistics for the 4-week period, February 15 to March 13, 1920, show that there were 518 departures of trains where letter mails from connecting trains were in process of being loaded, involving a total of 143,410 pouches, 911,709 sacks, and 138,423 outside parcel post and newsdealers' packages. It is estimated that each pouch contained 40 packages of letters with 40 letters in each package, aggregating 229,456,000 letters, or a daily average of 8,194,857 letters. It is estimated that 48,320,577 papers were delayed, or a daily average of 1,725,734 papers. The delays aggregated 1 to 24 hours.

"Immediately after the calling of the strike by railroad switchmen last spring, telegraphic instructions to field officers were issued directing that reports be submitted by wire regarding any interference directly or indirectly with the transmission of the mails in violation of the law, together with names of persons responsible. They were also directed to bring such cases to attention of local United States district attorneys with request that offenders be prosecuted for obstruction of the mails, if the facts warranted. As a result of the vigorous action insisted upon by the Post Office Department there were but few violations of the law and with these exceptions the mails were moved with practically no delay. The co-operation of the railroad officials and the large body of railroad employees who did not join the strikers was of inestimable value in preventing unlawful interference with the mails."

Freight Car Loading Shows Gain for Week

WASHINGTON, D. C.

FREIGHT CAR LOADING for the week ending December 4 nearly recovered the loss of the previous week, which included the Thanksgiving Day holiday, according to the report compiled by the Car Service Division of the American Railway Association. The total number of revenue cars loaded was 872,162, as compared with 797,673 the week before and 880,528 the week of November 20. For the corresponding week of 1919 the loading was 789,286 and for 1918 it was 837,806. As compared with 1919 this year's figure for the week represents an increase of 83,000 cars but this was more than covered by the increase of 108,000 cars in coal loading as compared with last year when the miners were on strike.

As compared with the corresponding week of 1919 increases in loading were shown in all districts except the Pocahontas and Northwestern, but there were decreases for all classes of commodities except coal, coke and ore. The summary is as follows:

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO, FOR WEEK ENDED SATURDAY, DECEMBER 4, 1920

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total Revenue Freight Loaded: This year, 1920	Corresponding year, 1919	Corresponding year, 1918	Received from Connections: This year, 1920	Corresponding year, 1919	Corresponding year, 1918
Eastern	1920	6,391	3,718	60,454	2,790	6,421	7,092	45,994	78,629	211,489	.....	.....	236,788	.....	.....
	1919	6,714	4,431	29,672	4,080	7,935	2,269	35,013	102,905	.....	193,018	202,369	.....	220,189	225,983
Allegheny	1920	3,118	3,132	68,942	8,286	3,696	8,723	37,005	61,114	194,016	.....	.....	128,968	.....	.....
	1919	2,923	3,546	32,917	4,598	4,929	5,175	41,643	68,777	.....	164,560	190,988	.....	113,737	165,154
Pocahontas	1920	97	140	21,014	611	1,701	124	2,585	6,047	32,319	.....	.....	16,476	.....	.....
	1919	195	174	23,850	531	2,231	515	170	9,928	.....	37,395	35,981	.....	19,535	19,105
Southern	1920	2,997	2,233	33,241	1,277	16,912	2,296	37,138	33,616	129,714	.....	.....	68,615	.....	.....
	1919	3,095	3,253	14,412	232	19,647	2,762	19,636	57,923	.....	120,980	115,473	.....	76,282	70,564
Northwestern	1920	11,676	8,924	10,851	1,498	13,529	6,189	26,617	29,345	108,629	.....	.....	47,666	.....	.....
	1919	12,370	10,658	11,106	478	14,361	1,829	21,118	37,532	.....	109,452	120,860	.....	50,984	72,41[illegible]
Central Western	1920	9,118	10,628	27,880	457	4,043	2,240	29,591	41,016	124,973	.....	.....	59,285	.....	.....
	1919	10,700	14,452	8,189	448	4,473	2,692	21,668	45,525	.....	108,145	115,739	.....	62,317	80,401
Southwestern	1920	3,712	2,126	7,846	724	7,669	529	16,641	31,775	71,022	.....	.....	48,078	.....	.....
	1919	3,686	3,060	1,623	550	5,901	732	14,980	25,244	.....	55,756	56,396	.....	40,306	45,138
Total all roads	1920	37,109	30,903	230,228	18,843	53,971	27,195	195,571	281,542	87,162	.....	.....	605,876	.....	.....
	1919	39,734	39,574	121,768	10,915	59,477	15,774	154,210	347,834	.....	789,286	.....	.....	589,350	.....
	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	837,806	.....	.....	657,758
Increase compared	1919	.....	.....	108,460	4,723	.....	11,421	41,361	.....	82,876	.....	.....	16,526	.....	.....
Decrease compared	1919	2,625	8,571	.....	.....	5,506	.....	.....	66,292	.....	.....	.....	.....	.....	.....
Increase compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	34,358	.....	.....	.....	.....	.....
Decrease compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	51,882	.....	.....

*L. C. L. merchandise loading figures for 1920 and 1919 are not comparable as some roads are not able to separate their L. C. L. freight and miscellaneous of 1919. Add merchandise and miscellaneous columns to get a fair comparison.

Preliminary estimates for the week ending December 11 indicate a new record for the year in the production and transportation of bituminous coal, 233,568 car loads or 12,850,000 tons, as compared with 12,757,000 tons the week before.

Since the car shortage has given way to a considerable car surplus greater progress is being made in the return of cars to the home roads. On December 1, according to the reports compiled by the Car Service Division, 35.5 per cent of the

freight cars were on home lines, an increase of 4.2 per cent. or about 100,000 cars, in a month. On March 1 when the roads were returned only 21.9 per cent of the cars were at home. Some roads that have been short of cars nearly all year are now finding their own cars returning to their lines somewhat faster than they like, and there has been on some roads a scramble to get rid of empty cars owned by other lines, in order to avoid the payment of per diem charges, somewhat akin to the efforts made earlier in the year to get and retain cars. There have also been some complaints of instances of refusal or unwillingness on the part of certain roads to accept empty cars, which the Car Service Division has been asked to adjust.

Freight car accumulations for the week ending December 3 show a further reduction to 21,991, or 4,333 cars less than were reported for the previous week. These figures included 7,368 cars held either for export or for coastwise movement.

In reply to a Senate resolution by which the Interstate Commerce Commission was directed to "furnish at the earliest possible date information to the Senate showing the causes for the present freight congestion in the principal cities of the United States and what efforts have been taken or are being taken or should be taken to relieve the present congested condition and to promptly move the freight tendered to the railroads," the commission has submitted a report saying that in its annual report to the Senate and House of Representatives will be found a discussion of the causes of the freight congestion and a statement of the efforts made to relieve such condition and to move promptly freight tendered to the railroads, the steps taken to provide the administrative machinery to deal with car service matters, also a report as to the administration of the revolving fund created by section 210, Transportation Act, 1920, and a list of the loans made by the United States to carriers to aid in the acquisition of locomotives and cars and in the making of other additions and betterments.

"It is believed that the commission's annual report, and particularly the portions above cited, gives the information called for by the resolution," the report says. "We add that since our 34th annual report was prepared the progressive amelioration of the emergency conditions which had previously existed warranted the suspension of Service Orders Nos. 20 and 21, effective November 21 and November 24, respectively; and the discontinuance of the remaining terminal committees described in the report."

Boards of Adjustment to Be Abolished

JOHN BARTON PAYNE, director general of railroads, has issued a circular announcing the abolition of the boards of adjustment created by the Railroad Administration as follows:

"A committee representing the Association of Railroad Executives has brought to my attention the fact that General Orders 13, 29 and 53 provide in terms that,

> 'Personal grievances and controversies arising under interpretation of wage agreements and all other disputes arising between officials of a railroad and its employees covered by this understanding will be handled in their usual manner by joint committees of the employees up to and including the chief operating officer of the railroad, (or some one officially designated by him.) If an agreement is not reached, the chairman of the joint committee of employees refers the matter to the chief executive officer of the organization concerned. If the contention of the employees' committee is approved by such executive officer, then the chief operating officer of the railroad and the chief executive officer of the organization concerned shall refer the matter with all supporting papers to the director of the Division of Labor of the U. S. Railroad Administration who will in turn present the case to the Railway Board of Adjustment, which board would promptly hear and decide the case, giving due notice to the chief operating officer of the railroad interested and to the chief executive officer of the organization concerned of the time set for the hearing.'

"That after the order of May 29, 1920, and amendment under which the time limit of July 15 was fixed within which claims growing out of the subject matter of said orders should be presented the claimants without complying with the procedure specified in said general orders presented their claims direct to the office of the director general and in view of this fact, none of the said claims are now properly before said adjustment boards.

"I have given careful consideration to each contention and am advised that if said contention is sustained, practically all of the cases now pending before Boards of Adjustment 1, 2 and 3 will fall and must fail of consideration.

"The point made by the representatives of the executives appears to me to be sound and there is nothing contained in the limitation order of May 29, 1920, changing the mode of procedure. But as I look upon the matter the railroads as such are not concerned in the pending claims, if the claims are limited, as in my judgment they must be limited, to the period of federal control. That is, it is for the director general to determine and to pass upon claims against the government by persons who were the employees of the government during the period of federal control and to provide for the payment of all just claims arising during federal control just as he must pass upon and provide for the payment of all other claims arising from federal control.

"If, however, the decision of these claims is to affect the railroads after the end of federal control, then the railroads have the right to insist upon a strict compliance with the terms of the said general orders.

"I am further advised that Board No. 1 will be able to dispose of all cases pending before it by February 15, that the number of cases pending before Boards 2 and 3 are so large that many months must elapse before said Boards could dispose of them.

"My conclusion, therefore, is that as to cases pending before Boards 2 and 3 some other means must be found to deal justly by the claimants as to any money due them arising out of federal control.

"The application of all decisions hereafter made to be limited in their effect to money due claimants between January 1, 1918, and March 1, 1920.

"It is, therefore, ordered that Board No. 1 be abolished as of February 15, 1921; that Board No. 2 and Board No. 3 be abolished as of January 10, 1921, i. e., by 30 days' notice as provided in said General Orders.

"Meantime, means will be provided to adequately, justly and promptly dispose of all claims which said boards may leave undisposed of."

S. M. ESTABROOK, manager of dining cars, hotels and restaurants on the Southern Pacific, described the development of dining car service on the Southern Pacific before a recent meeting of the Pacific Railway Club. Mr. Estabrook said that during 1919, the Southern Pacific served 3,000,000 patrons in its dining cars and an additional 3,000,000 in its hotels and steamer restaurants. In preparing food for this number, a ton and a half of potatoes a day were used, and it was estimated that 21,000 laying hens were required to furnish the eggs used.

The Citizen's Part in Railway Development

The Report of the Railway Business Association's Committee on Adequate Facilities

"A VITAL FACTOR [in the working out of the Transportation Act] will be the sense of responsibility felt by the individual citizen. It is essential that he sustain his co-operation whether he is a producer, a dealer, a consumer, an employee or otherwise one in a population dependent upon the prosperity of these groups for his own prosperity. Distress and loss due to inadequacy of [railway] facilities in the present period have given individual citizens reason to feel their stake. We can in due course judge whether their anxiety is sufficiently permanent or whether organization will be required to command their continued solicitude."

This paragraph is quoted from a report to the general executive committee of the Railway Business Association by that organization's committee on adequate facilities. The chairman of the committee is Knox Taylor, president of the Taylor-Wharton Iron & Steel Company, High Bridge, N. J. The report is submitted with idea of presenting for consideration "the question whether the time has not come for our association to seek among ourselves an outline of objects towards which our work should be aimed on the long view."

The report suggests the following conceptions to be brought to the attention of the public:

Improvements for Economy

(1) *Heavy investment in additions and betterments, with corresponding adjustment of income through economies or rates, or both, is the only means of getting ultimately to a lower rate level or even avoiding in the future a chronic condition of indefinitely rising rates.*

Arrearages of provision have long accumulated. Current effort has been concentrated upon devotion to catching up and making meantime the best of a crippled plant. Engineers have lacked both the courage and the audience to discuss forehanded railway plans which in industry would be regarded as a matter of course. Nobody has been bold enough to argue for a program on a scale which mathematical calculations indicate is essential, proposals having their limit in what is apprehended to be all that the public will sanction.

Up to a decade or more ago the outstanding phase of railway development was large investment in improvements as the basis of operating economies. Power of locomotives and capacity of cars were increased, with modernization of train-control appliances, elimination of grades and curves, multiplication of tracks, substitution of heavier rails, reconstruction of roadbed and bridges. The result was a heavy increase in the average train load, which is the unit of operating economy. In spite of rapidly advancing wages, the railway managers were able to postpone until 1910 any large-scale rate-advance applications.

CYCLE OF OPERATING COSTS

During that period, volume of traffic was increasing faster than railway capacity to haul it, even with the increased train load and the freer flow of traffic made possible by large outlays in the enlargement of terminals. This was itself a factor tending to offset the factors of rising cost per unit of work done, especially labor cost. Always in any business there is such a cycle. As volume grows and is transacted with existing facilities, other things being equal, the profit per unit rises. But in 1906 and 1907 the country had a sharp warning. Car shortages appeared, acting as a brake on production. To the discerning it became evident that the cycle had reached the point where further enlargement of traffic would require an expansion of railway facilities and plant, and that as this would naturally be undertaken on a scale designed to anticipate a considerable future growth of tonnage, the investment would be vast and the new fixed charges such a factor that income would have to be adjusted to carry it.

ASCERTAINMENT OF NEEDS

Such adjustment never took place. Every time there was a large-scale rate case the discussion turned on the past. The decision was based on estimates which did not contemplate any thoroughgoing modernization and enlargement. The adjustment enacted by Congress and ordered by the Interstate Commerce Commission in 1920 had little expansion in view. The estimates of the carriers were the amounts upon which they might in part catch up with arrearages and struggle through for a little longer. It was stated to the Commission on behalf of the railway managers that the rates which they were recommending would be insufficient to meet expected increases in cost of operation and establish railway credit, but that they hoped to make up the difference through economies. After a reasonable trial under the labor conditions which are now in process of being worked out the country should be in position to compare intelligently the resources which the roads must have in order to perform their work satisfactorily with the income which is actually realized from the rates as they are with such economies as prove feasible.

FOR A COMPREHENSIVE PROGRAM

Is it not essential that the hand-to-mouth fashion of providing railway facilities give way to a comprehensive plan, to be carried out over a period of years? The cost would have to be faced. Cannot the public be led to see that to make over the railway plant is the only route to economy and ultimate rate reduction, and that either through efficiency of the working force or, if that is insufficient, through further rate adjustments toward levels which obtain abroad, the users of transportation and the consumers of commodities carried must meet the cost of the modernizing and enlarging their railway system?

Great Need of Market for Stock

(2) *Investment in railway stocks should in the aggregate amount to at least half of the total railway capitalization.*

The normal method of financing any business is primarily and preferentially by the issue of stock. Bonds are sold when the amount required cannot be obtained on advantageous terms by sales of stock. Practically stock was half the railway capitalization until about 1902. Since then interest-bearing issues have steadily risen until recently the ratio has been 65 or more mortgages to 35 stock or less. We are habituated to this tendency. We hardly think of railway stock sales. The Transportation Act of 1920 and the rate adjustment under it appear to have strengthened the favor shown to railways by lenders, but the announcements and rumors regarding security flotations mention almost exclusively bonds, notes and equipment trusts.

REWARD FOR SUPERIORITY

If the ratio of funded debt to stock continues rising we may reach a condition where the credits almost own the roads. The stockholders' equity will be too small for whole-

some development. We shall have failed to restore the vital factor which gives individual ownership its superiority over government ownership. Bond heavy capitalization is capitalization in which safety of principal and interest is emphasized disproportionately and hence in which there is enfeeblement of foresight, of courage and energy in preparation for expected business and in experimentation with new devices and methods. We need to enlist and retain first-class constructive ability in directorates and management. The requisite incentive is the fluctuation of profits responsive to superiority of administration.

Element of Adventure

To restore the 50-50 basis of capitalization opportunities for income must be adjusted, not to the ideas of theorists or other observers, but to the ideas of those whose stock subscriptions we seek. The Transportation Act of 1920 is designed to soften the retribution which overtakes the unfortunate road and to limit the return of the fortunate road. This was avowedly intended to diminish the element of adventure. Some think it has eliminated that element. If these apprehensions prove in any degree well-founded, then the act may be said to have aggravated rather than corrected one of the primary defects in the situation.

The tendency of bonds to gain on stock preceded bestowal on the Interstate Commerce Commission of power to fix rates, yet as late as 1920 we are trying a measure which assumes the permanent elimination of investment involving risk. Is it not obligatory upon business men earnestly and thoroughly to consider hope and risk as necessary conditions of success and survival for individual ownership and operation?

When the act as it stands has been tried for a period and the time comes, perhaps after substantial consolidations, to draw perfecting amendments, should not the business world be prepared to discuss with Congress the fundamental problem here indicated? And is not that problem the cardinal American problem of promoting excellence and progress by leaving individuals free to fail or succeed with corresponding retributions and rewards?

Facilities Stake in Buying Securities

(3) *Citizens in the communities have a facilities stake, in addition to any investment stake, in buying securities of their railroads.*

This country was developed prior to 1900 by building railroads before they were needed, stimulating the country's growth by giving the farmer new land and a market for his products and making a new demand for manufactures. Inhabitants of regions not previously served with transportation extended practical encouragement by investing in railway securities just as they would invest in any other instrumentality necessary for the development of their prosperity. For the past 10 years railway expansion has ceased and intensive modernization of existing lines has almost stopped. This is due to our delay in bringing the carriers, the public and their political representatives to an understanding of the national needs and interest. The public is finally arriving at some realization of the situation and Congress has decreed the roads a return intended to restore their credit.

Adequate Facilities Paramount

The unit of industrial, jobbing and farm competition is the population unit. Where two or more railways serve the same community they may compete among themselves, but primarily, taken together, they comprise an instrumentality with which the community competes for markets with other communities. The aggregate railway system of the United States and Canada, though maintaining interline competition, constitutes in this sense one instrumentality. Considered as a whole, the continental system must provide such a total supply of facilities that the quota for each individual community shall serve as a means of competition with other communities. There must be not only an adequate car supply fluid over the whole continent, but adequate and modern power, tracks, structures and terminals wherever materials or products move.

Those Who Have a Stake

Furnishing capital for railways was an obvious responsibility of citizens in pioneer days, when the communities demanded creation of railways where there was none. Revival of that pioneer spirit both for construction of new railways and for the modernization of the lines that we have was the theme of the notable "railway restoration dinner" of our association in March, 1920. The mimic share of stock which served as a menu card enumerated the elements in the country who have a stake in buying railway securities:

"Railway employees who desire an increase in the amount of railway work to be done, stockholders and employees of railway supply concerns who wish provision of railway facilities and development of mechanical and engineering railway progress to be American standard, owners and employees of agricultural, industrial and mercantile enterprises whose prosperity depends upon progressive and efficient transportation service, citizens of regions which are in competition with other regions for trade markets, domestic or foreign, and consumers of food, clothing and shelter who require new supplies of material through conquest of the wilderness."

Can we afford to neglect a well-considered program of discussion aimed at winning acceptance of this conception by those whose opportunity it is?

Citizens' Part in Fuller Use of Facilities

(4) *Citizens will most fully benefit from the lessons of current car shortage if they provide effective means of insuring that their enterprises and agencies automatically and continuously perform the citizen's part.*

The public can greatly assist the efforts of the railway managers. Such co-operation was highly beneficial before the armistice. During recent weeks it has been in part again developed. If every man in every industry, in trade and in agriculture would count himself a friend of the railways and make co-operation a matter of rigid routine, the present railroad facilities would be more fully utilized, giving the country the equivalent of large additions to railway plant long before new cars could be built. This can be done by increasing the minimum car load, by prompt loading and unloading, by curtailing free time, and by acquiescence in the reduction of freight train speed. There are state laws which could advantageously be repealed—notably those increasing needlessly the number of trainmen.

These efforts would give us all immediate relief. Their pertinence in this report is in the danger that freight-moving performance having notably improved our vows of future vigilance will fade like New Year's resolutions, and an opportunity be lost to establish firmly the habit of good will toward and effective protection for railway transportation, upon which the life and happiness of everyone in the country depends. How can such solicitude be made permanent?

On these several conceptions your Committee on Adequate Facilities hopes to arrange in due course for making available to our members the views of authorities specially qualified to aid the members of our association in reaching sound conclusions.

The Coming Administration has a good opportunity for strengthening the Interstate Commerce Commission.—*Providence Journal.*



Partial Shipment of Locomotives Being Exported to Belgium

Belgian Locomotive Order Completed Promptly

Baldwin and American Locomotive Companies Complete Order in Advance of British Builders

THE RECENT COMPLETION of an order for 150 locomotives for the Belgian State Railways by American builders in advance of British manufacturers is a foreign trade item of unusual significance. The order for 150 locomotives



Front View of Locomotive Recently Exported to Belgium

placed in this country last winter was divided evenly between the American Locomotive Company and the Baldwin Locomotive Works in accordance with a standing agreement between these companies. At the same time an order for 200 locomotives of the same type was placed with one of the largest British manufacturers. It is understood that it was a condition of the recent loan to Belgium in which England participated that a portion of the order for these locomotives be placed in England. American builders, moreover, have furnished a portion of the steel castings required by the British builders including the cylinder castings, also the boiler plate, angle iron and sheeting.

The first of these locomotives was completed by the American Locomotive Company on March 1, which was within 52 days of the date on which the builders received complete information enabling them to proceed with the design of the locomotives. On June 1, this company completed the last of its portion of this order. The Baldwin Locomotive Works completed the last of the portion of the order assigned to them early in September. At this time none of the locomotives ordered from the British builders had been completed and the despatch with which the order was executed in this country elicited much favorable comment on the Continent.

Although these locomotives have already been described in some detail in both the *Railway Age* and the *Railway Mechanical Engineer,* the impression has prevailed that they are of the so-called Pershing type. Further than that they are Consolidation locomotives this is not a fact. The locomotives were designed in the drafting rooms of the American Locomotive Company but conform generally to Belgian practice. Metric measurements were used in the design and the locomotives were built to metric dimensions. Left-hand drive and other features including copper fireboxes peculiar to European practice prevail in distinction to the Pershing locomotives in which American practice was adhered to in nearly every detail. The locomotives are equipped with the Belgian type of cab and tender. The latter is equipped with the Belgian State Railway's standard train connection of the screw link type with two spring buffers. The tender frame is made of steel plate and is supported on three pairs of wheels held in rigid alignment. The base of the tank is designed to drop down so as to occupy a part of the space between wheels, in this manner lowering its center of gravity.

Proposed Change in Law as to Railroad Purchases

WASHINGTON, D. C.

A BILL TO REPEAL Section 10 of the Clayton act, which restricts purchases by railroads from companies with which they have an interlocking relationship, and to provide a substitute for it as an addition to Section 20-a of the Interstate Commerce Act, has been introduced in Congress by Senator Frelinghuysen and Representative Esch, by request, for the purpose of providing more workable provisions than are afforded by Section 10, the effective date of which has been repeatedly postponed since the passage of the law in 1914. The proposed new provisions are:

13. After December 31, 1921, no common carrier engaged in commerce shall have any dealings in supplies, or other articles of commerce, or shall make any contracts for construction or maintenance of any kind, to the amount of more than $50,000 in any one transaction with another corporation, firm, partnership, or association, unless such corporation firm, partnership, or association be a common carrier, railroad company, terminal company, joint facility company, or public service company, when said common carrier shall have upon its board of directors, or as its president, general manager, or as its purchasing or selling officer or agent in the particular transaction, any person who is at the same time a director, general manager, or purchasing or selling officer of, or who has any substantial interest in such other corporation, firm, partnership, or association, unless and except such dealings or contracts shall be with the bidder whose bid is the most favorable to such common carrier to be ascertained by competitive bidding, under regulations to be prescribed by rule or otherwise, by the Interstate Commerce Commission. It shall be lawful for any common carrier or person when in doubt as to what constitutes a substantial interest within the meaning of this paragraph to apply to the Interstate Commerce Commission for a ruling in respect thereto, and in case of such application the Interstate Commerce Commission is required to pass upon the question and is authorized to finally decide the same.

No common carrier engaged in commerce shall, when it has upon its board of directors, or as its president or general manager, any person who is at the same time a director, president, or general manager of another common carrier corporation, charge such other common carrier corporation for supplies or other articles of commerce a price in excess of that at which similar articles are concurrently charged out by it for operating purposes with the addition thereto of proper transportation charges.

No bid shall be considered unless the names and addresses of the officers, directors, and general managers thereof, if the bidder be a corporation, or the members, if the bidder be a partnership or firm, be given with the bid.

Any person who shall, directly or indirectly, do or attempt to do anything to prevent anyone from bidding or who shall do any act to prevent free and fair competition among the bidders or those desiring to bid shall be punished as prescribed in this paragraph in the case of an officer or director.

This paragraph shall not apply where no competition is possible by reason of the fact that the article of the special type or character desired, or the desired supply, can be had only of a single maker or seller at the point required; nor shall it deprive a carrier of the right to exercise an honest business discretion in determining which bid, under all of the circumstances of the case, is, by reason of the responsibility of the bidder or otherwise, most favorable to its interest; nor to prevent it, after having taken competitive bids, from negotiating with one or more of the bidders, without further competitive bidding, to reduce the price or to secure more favorable terms or a more favorable contract, or from accepting a better offer so arrived at; nor from enlarging or reducing the quantity of the proposed purchase or work at a price arrived at by competitive bidding or otherwise as permitted in this paragraph.

This paragraph shall not apply to dealings between a common carrier and a non-carrier corporation or company, where such non-carrier corporation or company is controlled by it through stock ownership, lease, or otherwise, or in which it alone, or together with another or other common carriers, has a stock interest amounting to as much as one-half of the outstanding stock or between a common carrier and such non-carrier corporation or company controlled by common stock ownership, or between a common carrier holding company and its controlled non-carrier corporations or companies. Such a common carrier is prohibited from purchasing supplies or other articles of commerce from any such non-carrier corporation or company, without the assent and approval of a different price by the Interstate Commerce Commission, at a price exceeding the then market value thereof, at the time and place of delivery.

Every such common carrier having any such dealings or making any such contracts required hereby to be made by competitive bidding, shall, for such time as the Interstate Commerce Commission shall require, preserve in its office, subject to the inspection of the Interstate Commerce Commission, a full and detailed record of the transaction, showing the manner of competitive bidding, who were the bidders, and the names and addresses of the directors and officers of the corporations and the members of the firm or partnership bidding; and whenever the said commission shall, after investigation or hearing, have reason to believe that the law has been violated in and about the said dealings or transactions, it is authorized to refer the matter and its own views or findings thereon to the Attorney General.

If any common carrier shall violate this paragraph, it shall be fined not exceeding $25,000; and every such director, agent, general manager, or officer thereof, who shall vote for or direct the act, knowing that it constitutes such violation, or who shall have knowingly aided or abetted in such violation, shall be deemed guilty of a misdemeanor, and shall be fined not exceeding $5,000, or confined in jail not exceeding one year, or both, in the discretion of the court.

Sec. 2. That section 10 of an Act entitled An Act to supplement existing laws against unlawful restraints and monopolies, and for other purposes, approved October 15, 1914, is hereby repealed.

Sec. 3. That this Act shall be enforced from its passage.

The bill to postpone for another year the effective date of Section 10 of the Clayton law, which, under the present law, would go into effect on January 1, was favorably reported by the House committee on interstate and foreign commerce on December 15, after a hearing at which Alfred P. Thom, general counsel for the Association of Railway Executives, pointed out the serious effect it would have on the purchase of supplies by railroads, and asked that it be postponed until Congress could consider an amendment to the law which would accomplish the purpose desired. The Senate committee had already reported an identical bill.

Mr. Thom said he had drafted the bill introduced by Senator Frelinghuysen and Representative Esch by request, and that the railroads have been trying for five years to get Congress to consider the subject on its merits, but other pressing matters had prevented any action except repeated postponement of the effective date of Section 10.

Section 10 requires that transactions involving the purchase of supplies or the sale of securities amounting to $50,000 in a year between railroads and companies, etc., in which there is an interlocking relation of officers or directors shall be on competitive bidding.

Mr. Thom said that competitive bidding represents a most costly way of buying because of the possibility of combinations among sellers and because the lowest priced article is frequently not satisfactory. Governments, he said, usually buy on competitive bids and pay more than business concerns would. The provisions of the law would commit the railroads to making practically all of their purchases on competitive bids because they would not know, when making a small purchase early in the year, whether later purchases from the same seller would not amount to $50,000 in a year. It is also practically impossible for a company to know whether any of its officers or directors has a "substantial" interest in a company whose stock may be purchased in the open market. The law would require competitive bids even on patented articles or articles manufactured by secret process which could be bought only from one seller, or on purchases where there is but one seller at the place of delivery.

If the system required by the law were adopted, Mr. Thom said, there would be developed an army of adventurers who would seek to put in the lowest bid and to sell their contract.

Report of the Bureau of Locomotive Inspection

Application of Water Columns and Other Devices Advocated—Increase of Accidents for Fiscal Year 1919

THE OUTSTANDING FEATURE of the report of the chief inspector of locomotives to the Interstate Commerce Commission for the fiscal year ending June 30, 1920, is the increase in the number of accidents and casualties resulting from failures of parts of locomotives and tenders. Although the percentage of locomotives inspected which were found defective decreased from 58 per cent in 1919 to 52 per cent in 1920, the number of accidents increased 49 per cent, the number killed 15 per cent and the number injured 41 per cent. A summary of the chief inspector's report is given below.

The succeeding tables and charts have been arranged so as to permit comparison with previous reports, as far as consistent, and show in concrete form the number of locomotives inspected, the number and percentage of those inspected found defective, and the number ordered out of service because of not meeting the requirements of the law, together with the total number of defects found. They also show the total number of accidents caused by failure from any cause of the locomotive or tender, including the boiler, and all parts and appurtenances thereof, reported by the carriers, or discovered by inspectors, together with the number of persons killed or injured due to such failure.

LOCOMOTIVES INSPECTED, NUMBER FOUND DEFECTIVE, PERCENTAGE INSPECTED FOUND DEFECTIVE, NUMBER ORDERED OUT OF SERVICE, AND TOTAL DEFECTS FOUND BY COMPARISON

	1920	1919	1918	1917
Number of locomotives inspected	49,471	59,772	41,611	47,542
Number found defective	25,529	34,557	22,196	25,909
Percentage found defective	52	58	53	54.5
Number ordered from service	3,774	4,433	2,125	3,294
Total defects found	95,066	135,300	78,277	84,883

NUMBER OF ACCIDENTS, NUMBER KILLED, AND NUMBER INJURED, REPORTED, AND INVESTIGATED, COVERING FAILURES OF ALL PARTS AND APPURTENANCES OF THE ENTIRE LOCOMOTIVE AND TENDER BY COMPARISON

	1920	1919	1918	1917
Number of accidents	843	565	641	616
Decrease from previous year	[1]49.2	11.8	[1]4.1	....
Number killed	66	57	46	62
Decrease from previous year	[1]15.8	[1]23.9	25.8	....
Number injured	916	647	756	721
Decrease from previous year	[1]41.6	14.4	[1]4.8	....

[1]Increase.

The following table shows the number of accidents, number of persons killed, and number injured, due to the failure of some part or appurtenance of the locomotive boiler only, which were reported by the carriers, with their percentage of decreases by comparison of the fiscal years ended June 30, 1912 and 1913, with the fiscal years ended June 30, 1919 and 1920:

	1920	1919	1913	1912
Number of accidents	439	341	820	856
Increase 1920 over 1919	28.8	....	....	....
Decrease 1920 from 1912	48.7	....	....	....
Number killed	48	45	36	91
Increase 1920 over 1919	6.7	....	....	....
Decrease 1920 from 1912	47.2	....	....	....
Number injured	503	413	911	1,005
Increase 1920 over 1919	21.8	....	....	....
Decrease 1920 from 1912	49.9	....	....	....

NUMBER OF DERAILMENTS DUE TO DEFECTS IN OR FAILURE OF PARTS OF THE LOCOMOTIVE OR TENDER, REPORTED TO AND INVESTIGATED BY THIS BUREAU, AND NUMBER OF PERSONS KILLED AND INJURED AS A RESULT, BY COMPARISON

	1920	1919	1918	1917
Number of derailments	7	7	2	4
Number killed	7	6	..	1
Number injured	18	7	2	21

[1]Only derailments, reported as being caused by defects in or failure of parts of the locomotive or tender have been investigated by this bureau.

The following table shows the total number of persons killed and injured by failure of locomotives or tenders, or some part or appurtenance thereof, during the four years ended June 30, 1917-1920, classified according to occupations.

	1920		1919		1918		1917	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
Members of the train crew:								
Engineers	16	272	14	194	11	245	16	230
Firemen	20	404	22	265	19	306	21	304
Brakemen	9	77	11	82	6	62	13	60
Conductors	2	19	2	16	..	21	3	14
Switchmen	4	19	1	7	2	..	..	8
Roundhouse and shop employees:								
Boiler makers	2	9	1	9	..	11	..	11
Machinists	1	20	..	5	..	11	..	8
Foremen	..	3	..	3	1	4	..	1
Inspectors	..	1	..	6	4	4	..	3
Watchmen	4	3	..	2	..	3	..	5
Boiler washers	..	13	..	7	1	4	..	7
Hostlers	..	13	..	6	..	8	..	6
Other roundhouse and shop employees	3	30	1	11	2	19	2	19
Other employees	4	26	3	23	..	26	5	22
Nonemployees	1	7	2	11	..	24	1	23
Total	66	916	57	647	45	756	62	721

A summary of all accidents and casualties occurring during the fiscal year ended June 30, 1920, as compared with the year ended June 30, 1919, covering the entire locomotive and tender and all of their parts and appurtenances, shows an increase of 49 per cent in the number of accidents, an increase of 16 per cent in the number killed, and an increase of 42 per cent in the number injured. This increase is due almost wholly to disregard for the requirements of the law and rules, as well as to safety of construction and operation. This is especially true with what are sometimes considered unimportant parts; for instance, 26 per cent of the increase in accidents and injuries was due to failure of grate shakers; 10 per cent was due to failure of reversing gear; and 10 per cent to failure of squirt hose.

A summary of all accidents and casualties caused by failure of the boiler and its appurtenances only, for the fiscal year ended June 30, 1912 (the first year of the existence of the law), as compared with the year ended June 30, 1920, shows a decrease of 47 per cent in the number of accidents, a decrease of 48 per cent in the number killed, and a decrease of 49 per cent in the number injured. These decreases are especially gratifying when considering the increased number of locomotives in service and the increased traffic being handled, together with the increased duties imposed on the inspectors by the amendment to the boiler-inspection law, which extended their duties to the entire locomotive and tender and the parts and appurtenances thereof, which has added greatly to their work. These decreases demonstrate the wisdom of complying with the requirements of the law and rules, and the wisdom and foresight of its advocates when requesting its enactment.

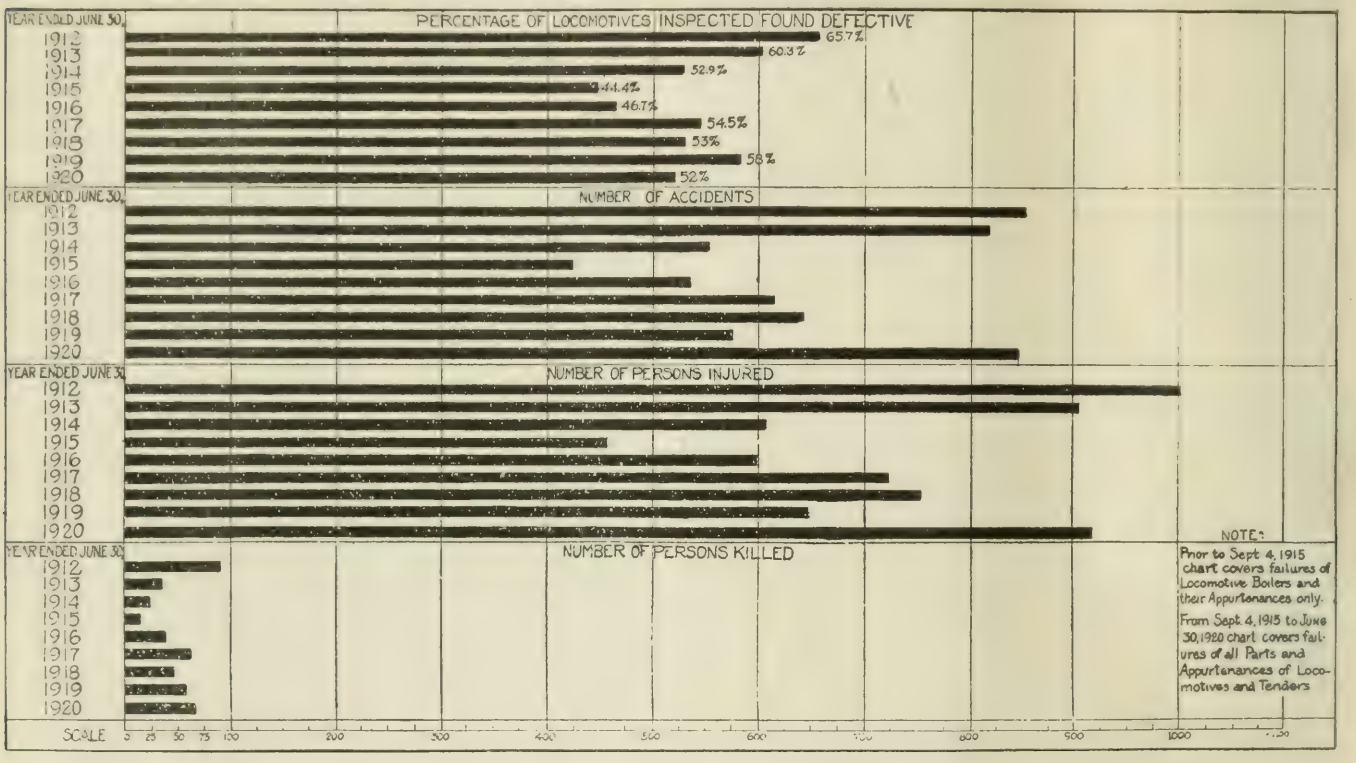
As shown by the table, derailments due to defects in or failure of parts of the locomotive or tender have been the direct cause of a number of most serious accidents and the loss of life and limb as well as damaged property and have forcibly demonstrated the necessity for proper inspection and repair of the running gear, driving gear, and brake rigging.

During the year the inspectors of this bureau were called upon by the commission to perform various duties not in connection with their regular work, which materially reduced the number of locomotives shown inspected by them, as well as the number ordered out of service, and it appears that certain railroad officials and employees have taken advantage of their temporary absence and permitted locomotives to remain in service with serious defects, which would have

been known to them had proper inspections been made and reports rendered as required.

It was found necessary to ask the courts to inflict the penalty provided in section 9 of the law, because of the defective condition in which locomotives were being operated by one carrier and its willful violation of the requirements of the law and rules. This case is now pending and is set for the October term of the court. It is evident that unless an immediate improvement is made by certain other carriers it will be necessary to file similar suits in the near future. That the law places the burden of proper inspection and repair and compliance with the rules of inspection on the carriers owning or operating the locomotives seems to have been lost sight of, and this is reflected in the increased number of accidents and casualties during the year.

Referring to failures of seams in boilers welded by the autogenous process, the recommendation made in the last annual report that such methods should not be applied to any part of the boiler where the strain is not carried by other



Graphic Summary of Results of Inspection and Accidents Due to Locomotive Failures, 1912-1920

construction nor in the low water zone of the firebox, is repeated, with the further recommendation that this should apply to all parts of the locomotive and tender subject to severe stresses and shocks where failures might cause accidents.

During the year, 258 applications were filed for extension of time for the removal of flues, as provided in rule 10. Investigation showed that in 31 of these cases, the condition of the locomotives was such that no extension could properly be granted. Twenty-five were in such condition that the full extension requested could not be granted, but an extension for a shorter period within the limits of safety was allowed. Ten extensions were granted after defects disclosed by our investigation had been repaired. Thirty-seven applications were withdrawn for various reasons and the remaining 155 were granted for the full period requested.

During the year, close attention was given to the equipping of locomotives with headlights that would meet the requirements of the commission's orders of December 26, 1916, and December 17, 1917, and reports indicate that on July 1 (the date fixed for full compliance with the requirements) practically all locomotives in service were equipped in accordance therewith. These lights are meeting with the hearty approval of employees and so far as we are able to learn, of the officials in charge, where the locomotives are in operation. The general expression is that "They add greatly to the safety, comfort, and economy of operation."

No formal appeal has been taken from the decision of any inspector, during the fiscal year, which again demonstrates the good judgment which characterizes their work.

A large part of the report is devoted to an account of the tests of water indicating devices conducted by the bureau which were described in the *Railway Age* of August 27.

The chief inspector calls attention to the fact that services of the inspectors were required in making various investigations during the year and, in view of this, recommends that the act of February 17, 1911, be amended so as to provide for additional inspectors, to be appointed by the commission, upon the recommendation of the chief inspector, as the needs of the service develop. Other recommendations that are repeated are as follows:

That all locomotives not using oil for fuel have a mechanically operated fire door, so constructed that it may be operated by pressure of the foot on a pedal or other suitable device, located on the floor of the cab or tender, at a proper distance from the fire door, so that it may be conveniently operated by the person firing the locomotive.

That all locomotives be provided with a bell so arranged and maintained that it may be operated from the engineer's cab by hand and by power.

That cabs of all locomotives not equipped with front doors or windows of such size as to permit of easy exit, have a suitable stirrup or other step, and a horizontal handhold on each side, approximately the full length of the cab, which will enable the enginemen to go from the cab to the running board in front of it; handholds and steps or stirrups to be securely fastened with bolts or rivets; the distance between the step and handhold to be not less than 60 in. nor more than 72 in.

That all locomotives where there is a different indication between the gage cock and water glass of two or more inches of the water level under any conditions of service be equipped with a suitable water column to which shall be attached three gage cocks and one water glass with not less than 6 in., preferably 8 in., clear reading, and one additional water glass with not less than 6 in., preferably 8 in., clear reading, located on the left side or back head of the boiler. The water glasses to be so located, constructed, and maintained that they will register the approximate general water level in the boiler under all conditions of service and show a corresponding level within 1 inch and be so located, constructed, and maintained that the engineer and fireman may under all conditions of service have an easy and clear view of the water in the glass from their respective and proper positions in the cab. The gage cocks to be so located that they will be in easy reach of the engineer from his proper position in the cab while running the locomotive, extension handles to be applied if necessary to accomplish this.

The usual chart showing the number of accidents occurring during the fiscal year from 1912 to 1920 due to failure of various parts of a locomotive, is shown, and this information is also given in tabular form. Another section of the report lists the accidents occurring on each railroad under the jurisdiction of the bureau, with a summary in tables which show also the number of locomotives inspected and the numbers found defective and ordered from service. A supplement at the conclusion of the report shows typical examples of defective conditions and accidents resulting from defects with a short account of the causes of the failure.

Hearings on Burlington Capitalization Concluded

WASHINGTON, D. C.

FINAL HEARINGS on the application of the Chicago, Burlington & Quincy for authority to capitalize a part of its surplus by issuing $60,000,000 additional stock and $109,000,000 of bonds were held before Director W. A. Colston of the Bureau of Finance of the Interstate Commerce Commission at Washington, December 14 and 15. The issues were opposed by J. E. Benton, solicitor for the National Association of Railway and Utilities Commissioners, and the Nebraska railroad commission, and the stock issue was indirectly opposed by the Illinois state authorities, although they did not make a formal protest. The $60,000,000 stock issue is to be distributed as a stock dividend and $80,000,000 of the bonds, according to the company's plans, are to be sold and the proceeds used for a cash dividend which will enable the Great Northern and Northern Pacific, which own most of the Burlington stock, to retire a part of the joint 4 per cent bonds issued against the Burlington stock as collateral, which fall due next year. The Burlington dividends would then pay the interest on an issue of bonds to refund the balance of $135,000,000 to $140,000,000 of the issue at a higher rate of interest. Application on the part of the Great Northern and Northern Pacific for authority to issue the refunding bonds is expected to be filed with the commission as soon as it passes on the Burlington issue.

The Nebraska commission filed a protest against the increase in capitalization on the ground that there should be no increase in securities until the commission has completed its valuation of the company's property to show the amount of depreciation, and that the surplus should be treated as a trust fund to cover depreciation and to insure constant dividends in lean years.

No evidence was introduced on behalf of the Nebraska commission, but Hale Holden, president of the Burlington, was cross-examined by Commissioner Thomas L. Hall and Hugh LaMaster, counsel of the Nebraska commission, Morton T. Culver, special assistant to the attorney general of Illinois, and Mr. Benton. Mr. Culver also read into the record the Illinois law prohibiting stock dividends or any increase in capital stock except upon 60 days' notice to the state authorities.

Most of the cross-examination revolved around the question as to whether the surplus of which the company now proposes to capitalize a part represents the result of excessive rates and what the state representatives chose to refer to as a trust fund in favor of the public. Mr. Holden declared that it is a trust fund belonging to the stockholders as representing what the company by good management has been able to save under rates established under public regulation.

When Mr. LaMaster asked if the Burlington had not asked the Interstate Commerce Commission for higher rates on the ground that the rates were too low and that railroads should be allowed to accumulate a surplus for a reserve, Mr. Holden replied that it had participated with other roads in applications for a rate increase on the ground that the general level of rates was too low in relation to increasing expenses, and that the roads had argued for the right to accumulate a reasonable surplus for a reserve, but he pointed out that the Burlington's position is unique. He also said that even the Burlington has not earned as much as the 6 per cent permitted by the transportation act on the amount of its property investment and that half of what it did earn had gone back into the property while the stockholders had received only the other half. Now that the property has been brought to a condition of efficiency and established earning power the stockholders are entitled to some reward for their patience. The company had never asked for rates which would produce more than a fair return and it should be able to accumulate a reasonable surplus out of a fair return. The stockholders had urged before the war that they should receive a larger return on their investment.

Commissioner Hall, of Nebraska, took the position that the people of Nebraska have furnished the traffic and paid rates to enable the Burlington to pay all its expenses and pile up a big surplus and that it should, therefore, be regarded as a trust fund. He also said that what the investors put in the property was no more than the par value of the shares. Mr. Holden said that some of them had paid $200 a share and that they had not received 6 per cent on that amount. Railroads, he said, cannot continue to serve the public unless some consideration is given to the rights of the stockholders.

Mr. Benton asked if the proposed issue had not been considered in reference to its effect on a possible consolidation. Mr. Holden said that it had but that he had no consolidation in mind.

O. M. Spencer, general solicitor of the Burlington, asked Commissioner Hall what he would consider a fair return on a railroad investment in Nebraska. Mr. Hall said it should be a composite of the rates as fixed by the money markets of the world on bonds, preferred stock and common stock, but he finally suggested 5½ per cent as fair. In argument Mr. Spencer declared that the present stockholders of the Burlington had received since 1901, only 3.9 per cent on their investment, which he argued indicated that the surplus did not represent excessive rates. Mr. Spencer said the Burlington occupies a peculiar, unique position among railroads and that while it has usually paid an 8 per cent dividend, the amount of stock on which it has paid has been very small in proportion to that of other large roads in its territory. The road has been built up since 1901, he said, by the stockholders receiving less than they were entitled to.

C. W. Bunn, general counsel of the Northern Pacific, said that as a dividend the stock issue would put no money in the pockets of the stockholders, but that the issue was only part of a wise financial scheme to afford the proper relation

between stock and bonds as a necessary foundation for the mortgage.

Arguments were also presented by E. C. Lindley, general counsel of the Great Northern, in support of the application, and by Mr. Culver, Mr. LaMaster and Mr. Benton against the application.

The purposes for which the Great Northern and Northern Pacific expect to use the dividends to be paid from the sale of the Burlington bond issue was explained at a previous hearing by Howard Elliott, chairman of the Northern Pacific, which he said owns 538,563½ shares of the stock of the Burlington. On July 1, 1921, he said, the bonds issued jointly and severally by the Great Northern and Northern Pacific companies amounting to $215,227,000, commonly known as C. B. & Q. joint 4's, because they are secured by a deposit of the Burlington stock as collateral, will become due. These bonds were issued nearly 20 years ago to purchase 1,076,135 shares out of a total of 1,108,391 shares of the stock of the Burlington, which were bought at $200 a share. Very careful thought has been given to the matter of the best method of refunding or paying these bonds so as to preserve the credit of the three railroads interested. Under the plan proposed by the Burlington, the Great Northern and Northern Pacific as the recipients of a large proportion of the dividend money, would be able to and intend to use it to pay as much on the joint 4's as the amount of the dividend received, leaving from $135,000,000 to $140,000,000 to be handled by some other issue of bonds, either a joint collateral bond of the two Northern companies or by each company issuing its own obligation if that can be done, the question to be determined later by negotiations among the companies and in conference with the commission.

If the $80,000,000 of Burlington bonds can be put out at a cost of not over 6 per cent and the $135,000,000 or $140,000,000 of collateral trust bonds can be put out at 7 per cent, a considerable saving in interest could be effected, Mr. Elliott said. To renew the collateral trust bonds as a whole, at 8 per cent, would cost at least $17,218,160 per annum. The $80,000,000 of Burlington bonds at 6 per cent would cost $4,800,000 per annum. The $135,227,000 in collateral trust bonds at 7 per cent would cost $9,465,890. The sum of these two interest payments is $14,265,890, or an estimated annual saving of $2,952,270. If in the working out of the plan some form of obligation individual to the two northern roads can be used instead of a collateral bond, Mr. Elliott said, the arithmetic is even more favorable. The interest required to refund the joint bonds at 8 per cent would be $17,218,160 and if $70,000,000 Northern Pacific bonds can be issued at a possible 6½ per cent and $70,000,000 Great Northern at 6½ per cent, the total cost plus that of the Burlington issue would be $13,800,000 per annum or a difference of $3,418,160 as compared with refunding the joint issue at 8 per cent.

Mr. Elliott said that the stockholder has owned his stock for nearly 20 years, which was bought in good faith on the belief that it was worth the $200 a share paid, and time has proved this to be true. The stockholder has helped to create the value of the Burlington by advancing to the company year after year the very large sums of money which might have been paid out in dividends and this was done knowingly and willingly because there was complete confidence that at the proper time the stockholders would receive just treatment.

Motor Transportation.—The Department of Agriculture reported that more than 49,000 farmers were using approximately 78,000 motor trucks in 1919. The stockyards of St. Joseph, Sioux City, Indianapolis and Omaha report enormous increases in receipts of live stock by truck. In all, 881,000 head of live stock, or 24 per cent of all live stock received, were delivered there by motor truck in 1919.

Tank Car Outlets and Other Projections

Colonel B. W. Dunn, Chief Inspector of the Bureau of Explosives, having received many letters protesting against the recent prohibition of nipples or other attachments to bottom outlet valves of tank cars, has issued a statement calling attention to the dangers incident to the transportation of gasoline.

The tank car committee of the American Railway Association, finds the tank car and the locomotive tender, of all railroad equipment, the most liable to derailment; and in the case of the tank car, the breakage of the outlet chamber almost invariably follows the derailment and adds greatly to the danger of further damage.

The bottom outlets of tank cars have always given more trouble in connection with leakages and fires than any other cause. It is contrary to elementary principles of safety to make a hole in the bottom of a tank containing thousands of gallons of a dangerous inflammable liquid, and depend upon any device to keep it closed. On English railroads a bottom valve is not allowed in any "tank waggon" carrying inflammable liquids of the first class. Furthermore, such liquids as gasoline are not transported in "tank waggons" of any type.

The Bureau of Explosives appreciates the difficulties. The desideratum is a car with valves which would not leak; but no valve has yet been placed in service which successfully accomplishes this result. The next best thing is to use a solid valve cap as a second defense against leakage at the bottom of the outlet chamber. If builders had made a serious effort years ago to make a really tight outlet, one might have been developed. It is hoped that some one of the experimental types now under service tests may prove satisfactory.

When extensions in the way of nipples and stop cocks are added to the outlet chamber the hazards are greatly increased. Valves extending below the bottom of the outlet chamber provide additional joints, each one of which is an additional possibility for leakage. These extensions are also liable to be struck and knocked off or ruptured by flying ballast or obstructions during transit. Consignees demanding these forget that the extensions increase the hazards while the car is moving. Gasoline is the most dangerous commodity transported on American railroads. The Bureau of Explosives' records show that from 1910 to the beginning of the present year, gasoline was responsible for 83 per cent of the deaths, 63 per cent of the personal injuries and over 49 per cent of the property damage occurring in the transportation of all classes of dangerous articles, exclusive of explosives. In the majority of the gasoline losses the bottom outlets started the trouble. So long as the railroads put up with this situation, just so long will improvement of the bottom outlet arrangement be delayed.

The action taken at the meeting of the tank car committee of the American Railway Association on June 4, 1920, against supplementary extensions, is believed to be a step in the right direction. It amended Section 7 of the Tank Car Specifications by adding sub-paragraph "c" providing that "No nipples, valves or other attachments, shall project below the bottom outlet cap except while car is being unloaded." This decision of the tank car committee was based principally upon the records of results in a large number of cases where this type of car was involved. The Bureau of Explosives heartily concurs in the action of the committee.

From the Post Office Service down to the smallest village lighting plant, we doubt if there is a publicly owned and managed activity in this country that is being operated as efficiently and as economically as it would be under private operation.—*The Valve World.*

Annual Report of Interstate Commerce Commission

Review of Year's Activities Under New Law, With References to Work of the Several Bureaus

THE ANNUAL REPORT of the Interstate Commerce Commission for the year ending October 31 was made public on December 9. The first part of the report was abstracted in the *Railway Age* of December 10, pages 1019 and following, and the remainder is given below. The part of the abstract given in last week's issue dealt with the exercise of the commission's emergency powers, including the work of the Bureau of Service. It also gave the details concerning the Bureau of Finance and the Bureau of Accounts. In the part of the report abstracted below are shown the details as to the following bureaus: Statistics; Traffic; Law; Inquiry; Valuation, etc., with references also to the other work done by the commission and not already covered in the report. There are also references to the Bureau of Locomotive Inspection, but the detailed report of the chief inspector of that Bureau will be found in this issue on page 1071. The detailed report of the Bureau of Safety, which is also published separately from the Commission's general report will be abstracted in next week's issue.

Abstract of the Report

Bureau of Statistics

The principal extension of the work of this bureau during the past year has been the addition of monthly reports of operating statistics, such as those relating to train-miles, car-miles, ton-miles, and other units of physical operation. Such data were in prior years required only annually. The director general of railroads found it necessary to institute a system of monthly operating statistics for the purpose of supervising railroad operations effectively. In addition to our former annual requirements, certain new records were added, such as those pertaining to train-hours, locomotive-hours, gross ton-miles, rating ton-miles, and the direction of movement. By order of December 1, 1919, we required carriers to continue all of the basic records relating to operating statistics inaugurated by the director general. The order further required certain of these data to be reported monthly.

Progress has been made in the matter of commodity statistics. By order of December 1, 1919, we adopted a classification of commodities comprising 70 classes, in place of the 38 classes formerly in use. For each of the 70 classes the tonnage carried and the number of carloads handled are reported quarterly. The reporting of the number of carloads in addition to the tonnage heretofore required has the advantage of enabling one to compute the average load per car of each of the commodity classes. As a test of the usefulness of the more elaborate scheme of commodity statistics discussed in our last report, we also required as a special study a report for the month of April, 1920, showing, for 15 selected classes of commodities, the tonnage, the revenue, the number of carloads, and the states of origin and destination as shown by the waybill. The value of this test is diminished by the fact that the strike of switchmen occurred in April, 1920.

Steps have also been taken to expand considerably the statistics relating to railroad employees. The classification of employees now in force is not sufficiently detailed to meet the needs of those engaged in the adjustment of wages. A revised classification has been submitted to the United States Railroad Labor Board, to the carriers, and to the labor organizations for consideration. Pending the revision of the schedules now in use we are receiving quarterly reports on the same form heretofore used annually, as the annual reports are necessarily much delayed. An annual statement of the number of women employed by railroads in various occupations has also been added to the statistical compilations of the bureau.

On June 15, 1915, we entered an order prescribing rules governing the separation of operating expenses between freight and passenger services. That order was modified on October 23, 1917, relieving the carriers from the requirement of making the apportionments in order to reduce as much as possible the statistical work during the war. Effective January 1, 1920, these rules have again been amended so as to provide for an accounting subdivision of each railway operating expense account between freight service and passenger and allied services. The bureau has under consideration a further separation of operating expenses as between terminal and line or road services.

From the table showing monthly financial results for large steam roads the decline in the net railway operating income since 1917 clearly appears. In making a computation of the amount necessary to make good the guaranty for the six months ended August 31, 1920, it is necessary to consider that 35 of the carriers making monthly reports did not accept the provisions of section 209, transportation act, 1920; that war taxes are included among the deductions from revenue in 1920; that we may find that heavier maintenance charges have been included in the accounts than can be allowed in computing the income for the guaranty period; and that many other adjustments will have to be made in the returns both for the test period and the guaranty period. For the large roads accepting the guaranty provisions, the reports now rendered indicate that the amount required to make good the guaranty for the six months is approximately $600,000,000, after deducting war taxes, which are borne by the corporations. To what extent the maintenance, limitation, and other adjustments will modify this loss to the government we are unable to say at this time.

In connection with the tables of accident statistics, it may be observed that of the 6,495 persons killed in train and trainservice accidents in the calendar year 1919, 1,784, or over 27 per cent, were killed in highway grade crossing accidents.

Bureau of Traffic

In the rearrangement of our forces to meet the increased duties laid upon us by the transportation act and contemporaneous legislation, the bureau of traffic was organized. In this bureau we have consolidated the several boards, sections, and divisions which have heretofore dealt with the publication and filing of tariffs; the suspension of rates pending investigation; applications for relief from the provisions of section 4 of the act; the classification of freight; express charges; and practically all matters affecting charges for transportation other than proceedings on our formal docket, and complaints of an informal character handled by our bureau of informal cases.

The bureau is headed by a director of traffic with subordinate jurisdiction over matters pertaining to traffic. In addition to the special work of the various units of the bureau outlined below, its activities are directed toward the adjustment by informal conferences and correspondence of controversies arising between shippers and carriers, and the settlement of differences between carriers concerning divisions of joint rates, designed to promote harmony between the carriers and the public, facilitate the disposition of urgent matters, and lessen the number of matters eventually brought before us upon formal complaint.

Notwithstanding our efforts to promote simplicity of tariff publication, questions constantly arise concerning the interpretation and application of tariff rates and rules governing charges for transportation which require investigation and informal rulings, without prejudice to any formal proceedings that may be thereafter instituted.

Pursuant to plans for promoting harmony, carriers have since their return to private control continued in a modified form a system inaugurated by the director general of issuing to the public announcements of proposed rate changes and conducting public conferences at which interested parties are afforded an opportunity of presenting facts with respect to such proposed changes before they are made effective.

We believe that this system will materially assist in maintaining a spirit of cooperation between the shipping public and the carriers and will tend to lessen the number of disputed matters eventually brought before us for disposition in a formal way.

Tariffs

The number of tariff publications filed, containing changes in freight, express, and pipe-line rates, passenger fares, and classification ratings was 135,426. The increase in the number of rate changes established during this period, as compared

with the previous year, was due to the general increases in rates, fares, and charges authorized by us following the passage of the transportation act, 1920, and the many changes made immediately prior to the termination of federal control.

Rate memoranda have been supplied in 5,146 cases for our use and for shippers, carriers, and other departments of the government. These memoranda are in addition to the large number of informal rate quotations and verifications made daily. Shippers, carriers and departments of the government in increasing numbers have made use of the schedules maintained for the use of the public.

The Fourth Section

The fourth section of the act has been changed in important particulars by the transportation act, 1920.

Prior to this we were empowered, upon application by a common carrier, and after investigation, to authorize it, in special cases "to charge less for longer than for shorter distances for the transportation of passengers and property," and were also empowered "from time to time to prescribe the extent to which such designated common carrier may be relieved from the operation of this section."

In administering this section we proceeded upon the theory that the Congress intended that we should in proper cases exercise the power to grant relief, observing the rules laid down in the other sections of the act, and that it was appropriate to grant relief when, in our opinion, the resulting rates or fares would not be unjust or unreasonable in violation of the first section or unduly prejudicial in violation of the third section.

I should be stated, however, that as these powers [referring to a quotation from the new law] have been exercised for several years, these limitations will have little effect upon the actual administration of this section, for the reason that it has not been our practice to grant relief in order to permit carriers to charge a lower rate at a more distant point than at intermediate points unless the lower rate was reasonably compensatory; and for several years we have made it a rule of almost universal application not to grant relief on the ground of circuity of route that would permit carriers to charge at intermediate points—as to which the haul was not longer than that of the direct line or route between competitive points—any rates exceeding those between the competitive points. We have also refused for several years to grant relief because of potential water competition.

In our thirty-third annual report we referred to the fact that the director general of railroads had in important cases declined to defend carriers' applications for relief under the fourth section and had requested relief in but few instances. The result was that the number of applications for such relief had been greatly reduced, and most of those filed were made by or on behalf of carriers not under federal control. Since the return on March 1 last of the transportation systems to corporate control and the renewal of more active competition between individual carriers there has been a great and growing increase in the number of these applications.

Bureau of Law

On October 31, 1919, there were 14 cases involving our orders or requirements pending in the courts, of which 4 have been concluded. During the year 4 cases were instituted, so there are now pending in the different courts 14 cases. Of these 1 is in the Supreme Court, 10 are in the district courts, and 3 are in the Supreme Court of the District of Columbia. Of the 4 cases finally disposed of during the year 2 were dismissed on motion of the parties, 1 was dropped from the docket, and one of the two cases decided by the Supreme Court was dismissed in accordance with that court's order.

Bureau of Inquiry

Twenty-five indictments were returned for violations of the act to regulate commerce and related acts, and 50 cases were concluded.

During the period there was a demand for transportation which taxed the facilities of the carriers. These conditions tended to bring about new abuses and irregularities. A practice has grown up on the part of some shippers of bribing operating employees of railroad companies in order to obtain service. This practice is discussed elsewhere and recommendation made that legislation be enacted to reach the evil.

Reference has been made in previous reports to the prosecution of certain lumber dealers for securing service discriminations in violation of the Elkins act by consigning shipments, which were not intended for government use, to officers of the Army and Navy and thus obtaining transportation in the face of embargoes. Investigations now under way indicate that a somewhat similar practice has been resorted to by certain coal dealers who have misused our service orders, which granted preferences and priorities in connection with the transportation of coal for use by public utilities, and thus obtained preferences and priorities in connection with the transportation of coal which was not used or intended for use by public utilities. Such violations of the law as may be disclosed by the investigations will be referred to the Department of Justice for appropriate action.

The increased rates now in force seem to have increased the efforts of dishonest shippers to reduce transportation charges by falsely describing their shipments and by filing fraudulent loss and damage claims.

Bureau of Service

We have dealt elsewhere in this report with the transportation and operating conditions as they existed in the past and have outlined the steps taken by us and by the carriers to meet those conditions. The orders were issued by us under our powers to take care of particular emergencies. The acute stage of emergency has now passed and the movement of all traffic may be considered to be approaching a normal state. But in order to aid in preventing a recurrence of conditions such as existed in the recent past, we must keep in constant and close touch with operating and transportation conditions throughout the country.

This bureau was organized in April, 1920. Its activities have been directed chiefly to the execution of duties imposed upon us by paragraphs (10) and (17) of section 1 of the interstate commerce act. Special emphasis has been placed upon the present need for increased car mileage, heavier car loading, decreased percentage of bad-order cars, and the bureau is constantly directing its efforts toward the promotion of operating efficiency on all railroads subject to our jurisdiction. It keeps in close contact with the car service division of the American Railroad Association, acting on behalf of the carriers, and with the carriers themselves. Numerous informal complaints and inquiries have received attention, and, wherever possible, differences have been composed. The volume of complaints and inquiries is substantial. Numerous conferences have been held by the director and his assistants with shippers and carriers in the endeavor to correct erroneous practices, and effected a better understanding between the carriers in their relation to the public.

In order that we may be kept in close touch with the transportation problems as they arise from day to day, the Civil Service Commission has, at our request, held an examination to establish a register of eligibles from which we expect to appoint competent service agents. Each appointee will be assigned to a particular territory and will serve as chairman of a terminal committee created by us at important points and will have executive charge of the functioning of all such committees. He will be expected to have full knowledge of service conditions within his territory at all times and to keep us advised relative thereto and make recommendations as to the exercise of our mandatory powers, and, when so authorized, to give directions to carriers as to car service.

Bribery of Railroad Employees

As a result of the inadequacy of the car supply and of railroad transportation facilities generally during the past year, a practice has grown up among shippers of bribing operating employees of railroad companies in order to obtain transportation services. The demoralizing effects of this practice are far-reaching. Bribery of this character in many instances can not be directly and effectively reached under existing laws. It is, therefore, recommended that the interstate commerce act be amended to provide for the punishment of any person offering or giving to an employee of a carrier subject to the act any money or thing of value with intent to influence his action or decision with respect to car service as defined in the act, or because of such action or decision; and to provide also for the punishment of the guilty employee.

Bureau of Safety

A more detailed report of the work of the bureau of safety is published as a separate document.

During the year ended June 30, 1920, we investigated 90 train accidents, which included 58 collisions and 32 derailments. The collisions resulted in 179 deaths and 1,158 injuries, and the derailments resulted in 60 deaths and 481 injuries, a total of 239 persons killed and 1,639 persons injured.

Thirty-one of the collisions investigated occurred on lines operated by the block system; 20 occurred on lines operated by the time-table and train-order system, and 7 were yard accidents.

Of the 31 collisions investigated in block-signal territory, 20 occurred on lines equipped with automatic block signals, of which 14 were rear-end collisions, 5 were head-end collisions, and 1 was a side collision.

Of the 20 collisions occurring in automatic block-signal territory, 16 were due directly or indirectly to the failure of enginemen properly to observe and obey signal indications; 1 was caused by a despatcher authorizing a movement against the current of traffic without knowing whether opposing trains were being held

and by a yard clerk allowing an opposing train to proceed; 1 was due to a closed angle cock on the rear of the tender; 1 to the failure of a conductor to see that a sufficient number of hand brakes were set to hold the portion of his train left standing on a mountain grade; and 1 to the air brakes not being in proper working order, adequate inspection and test of them not having been made before leaving the terminal.

Of the 16 collisions investigated in automatic block-signal territory in which enginemen were involved either directly or indirectly, 10 were due to failure of enginemen to observe or obey stop signals, all of which might have been prevented by an adequate automatic train-control system. In four of the other cases the enginemen failed to operate their trains with proper caution after entering occupied blocks, in accordance with the rules; in one case the train should have been flagged through a block, and in the other instance the engineman at fault was operating his train against the current of traffic.

The 11 collisions in nonautomatic block-signal territory consisted of 6 rear-end and 5 head-end collisions. Five of these accidents were due to the failure of enginemen to operate their trains under proper control in occupied blocks. Enginemen were also primarily responsible in three other instances. One of these collisions was due to the failure of a flagman properly to protect his train, one to a train being authorized to proceed against the current of traffic without utilizing the safeguards provided by rule, and one to the failure of a despatcher to deliver to one of the trains an order which changed a meeting point, resulting in a lap order, the latter being a head-end collision, and the block system on this line applied only to trains being operated in the same direction.

The 20 collisions occurring on lines operated under the time-table and train-order system consisted of 6 rear-end collisions, 13 head-end collisions, and 1 side collision. Errors in handling or failure to obey train orders were responsible for 8 of the head-end collisions; train service employees were at fault for 7 of these collisions, while the other was due to the failure of an operator to deliver a train order to one of the trains, resulting in a lap order, and of the despatcher to observe a rule governing the issuance of meet orders.

Track conditions were involved in 15 of the 32 derailments. Four derailments were due to broken rails and four to open switches, three of which were opened with malicious intent. One derailment was due to a defective switch, one to insufficient ballast, one to excessive speed in view of existing superelevation, one either to an obstruction or excessive speed in view of existing superelevation, and three to a combination of track and equipment defects. Of the remaining 17 derailments, 8 were due to defects of equipment, 3 to obstructions, 2 to excessive speed, 1 to running off a derail, and 1 to the failure of an engineman to note an open drawbridge, while the causes of 2 derailments were not ascertained.

Bureau of Locomotive Inspection

The work of this bureau during the fiscal year ended June 30, 1920, is shown in detail in the report of the chief inspector, published separately.

The summary of all accidents and casualties occurring during the fiscal year ended June 30, 1920, covering failures of the entire locomotive and tender and all of their parts and appurtenances, as compared with the year ended June 30, 1919, shows an increase of 49 per cent in the number of accidents, an increase of 16 per cent in the number killed, and an increase of 42 per cent in the number injured. This increase is due almost wholly to disregard for the requirements of the law and rules, as well as of safety of construction and operation. This is especially true with respect to parts sometimes considered unimportant; for example, 26 per cent of the increase in accidents and injuries was due to failure of grate shakers; 10 per cent was due to failure of reversing gear; and 10 per cent to failure of squirt hose.

The summary of all accidents and casualties caused by failure of the boiler and its appurtenances only for the fiscal year ended June 30, 1912, the first year of the existence of the law, as compared with the year ended June 30, 1920, shows a decrease of 47 per cent in the number of accidents, a decrease of 48 per cent in the number killed, and a decrease of 49 per cent in the number injured.

Derailments due to defects in or failure of parts of the locomotive or tender, have been the direct cause of a number of most serious accidents and loss of life and limb, as well as damage to property, and have shown the necessity for proper inspection and repair of the running gear, driving gear, and brake rigging.

During the period of federal control the assistant director of operation, United States Railroad Administration, was furnished monthly with a statement showing in detail all defects which constituted violations of the law and rules, found on locomotives operating under the jurisdiction of the director general of railroads, and the locomotives ordered out of service as provided in the law. In addition to this, a number of special investigations were made at the request of the Railroad Administration and reports furnished covering conditions found and action taken. In this and in other ways we co-operated with the Railroad Administration during federal control to the fullest extent consistent with the purpose of the law. Reports showing defects found on all locomotives ordered out of service, and those found approaching violations of the law and rules, were furnished the chief operating officers of the carriers, so that they might be fully informed of the condition of their locomotives and in other ways we co-operated with the carriers in bringing about safe and proper conditions.

With the additional duties of the inspectors, and the increased number of locomotives in service, it is impossible with the present force of inspectors and under the salaries now provided adequately to accomplish the purpose for which the law was enacted.

Bureau of Valuation

The conditions of employment which were discussed in considerable detail in our thirty-third report to the Congress have grown worse rather than better during the past year. It has been found increasingly difficult to obtain and retain competent men and the compensation has been distinctly greater, the effect being to retard the progress and enhance the cost of our work.

The field work in the southern district has been entirely completed. In all other districts, except the eastern, it has been completed except for some odds and ends which will be cleared up by the end of the present calendar year. In the eastern district, owing to the much greater complexity of the properties involved, it has not been possible to make corresponding progress. About 1,000 miles of railroad remain to be inventoried and this will require, with the three parties now employed, until June 1, next.

While the progress of our office work has been impeded by the labor conditions above referred to, it has been on the whole fairly satisfactory. It is still hoped that by December 31, 1921, a report will have been completed by every section upon all the major rail systems; that is, systems including 500 miles and more of road. With these reports we will have before us the information from which to establish a value under the valuation act.

The act of March 1, 1913, requires us to report "the present cost of condemnation and damages, or of purchase, in excess of present value" of common carrier lands. This statute was enacted previous to the decision by the Supreme Court of the United States in the so-called Minnesota Rate Cases. We held upon the strength of that decision that it was impossible to report intelligently the fact called for, and that if reported it would be of no practical significance. Nothing was therefore done toward ascertaining or reporting this fact.

The Kansas City Southern Railway Company claimed this to be error and proceedings were brought to compel us to investigate and report as required by the statute. The Supreme Court of the United States sustained this contention in an opinion promulgated March 8, 1920.

The effect of that decision was to prevent the fixing of a final value upon any property, or the service of other tentative valuations, until this figure could be ascertained, and in view of that possibility we suspended the service of tentative valuations pending the decision of the Supreme Court. Before that fact could be reported as to any individual carrier certain basic studies had to be made and certain general information collected. That has been done.

Certification of the Standard Return

Since the approval of the federal control act we have certified in tentative form the average annual railway operating income of 585 carriers for the three years ended June 30, 1917, amounting in the aggregate to $945,279,920. However, the sum stated does not represent the exact standard return of the carriers taken under federal control, because it has been necessary to make corrections of these tentative certifications and because it may be determined that some of the carriers whose income was so certified were not taken under federal control.

Such tentative certifications are made from the reports of the carriers rendered to us. We have reviewed the accounts of 325 carriers. Of these we have found that 170 of the original or tentative certifications were correct and that the certifications for 155 carriers should be amended so that the amounts certified would reflect the income of those carriers, ascertained in the manner required by our accounting rules.

By corrected certifications we have reduced the standard returns of 94 carriers in amounts aggregating $2,412,631, which is equivalent to a reduction of 1.24 per cent of the amount originally certified. The individual decreases ranged from $21.51 to $434,671. We have increased the standard returns of 61 carriers in amounts aggregating $1,160,604, which is equivalent to an increase of 1.18 per cent of the amount originally certified. The individual

increases ranged from $32.55 to $103,061. The net reduction amounts to $1,252,027. This net reduction is 0.43 per cent of the aggregate of the 153 standard returns we have corrected and 0.37 per cent of the 325 standard returns, the underlying accounts of which we have reviewed.

Under the provisions of the federal control act our certification of the standard return is conclusive of the amount of the average annual railway operating income. By virtue of the tentative certifications and the right of correction reserved therein the carriers were enabled to enter into the standard form of contract with the director general of railroads. There are stipulations in the standard form of contract which provide for conforming the just compensation specified therein to the correct amounts that we may certify.

Boards of Referees

Under the provisions of section 3 of the federal control act and in response to petitions filed by railroad corporations, we have appointed 20 boards of referees, and one upon petition filed by the director general of railroads, to hear claims for just compensation not adjusted by agreement upon a contract such as is authorized by section one of the federal control act.

Reports have been made upon 10 of the claims. During the proceedings in two of the cases the director general of railroads and the claimant agreed upon the just compensation, and those two cases were dismissed. Under the provisions of sections 3 and 6 of the federal control act and in response to petitions filed by railroad corporations we have appointed 48 boards of referees to hear claims for losses by reason of additions, betterments, or road extensions made or constructed during federal control by the President or by carriers in response to orders of the President, the cost of which was charged to the investment accounts of the railroad corporations. Progress is being made in the settlement of many items in these claims, and in order that the parties may have full opportunity to reduce the number of matters to be submitted to the boards none of these cases thus far has been set for hearing.

These boards have been constituted from our membership and from that of our official force.

Transportation of Explosives and Other Dangerous Articles

The act of May 30, 1908, entitled "An act to promote the safe transportation in interstate commerce of explosives and other dangerous articles, and to provide penalties for its violation," required us to formulate regulations for the safe transportation of explosives, such regulations to be binding upon all common carriers engaged in interstate commerce which transport explosives by land.

The act does not specifically authorize us to prescribe regulations for the transportation of dangerous articles other than explosives. However, the necessity for such regulations for the proper safeguarding of such articles in the channels of commerce and in order to afford reasonable protection to the public became manifest. Therefore, believing that section 15 of the act to regulate commerce conferred upon us the power to prescribe for the carriers such regulations as were appropriate in the interest of reasonable safety precautions, we formulated and published such regulations, effective October 1, 1911, after public hearing and full consideration of the interests of shippers, carriers, and the general public. Our power to prescribe these regulations and their binding effect upon the carriers has not been challenged. They have been generally observed by shippers, but many accidents and substantial losses have been and are being caused by failure of a comparatively small number of shippers to meet the requirements of the rules.

During the past several years, and more especially during the period of the war, occasion has arisen for the transportation of additional and heretofore unknown dangerous articles. It is obvious that the importance of appropriate precautions to insure the safe transportation of explosives and other dangerous articles from the standpoint of the carrier and its employees, the shipper, the passenger, and the general public, can hardly be overestimated. Probably in no other field of human endeavor is the importance of reasonable safety measures so apparent and pronounced.

During the year 1907, which immediately preceded the enactment of the act to promote the safe transportation in interstate commerce of explosives and other dangerous articles, etc., 79 accidents in the transportation of explosives resulted in 52 deaths, 80 personal injuries and a total known property loss of nearly $500,000. During the year 1918 our military program required the production and transportation of more than 2,000,000,000 pounds of military explosives. In addition to this, the normal movement of explosives for commercial use amounted to about 600,000,000 pounds. It is deduced from careful estimates that at all times during the year 1918 there were on the tracks of railroads in the United States not less than 55,000 carloads of explosives of an average weight of 40,000 pounds each. Notwithstanding the tremendous increase in the volume of these explosives transported during that year, the casualties resulting therefrom were only two persons injured and the damage to property was about $33,000.

In the transportation of dangerous articles other than explosives, however, 1,204 accidents occurred during 1918, resulting in 17 persons killed, 86 persons injured, and a known property loss of approximately $1,300,000. The remarkable success in transporting explosives is attributed to the penal provisions of the act of March 4, 1909, and the enforcement thereunder of our regulations governing such transportation. It is generally admitted by railroad officials and shippers that in order to secure proper safeguarding of the public in the transportation of dangerous articles other than explosives as strict regulations are necessary under statutory authority as in the case of the transportation of explosives. Owing to the absence of any penalty in the law under which our dangerous-article rules are prescribed similar to that now embraced in the transportation of explosives act, the object of those regulations is rendered most difficult if not, in fact, impossible of accomplishment. We believe that the public interest clearly requires the enactment of appropriate legislation definitely directed to the transportation of dangerous articles. We also believe that the act of March 4, 1909, should be amended to include certain explosives not now definitely named in the act; that its provisions should be extended to water lines engaged in interstate commerce, and that our industrial needs point strongly to the necessity for a modification of the so-called 90-day clause of the present law under which changes in our regulations for the transportation of explosives can be made only upon 90 days' notice. We think that these objects and other necessary modifications and extensions of existing laws may be most readily accomplished by the enactment of a law corresponding in general to the provisions of H. R. 12161, introduced in the House of Representatives on January 30, 1920.

Rate Increase

In connection with the discussion of the general rate advance case, the report includes the following table showing the number of States that have allowed or have not allowed for interstate traffic the increases authorized by the Interstate Commerce Commission for interstate traffic:

	States
Freight traffic:	
Increases approved in full as per our report	24
Increases approved with exceptions	17
Smaller percentage increases than allowed by us approved by	5
All increase denied	2
Total	48
Passenger traffic:	
Increases approved in full	23
Increases approved with exceptions	7
No increase allowed because statutory provisions prevent action by state commissions	13
Increases denied	3
Increases denied in part	2
Total	48

Regarding the general rate advance the report said:

"The only basis of comparison available in determining the rates which should be established in compliance with section 15a of the act is to be found in the volume of traffic in the past, and estimates of the expenses, volume of traffic, and other relevant factors likely to exist in the near future. Necessarily, rates so established have an element of uncertainty because the costs, volume of traffic, and other factors to be encountered by the carriers are not ascertainable with exactness. It is, therefore, impossible to speak with confidence as to results until a reasonable period has elapsed."

Reorganization

The commission also explains the reorganization which it has made of its forces to meet the increase in its duties and additions to its membership.

"Our reorganization," the report says, "together with the expansion of our administrative forces, necessitated reclassification of the various activities of our bureaus and sections. We have reduced the number of bureaus by consolidation and rearrangement, so that each now has to do with a principal function of our work. In this organization of administrative forces the guiding principle is to keep the organization as simple as possible, with centralized responsibility, and to afford a ready means to bring to bear the judgment of the commission on any matter. Each bureau has a single head, who reports to a commissioner, who in turn can bring matters to a division, or, if need be, to the entire commission, for determination. The exception to this rule is the bureau of valuation, which reports directly to Division 1. The majority of matters are dealt with by a division. Minor administrative matters are disposed of by the commissioner in immediate charge of the particular bureau."

The Financial Position of the English Railways*

The Claims Against the State—Chief Points for Adjustment—The Future of the Railways

By W. M. Acworth

THE PREVAILING uncertainty as to the future position of British railways is reflected in the price of their stocks. This uncertainty, it is fair to say, is not confined to this country. The war has upset business all over the world, and the railways are no exception.

Ordinary business concerns can readjust themselves to the changed circumstances in such manner as their own uncontrolled judgment decides. But railway undertakings are at all times semi-public, and during the war they have been treated as wholly public. Not only have they to work out the complicated readjustments consequent on de-control, but the whole code of statutory, legal and executive obligations and restrictions to which they are subject has to be recast to meet the new conditions. All this is bound to take time, and in fairness this must be recognized. Still the public would perhaps be better pleased if there were more signs displayed on all sides of a desire to hasten the process.

A review of the financial situation falls under two main heads:—The settlement between the government and the companies in reference to the past; and the prospects for the future, after next August, when the railways revert to their owners, and once more earnings are received and expenditure incurred on behalf of the shareholders. The settlement between the government and the companies looked a simple matter when it was first arrived at by an interchange of short informal letters in August, 1914. It will not be so simple when seven years have elapsed; the documents to be submitted for investigation to Lord Colwyn's committee will form a substantial volume.

Statutory Right Waived

Under the terms of the Act of 1871, which authorized the government to take possession, the companies were entitled to "full compensation for any loss or injury they may have sustained," such compensation to be ascertained by agreement, or in default by arbitration. This statutory right the companies waived at the outset by agreeing, in the terms of their letter of August 6, 1914, that the compensation should be adjusted on the basis of—to put it broadly—a guarantee by the government to the companies of their pre-war net income during the period of control. This period was fixed by Mr. Runciman, then president of the Board of Trade, in September, 1916, as extending to "two years after the termination of the war"; which date was subsequently interpreted by the Ministry of Transport Act, 1919, to mean August 12, 1921. Seeing that the war is still not officially terminated, this has turned out to be somewhat of the nature of a prolepsis.

There have been many subsequent agreements, modifications, and interpretations of agreements. For one thing, there has been frequent need to divide what is technically known as "above-the-line" receipts and expenditure from those "below-the-line." It was only the former class, receipts and expenditure concerned directly or indirectly with operating the railways, that the government took over. The companies retained possession of all "below-the-line" properties and revenues; bookstalls, advertisements, land and houses not used for railway purposes, and so on; and in respect of these they have carried on business, on their own account, as before.

Arrears of Expenditure

Two sets of agreements only seem to be of sufficient general importance to merit notice. The first set refers to maintenance of the existing property, and the additions to it from time to time on capital account. Under the normal conditions of pre-war times the companies maintained or renewed their plant and equipment up to their current standard year by year out of annual revenue. Yet extensions and additions and improvements on capital account were always going on. At an early stage of the war new construction practically ceased; and as men and materials grew even scarcer, even renewals were abandoned, while finally even repairs, unless absolutely necessary to keep the machine going, were postponed.

The result was that revenue expenditure, for which the government was responsible, fell heavily into arrear. The government perforce agreed that the postponed expenditure must ultimately be met from public funds. The arrears are being caught up now. What proportion will have been carried out by next August as part of the current expenditure which the government is still meeting, and what proportion will be left over to be paid for in cash on the termination of control, and at what price the materials and labor involved shall be charged, are accounting questions intricate and difficult enough, and involving huge sums of money, but not apparently involving any question of principle. There is, however a question arising here which may fairly be called one of principle.

Every business man knows how difficult and often arbitrary is the apportionment of renewal expenses between revenue and capital. Under normal circumstances the shareholder pays in either case. But here, if the expenditure is held to be on revenue account, the government has to pay in full; if on capital account the government only pays interest on it during the period of control. For expenditure on what is admittedly capital account (such as that, for instance, invested in partially constructed lines) at an early stage in the war the government accepted liability to pay interest at the rate of 4 per cent per annum on it as and when brought into actual use. When after the armistice capital expenditure began again, the government practically agreed to pay interest at the rate of 5 per cent on the cost of work carried out, subject to ministerial approval as and from the date when the money was actually spent.

Extra Wear and Tear

Closely connected with the question of maintenance is that which is known as "extra wear and tear." The government auditors seem to assume that there will be eventual payment under this head, for which "a large allowance needs to be provided." "A calculation," they say—by whom made they do not state—"results in a figure of about £40,000,000" (about $160,000,000). But the roundness of the figure does not suggest any extreme accuracy of calculation, and apparently the government has not in any way admitted liability.

The claim which the companies will presumably make may perhaps be best explained by a simple example. The rate at which rails need renewal depends almost wholly under normal

*From the Times Trade Supplement, October 30, 1920.
Note—In converting from pounds sterling to dollars, a rate of $4 to the pound has been used. The normal rate of exchange is $4.86, whereas the present rate is approximately $3.50.

circumstances upon the amount of traffic passing over them. Company A before the war carried to a rail renewal fund each year such a sum as would replace its rails within 25 years, which had been ascertained by experience to be the fair period to allow. Suppose that its traffic during the war doubled, then eight years' life of the rails has been absorbed in four years. The company, if prudently managed, would surely have doubled its annual contribution to the renewal fund. If the government did not do so, it has under-maintained the property. But the government may reply: "Not so. You are asking something beyond your bargain. We undertook to guarantee your current dividends and to maintain your property. If rails fall for replacement earlier than usual because of extra traffic, so long as we are in control, we are bound to renew them. We accept no obligation for contribution to funds which on an actuarial basis may need enlargement to meet hypothetical pre-dated expenditure hereafter."

Further, they may well say, "A bargain to be fair must work both ways. If we are to pay 'for extra wear and tear,' on lines where the traffic increased, how are we to be compensated for the longer life of the rails on lines which owing to war exigencies were left half empty or even closed to traffic entirely?"

Value of Stores

The other agreement needing special mention is that relating to stores. Though the official returns do not give the value of the stocks carried by the railways as a whole, the amount must be very large. It stood in the books of the North-Western Railway on December 31, 1913, at over £2,000,000 ($8,000,000); so we may assume that it would be something like £20,000,000 ($80,000,000) for the whole country. These stocks were taken and used and replenished from time to time on government account. The government is now under obligation to restore to the companies at the end of the control period, either in specie or in their cash equivalent, at prices ruling in August, 1921, the stocks as they stood on August 5, 1914. The agreement is of course very advantageous for the companies. The North-Western, for instance, will, as against a liability of £2,000,000 ($8,000,000) for the cost of stores, have possession of a stock worth, say, £5,000,000 ($20,000,000). And the companies as a whole will have perhaps £30,000,000 ($120,000,000) to add to reserve—for one may presume it will be so treated—a very satisfactory addition indeed to an item in English railway balance-sheets which has hitherto been none too large.

Future of the Railways

As for the prospects of the future, he would be a bold man who would attempt to prophesy at the present moment. The government has announced its fixed policy to be that the railways shall be permitted to charge such rates as will with efficient and economical management secure to them what we may roughly call their pre-war net income. It is difficult enough to fix even on paper the right rates to secure this result; whether the facts correspond to the paper calculation depends on the volume of traffic. It is liable to sudden disturbances on both sides. Expenses may go up—they are doing so at the present moment; the sliding scale will give the workmen an extra 2s. (20 cents) a week, and 2s. a week for 600,000 workmen means £3,000,000 ($12,000,000). Receipts may go down, either because the increased rates check trade and travel or owing to a general depression in trade. Where they will fall to if there is a prolonged coal strike no one can say.

The increased freight rates which were sanctioned in July and came into force at the beginning of September were then calculated, not merely to meet current requirements, but to provide in the 11 months from September 1, 1920, to July 31, 1921, a surplus sufficient to wipe out a deficit which had accumulated in the five months April to August, 1920. The prospect was held out that from August next rates could be reduced by something like 10 per cent. The returns for September last are not yet published, but there seems reason to hope that they will meet expectations. For October and the subsequent months there can be no such hope. The outlook is gloomy. The coal strike has destroyed all possibility of rate reduction. If the shareholders' dividends are to be maintained beyond next August it will be necessary to rely not so much upon increased rates as upon economies in operation.

Unfortunately the returns which have been published every four weeks since the beginning of this year do not seem to show that much progress has been made in this direction at present. The load per car and per train, the work done by each engine for each hour that it is employed, the proportion of empty to loaded cars—none of these figures (and they are the true tests of operating efficiency) are satisfactory, and they show no improvement. The American railway companies by an organized and long continued campaign of publicity have succeeded in persuading their shippers that better loading, prompt release of cars, and the like, in which each trader can individually help, is in the best interest of the trading community at large. Nothing of this kind is being attempted here.

Further, a good many months have elapsed since the government publicly announced its policy to help the companies to do that which they have long vainly endeavored to do for themselves, that is, to combine the scattered resources of a large number of competing companies into a small number of efficient operating groups. That the potential economies of such a regrouping are very large no one can doubt. It must, of course, take years before the process can be fully worked out; but the economies can begin as each step in the process is taken. So far there are unfortunately no signs that the process is beginning. If the companies are holding out their right hand to grasp the hand which the government has extended to them, they have at least taken every precaution to prevent their left hand from knowing what their right hand is doing.

A BAND was recently incorporated at Hagerstown, Md., by employees of the Western Maryland.



Photo from Keystone View Co.

Passengers Riding on Car Tops on a Crowded Roumanian Railway

General News Department

Representative McLane has introduced in Congress a bill to empower the Interstate Commerce Commission to fix the price of coal and to regulate the coal business under such powers "as it now exercises over railroads."

Loans from the War Finance Corporation made to railroads have been reduced since November, 1919, from $70,558,210 to $52,828,270, of which $40,155,270 is payable on demand, the balance $12,672,940 maturing on January 1, 1921, and April 1, 1922.

Pensioners of the Canadian Pacific, who during the war have received 125 per cent of their regular or normal sums, have been advised that this increase, allowed because of the increase in the cost of living, will be continued through the year 1921.

The Railway Labor Board on December 16 began hearings on the controversy between the Norfolk & Western and its trainmen and conductors, according to a recent announcement made by Judge R. M. Barton, chairman of the Board. According to Judge Barton, the strike vote taken by these employees will be held in abeyance until the Board announces its findings in the case.

Advances to the railroads on account of their six months' guaranty for the period from March 1 to August 31 had been paid by the Treasury Department, up to November 13, to the amount of $250,485,374, on certificates by the Interstate Commerce Commission. The commission up to that time had isued certificates for $256,524,874. Up to November 9 certificates for loans from the revolving fund amounting to $102,812,785 had been received from the Interstate Commerce Commission, and on these $81,621,085 had been actually paid out.

Joseph Sweeney, of Philadelphia, Pa., a brakeman of the Baltimore & Ohio, is the recipient of a gold medal, presented by the railroad company, in recognition of his noble action in giving his blood in a transfusion operation in an effort to save the life of Thomas J. Thornton, a fellow employee. Thornton had both legs crushed and was taken to the Polyclinic Hospital by Sweeney and others. The attempt to save the injured man failed and Sweeney asked that his part be kept secret, but the facts leaked out. The presentation was made by Vice-president C. W. Galloway, in the presence of General Manager S. Ennes, General Superintendent E. W. Scheer, Superintendent R. B White, C. C. F. Bent and other officers. One side of the medal shows an angel hovering over the prostrate form of a man on the railroad tracks.

Tentative Consolidation Plan Under Way

Prof. W. Z. Ripley, who has been engaged by the Interstate Commerce Commission to prepare a tentative plan for the consolidation of the railroads of the United States into a limited number of systems, is expected to submit his report to the commission about January 1.

Mexican National to Come Under Per Diem Rules

That cars will be allowed to enter Mexico under the A. R. A. per diem rules is expected at an early date as the result of negotiations completed by the American Railway Association acting in behalf of 90 American roads, and F. P. De Hayos, representing the National Railways of Mexico. The agreement was drawn in New York and sent to the director general of the National Railways by special messenger. As soon as he agrees to it and executes his part of the agreement, his company will again be entrusted with American cars without depositing a bond. Under the terms of the agreement the National will pay $400,000 to the 90 railways for which the A. R. A. is acting. This sum will be in settlement of claims arising from the loss of 409 cars delivered to the National prior to July 1, 1914, and 59 delivered between that date and January 1, 1918. These cars were lost or destroyed during the revolutionary disturbances in Mexico. Since January 1, 1917, cars have not been delivered to the National without the payment of a $2,000 bond. The agreement calls for the payment of 25 per cent of the $400,000 on execution and the remaining 75 per cent in three equal instalments, to be paid at six-month intervals thereafter.

Fixing Depreciation Rates

A meeting of a subcommittee of the valuation committee of the Association of Railway Executives at the Pennsylvania station, December 14, was attended by representatives of the government. The meeting was preliminary to tackling the question of fixing the rates for depreciation to be charged in the reports of the carriers on their different classes of property. Under the amended Interstate Commerce Act the Interstate Commerce Commission must fix such rates for depreciation, and it is logical that the Commission should turn to the executives for data on the situation.

New York Section of the A. S. C. E.

The Port of New York was the subject of the evening at the meeting of the New York Section of the American Society of Civil Engineers held on December 15. The subject was introduced by B. F. Cresson, Jr., consulting engineer, New York-New Jersey Port and Harbor Development Commission, who stated that the largest factor in the retarded development of the port of New York was contained in the lack of uniform administrative control. He also pointed out the difference between the two shores and the classes of traffic which passes through their terminal and piers, stating that the problem was far more than a local one—it was national in its scope, as about 50 per cent of export and import traffic of the country passed through it. Other speakers emphasized the need of full cooperation of New York State and New Jersey, pointing out the future possibilities of the Jersey shore, with its eight principal railroads as against but two on the Manhattan side, and stating that the problem was essentially a railroad one. The subject of piers, channels, loading and unloading machinery was discussed in relation to the speeding up of the turn-around of ocean and coastwise ships. The majority of the speakers advised a separation or classification of traffic between the two shores, believing that the Manhattan piers should handle local and New England traffic, etc., and the Jersey shores the south and west traffic, thus eliminating the complicated interchange across the river and its high costs. J. J. Mantell (Erie) spoke of the present inefficiency in the handling of freight, stating that it now cost about $50 a car to handle the freight from the yards in Jersey to Manhattan.

Meeting of Executive Committee Steam Railroad Section, National Safety Council

The executive committee of the Steam Railroad section of the National Safety Council, together with delegates from a number of railroads, making a total of 19 roads represented, met at the headquarters of the National Safety Council in Chicago, on December 14. The committee made plans for furnishing the magazines of the various railroad brotherhoods regularly with articles and news on the safety movement. The magazines of the Brotherhood of Railroad Trainmen, the Order of Railroad Conductors and the Switchmen's Union of North America are already publishing articles of this character. Arrangements were also made to provide a six months' supply of railroad safety bulletins.

The Committee on Accident Causes and Remedies called

attention to Bulletin 74 of the Interstate Commerce Commission, and advised that the commission is now preparing to issue its statistical information more promptly. The Program committee reported that its plans for the Tenth Annual Congress of the National Safety Council include the presentation of a court scene portraying the results of grade crossing accidents. The Membership committee reported that 117 railroads were new members of the National Safety Council, and outlined plans for enrolling the remaining carriers.

The meeting took up in general discussion a number of questions, including trespassing and dangers around freight stations, and laid plans for educating shippers to a realization of the extent of the economic losses incurred through careless and unsafe railroad practices.

Teredo Damage in San Francisco Bay
Twenty-Five Million Dollars in Two Years

A critical emergency has been caused in San Francisco Bay by the enormous increase in damage from marine borers to wharf structures within the past two years. This recent damage is most serious in the upper bay, from Mare Island Navy Yard up Carquinez Straits and the lower Sacramento river. A survey of the damage and an investigation looking to the best means of combating the marine borers have been undertaken by the Forest Products Laboratory of the U. S. Forest Service, in co-operation with the San Francisco Bay Marine Piling Committee of the American Wood Preservers' Association, under the chairmanship of F. D. Mattos, superintendent of Creosoting Plants for the Southern Pacific. This committee is composed of the engineering representatives of the State Board of Harbor Commissioners, the principal railroads, oil companies and shipping interests having waterfront structures in the bay, and who are financing the investigation, together with representatives of the Army, Navy, U. S. Engineer Corps, Immigration Commission and Lighthouse Board, and the University of California, the latter through Professor C. A. Kofoid, marine biologist, who is studying the biological aspects of the problem. The Forest Products Laboratory is represented by George M. Hunt, chief of the Section of Wood Preservation, and T. G. Townsend, engineer in forest products, who are conducting the survey. The executive officer of the committee is C. L. Hill, chief of the office of forest products, U. S. Forest Service, San Francisco. Its fiscal agent is E. M. Blake, who is also secretary of the committee.

This evil has existed for a long time in San Francisco Bay, due chiefly to limnoria, and to one of the teredo family called xylotrya. From Mare Island up the Sacramento river, however, there has, until within the past three years, been little trouble from marine borers on account of the large volume of fresh water discharged into the bay by the river. A decrease of fresh water flow, caused by several dry years, and the increasing diversion of irrigation water from the river, have apparently coincided with a new invasion of the teredo navalis, which is the species of shipworm that has caused such heavy damage to marine structures all over the world for centuries, but which has not previously been known in San Francisco Bay. This teredo has gone in large numbers to the upper parts of the bay. There, by reason of the past immunity, there were large quantities of untreated wooden piling, and the attacks of the teredo have been so rapid and severe that structures valued at millions of dollars are already practically destroyed. For the past year docks have been failing, and frequently dropping off into the bay, with accompanying menace to other structures. The damage, which has been estimated by the committee at twenty-five million dollars up to the present time, bids fair to greatly exceed that sum.

This study will be the first unit of a nation-wide investigation under the auspices of the United States Forest Service and co-operating associations of wood preservers, lumbermen, railroads and many other industries having interests at stake, which will cover the entire coastal waters of the continental United States.

As complete a report as possible is to be prepared by the committee on the findings to date for presentation before the seventeenth annual meeting of the American Wood-Preservers' Association, which will be held at San Francisco on January 25, 26 and 27, 1921. This report will contain maps and diagrams, and plates made from photographs and photomicrographs taken during the investigation.

Traffic News

The Traffic Club of Chicago held its fourteenth annual dinner at the Hotel LaSalle on December 16.

The Transportation Club of San Francisco, Cal., will hold its "Christmas Jinks" at the Palace Hotel on December 22. There will be a dinner and entertainment.

Thomas J. Burke, heretofore assistant commissioner of the Nashville (Tenn.) Traffic Bureau, has been appointed Commissioner of the Traffic Bureau at Charleston, S. C.

A traffic managers' division of the Manufacturers' Club of Mansfield, Ohio, has been organized. The officers are W. H. Gugler, chairman, and Wellington T. Leonard, secretary.

The movement of grain out of Alberta in November, over the Canadian Pacific, amounted to about 25,000 cars. This grain was mostly wheat, and the record compared with 16,000 cars in the largest preceding crop year, 1915.

Coal, coke and ore, loaded on the Pennsylvania System, during September, averaged 53 tons a car, and all carload freight averaged 43.4 tons. The Pennsylvania's campaign for increased carloading accomplished an increase of 4 per cent, viz.: June, 41.7 tons; July, 42.1; August, 42.2, and September, 43.4.

Continued improvement in transportation during November was again noted by the Federal Reserve Board in its monthly review of business conditions. "Freight congestion is reported practically at an end and both staples and coal are moving steadily to market as shipped," says the Board's review.

Fearing that increased freight rates will operate to the disadvantage of California goods in eastern markets, Governor W. D. Stephens has directed the California state market director to investigate the matter and to call a conference of representative men who can be of assistance in the preparation of a statement of conditions as they exist, together with constructive suggestions.

Representatives of the Michigan Traffic League and the Michigan railroads, in a meeting called by the Michigan Public Utilities Commission at Lansing, December 7, failed to agree as to whether the zoning system should be replaced or a new set of joint freight rates between the two peninsulas of Michigan be established, the matters in controversy.

Conrad E. Spens, vice-president of the Chicago, Burlington & Quincy, was the principal speaker before the Transportation Club of Peoria (Ill.) at the club's annual banquet held on December 9. Mr. Spens described the conditions preceding and during federal control and the improvements in operating efficiency and in the amount of traffic handled after the return of the roads to private management. Frank J. Bentley, traffic manager of the Illinois Steel Company, Chicago, spoke on "The Responsibility of the Shipper Under the Transportation Act of 1920." Nearly 400 railroad officers and shippers attended the banquet.

The Pennsylvania reports for the first ten months of this year 1,464,821 gross tons of coal and coke dumped at Canton piers, Baltimore, Md., or 204,332 tons more than the traffic at Canton for the entire twelve months of 1919. The total exceeds by 12,919 tons the dumpings for the two years 1916 and 1917 combined. The growth of this traffic is shown by the following:

Period	Canton dumpings (gross tons)	Period	Canton dumpings (gross tons)
10 months, 1920	1,464,821	1917	652,709
12 months, 1919	1,260,489	1916	799,193
1918	821,090	1915	884,633

The total for the month of October 272,406 gross tons, was 56,879 tons in excess of that for October, 1919, and was largest monthly record ever made.

Export and Import Rates

A hearing was held before the United States Shipping Board at Washington on December 6 as a part of an investigation by the board into the advisability of putting into effect Section 28 of the merchant marine law which provides that special export and import rates may be allowed by the railroads for freight to be shipped in American vessels. This provision of the law has been suspended until January 1 by the Interstate Commerce Commission, at the request of the board, in accordance with the provision in the law which authorized the suspension if its enforcement would result in inadequate boat service at the ports. Representatives of San Francisco and the North Pacific coast ports testified that there is insufficient American tonnage on the western coast to take the traffic and therefore they opposed the restriction of special rates to shipments for American vessels, on the ground that the foreign lines would remove their vessels from the Pacific ports and take freight from Atlantic ports. A similar position was taken by Edward Chambers, vice-president, Atchison, Topeka & Santa Fe; J. G. Woodworth, vice-president, Northern Pacific, and G. E. Stolp, Oriental traffic manager, Chicago, Milwaukee & St. Paul, who declared that the traffic of the transcontinental lines would be seriously affected unless they were allowed to continue the special rates to the Pacific coast.

A Quarter-Billion of Passengers

P. H. Woodward, general passenger agent of the Long Island, in a paper read recently before the American Society of Civil Engineers, in New York City, estimated that 285 million passengers would be carried to and from New York (Manhattan) in the current calendar year. The principal items are based on figures reported by the Public Service Commission for 1919, and are as follows:

Passengers Carried To and From New York City

Long Island Railroad—Three terminals: Pennsylvania Station, Flatbush Avenue (Brooklyn), and Long Island City. To and from subway and elevated line at Woodside and Hunterspoint avenue	48,786,000
New York Central	25,361,499
New York, New Haven & Hartford	14,886,158
Pennsylvania	13,940,000
Central of New Jersey	16,720,600
Delaware, Lackawanna & Western	20,400,000
Erie Railroad	25,116,849
New York, Westchester & Boston	3,750,806
New York, Ontario & Western	538,692
Lehigh Valley	408,000
Baltimore & Ohio	510,000

The Pennsylvania Railroad, in addition to the 13,940,000 passengers carried in and out of the Pennsylvania station and the ferry terminals at Cortlandt and Desbrosses streets, took or left 4,420,000 passengers at its Jersey City Terminal, and transferred to and from the Hudson & Manhattan at Manhattan Transfer a total of 22,640,000, a grand total for the Pennsylvania of 41,000,000 passengers. The Staten Island Rapid Transit carried on Staten Island a total of 10,205,000

In the case of the Delaware, Lackawanna & Western, it is estimated that 50 per cent of its passengers transferred to and from the Hudson & Manhattan at Hoboken, and in the case of the Erie, 60 per cent transferred to and from the Hudson & Manhattan in Jersey City. The Hudson & Manhattan carried 92,571,928 passengers during that year.

"Therefore, these figures, after taking duplications into account as far as the Hudson & Manhattan is concerned, represent over 250,000,000 passengers a year. This year (1920), if all of the lines enumerated have increased in the same ratio as the Long Island, 14 per cent, or 35,000,000, will be added, making a total of 285,000,000."

Export and Import Rate Limitation Suspended

The Interstate Commerce Commission on December 11 suspended from January 1, 1921, until further order of the commission, the provisions of Section 28 of the merchant marine act. This order was issued on a certificate by the United States Shipping Board that adequate shipping facilities for handling the commerce of the United States to and from foreign ports are not afforded by vessels documented under the laws of the United States and that the operation of the provisions of Section 28 should be suspended. Section 28 restricts preferential export and import railroad rates to shipments carried in vessels documented under the laws of the United States but provides for a suspension by the commission on certificate of the Shipping Board. The Shipping Board had announced on December 10 that it had issued the certificate to the commission following a hearing on the subject held on December 6. The board also announced a resolution that as soon as adequate shipping facilities, as required and defined by Section 28, to or from certain ports, become available, prompt certification of conditions will be made and the enforcement of the provisions of Section 28 will be requested. The board also resolved that every effort should be made to hasten the providing of American shipping facilities so that the provisions of Section 28 will be made operative at the earliest practicable date. Representatives of the Pacific coast ports and of some of the transcontinental lines opposed making Section 28 operative, on the ground that the traffic would be handled through Atlantic ports because of the insufficiency of American tonnage at Pacific coast ports.

New York State Passenger Fares

The Court of Appeals of the State of New York on December 10 affirmed the decision of the lower court requiring the New York Central to comply with the provisions of its charter, granted in the year 1853, limiting local passenger fares between Albany and Buffalo to two cents a mile. The railroad had claimed that under the Federal Transportation Act, 1920, the higher rates adopted by the Federal Government on account of the war emergency, should not be reduced except after affirmative action by the state authorities; but the court holds that the provisions of the original charter were only suspended during the operation of Federal power, and that the termination of Federal control automatically terminated the suspension. The court comments on the fact that the Interstate Commerce Commission has authorized the New York Central to increase its rates to 3.6 cents a mile. Whether this has the effect of overturning the old state rate is not passed upon in the opinion, but the railroad is given permission to present the record taken before the Interstate Commerce Commission to the Supreme Court at a special term, where the constitutional questions may be properly presented, none of them appearing in the present record.

The New York, Ontario & Western, the Erie, and other roads have asked the United States District Court for an injunction to forbid the officers of the state to interfere with the increase in passenger fares on New York State railroads as ordered by the Interstate Commerce Commission; and the court, Judge Ray presiding, has appointed a hearing on the petition at Norwich, N. Y., on January 12.

The railroads of the state are now subject to confusing orders from different courts. The Court of Appeals, the highest state court, has decided, in the case of the New York Central, as above noted, that the state law applies; that federal authority over intrastate rates ceased when the special legislation enacted because of the war had been accomplished. The State Supreme Court, in two proceedings, one at Brooklyn and one at Kingston, has forbidden the application of the rates ordered by the Interstate Commerce Commission; and the Interstate Commerce Commission has ordered a general advance to 3.6 cents a mile, basing its authority on the decision of the United States Supreme Court.

In their application to the Federal Court the railroads declare that the proceedings taken by the Public Service Commission and Attorney General for state control of fares prevented the roads from carrying out the increase ordered by the Interstate Commerce Commission and subjected them to multitudinous and vexatious suits for penalties; and that unless restrained the defendants would institute suits and prosecutions against the roads to prevent them from complying with the Interstate Commerce Commission's order. This, it was claimed, would wrongfully deprive the roads of large revenues. The roads also alleged that they would be met with constant and continuous refusal of passengers to pay the 20 per cent increase while yet the carriers would be under legal obligation to collect the rates or remove the passengers from trains. This would result in great public inconvenience, the obstruction of the plaintiff's business and a multiplicity of suits for overcharges. Non-compliance with the federal order makes a carrier liable to severe penalties.

The injunction granted at Kingston was to be further argued this week.

Commission and Court News

Interstate Commerce Commission

The commission has instituted a proceeding of investigation in the Arizona intrastate rate case.

The commission has suspended until April 9 the proposed cancellation of commodity distance rates on logs, c.l., between points in South Carolina applicable on interstate traffic, published in an Atlantic Coast Line tariff, indicated as effective December 10, 1920.

Oral arguments were heard by the Interstate Commerce Commission on December 13, 14 and 15, in the Utah, Illinois, Florida, Nebraska, Michigan, Indiana and Ohio state rate cases involving the refusal or failure of the state authorities to allow increases in intrastate rates corresponding to those allowed for interstate.

The commission has further suspended from December 9 to January 8 the cancellation of through joint rates in connection with the Missouri & Kansas. The suspended tariffs provide for the cancellation of joint through commodity rates from various points in Missouri, Kansas, Oklahoma, Texas and other central western states to Rosedale, Kan., and Westport, Mo.

The commission has suspended until April 22, the operation of certain tariffs cancelling joint through commodity rates on cement, c.l., from points in Colorado, Indiana, Iowa, Kansas, Minnesota, Missouri, Oklahoma and Wisconsin to Rosedale, Kan., and Westport, Mo., via Lenexa, Kan., in connection with the Missouri & Kansas Railway, leaving combination rates applicable instead.

The commission has further suspended until January 2, 1921, the operation of paragraph 2 of Note 1, in Item 2-B of Supplement No. 2 to J. E. Fairbanks' tariff I. C. C. No. 8, and paragraph designated by number 2, on second page of Supplement No. 1 to East St. Louis Junction Railroad tariff I. C. C. No. 3, wherein it is proposed to impose a storage charge of $10 per car per day on coal or coke not released within the free time.

Hearing on New England Rate Divisions

The committee of 11 executives appointed at a recent conference to try to work out by voluntary agreement some plan for improving the financial condition of the New England railroads by increasing their divisions on through rates to and from points west of the Hudson river having failed to accomplish any results, the question has been put up to the Interstate Commerce Commission for a solution and a hearing was begun at Washington before Chairman Clark on December 15 on the formal complaint filed by the New England railroads some time ago against those west of the Hudson river, asking the commission to fix the divisions which should accrue to the New England lines. Charles F. Choate, Jr., counsel for the New England lines, made an opening statement in which he said that the net operating income for September and October of the New England lines was $3,591,000 less than enough to pay fixed charges and that the estimated income for a year would be at least $24,000,000 short of a 6 per cent return. He said that many of the divisions accruing to the New England lines were established 40 or 50 years ago and that operating costs have mounted faster in New England than in other parts of the country. Mr. Choate was followed by witnesses who began an elaborate statistical presentation to show the reasons for higher operating costs in New England and why the divisions should be increased. The New England case is being conducted on the theory that when the commission included the New England lines in the Eastern district and allowed the same percentage of rate increase for the entire district it gave the lines west of the Hudson river $25,000,000 a year of increased revenue because of the effect on the showing for the Eastern lines as a whole of the subnormal condition of the New England roads.

United States Supreme Court

The Supreme Court of the United States on December 13 denied a writ of certiorari to review the decision of the Court of Appeals for the Fourth Circuit in the case of the Lambert Run Coal Company against the Baltimore & Ohio in which the court sustained the order of the Interstate Commerce Commission authorizing railroads to assign cars for coal.

Safety Appliance Act Applies to Terminal Railroads

The Supreme Court of the United States has reversed the decision of the Circuit Court of Appeals, Eighth Circuit (255 Fed. 655) which affirmed a verdict for the Northern Pacific in the suit against it for violating the Safety Appliance Act by operating over its four-mile terminal railroad along the waterfront of Duluth, in September, 1916, two transfer trains, not having 85 per cent of the power brakes coupled. The company contended that the act did not apply because this terminal road was not part of a main line. The Supreme Court says, in part, by Mr. Justice Brandeis: "There is nothing in the act which limits this provision to operations on main line tracks. It is applicable to 'all trains * * * used on any railroad engaged in interstate commerce.' It is admitted that this railroad is engaged in interstate commerce; and the cases cited show that transfer trains, like those here involved (over 40 cars each) are 'trains' within the meaning of the act. A moving locomotive with cars attached is without the provision of the act only when it is *not* a train; as where the operation is that of switching, classifying and assembling cars within yards for the purpose of making up trains. Congress has not imposed upon courts applying the act any duty to weigh the dangers incident to particular operations; and we have no occasion to consider the special dangers incident to operating trains under the conditions here presented."—United States v. Northern Pacific. Decided December 6, 1920.

Injuries of Express Messengers

An express messenger, Taylor, injured in a derailment on the St. Louis & San Francisco in Mississippi, obtained a judgment in that state against the railroad, which was affirmed by the State Supreme Court (58 So. 485). The contract between the express company and the railroad company bound the former to indemnify the railroad for all damages paid to express messengers while on the trains. The injured employee's agreement with the express company provided that he should assume all risks incident to his employment, from whatever cause arising. The express company sued the messenger on the theory that he violated this agreement and perpetrated a legal fraud on the express company by obtaining the judgment against the railroad. The Circuit Court of Appeals, Fifth Circuit, dismissed the bill (249 Fed. 109) for the reason that under §5 of the Federal Employers' Liability Act the messenger's agreement was void.

The Supreme Court of the United States has reversed that decision, holding that the District Court for the Northern District of Mississippi was right in holding Taylor's action and judgment a legal fraud on the express company and directing him to execute a release of all claims on account of his injuries.

Taylor was not in the railroad company's employ and did not obtain his judgment against the railroad on that theory. The fact that the railroad provided the express car was not material. The court holds that the Employers' Liability Act does not embrace a common carrier by express which neither owns nor operates a railroad, but uses and pays for railroad transportation as the express company does. In the court's opinion, the words, "common carrier by railroad," as used in the act, mean one who operates a railroad as a means of carrying for the public—that is to say, a railroad company acting as a common carrier. As Taylor was not an employee of the railroad company, and the express company was not within the Employers' Liability Act, the act has no bearing on the liability of either company, or on the validity of the messenger's agreement. There being no statute regulating the subject, the messenger's agreement was a valid and binding contract whereby Taylor assumed all risk of injury, assented to the arrangement between the two companies and bound himself to refrain from asserting any liability against either company for such injuries.—Wells, Fargo & Co. v. Taylor. Decided December 6, 1920. Opinion by Mr. Justice Van Devanter.

Foreign Railway News

Concrete Car on Austrian Railways

The Austrian Railways have recently placed in service an experimental concrete coal car. Impact tests of the car under very severe conditions show that it withstood the stresses set up when coupling at high speeds better than the ordinary type of car.

Mexican Project Fast Nearing Completion

The work on the line which is being built by the National Railways of Mexico, from Allende, Coahuila, to Del Rio, Tex., connecting with the Southern Pacific at that point, is being pushed, and only 21 miles yet remain to be built, according to advices from Mexico City.

Railway Extension in Argentina

The Pacific Railway of Argentina has begun the construction of an extension of its line from Stroeder to Carmen de Patagones, a distance of 40 miles. A further extension will be made to connect this line and the Southern Railway with the government lines in the vicinity.

Large Deficit on Italian Roads

The deficit of the Italian government railways for the fiscal year ending June 30 was $163,400,000, according to reports from Rome. The total revenue from all sources was $415,910,000 and the total expenses $579,310,000. It was pointed out that this figure for the deficit is probably too small in view of the deterioration of the lines during the period due to the lack of adequate allowances for maintenance.

Export of Steam Locomotives in October

The exports of steam locomotives in October totaled 138, valued at $3,894,750. Of these 47, valued at $1,631,093, were destined for Cuba; 18, valued at $762,000, for Argentina, and 18, valued at $633,000, for China. The detailed figures by countries, as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Number	Dollars
France	2	31,417
Italy	2	30,947
Spain	4	152,800
Canada	14	105,702
Panama	4	6,456
Mexico	8	128,223
Cuba	47	1,631,093
Argentina	18	763,000
Brazil	2	32,350
Chile	2	4,940
Peru	2	22,330
China	18	633,000
British India	6	189,000
Peru	2	22,330
Philippine Islands	1	8,630
British West Africa	2	53,662
Portuguese Africa	4	83,200
Total	138	3,894,750

French Railways Want Money from America

The French railways are making plans to present claims for vast sums against the American government, according to a Paris despatch to the New York Herald. It is pointed out that the United States army has a receipt in full for its railway bill with the French railways, but the carriers are said to maintain that various expenses in connection with the transport business of the American army, not foreseen when the bills were presented, have now manifested themselves. The deficit of the Etat for the war period is estimated at $200,000,000, that of the Nord at $80,000,000, of the Est at $60,000,000, and the combined deficit of the Paris-Lyons-Mediterranean, the Midi, and the Orleans at $120,000,000. The despatch says that it is proposed to levy one-fifth of the total deficit against Great Britain and four-fifths against the United States, on the grounds that the sudden arrival of the American forces caused the greater congestion of traffic and occasioned the disruption of the railway service generally.

New Bridge for Peking-Hankow Railway

A cablegram from commercial attache Julean Arnold at Peking on November 27 reports that the ministry of communications is calling for bids for a bridge over the Yellow River for the Peking-Hankow Railway, to replace the present structure, which is unsafe for heavy traffic. The new bridge will be about 10,000 feet in length and will call for a permissible loading of Cooper E-50 and is estimated to cost between $15,000,000 and $20,000,000.

Exports of Car Wheels and Axles in October

The exports of car wheels and axles in October fell considerably below the showing for September. The October shipments showed a total value of $543,753. Cuba was the destination of consignments valued at $104,766. Kwantung came next, with shipments valued at $91,639. The detailed figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce follow:

Countries	Dollars
Italy	41,410
Russia in Europe	11,970
Spain	8,686
England	221
Scotland	17,768
Canada	49,827
Costa Rica	76
Honduras	193
Panama	11,699
Salvador	2,065
Mexico	6,451
Newfoundland and Labrador	125
Jamaica	193
Trinidad and Tobago	407
Cuba	104,766
Dominican Republic	1,498
Argentina	9,554
Brazil	61,139
Chile	1,200
Colombia	299
Ecuador	861
Dutch Guiana	440
Peru	2,947
Venezuela	230
China	44,900
Kwantung	91,639
British India	19,285
Dutch East Indies	3,000
Japan	26,019
Australia	2,021
New Zealand	5,838
Philippine Islands	13,774
British South Africa	3,252
Total	543,753

Exports of Cars in October

The exports of passenger cars in October amounted to 22, of a total value of $73,500. Mexico, with 13, valued at $26,500, was the largest purchaser of this equipment. Freight cars numbering 927, valued at $1,462,603 were exported during the month, showing a falling off of almost 50 per cent, when compared with the shipments for September. Of the total freight cars shipped, 495, or more than 50 per cent, were destined for Cuba. Exports of cars for other than steam railways totalled 598, valued at $199,891. The Philippine Islands were the largest purchasers of this equipment, these consignments amounting to 450, valued at $123,525. The value of car parts exported was $711,494, and the Philippines was the destination of this material to the value of $145,868. The detailed figures by countries, as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Steam: Passenger No.	Steam: Passenger Dollars	Steam: Freight and other No.	Steam: Freight and other Dollars	For other railways No.	For other railways Dollars	Parts of cars Dollars
Belgium	..	.....	...	.....	...	.....	2,874
France	..	.....	...	.....	...	.....	583
Germany	..	.....	...	.....	...	.....	1,483
Italy	..	.....	...	.....	1	240	185
England	..	.....	...	.....	...	.....	35,893
Canada	8	27,500	96	94,653	4	473	82,632
Honduras	..	.....	2	2,610	...	.....	.....
Salvador	..	.....	...	.....	...	.....	1,362
Mexico	13	26,500	139	136,648	9	7,517	33,945
Jamaica	..	.....	...	.....	...	.....	4,389
Trinidad and Tobago	..	.....	...	.....	...	.....	2,545
Other Brit. W. Indies	..	.....	...	.....	...	.....	1,059
Cuba	1	19,500	495	872,767	39	38,315	44,451
Virgin Islands of U. S.	..	.....	...	.....	...	.....	7,240
Dominican Republic	..	.....	6	4,314	...	.....	3,253
Argentina	..	.....	...	.....	12	1,020	93,104
Brazil	..	.....	...	.....	10	2,000	45,678
Chile	..	.....	35	38,445	...	.....	.....
Colombia	..	.....	...	.....	...	.....	2,755
Ecuador	..	.....	...	.....	15	2,850	.....
Peru	..	.....	4	1,200	30	11,526	1,362
China	..	.....	...	.....	8	550	106,847
Kwantung	..	.....	44	81,312	...	.....	1,275
British India	..	.....	...	.....	25	10,580	750
Other Brit. E. Indies	..	.....	...	.....	...	.....	508
Dutch East Indies	..	.....	5	11,918	1	2,295	338
Japan	..	.....	...	.....	...	.....	78,940
Philippine Islands	..	.....	...	.....	450	123,525	145,868
British South Africa	..	.....	100	218,736	...	.....	10,730
Portuguese Africa	..	.....	...	.....	...	.....	1,441
Total	22	73,500	927	1,462,603	598	199,891	711,494

New Mechanical Department Head on London & North Western

Captain H. P. M. Beames has been appointed by the London & North Western to be chief mechanical engineer of its Crewe works and the hydraulic department, with headquarters at Crewe, England, effective December 1. He succeeds the late C. J. Bowen Cooke, who had occupied the position of chief mechanical engineer since June, 1909, until his death, which occurred October 19. Captain Beames hitherto was locomotive works manager at Crewe—a position which he had held since April, 1916. He has for many years been associated with the London and North Western mechanical department, having entered the Crewe works as an apprentice in January, 1895. After his elementary training, he held numerous positions of responsibility in the chief mechanical engineer's department, which he has filled with distinctive ability. Captain Beames has also seen considerable military service. On the outbreak of the South African War, he volunteered and served as a private, and was later promoted to sergeant. When the European war broke out, he again volunteered for military service and was commissioned a captain in the Royal Engineers. When the war was over he returned to his position as assistant to the mechanical engineer at Crewe works.

Exports of Track Materials in October

The figures for the exports of all kinds of track materials in October show substantial increases over the September statement. Spikes weighing 3,534,645 lb., and valued at $142,611; 53,266 tons of rails, valued at $3,426,671, and switches, frogs, splice bars, etc., valued at $689,785, are the totals for the month. The largest shipments of spikes, 1,476,000 lb., valued at $59,241, went to Cuba. Cuba, likewise, was the largest purchaser of rails, switches, frogs, splice bars, etc. The rail shipments to Cuba totalled 11,983, valued at $699,112, and that country's consignments of switches, frogs, splice bars, etc., were valued at $142,533. The detailed figures, as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Spikes		Steel rails		Switches, frogs, splice bars.
	Pounds	Dollars	Tons	Dollars	Dollars
Belgium	.....	.....	.....	.....	30,930
Denmark	.....	.....	.....	.....	362
Finland	.....	.....	.....	.....	191
France	.....	.....	.....	.....	6,104
Netherlands	.....	.....	675	45,394	.....
Norway	.....	.....	.....	.....	612
Portugal	.....	.....	.....	.....	3,408
Roumania	.....	.....	340	22,320	.....
Russia in Europe	495,694	14,973	2,173	140,207	8,399
Spain	152,540	6,011	1,302	73,366	18,694
Sweden	.....	.....	1,492	102,040	16,041
Scotland	.....	.....	370	16,598	22,911
Canada	99,572	5,790	541	33,178	41,494
Costa Rica	20,000	1,448	.....	.....	703
Guatemala	5,200	470	.....	.....	.....
Honduras	20,000	1,008	1,526	88,947	17,330
Nicaragua	7,200	483	.....	.....	.....
Panama	2,200	181	54	4,400	1,719
Salvador	1,800	216	.....	.....	.....
Mexico	77,025	4,285	2,468	143,025	18,631
Newfoundland and Labrador	.....	.....	.....	.....	144
Jamaica	21,800	1,380	124	9,719	5,459
Trinidad and Tobago	.....	.....	.....	.....	4,752
Cuba	1,476,061	59,241	11,983	699,112	142,533
French West Indies	10,002	300	.....	.....	300
Haiti	.....	.....	.....	.....	383
Dominican Republic	11,100	675	28	2,385	995
Argentina	37,000	1,468	942	67,154	18,731
Bolivia	.....	.....	.....	.....	3,460
Brazil	429,080	12,688	6,518	470,405	93,576
Chile	100,900	2,990	185	12,250	35,862
Colombia	16,024	1,481	342	20,190	11,501
Ecuador	11,599	767	23	1,500	10,542
British Guiana	.....	.....	.....	.....	715
Dutch Guiana	.....	.....	.....	.....	1,366
Peru	.....	.....	1,458	105,093	46,780
Venezuela	19,200	1,354	68	3,918	1,786
China	3,800	236	3,199	200,411	1,184
Kwantung	.....	.....	96	5,800	.....
British India	.....	.....	267	17,059	4,718
Straits Settlements	1,800	111	26	1,831	133
Dutch East Indies	46,627	1,928	4,476	274,118	8,521
Hongkong	19,200	1,142	251	16,566	692
Japan	378,221	17,678	4,745	348,136	32,587
Australia	.....	.....	.....	.....	89
New Zealand	.....	.....	441	77,234	58
Other British Oceania	.....	.....	.....	.....	140
Philippine Islands	71,000	4,307	1,502	107,385	49,215
British South Africa	.....	.....	564	42,527	4,818
French Africa	.....	.....	5,004	270,243	.....
Italian Africa	.....	.....	.....	.....	21,216
Portuguese Africa	.....	.....	83	4,160	.....
Total	3,534,645	142,611	53,266	3,426,671	689,785

Equipment and Supplies

Equipment Deliveries and Orders

The Railway Business Association, in a circular to members of that organization, discussing recent developments in the railway field, gives some interesting figures concerning car and locomotive orders and deliveries in 1920 as compared with previous years.

The circular gives the following details:

Rolling stock acquired by United States and Canadian railways during 1920 to November 1, is stated by the Bureau of Railway Economics upon inquiry of the Railway Business Association as follows:

DELIVERIES (DOMESTIC) JAN.-OCT., INC., 1920

Locomotives	1,484
Freight cars	19,329

By the same authority the locomotives and freight cars delivered in the record year 1907 and in each of the four years 1916-1919, inclusive, are thus tabulated:

Year	Locomotives	Freight cars
1907	6,564	280,216
1916	2,708	111,516
1917	2,585	115,705
1918	3,668	67,063
Average 16-18	2,987	98,094
1919	2,162	98,981
1920 (estimated)	1,792	23,194

Taking 1920 deliveries to November 1 as five-sixths, the year's output at the same rate would be estimated as locomotives 1,792, freight cars 23,194.

COMPARISONS

In comparing this showing with past performance, it is approximately appropriate to regard 1918, the first full year of government control, as a year in which deliveries were the result of orders placed largely by the railways, and 1919 and 1920 as years in which deliveries were the result of orders placed largely during government control. With this in view, 1916-1918 are grouped and averaged. We have then that the estimate of the 1920 locomotives is 83 per cent of the 1919 deliveries, 60 per cent of the 1916-1918 average, and 27 per cent of the 1907 deliveries; and the 1920 estimate of freight cars 23 per cent of 1919, 23 per cent of the 1916-1918 average and 8 per cent of the 1907 deliveries.

FREIGHT CAR ORDERS

As emphasized above, deliveries in 1920 to September 1 were based on orders placed under government control. Some of the orders may have been given after March 1, when the President relinquished the roads, but the rate increase did not become effective until August 26, and the government guarantee continued until September 1, so that the first significant months in appraising railway orders are September and October. In September the orders for freight cars were 2,201, in October, 3,936. Freight car orders for the record year 1905 and for 1916 to 1920, inclusive, are taken from annual and monthly reports published by the *Railway Age*:

Year	Freight car orders
1905	341,315
1916	170,054
1917	79,367
1918	123,770
Average, 1916-18	124,397
1919	29,893
1920 (January-October)	54,719
1920 (estimated on 10 months)	65,652
1920 (September-October)	6,137
1920 (estimated on September-October)	36,822

Taking January to October, inclusive, as ten-twelfths, the estimate for a year's orders is 65,652, which is 212 per cent of 1919, 52 per cent of the 1916-1918 average and 19 per cent of 1905. Taking September and October alone as two-twelfths, the estimate for the year's orders would be 123 per cent of 1919, 29 per cent of the 1916-1918 average, and 10 per cent of 1905.

Locomotives

THE TENNESSEE COAL, IRON & RAILROAD is inquiring for 1 passenger locomotive, 2 Consolidation locomotives, and 1, 6-wheel switching locomotive.

The Atlantic Coast Line is inquiring for 100 cars. This road was inquiring in September for 100 phosphate cars, but withdrew its inquiry for this equipment, as noted in the *Railway Age* of November 19.

The Pittsburgh & West Virginia has ordered 6 Consolidation type locomotives from the American Locomotive Company. These locomotives will have 25 by 32 in. cylinders, a total weight in working order of 238,000 lb. and will be equipped with superheaters.

The Cuba Cane Sugar Corporation, 123 Front street, New York, has ordered 3 Consolidation type locomotives from the American Locomotive Company. These locomotives will have 19 by 26 in. cylinders and a total weight in working order of 137,000 lb.

The Chemins de fer de la Province de Santa Fe (Argentina) has ordered 10 Pacific type locomotives from the American Locomotive Company. These locomotives will have 16 by 20 in. cylinders, a total weight in working order of 105,000 lb. and will be equipped with superheaters.

The Western Pacific, reported in the *Railway Age* of November 19 as inquiring for 10 Mikado locomotives, has ordered 5 of these locomotives from the American Locomotive Company. The locomotives will have 28 by 30 in. cylinders, a total weight in working order of 323,000 lb. and will be equipped with superheaters.

The Rio Grande Do Sul State Railway (Brazil), reported in the *Railway Age* of November 5, as having opened bids on September 20, for 25 locomotives, has ordered 5 Mikado type locomotives from the American Locomotive Company. These locomotives will have 16 in. by 22 in. cylinders, a total weight in working order of 110,000 lb. and will be equipped with superheaters.

The Inspectoria Federol Das Obras Contra As Seccas (Brazil) has ordered from the American Locomotive Company 6 Consolidation type locomotives with 16 by 20 in. cylinders and a total weight in working order of 80,000 lb.; 8, 10-wheel type locomotives with 15 by 20 in. cylinders and a total weight in working order of 74,000 lb.; also 6, 4-wheel tank locomotives with 9 by 14 in. cylinders and a total weight in working order of 29,000 lb.

Freight Cars

The Barber Asphalt Paving Company, Maurer, N. J., is inquiring for 50, 40-ton flat cars.

The Pittsburgh Machinery Company, Pittsburgh, Pa., has renewed its inquiry for from 45 to 50, 10,000-gallon tank cars.

The Katanga Railways (Congo, Belgian Colony) is inquiring, through car builders, for 50 triple-hopper cars and 60 flat-bottom gondola cars.

The Norfolk & Western was reported in the *Railway Age* of December 10, as having authorized the construction of 1,000, 120-ton hopper cars in the Roanoke shops. Later advices are to the effect that the company does not intend to construct these cars at the present time; the work has been postponed.

The National Railways of Mexico.—Bids were received recently by John S. Stanley, 111 Broadway, New York, for 750 box cars, 250 stock cars, 250 flat cars, 250 gondola cars and 100 tank cars, for export to Mexico. The above equipment is not a part of Florian & Co.'s contract, reported by this firm as having been made with the National Railways, and mentioned in our issue of November 19.

Iron and Steel

The Chicago, Indianapolis & Louisville has ordered 352 tons of steel from the Indiana Bridge Company, Muncie, Ind., for a freight car repair shop at Lafayette, Ind.

The Southern Pacific has placed orders for 68,400 tons of rails for its 1921 requirements with the following companies: Tennessee Coal & Iron Company, 50,000 tons; Colorado Fuel & Iron Company, 14,046 tons; Lorain Steel Company, 2,354 tons, and the Manganese Steel Rail Company's order for 2,000 tons, mentioned last week.

Supply Trade News

The Bastian-Blessing Company, Chicago, Ill., manufacturer of Rego oxy-acetylene and oxy-hydrogen products, has appointed the **Beck-Hill Corporation,** 22 Thames street, New York, as its sole eastern railway representative.

The Union Asbestos & Rubber Company, Chicago, whose factory was destroyed by fire on the morning of December 1, with an estimated loss of $35,000, are continuing their business in temporary quarters.

The Chicago Bridge & Iron Works, Chicago, Ill., has opened a new sales office at Atlanta, Ga., in the Forsythe building. **Joseph L. Zeller,** who has been with this company for a number of years, is in charge of this office and will handle sales in Georgia, Alabama, Tennessee and Florida.

C. A. Eggert, who for a number of years was connected with the sales department of the Consolidated Car Heating Company, Albany, N. Y., has entered the employ of the **O. M. Edwards Company, Inc.,** Syracuse, N. Y., as sales manager of its central district, with office at 1425 Edison building, Chicago, Ill.

Richard Sanderson, manager of the New York office of the **Baldwin Locomotive Works** and the **Standard Steel Works Company,** Philadelphia, Pa., has been transferred to Philadelphia as vice-president in charge of sales of the Standard Steel Works Company, succeeding **Robert Radford,** resigned. Mr. Sanderson was born on July 30, 1888, at Lynchburg, Va., and was educated at Worcester Polytechnic Institute, leaving there in 1910. He started as an apprentice on the Seaboard Air Line, later finishing his apprenticeship at the Baldwin Locomotive Works. In 1912 he entered the New York office as assistant representative of the sales department for both the Baldwin Locomotive Works and the Standard Steel Works Company, remaining in that capacity until April 1, 1919, when he was made manager of the New York office for both companies. On December 1 he was elected vice-president of the Standard Steel Works Company, as above noted.



R. Sanderson

The **Reade Manufacturing Company** has recently moved from Hoboken, N. J., into its new factory at Jersey City, N. J., where additional facilities are available. Two new departments, a traffic department and a mechanical or service department, have been added to the organization, both of which are under the supervision of **R. H. Vogle,** sales manager of the railroad department.

H. W. Jacques, for the past six years manager of the railway supply department of the Simmons Hardware Company, St. Louis, Mo., has left the service of that company and has established an office at 404 Parkway building, Philadelphia, Pa. He will represent in the railroad field the following firms: Baldwin Tool Works, Parkersburg, W. Va.; Fayette R. Plumb, Inc., Philadelphia, Pa.; Columbus Handle & Tool Company, Columbus, Ind.; American Handle Company, Jonesboro, Ark.; Keller & Tamm Manufacturing Company, St. Louis, Mo.; Western Tinware Company, St. Louis, Mo.

Financial and Construction

Railway Financial News

Baltimore & Ohio.—At the annual meeting of the directors in New York on December 14, Daniel Willard was re-elected president and with him his staff of executive officers. The directors also declared the regular semi-annual dividend of 2 per cent on the preferred stock, payable March 1 to stock of record January 15.

The combined income statement for the year ended December 31, 1920, partly estimated, shows a net railway income of $28,283,387, an increase of $534,563; other corporate income, $5,175,968; and an estimated surplus of $2,044,169.

Boston & Maine.—The directors on December 10 failed to take action on the preferred stock dividends which are due for payment January 1. The dividends are cumulative. President James H. Hustis explained this as follows: "The present uncertainty as to revenues and expenses is the direct cause. Inability to obtain large amounts from the government, coupled with the fact that earnings have been unsatisfactory during the two months following the guarantee period, also made this action desirable. Furthermore, the failure to reach an agreement through conferences with the lines to the west, in the attempt to secure a larger division of the through freight rates, has made necessary the pressing of the case, which is set for hearing before the Interstate Commerce Commission on December 15."

Chesapeake & Ohio.—The Interstate Commerce Commission has approved a loan of $3,759,000 to this company to apply to the purchase of freight train equipment consisting of 25 freight and switching locomotives and 1,000, 100-ton steel coal cars at an estimated total cost of about $5,200,000. The carrier, which is one of the principal coal carrying roads in the United States, is itself required to finance about $4,360,000 to meet the loan of the government.

Chesapeake & Ohio.—This company has applied to the Interstate Commerce Commission for authority to guarantee at 6 per cent, 10-year promissory note of the Louisville & Jeffersonville Bridge & Railway Company for $50,000 to the secretary of the Treasury.

Chicago & North Western.—This company has applied to the Interstate Commerce Commission for authority to guarantee a 10-year promissory note of the Indiana Harbor Belt for $116,000 to the Secretary of the Treasury.

Chicago, Milwaukee & St. Paul.—The Interstate Commerce Commission has approved a loan of $25,340,000 to this company for maturing indebtedness.

Chicago, Milwaukee & St. Paul.—This company has applied to the Interstate Commerce Commission for authority to guarantee a 6 per cent, 10-year promissory note of the Indiana Harbor Belt for $116,000 to the Secretary of the Treasury.

Chicago, Rock Island & Pacific.—This company has been authorized by the Interstate Commerce Commission to pledge and repledge, from time to time, all or any part of the $1,000,000 of first and refunding mortgage gold bonds, authorized to be issued by its order of October 4, as collateral security for any note or notes hereafter issued by the applicant maturing not more than two years after the date thereof, and aggregating, together with all other then outstanding notes of a maturity of two years or less, not more than 5 per cent of the par value of the securities of the carrier then outstanding.

Indiana Harbor Belt.—This company has applied to the Interstate Commerce Commission for authority to issue $579,000 of its 5 per cent, 50-year general mortgage bonds of 1907, to be pledged as collateral for promissory notes.

Interstate Railroad.—This company has applied to the Interstate Commerce Commission for authority to issue stock to the amount of $385,000, to be sold at par, for the purchase of equipment and the improvement of its facilities, including a short extension.

Lake Superior & Ishpeming.—This company has applied to the Interstate Commerce Commission for authority to issue $2,000,000 additional stock, to be distributed to its stockholders pro rata as a stock dividend, to capitalize a surplus representing expenditures for improvements made out of earnings.

Minneapolis & St. Louis.—This company has applied to the Interstate Commerce Commission for authority to issue notes to the amount of $230,000 at 6 per cent, payable in 10 semi-annual instalments to the American Locomotive Company in part payment for the purchase of 5 Pacific type passenger locomotives.

New York, New Haven & Hartford.—A mortgage of $95,000,000 has been executed and delivered to the Bankers' Trust Company of New York, trustee. The mortgage is a first lien upon 422 miles of the company's lines. A total of not more than $95,000,000 of new bonds are authorized by the mortgage. Not exceeding $80,000,000 of the new bonds are authorized to refund the company's indebtedness to the United States Government incurred during the period of federal control. Not exceeding $15,000,000 of the new bonds are authorized to be issued for security to the United States for new loans that may be made to the company for equipment and betterments.

Peoria & Pekin Union.—This company has applied to the Interstate Commerce Commission for authority to extend the time of payment of its first mortgage bonds maturing February 1, 1921, amounting to $1,495,000, for 5 years, and to increase the rate of interest from 6 to 7 per cent; also to extend for 5 years its second mortgage bonds to the amount of $1,499,000, and to increase the rate of interest from 4½ to 7 per cent.

Southern.—This company has applied to the Interstate Commerce Commission for authority to nominally issue $5,900,000 of its development and general mortgage 4 per cent bonds, payable April 1, 1956, to be pledged as security in part for a loan of $3,825,000 from the revolving fund authorized by the Interstate Commerce Commission to aid the company in the acquisition of new equipment.

Tennessee & North Carolina.—This company has applied to the Interstate Commerce Commission for authority to issue $2,500,000 of capital stock and for a certificate authorizing the acquisition of the line from Newport, Tenn., to Waterville, N. C., as a consolidation of two companies of the same name, one incorporated in Tennessee and one in North Carolina.

Railway Construction

Atlantic Coast Line.—This company has awarded a contract to the Lackawanna Bridge Company, Buffalo, N. Y., for the construction of a reinforced concrete phosphate elevator at Tampa, Fla., to cost approximately $40,000.

Canadian National.—This company has awarded a contract to the Pacific-Atlantic Construction Company, Ltd., Vancouver, B. C., for the completion of the company's terminal improvements at Vancouver, at a cost of approximately $350,000.

Duluth & Iron Range.—This company has applied to the Interstate Commerce Commission for certificate authorizing it to construct a line of 2.91 miles between Divide and Babbitt, Minn.

Missouri, Kansas & Texas.—This company will shortly receive bids for the construction of a frame freight and passenger station, 60 ft. by 160 ft. in area, at Hominy, Okla., to cost about $21,000.

Oklahoma-Southwestern.—This company contemplates extending its lines from Nuyaka, Okla., to Henryetta, a distance of 12 miles. The project will involve the construction of 10 bridges, including one 110 ft. steel span, and the remainder of wood with lengths from 50 to 200 ft. The company plans to let contracts for the grading and will lay the track with company forces. The estimated cost of the project is $600,000.

Pere Marquette.—This company is receiving bids for the construction of a frame freight and passenger station at Clifford, Mich.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1920

Name of road.		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rentals.	Increase (or decr.) comp. with last year.
Alabama & Vicksburg	Oct.	141	$222,248	$88,641	$332,686	$83,768	$59,636	$8,176	$151,570	$12,617	$318,906	95.86	$13,781	—$871	—$862	$62,751
	10 mos.	141	1,891,205	738,684	2,869,816	581,113	570,099	65,236	1,114,916	111,704	2,474,314	86.22	395,502	255,131	282,531	101,237
Alabama Great Southern	Oct.	313	748,377	223,188	1,035,860	226,538	213,040	17,912	399,815	25,622	893,535	86.26	142,325	78,310	107,643	—129,055
	10 mos.	317	6,728,013	2,066,667	9,482,185	1,123,234	2,045,655	185,414	3,605,582	239,964	7,277,667	76.75	2,204,518	1,810,707	1,957,003	892,681
Ann Arbor	Oct.	293	438,442	56,415	514,347	82,466	94,151	9,520	225,641	16,863	428,667	83.34	85,681	68,206	45,500	—47,852
	10 mos.	298	3,518,044	594,121	4,401,994	686,904	937,922	74,890	2,098,242	149,815	3,948,083	89.69	453,911	280,472	43,158	—444,087
Atchison, Topeka & Santa Fe	Oct.	8,830	14,407,179	4,841,036	20,612,087	3,795,040	4,256,492	218,940	7,298,109	340,733	15,911,414	77.19	4,700,673	3,740,260	3,814,025	—695,094
	10 mos.	8,753	115,462,669	44,383,500	176,553,300	34,590,878	41,985,158	2,026,296	64,113,064	3,317,155	145,780,307	68.26	30,772,993	21,896,355	22,263,007	—8,143,506
Gulf, Colorado & Santa Fe	Oct.	1,907	2,146,589	664,741	2,968,630	689,280	607,854	37,843	1,122,714	61,439	2,515,110	84.72	453,520	366,158	364,969	—60,745
	10 mos.	1,913	14,875,593	5,398,998	21,927,618	6,168,130	4,876,479	284,625	10,256,923	580,556	22,130,217	100.92	—202,599	—1,072,487	—1,651,547	—3,160,716
Panhandle & Santa Fe	Oct.	857	694,740	179,377	914,358	247,383	241,192	5,710	341,508	18,587	854,310	93.43	60,049	34,491	2,113	—129,281
	10 mos.	806	5,499,130	1,648,586	7,624,251	2,014,891	2,549,275	48,755	3,288,695	181,024	8,075,572	105.92	—451,320	—695,005	—1,047,942	—674,854
Atlanta & West Point	Oct.	93	134,056	81,968	243,216	38,791	45,851	7,896	100,823	10,921	208,687	85.80	34,529	23,438	19,274	—47,039
	10 mos.	93	1,263,333	939,953	2,523,844	360,022	444,751	61,962	975,897	97,887	1,982,105	78.54	541,738	456,209	394,309	—56,995
Atlanta, Birmingham & Atlantic	Oct.	639	393,956	98,352	527,620	154,355	142,873	25,488	266,301	19,771	608,942	115.41	—81,322	—98,025	—84,858	—54,126
	10 mos.	639	3,518,482	876,064	4,816,548	1,225,254	1,455,727	207,027	2,651,264	194,112	5,734,224	119.05	—917,675	—1,083,250	—1,109,965	—302,045
Atlantic City	Oct.	177	140,149	178,840	328,564	92,314	60,275	3,923	237,554	1,586	395,753	120.45	—67,188	—82,663	—113,674	—79,127
	10 mos.	177	1,137,922	2,819,636	4,153,365	641,626	476,223	28,453	2,299,843	14,864	3,461,638	83.35	691,727	542,677	291,220	—545,701
Atlantic Coast Line	Oct.	4,886	4,506,374	1,437,600	6,395,512	910,048	1,472,048	87,636	2,706,675	139,092	5,347,532	83.61	1,047,980	770,542	903,312	73,354
	10 mos.	4,890	39,165,005	15,339,506	59,866,285	10,438,628	13,256,657	754,403	28,306,973	1,373,153	54,502,107	91.04	5,364,178	2,577,064	2,299,824	—2,869,819
Baltimore & Ohio	Oct.	5,153	20,614,952	2,986,463	25,015,395	3,045,011	6,000,369	233,588	11,124,014	541,867	21,101,401	84.35	3,913,994	3,367,968	2,881,282	1,349,826
	10 mos.	5,153	147,137,153	25,437,374	187,589,266	27,055,194	56,734,336	2,233,191	92,870,162	4,968,851	185,254,173	98.76	2,335,093	—3,378,080	—5,543,942	—10,253,736
Baltimore & Ohio Chicago Terminal	Oct.	90	.....	.....	281,168	36,512	49,434	1,285	221,433	11,791	324,835	115.53	—43,667	—74,836	26,550	—32,668
	10 mos.	90	.....	.....	1,814,513	413,041	566,134	14,159	1,581,291	116,423	2,942,942	162.19	—928,429	—1,231,787	—478,108	663,027
Baltimore, Chesapeake & Atlantic	Oct.	87	122,812	41,681	167,011	16,783	34,997	1,404	85,225	4,845	143,253	85.78	23,757	22,757	22,040	11,399
	10 mos.	87	865,049	439,528	1,388,747	142,055	440,922	13,371	853,120	41,897	1,493,365	107.53	—104,618	—136,218	—122,108	96,015
Bangor & Aroostook	Oct.	658	538,611	106,802	671,776	91,114	132,549	1,499	229,976	15,668	479,012	71.41	192,764	166,200	206,329	221,238
	10 mos.	658	4,185,586	896,287	5,450,151	1,216,199	1,283,443	37,661	2,084,334	188,347	4,888,120	89.69	562,031	307,447	633,033	601,074
Belt Ry. Co. of Chicago	Oct.	31	.....	.....	556,647	98,760	59,963	1,045	270,069	10,240	440,077	79.02	116,570	91,803	136,802	—2,224
	10 mos.	31	.....	.....	3,739,607	548,510	690,546	8,037	2,338,541	89,019	3,674,653	98.26	64,957	—165,887	1,359,780	28,183
Bessemer & Lake Erie	Oct.	225	2,077,531	[8]45,700	2,156,031	202,463	417,699	16,549	642,459	33,784	1,323,016	61.36	833,014	817,202	977,336	716,609
	10 mos.	225	11,923,405	[9]423,037	12,660,179	1,450,352	3,593,686	142,930	4,258,587	299,918	9,821,222	77.58	2,838,957	2,684,716	4,824,787	2,209,398
Bingham & Garfield	Oct.	36	34,595	1,823	39,233	13,032	1,918	2,331	14,200	5,057	36,642	93.40	2,590	—1,921	13,926	—30,747
	10 mos.	36	1,293,364	17,034	1,333,766	310,494	304,381	18,389	324,348	46,379	1,011,414	75.83	322,352	249,036	367,795	511,565
Birmingham Southern	Oct.	28	44,862	.....	63,099	4,373	6,261	994	35,674	3,586	50,887	80.65	12,211	10,439	5,077	2,243
	10 mos.	28	375,749	.....	520,879	44,217	79,755	9,926	312,786	35,784	482,468	92.63	38,411	20,821	—33,027	—77,745
Boston & Maine	Oct.	2,304	5,796,455	[7]2,237,093	8,713,545	1,590,997	1,964,282	70,783	4,624,755	308,593	8,606,976	98.78	106,569	—113,152	—568,628	—1,258,883
	10 mos.	2,295	43,803,850	[7]20,557,453	71,722,729	12,384,389	15,989,254	556,280	41,894,538	2,523,184	73,740,928	102.81	—2,018,200	—4,432,004	—8,441,771	—12,440,832
Brooklyn Eastern District Terminal	Oct.	9	116,847	.....	130,539	6,173	24,633	385	59,580	4,566	95,338	73.03	35,201	28,957	28,106	68,107
	10 mos	9	878,901	.....	969,660	135,006	294,285	1,645	632,202	43,432	1,106,570	114.12	—36,910	—99,184	—110,531	193,664
Buffalo & Susquehanna R. R. Corp.	Oct.	296	326,445	6,269	335,927	34,171	116,996	2,672	103,539	10,487	267,864	79.74	68,063	52,288	98,035	88,450
	10 mos.	296	2,401,426	69,117	2,515,210	518,102	1,091,263	25,791	923,114	104,437	2,662,706	105.95	—147,496	—226,446	148,067	391,006
Buffalo, Rochester & Pittsburgh	Oct.	589	2,257,090	161,418	2,491,443	304,934	556,603	17,625	966,648	45,909	1,893,981	76.02	597,462	562,431	689,977	530,580
	10 mos.	589	15,219,408	1,538,550	17,437,974	3,066,281	5,520,686	176,716	8,050,800	421,437	17,253,471	98.94	184,503	—146,182	1,380,839	1,967,845
Canadian Pacific (Lines in Maine)	Oct.	233	167,421	40,248	220,571	126,057	58,640	3,665	143,785	3,854	335,863	152.28	—115,293	—127,493	—134,960	—116,196
	10 mos.	233	1,691,946	494,567	2,312,338	689,858	582,148	31,396	1,469,224	35,651	2,808,139	121.44	—495,801	—617,801	—748,570	—322,083
Carolina, Clinchfield & Ohio	Oct.	291	723,983	52,210	789,395	102,350	181,707	22,296	232,315	21,977	560,327	70.98	229,068	189,015	274,308	89,252
	10 mos	291	5,526,794	442,551	6,124,904	811,425	1,456,377	167,405	1,939,796	205,830	4,578,746	74.76	1,546,159	1,207,999	2,263,345	1,109,270
Central New England	Oct.	301	837,831	30,140	900,117	130,771	141,679	6,403	482,961	16,182	777,997	86.43	122,120	103,891	804	—114,109
	10 mos.	301	5,486,367	264,339	6,025,184	1,643,104	1,442,881	37,559	3,666,611	168,789	6,968,836	115.66	—943,652	—1,125,354	—2,197,471	—2,205,395
Central of Georgia	Oct.	1,924	1,468,850	578,551	2,246,462	402,472	524,948	66,564	1,064,941	85,823	2,149,345	95.67	97,117	—9,008	33,241	—85,631
	10 mos.	1,924	13,110,960	5,632,119	21,135,713	4,101,787	4,940,730	511,916	10,121,895	796,315	20,518,586	97.08	617,127	—233,325	—274,954	—1,603,339
Central R. R. of New Jersey	Oct.	686	4,535,160	861,820	5,650,966	663,628	1,945,321	44,982	2,284,236	100,777	5,060,372	89.55	590,594	315,279	365,750	407,361
	10 mos.	686	30,440,901	8,292,517	41,836,692	6,332,827	14,236,626	336,666	21,820,609	1,051,158	44,044,451	105.28	2,207,759	—4,912,552	—4,568,979	—6,468,133
Central Vermont	Oct.	413	545,796	125,867	725,475	140,017	180,645	11,534	437,639	22,049	793,858	109.43	—68,382	—96,833	—96,023	—5,542
	10 mos.	413	4,252,032	1,064,117	5,913,472	1,055,469	1,681,073	101,505	3,940,150	209,444	7,008,817	118.52	1,095,345	—1,280,807	—1,435,871	—628,755
Charleston & Western Carolina	Oct.	342	225,308	57,321	300,329	80,711	66,896	6,035	185,982	8,116	347,740	115.79	—47,412	—59,048	—69,542	—72,821
	10 mos.	342	2,144,017	558,500	2,869,513	710,371	647,136	55,809	1,600,467	57,683	3,091,467	107.74	—221,954	—332,085	—484,059	—635,702
Chesapeake & Ohio	Oct.	2,520	8,532,915	1,076,357	10,075,590	1,233,820	2,308,696	55,560	3,550,371	164,381	7,331,308	72.76	2,744,382	2,554,300	2,572,000	2,126,341
	10 mos.	2,519	58,347,432	9,564,899	73,044,113	10,740,461	20,047,165	565,057	30,341,710	1,499,740	63,537,053	86.98	9,507,060	7,127,430	8,988,997	400,406
Chicago & Alton	Oct.	1,050	2,350,537	[9]625,463	3,112,401	514,689	694,023	54,431	1,370,281	64,843	2,644,689	84.97	467,711	407,735	391,775	301,293
	10 mos.	1,050	16,773,481	[9]5,739,594	24,675,202	3,971,825	6,614,148	385,407	11,360,213	634,873	23,078,364	93.51	1,601,837	946,935	—22,625	—209,182
Chicago & Eastern Illinois	Oct.	1,130	2,551,615	477,002	3,198,030	301,263	952,758	25,749	1,213,406	76,349	2,584,104	80.80	613,926	513,747	659,066	276,119
	10 mos.	1,131	17,843,514	4,456,320	24,893,897	3,385,177	8,130,034	260,455	10,859,296	848,281	23,616,682	92.86	1,277,215	304,163	1,643,133	2,003,106
Chic., Det. & Can. Grand Trunk Jct	Oct.	62	104,446	14,987	148,795	18,106	27,052	1,856	90,478	4,995	142,459	95.74	6,336	1,539	—16,294	—104,930
	10 mos.	62	1,125,864	182,609	1,535,039	182,325	272,859	16,457	807,443	39,597	1,318,794	85.91	216,245	171,308	—40,843	—771,141
Chicago & North Western	Oct.	8,405	13,166,377	3,146,630	17,739,416	2,633,631	3,456,818	160,374	7,223,046	402,354	14,037,313	79.13	3,702,103	2,976,950	2,844,232	399,615
	10 mos.	8,405	91,287,330	31,208,133	136,952,506	23,788,735	31,711,972	1,162,242	65,394,808	3,452,410	126,726,987	92.53	10,225,519	3,294,165	1,318,941	12,554,392

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1920—CONCLUDED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total	Operating [illegible]	Net [illegible]	[illegible]	Net [illegible]	[illegible]
Chicago, St. P., Minn. & Omaha..Oct.	1,749	2,305,796	681,607	3,184,708	378,960	592,079	46,691	1,368,475	92,417	2,491,326	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	1,749	17,157,058	6,881,217	26,282,972	4,311,338	5,128,469	308,372	12,399,480	801,885	23,009,549	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Chicago, Burlington & Quincy.....Oct.	9,370	14,336,790	3,307,253	18,919,313	2,641,350	3,995,996	178,880	7,495,609	454,930	14,953,181	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	9,371	165,717,408	30,295,643	151,668,275	27,152,168	33,357,269	1,391,313	66,667,948	4,132,907	134,342,119	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Cleve., Cinn., Chicago & St. Louis..Oct..	2,409	6,629,352	1,749,843	8,989,924	1,105,388	1,767,094	116,759	3,547,428	168,515	6,775,810	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	2,408	49,868,512	16,398,954	73,440,786	9,910,144	17,152,849	1,011,651	31,025,456	1,471,935	61,151,169	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Colorado & Southern..... ...Oct.	1,099	1,405,821	276,622	1,780,122	189,826	250,214	12,699	580,787	55,177	1,096,266	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	1,099	9,145,629	2,534,021	12,690,243	2,354,924	2,969,269	118,424	4,574,728	481,963	10,600,816	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Ft. Worth & Denver City.....Oct.	454	924,312	354,746	1,330,621	186,495	290,983	9,041	584,887	35,866	1,118,484	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	454	6,529,945	3,442,765	10,542,920	1,737,584	2,386,808	76,587	4,726,505	351,794	9,341,776	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Trinity & Brazos Valley.....Oct.	368	258,147	35,033	303,672	62,127	71,777	2,191	104,203	9,567	250,265	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	368	1,352,794	242,082	1,690,148	648,373	554,453	23,390	865,704	121,194	2,152,935	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Chicago Great Western.....Oct.	1,496	1,756,115	496,186	2,426,958	523,735	485,349	54,263	949,839	68,388	2,100,709	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	1,496	13,074,024	4,737,537	19,799,261	5,031,607	5,366,856	389,383	9,330,966	576,188	20,880,044	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Chicago, Indianapolis & Louisville..Oct.	654	1,213,779	316,226	1,643,681	198,203	362,198	39,851	739,561	39,449	1,397,710	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	654	9,020,408	2,777,559	13,150,147	1,859,416	3,936,522	299,360	6,108,653	329,269	12,694,154	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Chicago Junction Ry.....Oct.	12	.....	.....	387,194	15,687	34,785	181	438,121	10,320	519,064	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	12	.....	.....	2,852,242	545,997	604,656	2,318	3,056,307	98,593	4,307,870	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Chicago, Milwaukee & St. Paul.....Oct.	10,611	13,144,005	2,602,266	17,499,474	2,500,443	3,564,180	151,339	7,633,586	463,501	14,403,431	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	10,627	96,194,125	26,000,483	138,776,614	25,190,884	34,706,599	1,290,150	68,493,653	4,336,554	135,003,812	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Chicago, Peoria & St. Louis.....Oct.	247	244,417	26,786	286,947	52,066	86,898	5,348	149,774	12,387	306,473	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	247	1,845,555	275,787	2,273,328	418,084	765,592	44,831	1,206,107	116,948	2,551,492	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Chicago, Rock Island & Pacific.....Oct.	7,662	9,440,168	2,994,356	13,199,481	2,151,728	2,870,447	153,383	5,553,990	284,863	11,085,492	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	7,637	74,692,781	28,448,425	112,620,287	21,522,492	28,562,914	1,372,118	51,232,724	2,640,632	105,700,842	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Chicago, Rock Island & Gulf.....Oct.	461	527,546	122,496	683,753	76,848	146,577	11,363	304,683	16,106	557,036	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	461	3,958,404	1,094,525	5,482,459	863,863	944,031	95,106	2,380,722	146,249	4,442,566	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Chic., Terre Haute & Southeastern..Oct.	374	675,688	26,789	716,932	85,895	229,018	6,028	274,182	12,436	611,418	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	374	4,469,945	250,144	4,847,536	741,452	1,675,785	48,607	2,044,496	114,266	4,644,568	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Cincinnati, Indianapolis & Western..Oct.	321	326,716	72,551	417,487	69,622	89,658	11,634	188,922	21,866	382,946	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	321	2,794,166	612,796	3,699,178	679,100	1,240,205	92,906	1,789,807	196,963	4,010,527	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Cincin., New Orleans & Tex. Pac..Oct.	338	1,373,609	401,152	1,879,815	267,165	517,301	23,919	629,202	39,776	1,491,538	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	338	12,511,572	3,491,780	17,211,270	1,935,267	4,364,810	263,063	6,240,103	390,778	13,307,290	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Cincinnati Northern .....Oct.	245	421,075	17,446	447,097	51,603	54,455	5,017	136,354	7,189	254,582	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	248	2,711,779	204,164	3,044,450	550,674	638,025	38,567	1,132,494	64,342	2,424,044	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Copper Range .....Oct.	142	93,353	8,616	116,711	21,440	15,847	1,876	40,147	2,470	81,780	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	142	628,133	114,513	814,618	221,515	159,463	18,297	377,803	27,278	804,356	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Colorado & Wyoming.....Oct.	43	30,999	1,118	107,620	19,103	26,695	409	51,974	4,391	102,571	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	43	227,977	9,880	837,889	156,806	198,165	2,900	433,845	41,973	833,692	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Delaware & Hudson.....Oct.	881	3,756,368	334,716	4,219,250	452,340	1,203,953	43,652	1,929,347	170,252	3,827,855	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	881	30,553,335	3,176,530	35,734,659	4,101,788	10,198,867	308,302	17,411,744	1,315,973	33,806,900	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Delaware, Lackawanna & Western..Oct.	956	6,964,758	1,238,270	8,836,825	1,007,444	1,652,631	110,846	4,079,784	176,640	7,097,199	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	956	45,941,259	11,260,110	64,840,464	8,669,655	15,124,534	835,115	32,502,621	1,546,902	59,541,581	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Denver & Rio Grande.....Oct.	2,585	3,158,964	655,762	4,055,960	507,177	785,301	38,168	1,384,383	88,936	2,869,420	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	2,585	23,202,237	6,388,553	32,090,330	5,087,255	7,631,198	387,743	11,668,629	829,762	26,267,627	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Denver & Salt Lake.....Oct.	255	304,262	34,619	349,649	46,184	64,576	1,017	145,289	8,335	265,401	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	255	1,857,673	400,783	2,371,081	697,591	706,528	11,823	1,236,636	79,794	2,732,373	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Detroit & Mackinac.....Oct.	376	202,332	32,956	247,274	42,888	54,026	2,670	109,064	7,293	215,630	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	376	1,219,815	362,382	1,723,349	319,821	458,080	27,712	852,590	77,184	1,734,128	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Detroit, Grand Haven & Milwaukee..Oct.	195	318,959	73,600	440,541	102,103	76,824	6,212	270,482	17,040	473,385	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	195	3,036,071	495,413	4,004,149	731,473	832,064	62,037	2,483,293	137,594	4,250,115	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Detroit & Toledo Shore Line.....Oct.	62	210,496	.....	214,028	45,222	25,073	2,644	72,264	5,128	150,332	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	62	1,576,075	.....	1,589,482	236,653	193,150	19,450	541,573	45,646	1,036,471	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Detroit, Toledo & Ironton.....Oct.	456	553,408	18,658	598,054	269,846	145,447	7,766	271,726	20,701	715,484	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	454	3,810,026	158,433	4,230,907	1,494,534	1,001,301	66,605	2,221,157	211,971	4,993,401	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Duluth & Iron Range.....Oct.	298	1,291,347	25,736	1,414,918	127,131	140,202	1,629	348,539	22,776	641,095	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	298	9,075,881	238,422	10,065,045	1,243,542	1,244,677	10,868	2,543,774	194,390	5,244,098	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Duluth, Missabe & Northern.....Oct.	406	2,524,193	52,407	2,819,901	286,502	179,498	3,327	551,245	33,302	1,056,371	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	406	15,760,466	512,372	17,813,621	2,219,350	1,673,729	30,088	3,778,384	233,130	7,953,644	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Duluth, South Shore & Atlantic....Oct.	613	493,143	115,520	647,873	99,904	101,021	5,717	286,163	12,437	512,470	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos	613	3,254,455	1,106,700	4,850,898	1,007,730	851,537	52,921	2,344,350	117,842	4,490,017	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Duluth, Winnipeg & Pacific.....Oct.	178	233,453	30,626	269,609	67,411	56,862	4,209	121,277	9,414	259,173	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	178	1,702,664	284,123	2,033,012	394,729	413,398	36,573	970,683	87,413	1,902,797	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
East St. Louis Connecting Ry.....Oct.	3	.....	.....	157,832	17,598	5,276	314	87,448	3,980	114,617	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	3	.....	.....	1,202,569	153,360	292,310	3,042	907,901	39,547	1,396,160	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
El Paso & Southwestern Co.....Oct.	1,027	1,090,740	216,336	1,399,750	217,414	229,901	28,721	338,952	47,933	872,582	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	1,027	8,995,803	2,143,569	11,949,887	2,577,050	2,384,066	185,918	3,353,222	432,096	9,024,148	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Elgin, Joliet & Eastern.....Oct.	836	2,571,341	12	2,809,344	280,190	495,371	14,391	901,948	44,173	1,734,597	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10 mos.	833	17,898,397	104	20,279,449	2,211,619	4,629,346	85,682	8,197,263	378,162	15,492,666	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1920—CONTINUED

Name of road.		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rentals.	Increase (or deer.) comp. with last year.
Erie	Oct.	1,989	9,484,647	1,344,563	11,579,587	1,334,725	3,188,627	133,641	5,749,836	337,837	10,801,217	93.28	778,371	429,042	282,059	—172,479
	10 mos	1,989	67,351,921	11,859,493	87,664,562	13,346,030	30,203,786	1,039,881	47,756,040	2,708,328	95,744,950	109.22	—8,080,388	—10,684,276	—9,776,032	—10,051,318
Chicago & Erie	Oct.	269	1,336,315	98,785	1,499,825	200,842	194,631	21,327	635,349	42,438	1,091,801	72.80	408,024	372,675	—15,822	—174,754
	10 mos.	269	8,805,283	796,719	10,490,954	1,309,918	1,808,537	159,145	5,455,640	351,229	9,108,364	86.82	1,382,590	984,393	—2,014,397	—2,455,116
Florida East Coast	Oct.	764	732,072	267,264	1,078,117	229,492	215,115	7,540	438,026	26,416	926,531	85.94	151,586	100,988	61,765	—95,324
	10 mos.	764	6,252,172	3,202,179	10,959,369	1,650,135	1,959,277	87,530	4,297,026	264,729	8,380,207	76.47	2,579,162	2,109,968	1,748,563	725,857
Fonda, Johnstown & Gloversville	Oct.	89	44,346	74,035	123,050	18,464	11,740	603	50,217	6,618	87,643	71.23	35,408	30,333	28,004	5,289
	10 mos.	89	406,564	734,444	1,192,659	138,741	115,516	5,432	442,725	57,196	759,611	63.69	433,049	382,649	345,061	26,313
Fort Smith & Western	Oct.	253	196,118	839,340	252,573	36,873	49,737	5,030	93,846	8,509	195,455	77.39	57,118	51,892	53,256	— 8,158
	10 mos.	253	1,145,365	340,405	1,600,973	348,355	376,431	44,992	652,474	77,671	1,512,469	94.47	88,504	37,674	68,749	—128,476
[1]Galveston Wharf Co	Oct.	13	.....	.....	256,604	50,570	10,365	664	57,476	2,802	152,227	59.32	104,377	90,377	90,320	102,823
	10 mos.	13	.....	.....	1,484,109	465,416	49,637	4,629	421,430	25,269	1,204,526	81.16	279,583	113,000	122,522	215,468
Georgia	Oct.	328	454,040	166,570	662,870	94,834	103,265	18,713	311,533	20,988	549,448	82.89	113,422	107,471	104,935	— 139,958
	10 mos.	328	3,629,634	1,490,377	5,535,073	885,813	1,176,191	149,695	3,019,564	200,202	5,433,515	98.17	101,558	42,036	—42,963	—1,174,984
Georgia & Florida	Oct.	405	119,048	32,181	162,906	41,406	28,127	7,667	92,064	9,325	178,589	109.63	—15,683	—22,128	—28,969	20,640
	10 mos.	405	865,128	272,874	1,251,064	611,105	267,924	58,704	872,901	90,502	1,901,135	151.96	—650,073	—714,200	—759,073	—431,925
Georgia Southern & Florida	Oct.	402	306,854	139,082	486,890	93,235	134,817	10,175	287,683	13,505	542,022	111.32	—55,132	—77,229	—94,639	—70,033
	10 mos.	402	2,694,844	1,259,285	4,404,868	730,378	1,063,078	78,486	2,320,253	125,381	4,343,727	98.61	61,141	—135,367	—119,242	—167,117
Grand Trunk Western	Oct.	350	1,358,679	260,433	1,727,068	263,097	328,946	22,091	681,033	57,458	1,368,938	79.26	358,130	307,018	108,444	—163,016
	10 mos.	350	10,955,673	2,340,468	14,358,204	2,060,379	3,509,718	210,417	6,509,822	467,083	12,850,499	89.50	1,507,704	1,018,788	—1,141,581	—3,024,671
Grand Trunk Ry. of Canada	Oct.	166	256,697	53,756	333,340	111,243	77,554	2,910	175,920	14,663	382,331	114.70	— 48,991	—66,714	—122,155	51,446
	10 mos.	166	1,869,031	434,224	2,485,580	782,264	675,508	29,100	1,649,485	131,501	3,276,368	131.82	—790,788	—954,916	—1,422,267	—759,761
Great Northern	Oct.	8,171	10,390,977	1,841,475	13,261,977	1,758,713	2,685,034	116,854	5,164,555	258,943	10,093,799	76.11	3,168,179	2,204,063	2,370,448	—788,473
	10 mos.	8,174	72,200,898	17,107,730	102,049,090	22,533,118	21,400,158	965,346	43,701,103	2,308,160	92,281,121	90.43	9,767,970	1,523,477	3,702,525	—9,540,581
Green Bay & Western	Oct.	252	107,481	15,899	132,208	23,517	25,023	1,453	50,279	2,839	102,920	77.85	29,288	22,260	21,689	—2,200
	10 mos.	252	788,622	180,548	1,050,083	218,023	252,771	13,032	454,646	28,949	967,243	92.11	82,840	13,155	22,387	—13,949
Gulf & Ship Island	Oct.	307	248,962	54,490	326,073	56,662	47,193	7,187	120,359	14,592	246,421	75.58	79,652	56,520	61,073	73,336
	10 mos.	307	1,787,870	519,263	2,525,125	729,690	612,541	62,565	1,075,030	134,553	2,618,920	103.71	—93,795	—293,909	—210,810	—156,907
Gulf Coast Lines	Oct.	920	1,004,140	290,456	1,354,011	216,514	210,239	27,921	371,769	44,222	869,561	64.22	484,450	455,672	.....	.....
	10 mos.	920	7,429,352	2,715,550	10,770,910	2,576,478	1,897,888	226,202	3,698,897	416,458	8,806,086	81.76	1,964,824	1,686,673	.....	.....
Gulf, Colorado & Santa Fe	Oct.	1,907	2,146,589	664,741	2,968,630	689,280	607,854	37,843	1,122,714	61,439	2,515,110	84.72	453,520	366,158	364,969	—60,745
	10 mos.	1,913	14,875,593	5,398,998	21,927,618	6,168,130	4,876,479	284,625	10,256,923	580,556	22,130,217	100.92	—202,599	—1,072,487	—1,651,547	—3,160,716
Gulf, Mobile & Northern	Oct.	476	383,743	61,653	463,684	94,838	103,689	12,400	219,302	19,536	449,765	97.00	13,919	—714	—28,546	—40,583
	10 mos.	470	2,471,392	589,321	3,279,460	1,230,660	876,466	106,056	1,577,289	162,441	3,952,913	120.54	—673,452	—810,758	— 852,971	—794,971
Hocking Valley	Oct.	350	1,847,298	124,856	2,131,704	218,375	750,334	8,099	678,492	45,295	1,700,340	79.77	431,364	292,409	386,219	163,986
	10 mos.	350	11,658,870	1,110,770	13,702,048	1,716,871	4,991,080	96,496	5,292,347	370,898	12,466,913	90.99	1,235,135	477,305	1,453,946	—202,201
Illinois Central	Oct.	4,799	11,512,454	2,302,352	14,671,030	2,273,700	3,486,116	123,427	5,968,805	322,714	12,257,274	83.55	2,413,755	1,713,753	1,713,526	729,297
	10 mos.	4,799	86,245,591	22,238,538	118,706,596	22,517,809	31,313,021	1,066,753	52,584,461	2,756,492	111,136,612	93.62	7,569,983	1,230,213	4,437,161	—286,236
Yazoo & Mississippi Valley	Oct.	1,381	1,417,957	505,373	2,042,010	424,039	267,878	30,974	997,602	74,293	1,800,124	88.15	241,886	150,060	340,578	—113,150
	10 mos.	1,381	17,527,896	4,916,280	23,834,664	5,569,821	5,583,487	265,493	9,879,766	638,781	21,984,600	92.24	1,850,064	963,900	726,056	—4,749,809
[1]Illinois Terminal	Oct.	24	109,238	.....	115,080	10,430	8,991	829	26,884	5,867	53,001	46.06	62,079	60,962	58,691	—2,520
	10 mos.	24	843,951	.....	887,433	56,887	98,881	-7,884	221,818	52,156	437,636	49.31	449,807	438,465	398,353	—32,481
[1]Indiana Harbor Belt	Oct.	120	.....	.....	1,126,767	121,423	286,397	2,830	557,332	26,655	993,689	88.19	133,378	122,378	344,341	505,416
	10 mos.	120	.....	.....	7,480,658	1,135,418	2,559,605	27,773	5,371,973	223,047	9,317,814	124.56	—1,837,155	—1,944,314	—3,400,272	—2,693,160
International & Great Northern	Oct.	1,159	1,892,025	419,022	2,442,224	371,926	378,080	23,621	945,897	51,334	1,784,811	73.08	657,413	626,640	511,856	734,584
	10 mos.	1,159	11,320,650	3,081,744	15,727,190	3,175,088	3,881,147	208,945	8,083,230	504,402	15,922,940	101.25	—165,749	—475,676	—1,146,794	118,859
International Railway of Maine	Oct.	233	167,421	40,248	220,571	126,057	58,640	3,665	143,785	3,854	335,863	152.27	115,293	127,493	134,960	—116,196
	10 mos.	233	1,691,946	494,567	2,312,338	689,858	582,148	31,396	1,469,224	35,651	2,808,139	121.50	—495,801	—617,801	—748,570	—322,083
Kanawha & Michigan	Oct.	176	503,240	59,454	577,428	96,310	181,746	4,881	188,766	15,854	487,558	84.44	89,870	56,037	173,846	93,365
	10 mos	176	3,597,884	550,044	4,325,116	869,580	1,627,087	34,933	1,696,422	140,846	4,364,868	101.01	—38,752	—353,629	—433,916	221,902
Kansas City, Mexico & Orient	Oct.	272	150,393	17,879	178,849	49,644	55,208	4,349	77,529	27,766	214,496	119.93	—35,647	—43,347	—41,066	18,805
	10 mos.	272	1,093,594	190,562	1,378,071	491,388	499,646	38,925	820,972	141,109	1,992,040	144.55	—613,968	—691,032	—694,535	—204,247
Kan. City, Mexico & Orient of Tex.	Oct.	465	186,319	27,920	221,945	22,990	27,649	4,672	83,524	6,562	145,397	65.51	76,548	70,958	66,404	115,402
	10 mos.	465	1,214,653	238,308	1,558,629	701,961	452,628	39,027	917,112	85,249	2,195,977	140.89	—637,348	—701,020	—699,183	—96,274
Kansas City Southern	Oct.	779	1,741,510	250,899	2,126,779	223,759	366,448	34,661	837,929	71,561	1,532,104	72.04	594,675	521,552	495,337	113,899
	10 mos.	779	12,431,107	2,498,606	16,190,923	2,268,234	3,352,017	339,910	6,724,265	647,243	13,322,150	82.28	2,868,773	2,176,409	1,775,641	427,507
[1]Kansas City Terminal	Oct.	27	.....	.....	165,345	28,828	29,940	.....	75,296	2,549	138,655	83.86	26,690	—3,310	763,881	77,808
	10 mos.	27	.....	.....	1,327,192	244,968	329,645	.....	755,239	28,293	1,381,603	104.10	—54,411	—337,489	1,778,654	—233,989
Kansas, Oklahoma & Gulf	Oct.	329	270,954	31,499	313,895	73,683	69,761	3,859	128,065	10,794	286,338	91.22	27,557	19,555	11,971	64,952
	10 mos.	329	1,808,550	252,780	2,168,012	525,713	576,381	25,875	1,098,236	96,102	2,319,230	106.98	151,224	252,981	332,990	411,351
Lake Erie & Western	Oct.	738	1,011,740	64,541	1,134,864	143,191	343,807	17,455	467,908	30,502	1,000,578	88.17	134,286	90,548	60,055	—141,911
	10 mos.	738	8,383,623	678,156	9,612,857	1,301,397	3,269,343	157,623	4,275,253	274,361	9,270,947	96.44	341,910	—67,473	328,711	—302,655
Lake Superior & Ishpeming	Oct.	34	181,491	69	204,543	24,156	19,481	196	53,661	3,037	100,530	49.15	104,013	99,079	102,403	65,228
	10 mos.	34	1,347,082	2,239	1,520,067	209,460	184,966	2,284	359,875	29,245	785,829	51.70	734,238	685,422	700,514	390,530
Lake Terminal	Oct.	12	.....	160	150,373	20,506	23,559	.....	97,145	105	141,315	93.98	9,058	2,121	6,559	14,630
	10 mos.	12	.....	2,012	1,141,835	177,585	255,625	.....	823,701	846	1,257,757	110.15	—115,922	—176,498	—252,818	—119,195
Lehigh & Hudson River	Oct.	96	351,878	3,936	364,534	41,966	55,511	2,020	176,523	7,968	283,928	77.89	80,605	72,005	46,968	—31,070
	10 mos.	96	2,326,499	40,752	2,460,422	317,190	488,579	18,685	1,344,846	79,182	2,248,482	91.39	211,940	125,560	122,566	—429,807

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1920—CONTINUED

Name of road.		Average mileage operated during period.	Operating revenues			Operating expenses								
			Freight.	Passenger.	Total (inc. misc.)	Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation	General.	Total.	Operating ratio	Net from railway (operating income)	Net railway (operating income)	Income
Lehigh & New England	Oct.	229	546,322	1,920	566,423	99,515	81,470	3,486	177,100	15,858	377,429	66.63	188,994	174,741	147,200
	10 mos.	229	3,627,165	19,930	3,796,112	677,849	816,355	55,594	1,459,872	137,789	3,145,166	82.85	650,946	651,946	697,000
Lehigh Valley	Oct.	1,435	7,422,992	671,372	8,486,513	985,542	2,026,367	83,656	3,675,684	174,788	6,976,081	82.20	1,510,433	1,347,433	1,121,000
	10 mos.	1,435	49,114,550	6,456,871	60,203,480	10,357,350	18,341,825	708,846	33,734,089	1,379,834	64,799,670	107.65	—4,596,190	—4,844,190	—4,273,000
Long Island	Oct.	398	845,305	1,263,622	2,325,877	253,015	532,641	26,053	1,337,614	65,766	2,238,752	96.25	87,125	87,125	87,000
	10 mos.	398	5,847,405	13,745,924	21,805,205	3,227,354	4,507,207	182,994	12,127,976	597,376	20,968,709	96.13	836,496	836,496	836,000
Los Angeles & Salt Lake	Oct.	1,168	1,341,045	429,949	1,930,409	222,856	420,777	42,373	686,850	41,381	1,478,465	76.59	451,943	451,943	451,000
	10 mos.	1,168	10,510,183	4,809,117	16,871,749	2,256,294	3,279,363	301,105	6,080,031	384,250	12,864,520	76.25	3,997,229	3,997,229	3,997,000
Louisiana & Arkansas	Oct.	302	344,581	45,917	401,292	108,138	59,384	4,585	147,635	8,867	328,607	81.89	72,685	72,685	72,000
	10 mos.	302	2,823,901	499,735	3,464,236	797,786	508,472	47,839	1,213,396	86,257	2,653,358	76.59	810,878	810,878	810,000
Louisiana Ry. & Nav	Oct.	344	394,948	41,614	459,170	104,876	71,020	9,257	210,306	12,855	408,315	88.92	50,855	50,855	50,000
	10 mos.	344	2,861,957	432,056	3,506,564	852,497	571,991	67,366	1,587,239	114,601	3,193,694	91.06	312,870	370,548	314,000
Louisville & Nashville	Oct.	5,040	8,629,375	2,431,783	11,592,765	1,922,215	2,963,762	181,733	5,267,969	282,910	10,671,120	92.05	921,645	918,645	921,000	—1,171,484
	10 mos.	5,040	74,075,207	22,010,051	103,636,598	19,092,838	28,556,297	1,697,809	48,083,740	2,495,576	100,430,632	96.91	3,205,966	3,205,966	3,213,000	—7,216,847
Louisville, Henderson & St. Louis	Oct.	199	212,718	71,383	300,356	61,795	39,455	5,853	120,709	8,999	236,811	78.84	63,545	63,545	48,974	—41,000
	10 mos.	199	1,763,043	641,236	2,598,202	644,012	369,352	55,389	962,113	89,326	2,126,191	81.80	472,011	443,011	357,153	—1
Maine Central	Oct.	1,216	1,632,248	486,283	2,239,932	338,073	392,745	14,602	1,128,959	55,125	1,932,456	86.27	307,476	311,320	196,000	
	10 mos.	1,216	11,329,117	4,510,999	17,220,615	3,297,347	4,068,283	139,264	10,270,431	488,214	18,302,238	106.28	—1,081,623	—1,081,623	—2,184,250	—1,000,142
Maryland, Delaware & Virginia	Oct.	82	93,199	33,644	128,533	11,060	11,554	914	76,777	3,167	103,473	80.50	25,060	25,060	23,614	19,000
	10 mos.	82	671,210	396,323	1,115,849	108,663	374,782	9,434	770,763	27,524	1,391,167	115.71	—175,318	—191,372	—208,447	—14,312
Michigan Central	Oct.	1,862	6,563,074	1,845,666	9,106,911	1,166,804	2,054,171	68,323	3,293,860	149,129	6,802,373	74.70	2,304,538	2,304,538	1,537,537	
	10 mos.	1,862	46,166,756	18,816,922	72,691,227	10,286,522	19,096,710	800,791	31,312,739	1,401,112	63,986,455	88.02	8,710,772	8,704,772	7,000,647	—1,777,000
Midland Valley	Oct.	388	373,205	122,639	511,966	90,643	56,706	3,893	172,644	15,731	339,618	66.34	172,348	165,154	156,000	160,000
	10 mos.	388	2,842,035	1,038,517	4,061,555	1,006,366	710,116	35,742	1,525,299	171,129	3,448,652	84.91	612,903	540,615	516,000	124,000
Minneapolis & St. Louis	Oct	1,647	1,564,816	205,840	1,790,976	280,620	373,578	23,238	804,168	45,186	1,525,890	85.20	265,086	167,586	311,112	47,971
	10 mos.	1,647	10,724,923	2,252,034	13,873,352	2,819,969	3,566,415	199,765	7,354,291	405,617	14,346,452	103.41	—473,101	—1,079,601	—988,721	—1,174,167
Mineral Range	Oct.	101	66,561	273	70,364	13,938	25,999	358	37,451	1,373	79,119	112.44	—8,755	—13,055	—566	—44
	10 mos.	101	541,418	2,988	566,940	160,980	206,852	3,062	330,811	12,124	713,836	125.91	—146,896	—186,012	—113,157	—48,316
Minneapolis, St. Paul & S. S. Marie	Oct.	4,243	4,251,256	793,606	5,382,989	894,357	1,039,842	50,467	2,269,009	109,540	4,392,048	81.59	990,941	717,081	723,000	141
	10 mos.	4,243	28,150,581	7,564,261	39,357,892	7,626,650	8,034,100	419,583	17,910,799	1,024,558	35,324,196	89.75	4,033,695	1,189,327	1,193,191	—95,000
Minnesota & International	Oct.	194	63,409	31,955	109,466	22,646	20,892	643	59,231	4,540	107,951	98.62	1,515	—5,020	—10,811	3,774
	10 mos.	194	673,667	306,416	1,060,376	281,058	205,179	5,888	538,863	39,991	1,070,976	101.00	—10,600	—67,185	—179,334	—113,000
Mississippi Central	Oct.	164	88,967	26,257	126,984	19,925	34,350	2,593	47,677	8,439	112,985	88.98	13,999	8,886	16,117	—2,254
	10 mos.	164	608,324	228,838	904,147	364,578	333,692	24,409	440,341	86,337	1,249,359	138.18	—345,211	—345,544	—273,451	—199,000
Missouri & North Arkansas	Oct.	364	148,419	54,744	220,006	44,193	34,397	3,799	88,144	8,722	179,254	81.48	40,753	39,188	26,437	34,331
	10 mos.	364	1,062,789	492,971	1,708,545	601,689	369,228	34,718	772,983	86,544	1,864,441	109.13	—155,896	—203,528	—249,584	—71,134
Missouri, Kansas & Texas	Oct.	1,715	2,866,710	810,521	3,970,639	572,803	939,238	39,730	1,401,960	107,641	3,077,469	77.51	893,170	892,778	937,470	883,000
	10 mos.	1,715	22,705,407	7,371,924	32,951,582	6,205,477	9,024,911	389,492	11,903,002	1,126,771	28,815,979	87.45	4,135,603	2,744,217	4,502,483	377,000
Missouri, Kansas & Texas of Tex	Oct.	1,739	2,113,749	943,006	3,267,816	571,077	479,997	43,148	1,318,711	92,465	2,525,066	77.27	742,756	742,756	403,480	302,000
	10 mos.	1,751	13,909,775	7,779,729	23,888,481	6,399,551	4,753,850	339,284	12,492,604	909,766	25,119,605	105.15	—1,231,124	—1,787,446	—4,662,513	—3,844,756
Wichita Falls & Northwestern	Oct.	328	164,639	52,596	232,125	54,943	38,345	1,054	107,605	6,647	208,594	89.86	23,531	11,098	—22,843	5,671
	10 mos.	328	1,551,100	508,590	2,209,956	628,501	326,571	10,916	1,139,959	109,866	2,215,697	100.26	—5,741	—118,662	—353,657	—171,000
Missouri Pacific	Oct.	7,300	9,035,070	1,928,027	11,715,986	2,103,162	2,417,807	165,749	4,758,100	280,080	9,755,431	83.27	1,960,555	1,954,769	1,302,681	7,515
	10 mos.	7,299	68,794,469	18,141,679	95,660,483	21,468,766	24,361,817	1,479,876	42,067,742	2,664,686	92,523,194	96.72	3,137,290	—538,393	—4,298,157	—9,371,160
Mobile & Ohio	Oct.	1,165	1,514,092	214,905	1,826,051	257,510	529,272	45,206	845,599	53,567	1,732,255	94.86	93,766	41,506	121,206	78,585
	10 mos.	1,120	12,275,052	2,005,540	15,392,092	3,162,729	4,909,373	340,682	7,502,346	504,386	16,429,623	106.74	—1,037,531	—1,622,709	—1,025,745	413,000
Monongahela Connecting	Oct.	7	.....	.....	272,967	28,561	40,343	561	143,595	7,321	220,381	80.74	52,586	46,058	45,520	37,000
	10 mos.	7	.....	.....	2,603,617	293,339	379,775	5,641	1,287,634	65,793	2,032,182	78.05	571,435	424,871	364,330	317,000
Monongahela	Oct.	106	500,040	36,146	545,894	112,853	57,399	1,481	156,358	8,551	336,642	61.67	209,252	202,959	127,149	6,000
	10 mos.	107	3,096,754	280,527	3,460,398	1,172,022	588,363	10,227	1,252,151	80,322	3,103,086	89.67	357,312	296,968	—325,587	—1,249,000
Montour	Oct.	56	218,236	1,254	224,392	61,348	79,495	981	49,297	7,418	198,574	88.50	25,818	23,207	61,816	10,245
	10 mos.	56	1,258,786	12,556	1,308,530	328,847	547,644	11,398	402,033	73,268	1,380,337	105.49	—71,806	—96,452	275,188	79,957
Nashville, Chattanooga & St. Louis	Oct.	1,247	1,657,959	519,868	2,307,003	478,265	631,873	63,974	1,059,999	60,481	2,297,779	99.60	9,223	—46,101	33,478	—156,000
	10 mos.	1,247	14,075,761	4,614,330	20,415,596	4,305,258	5,526,492	573,382	9,312,734	562,696	20,346,541	99.66	69,056	—402,471	62,502	—717,000
Nevada Northern	Oct.	165	61,574	10,902	78,867	24,618	10,297	783	23,818	3,894	63,410	80.40	15,457	5,292	7,858	27,168
	10 mos.	165	1,264,192	103,939	1,430,476	290,174	236,469	8,561	376,235	47,869	960,216	67.13	470,260	368,898	346,945	151,536
New Jersey & New York	Oct.	47	26,649	101,744	133,253	13,058	20,080	3,091	83,347	3,190	122,766	92.13	10,487	6,143	—10,347	—3,146
	10 mos.	47	149,735	881,109	1,102,336	124,213	185,197	16,487	684,550	26,374	1,036,816	94.06	65,520	41,945	—181,208	—85,803
New Orleans & Northeastern	Oct.	207	437,533	115,539	618,663	143,553	160,109	10,088	250,912	19,089	590,960	95.62	27,103	—14,516	18,208	—6,025
	10 mos.	207	4,611,010	1,094,525	6,390,299	1,055,964	1,287,035	107,473	2,650,020	179,161	5,331,001	83.42	1,059,299	647,104	678,745	410,086
New Orleans Great Northern	Oct.	284	200,278	55,980	266,218	42,348	55,514	4,234	123,376	10,988	236,898	88.99	29,320	16,846	21,581	22,254
	10 mos.	284	1,611,840	521,306	2,233,282	529,762	495,474	45,640	965,658	104,361	2,145,530	96.07	87,752	—42,895	67,866	16,375
New York Central	Oct.	6,069	26,082,351	8,677,404	38,219,522	4,504,880	8,415,168	374,683	16,509,807	864,066	31,138,064	81.47	7,081,458	6,067,981	5,562,122	61,507
	10 mos.	6,069	179,701,830	80,759,496	302,245,348	44,685,927	81,984,433	2,962,049	146,402,677	7,853,190	288,643,375	95.50	13,601,974	8,763,966	814,922	—4,574,943
New York, Chicago & St. Louis	Oct.	575	2,277,375	122,622	2,492,530	280,243	537,311	58,651	1,964,380	76,672	2,923,256	81.17	469,273	334,173	265,365	62,348
	10 mos.	574	21,073,461	1,084,231	22,979,250	2,740,170	4,150,611	459,630	9,814,523	704,709	17,927,512	78.02	5,051,738	4,175,103	4,024,903	895,527
New York, New Haven & Hartford	Oct.	2,002	6,534,008	4,793,910	12,407,605	1,694,575	2,392,654	59,215	6,609,433	360,368	11,813,357	91.19	1,094,248	659,453	140,747	—1,115,008
	10 mos.	1,982	46,451,384	43,067,174	103,107,732	17,255,326	24,716,018	569,938	55,073,567	3,562,959	103,106,029	99.99	—2,702	—3,811,440	—9,095,852	—14,714,785
New York, Ontario & Western	Oct.	569	859,990	131,433	1,145,641	113,924	349,184	13,037	536,469	28,989	1,041,602	90.92	104,039	68,539	82,353	—123,724
	10 mos.	569	6,164,809	2,802,176	10,589,315	1,949,395	2 762,131	115,566	5,197,393	277,400	10,301,886	97.29	287,429	—36,557	—119,216	1,156,491
New York, Susquehanna & Western	Oct.	135	364,596	68,185	490,830	75,442	64,029	6,230	276,923	12,353	434,865	88.60	55,965	16,167	9,743	26,345
	10 mos.	135	2,642,104	650,303	3,741,636	631,792	779,486	33,745	2,720,171	105,786	4,271,463	114.16	—529,827	—762,273	—736,633	—643,126
Newburgh & South Shore	Oct.	7	.....	.....	211,149	18,013	35,389	.....	113,070	4,302	170,774	80.88	40,375	29,863	11,668	66,480
	10 mos.	7	.....	.....	1,469,561	167,892	333,216	.....	939,347	44,424	1,484,879	101.04	—15,319	—103,178	—264,611	122,702

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1920—CONTINUED

Name of road.		Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rentals.	Increase (or decr.) comp. with last year.
			Freight.	Passenger.	Total (inc. misc.)	Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.					
Norfolk & Western	Oct.	2,198	8,044,206	[1]986,113	9,336,496	1,183,140	2,728,984	67,107	3,743,761	171,537	7,901,262	84.38	1,435,234	1,085,119	1,474,131	317,468
	10 mos	2,200	57,000,447	[8]8,345,875	69,019,932	10,914,849	24,360,583	612,556	31,052,344	1,540,664	68,663,231	99.48	356,701	—3,466,209	107,396	—9,169,836
Norfolk Southern	Oct.	944	486,919	169,295	699,722	81,189	130,315	20,677	373,317	32,835	638,691	91.27	61,031	35,021	39,146	—79,646
	10 mos.	924	4,362,217	1,703,007	6,544,357	1,498,962	1,392,910	154,096	3,488,963	306,819	6,844,018	104.58	—299,662	—499,814	—588,311	—660,719
Northern Alabama	Oct.	110	121,342	18,940	145,030	41,952	9,524	1,953	69,207	3,670	126,306	87.09	18,724	13,361	—5,229	—5,661
	10 mos.	110	1,037,010	157,170	1,250,123	321,969	76,095	16,488	597,275	29,614	1,041,442	83.31	208,680	163,550	—75,479	—117,345
Northern Pacific	Oct.	6,655	9,375,374	1,850,581	12,032,973	1,769,043	2,287,378	125,195	4,416,658	280,510	8,994,636	74.75	3,038,338	2,299,466	2,783,187	222,668
	10 mos.	6,652	64,671,918	17,950,311	91,649,489	18,607,071	18,699,075	880,443	37,352,304	2,435,032	79,270,431	86.49	12,379,058	4,677,327	8,357,006	—6,574,654
Northwestern Pacific	Oct.	536	481,669	239,402	808,854	165,499	142,197	8,969	327,145	17,027	666,250	82.99	136,604	106,029	93,500	—82,149
	10 mos.	537	3,550,725	2,387,472	6,722,211	1,254,392	871,482	62,904	2,809,341	159,299	5,186,447	77.15	1,535,764	1,252,910	1,139,005	124,402
Pennsylvania R. R.	Oct.	7,259	45,233,762	18,326,254	60,603,431	7,771,321	15,869,650	491,246	27,591,684	1,299,049	54,046,038	89.18	6,557,393	4,853,690	3,978,622	928,020
	10 mos.	7,259	304,947,355	110,436,666	456,155,874	78,521,712	146,791,115	4,105,994	239,125,780	11,830,719	488,635,665	107.12	—32,479,791	—48,215,951	—52,633,666	—77,708,400
Grand Rapids & Indiana	Oct.	569	751,440	187,515	981,489	110,041	238,687	16,413	460,315	30,092	855,562	87.17	125,927	95,672	83,932	—40,742
	10 mos.	569	5,064,371	2,102,291	7,881,008	1,060,465	2,011,114	138,702	4,399,487	303,149	7,942,421	100.77	—61,413	—383,694	—475,879	964,775
New York, Philadelphia & Norfolk	Oct.	121	594,188	108,400	741,306	79,831	188,634	9,402	383,676	19,265	700,202	94.46	41,104	10,433	—1,116	—78,894
	10 mos.	121	5,059,275	1,069,842	6,693,888	704,161	1,899,551	98,569	4,003,689	156,998	7,031,468	105.04	—337,579	—645,754	—776,282	—1,510,353
Pittsburgh, Cin., Chi. & St. L.	Oct.	2,383	8,679,689	2,263,743	11,636,306	1,514,871	3,186,686	103,517	5,147,915	270,451	10,386,312	89.26	1,249,994	929,125	631,292	1,218,434
	10 mos.	2,383	57,406,339	19,221,532	87,111,429	14,506,951	30,077,643	964,216	45,555,865	2,414,633	94,414,555	108.38	—7,303,127	—10,460,515	—12,126,124	14,359,814
Peoria & Pekin Union	Oct.	.....	30,426	4,949	158,264	33,967	40,233	35	108,458	5,903	188,596	119.17	—30,332	—39,833	—19,258	—25,947
	10 mos.	.....	273,115	41,988	1,298,562	200,679	375,261	2,074	921,536	50,443	1,549,992	119.36	—251,430	—346,430	—252,908	49,743
Pere Marquette	Oct.	2,238	3,533,289	537,224	4,332,742	505,709	915,746	47,895	1,860,018	131,168	3,422,974	79.00	909,768	812,519	590,482	—290,873
	10 mos.	2,233	24,583,520	5,909,218	33,888,564	4,822,107	7,907,756	425,117	15,759,821	1,118,054	30,076,404	88.75	3,812,160	3,137,342	1,063,995	—5,047,520
Perkiomen	Oct.	41	107,055	10,514	121,431	12,592	6,192	13	43,407	853	63,057	51.93	58,374	54,925	48,927	1,428
	10 mos.	41	362,760	111,462	1,027,710	98,465	47,191	199	414,774	3,475	564,280	54.91	462,430	439,566	385,952	—31,946
Philadelphia & Reading	Oct.	1,126	9,137,799	1,030,584	10,583,898	1,023,288	2,172,832	55,493	4,217,899	189,204	7,686,493	72.62	2,897,405	2,670,486	2,341,681	1,240,681
	10 mos.	1,126	61,168,536	9,233,296	74,869,828	9,383,169	21,002,901	568,238	38,273,665	1,723,739	71,190,014	95.09	3,679,813	1,791,901	—935,125	—4,077,420
Philadelphia, Bethlehem & New Eng.	Oct.	10	.....	.....	128,582	20,835	13,192	405	90,643	1,707	126,782	98.60	1,800	— 641	— 5,042	1,659
	10 mos.	10	.....	.....	1,116,763	161,874	156,713	4,461	786,588	15,474	1,125,110	100.74	—8,348	—20,973	—56,123	—54,052
Pittsburgh & Lake Erie	Oct.	224	3,868,662	[15]327,738	4,655,113	[11]349,737	[13]822,190	32,735	1,403,316	73,390	2,687,127	57.72	1,967,985	1,785,125	1,991,897	1,796,143
	10 mos.	224	22,467,115	[16]2,707,956	27,630,836	[12]5,322,484	[14]10,371,946	201,471	10,604,969	631,001	27,153,342	98.27	477,494	—957,460	1,098,243	—1,857,166
Pittsburgh & Shawmut	Oct.	103	201,079	4,885	209,723	30,388	37,388	1,574	60,413	7,906	137,669	65.64	72,055	71,813	108,915	112,577
	10 mos.	103	1,376,580	51,797	1,443,597	305,084	358,119	15,140	536,374	70,601	1,285,317	89.04	158,281	149,789	515,112	686 216
Pittsburgh & West Virginia	Oct.	63	242,128	12,852	291,664	99,596	48,229	2,251	96,387	8,509	266,567	91.40	25,097	11,835	8,062	41,273
	10 mos.	63	1,688,927	101,815	2,010,265	675,353	521,030	17,059	759,874	92,579	2,176,797	108.28	—166,532	—307,418	—249,594	319,519
Pittsburgh, Shawmut & Northern	Oct.	209	173,153	6,276	180,949	38,789	60,248	1,203	76,329	5,819	182,394	100.80	—1,446	—3,385	23.039	1,144
	10 mos.	209	1,192,110	64,899	1,284,765	321,230	572,554	17,306	639,837	77,989	1,628,966	126.79	—344,201	—363,698	—34,918	—58,780
Port Reading	Oct.	21	149,458	.....	207,774	4,838	17,740	18	95,485	—3,518	114,563	55.14	93,211	81,911	35,826	61,414
	10 mos.	21	1,192,866	.....	1,541,284	178,911	105,354	188	886,913	11,608	1,176,974	76.36	364.309	279,513	—256.346	—812,922
Quincy, Omaha & Kansas City	Oct.	255	103,118	27,480	141,138	39,031	21.897	802	69,458	2,996	134,056	94.98	7 082	1,267	—1,999	22,713
	10 mos	255	736,462	258,291	1,114,423	450.897	281,676	5,784	645,803	23,985	1,407,337	126.28	292,914	—333,253	—380.260	—218.810
Richmond, Fredericksburg & Poto'c.	Oct.	117	455,324	354,679	914,262	133,043	162,907	8,253	367,127	52,118	716,377	78.36	197,885	171,753	158,912	—191,434
	10 mos	117	4,407,295	3,157,400	9,201,085	970,770	1,537,722	74 077	3,847,118	276,654	6,823,719	74.16	2,377,366	2,078,257	1,768,831	—2,451,872
Rutland	Oct	415	368,500	138,730	607,247	104,680	142,634	7,365	295,048	14,692	566,725	93.33	40,521	17,716	35,736	7,561
	10 mos.	415	2,264,885	1,134,436	4,087,635	834,977	1,150,534	47,285	1,993,581	116,566	4,159,434	101.75	—71,799	—330,147	—106,757	—255,738
St. Louis Merchants Bridge Term.	Oct.	9	.....	.....	507,995	69,884	29,569	913	243,632	9,063	353,061	69.50	154,933	142,912	151,143	149,563
	10 mos.	9	.....	2,889	3,522,204	557,542	614,351	8,850	2,535,383	88,713	3,804,838	108.01	— 282,634	—409,716	—384,871	—18,309
St. Louis-San Francisco	Oct.	4,757	6,662,779	2,267,876	9,412,726	1,436,069	2,015,142	77,393	3,520,696	251,161	7,269,591	77.23	2,143,134	1,884,237	1,773,570	124,677
	10 mos.	4,757	51,463,729	21,032,193	76,911,535	13,655,137	17,930,331	694,066	31,914,118	2,341,389	66,353,251	86 27	10,558,284	8,053,013	6,871,403	—5,596,466
St. Louis-San Francisco & Texas.	Oct.	134	151,765	25,012	187,914	69.713	35,877	3,410	113,521	7,452	229,973	122.38	- 42,059	—43,946	—79,882	—68.182
	10 mos.	134	1,168,831	194,646	1,443,928	492,469	312,319	21,577	931,082	67,528	1,824,974	126.39	—381,046	—404,019	—731,492	—591.076
Fort Worth & Rio Grande	Oct.	235	116,806	77,621	205,908	107,937	38,223	3.393	112,181	6,904	268,640	130.47	—62,733	66.690	— 86,736	—119,494
	10 mos.	235	826,778	654,546	1,605,552	890,680	316,126	22,344	925,401	71,420	2,225,934	138.64	—622,382	—660,973	—878,864	—890,312
St. Louis Southwestern	Oct.	968	1,737,530	217,990	2,033,979	434,507	311,910	50,122	470,562	71,752	1,351,711	66.46	682,268	626,838	644,840	314.613
	10 mos	962	14,695,558	1,944,180	17,494,978	2,620,904	2,934,894	451,246	4,701,241	515,241	11,270,150	64.42	6,234,828	5,618,795	5,799,297	3,606,428
St. Louis Southwestern of Texas	Oct.	807	756,748	181,703	995,427	330,830	244,939	21,967	409,025	36,965	1,042,214	104.70	—46,787	—59,878	—16.672	171,694
	10 mos.	807	5,527,169	1,414,304	7,590,818	2.547,877	2,406,379	172,188	4,061,326	320,800	9,503,416	125.20	—1,912,598	—2,141,564	—1,730,866	—563.195
St. Louis Transfer Ry.	Oct.	6	.....	.....	133,595	11,767	1,301	213	49,664	2,825	65,769	49.23	67,827	67,554	62,139	35,039
	10 mos.	6	.....	.....	1,145,223	96,250	159,662	2,077	582,759	26,116	866,864	75.69	278,359	275,018	264,065	18,460
San Antonio & Aransas Pass	Oct.	736	632,143	147,809	813,369	75,222	124,410	11,408	285,511	27,213	523,485	64.35	289,884	281,187	283,840	399,336
	10 mos.	736	3,280,038	1,181,456	4,852,855	1,075.046	1,085.856	78.884	2,378,612	207,529	4,823,163	99.39	29,692	—109,311	32.193	912.211
San Antonio, Uvalde & Gulf	Oct.	317	73,409	48,542	135,606	29,315	25,803	2,218	65,323	6,364	129,023	95.14	6,583	2,306	—10,853	58,868
	10 mos.	317	780,204	421,979	1,281,385	341,424	240,303	22,621	704,006	60,150	1,368,503	106.80	—87,118	111,830	—219,688	—68,292
Seaboard Air Line	Oct.	3,563	2,991,915	913,355	4,334,067	445,998	771,808	113,959	2,032,238	163,340	3,558,768	82.11	775,299	639,812	597,840	363,097
	10 mos.	3,563	26,736,777	8,791,990	40,428,692	7,357.402	10,114,687	1,042,382	20,903,988	1,644,430	41,466,761	102 56	—1,038,070	—2,484,932	—3,981,720	—6,156,455
Southern Ry.	Oct.	6,971	9,869,365	3,282,344	14,189,224	2,222,883	2,858,633	215,238	6,357,586	373,761	12,175,509	85.80	2,013,715	1,625,099	1,600,242	669,676
	10 mos.	6,973	82,925,434	30,754,764	126,601,139	17,439,940	24,359,862	1,731,764	57,329,832	3,306,044	105,307,629	83.18	21,193,510	16,996,318	14,234,675	6,287,542
Southern Ry. in Mississippi	Oct.	278	122,660	54,404	190,797	53,302	23,691	4,472	109,260	8,653	199,378	104 49	—8,581	— 17,581	— 31,990	—34,360
	10 mos.	278	866,771	504,668	1,518,663	613,422	261,363	30,799	913,708	63,822	1,883,115	123 99	—364,452	—461,669	—686,830	—587,434
Southern Pacific Co.	Oct.	7,105	14,565,530	4,682,908	20,860,067	2,341,155	3,125,000	192,761	7,794,225	463,077	14,258,469	68.35	6,601,598	5,683,755	5,564,790	415
	10 mos.	7,098	103,810,655	45,175,341	166,400,434	25,635,063	33,464,496	1,784,311	56,475,682	4,174,969	135,175,318	81.23	31,225,116	21,854,878	21,079,877	5,101,143
Southern Pacific S. S. Lines	Oct.	.....	972,769	68,513	1,094,743	10,099	180,326	13,163	863,381	31,099	1,098,069	100.30	—3,326	—14,849	11,639	57,067
	10 mos.	.....	4,707,528	355,885	5,303,766	113,128	3,024,352	142,452	6,586,358	283,588	10,149,879	191.37	—4,846,113	—4,959,362	—4,929,231	—6,496,953

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1920—CONTINUED

Name of road.		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (ins. misc.)	Maintenance of: Way and structures.	Equipment.	Operating expenses: Traffic.	Transportation.	General	Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Arizona Eastern	Oct.	383	278,695	60,123	270,705	66,479	52,182	3,889	129,175	25,676	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	380	2,543,606	546,794	3,369,653	780,732	485,753	34,677	1,160,208	219,182	2,768,076	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Galveston, Harrisburg & San Ant.	Oct.	1,384	2,307,191	559,869	2,974,925	525,000	756,831	42,285	963,134	88,811	1,911,041	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	1,384	14,952,294	4,756,284	21,252,093	4,426,352	5,682,457	369,925	8,252,773	711,867	19,639,396	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Houston, East & West Texas	Oct.	190	259,319	62,806	336,003	97,500	53,768	3,149	152,370	8,280	315,067	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	190	1,722,832	563,084	2,453,495	874,477	417,116	31,938	1,144,584	67,848	2,541,972	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Houston & Texas Central	Oct.	915	986,993	314,495	1,373,544	275,000	287,986	22,503	499,662	29,008	1,114,941	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	.....	6,287,151	2,515,868	9,620,229	2,476,000	2,144,466	160,593	4,078,629	277,408	9,135,467	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Louisiana Western	Oct.	207	351,270	129,994	508,204	153,156	106,834	11,033	147,966	17,567	441,118	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	207	2,962,142	1,123,129	4,378,567	1,098,132	813,896	75,339	1,179,846	151,308	3,346,314	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Morgan's Louis'a & Tex. S. S. Co.	Oct.	400	699,680	196,066	959,389	257,688	249,082	16,885	361,224	32,428	922,664	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	400	6,003,405	1,824,014	8,475,711	1,706,085	1,929,394	122,057	3,154,849	277,207	7,218,348	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Texas & New Orleans	Oct.	469	678,928	220,049	985,986	290,000	291,092	10,847	543,171	23,769	1,208,908	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	469	5,449,733	1,750,899	8,104,727	2,269,732	2,322,914	93,114	3,210,584	221,947	8,545,857	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Spokane International	Oct.	165	113,939	22,390	140,388	28,114	12,142	2,884	46,973	6,699	96,696	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	161	1,044,874	196,708	1,280,584	229,477	105,032	25,234	399,836	54,393	816,755	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Spokane, Portland & Seattle	Oct.	549	659,067	200,809	927,553	121,366	128,232	9,314	284,441	26,970	581,572	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	549	5,036,563	1,954,154	7,594,078	1,626,933	1,026,388	78,742	2,564,580	248,859	5,645,236	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Staten Island Rapid Transit	Oct.	23	91,878	100,481	219,130	95,444	37,148	1,872	145,081	13,528	293,073	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	23	791,862	985,854	1,984,578	513,783	342,810	14,892	1,202,870	112,479	2,186,834	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Tennessee Central	Oct.	292	216,532	58,471	291,882	79,772	72,337	5,451	165,446	12,154	335,160	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	292	1,733,047	540,381	2,449,481	497,334	518,043	48,256	1,257,773	106,803	2,428,629	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[1]Terminal Railroad Assoc. of St. L.	Oct.	36	.....	—1	511,368	101,732	39,629	969	203,698	11,716	363,404	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	36	.....	8,478	3,894,786	816,360	656,606	10,172	1,830,818	91,656	3,451,276	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Texarkana & Fort Smith	Oct.	93	218,754	25,534	255,349	20,016	24,163	4,377	72,602	8,760	129,436	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	93	1,385,446	232,684	1,762,658	222,007	191,919	27,251	611,966	65,025	1,119,002	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Texas & Pacific	Oct.	1,946	2,695,980	1,114,550	4,057,781	758,831	730,982	48,084	1,583,788	110,059	3,274,019	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	1,946	20,813,216	10,059,103	33,607,546	6,553,796	7,283,997	398,584	14,893,187	1,002,904	30,554,537	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Toledo & Ohio Central	Oct.	503	1,389,889	74,811	1,544,746	175,753	321,655	10,336	565,564	27,994	1,106,027	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	490	9,289,780	710,306	10,591,491	1,573,731	3,103,840	103,640	4,821,041	233,007	9,869,779	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Toledo, Peoria & Western	Oct.	247	138,307	50,982	200,375	40,450	39,557	3,080	98,867	7,877	189,832	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	247	1,020,916	509,944	1,677,039	297,015	434,278	27,916	975,808	72,624	1,807,579	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Toledo, St. Louis & Western	Oct.	454	1,059,554	36,657	1,118,618	193,511	181,815	18,782	338,298	15,134	747,538	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	454	8,612,766	364,482	9,404,873	2,025,688	1,864,151	133,492	3,737,220	153,169	7,913,232	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Ulster & Delaware	Oct.	128	95,847	29,946	153,020	33,117	27,069	3,525	95,554	9,029	168,976	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	128	604,913	377,910	1,249,173	219,255	231,233	28,580	879,409	74,654	1,439,292	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[1]Union R. R. (of Penna.)	Oct.	45	.....	.....	1,286,362	64,923	191,286	523	649,278	8,347	914,357	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	45	.....	.....	8,790,473	880,545	2,149,804	3,801	5,426,495	83,561	8,544,206	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Union Pacific	Oct.	3,614	11,637,891	2,115,287	14,743,231	1,544,220	2,605,901	114,336	4,259,779	354,790	9,140,195	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	3,614	77,702,608	18,828,264	108,233,295	17,147,966	20,886,938	882,767	32,754,997	3,172,280	77,454,674	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Oregon Short Line	Oct.	2,358	3,547,329	695,495	4,529,174	520,521	591,629	39,400	1,385,161	143,720	2,760,809	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	2,353	27,355,381	6,508,846	37,197,148	5,784,658	5,965,477	333,388	11,899,476	1,293,700	26,066,034	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Oregon-Wash. R. R. & Nav. Co.	Oct.	2,223	2,226,879	685,001	3,145,811	780,731	536,123	49,959	1,341,267	152,934	2,900,639	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	2,222	18,659,188	6,411,914	27,676,513	5,633,339	4,900,070	416,690	11,830,589	1,316,588	24,461,596	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
St. Joseph & Grand Island	Oct.	258	365,797	40,028	425,232	91,934	45,297	3,177	174,901	16,991	334,367	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	258	2,266,334	375,299	2,849,595	941,538	452,946	24,714	1,468,368	142,795	3,049,514	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Utah	Oct.	98	210,647	813	212,550	31,220	31,952	322	49,426	3,937	116,856	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	98	1,599,792	7,802	1,612,594	211,466	304,393	2,215	370,308	30,579	918,960	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Vicksburg, Shreveport & Pacific	Oct.	171	304,164	107,540	437,672	113,607	87,929	8,965	182,077	13,996	410,391	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	171	2,408,761	999,913	3,704,544	740,319	727,715	18,212	1,478,316	123,566	3,186,183	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Virginian	Oct.	523	1,821,124	82,203	2,058,218	230,310	381,348	10,188	620,728	37,666	1,277,801	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	523	12,508,818	712,021	14,555,289	1,765,301	2,928,504	83,756	5,272,467	307,016	10,338,995	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Wabash	Oct.	2,472	4,801,912	1,029,682	6,282,611	931,446	1,161,419	121,368	2,795,088	173,163	5,213,304	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	2,472	34,788,655	9,295,874	48,556,406	8,691,212	12,476,799	934,142	24,672,983	1,594,421	48,690,041	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
West Jersey & Sea Shore	Oct.	361	809,285	469,050	1,349,428	284,486	310,793	13,430	659,268	27,998	1,305,041	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	361	3,674,156	7,465,347	11,985,624	2,695,554	2,560,484	112,027	6,161,015	262,379	11,876,615	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Western Maryland	Oct.	797	2,015,224	108,117	2,206,432	229,373	494,405	31,896	920,366	59,350	1,753,404	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	776	13,956,030	1,038,273	16,004,506	3,244,705	5,217,181	394,460	6,886,580	519,666	16,433,083	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Western Pacific	Oct.	1,011	1,430,712	242,225	1,744,342	263,639	273,063	31,910	600,074	48,101	1,245,243	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	1,017	10,470,291	2,229,588	13,399,769	2,267,282	2,071,175	279,300	4,721,375	380,217	9,990,815	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Western Ry. of Alabama	Oct.	133	157,744	66,707	242,084	45,819	45,327	8,125	105,176	9,718	217,890	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	133	1,315,177	772,703	2,325,270	363,909	501,672	61,660	884,525	83,464	1,931,987	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Wheeling & Lake Erie	Oct.	511	1,757,266	86,309	2,032,726	351,746	527,772	13,124	763,928	35,342	1,697,333	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	511	12,464,977	717,712	14,491,916	2,448,876	3,663,308	142,469	6,216,052	328,180	12,837,655	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Wichita Valley	Oct.	256	110,751	54,041	172,192	31,466	14,232	52	72,599	1,475	119,804	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	10 mos.	256	908,216	424,812	1,420,014	370,151	148,874	900	622,802	15,898	1,158,522	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[1] $30,013.85 included for Pullman surcharge. [2] $100,000.00 war tax. [3] $55,013.85 included for Pullman surcharge. [4] $1,040,000.00 war tax. [5] Includes $118.74 surcharge upon passengers in sleeping and parlor cars, month. [6] Includes $263.50 surcharge upon passengers in sleeping and parlor cars, cumulative. [7] Includes Pullman surcharge collection for the month of October, 1920, $24,465.37, and $45,476.90 for the ten months ending October 31, 1920. [8] Back time included in operating expenses, $3,043.96. [9] Includes $15,000.00 surcharges upon passengers in sleeping and parlor cars. [10] Includes surcharge $659.15. [11] Item 10 includes "Equalization of maintenance" applicable to month of October, 1920, $231,953.40. [12] Item 10 includes "Equalization of Maintenance" applicable to period March 1, 1920, to October 31, 1920, $1,010,780.85. [13] Item 11 includes "Equalization of Maintenance" applicable to month of October, 1920, $316,745.94. [14] Item 11 includes "Equalization of Maintenance" applicable to period March 1, 1920, to October 31, 1920, $534,081.94. [15] Item 2 includes Pullman surcharge for month of October, 1920, $3,037.51. [16] Item 2 includes Pullman surcharge for period August 1, 1920, $8,360.44

Railway Officers

Financial, Legal and Accounting

F. F. Clarke has been appointed chief land surveyor of the Canadian National, with headquarters at Toronto, effective December 1. Mr. Clarke will report to the legal department.

Robert Crosbie, whose appointment as comptroller of the Spokane, Portland & Seattle was announced in the *Railway Age* of November 26 (page 953), was born May 2, 1882, at Dalbeattie, Scotland. He was educated in the public schools, high school and business college at Dalbeattie and first entered railway service with the Glasgow & South Western (Scotland) in 1889. In 1906 Mr. Crosbie came to Montreal to become interline traffic accountant for the Grand Trunk. From 1908 to 1910 he was a general accountant for the Delaware, Lackawanna & Western at New York and Scranton, Pa. In 1910 he became an accountant for the Spokane, Portland & Seattle at Portland, Ore., and the following year was placed in charge of general accounts. In 1918 he was appointed assistant comptroller and, during federal control, was given full charge of corporate accounts. He remained in this position until his appointment as comptroller.



R. Crosbie

Executive

R. C. Vaughan, assistant to the president of the Canadian National, has been appointed vice-president in charge of purchase and stores, with headquarters at Toronto, effective December 1.

P. C. Byrne, whose election as vice-president and general manager of the Alabama & North Western was announced in the *Railway Age* of November 19 (page 905), was born March 2, 1885, at Bluff Springs, Fla. He was educated at the Barton Academy and at a business college. He began his railroad career in 1906 as a stenographer for the Central of Georgia at Mobile, Ala. From 1907 to 1909 he was chief clerk to a superintendent of the Gulf, Mobile & Northern. During the following year he was employed by the Atlanta Joint Terminal as a stenographer and as a telegraph operator. In 1910 he entered the service of the Alabama, Tennessee & Northern as secretary to the president and the same year was appointed chief clerk. In 1912 he was promoted to division superintendent and in 1913 to general superintendent of the Alabama & North Western, which position he held at the time of his recent election.

Albert C. Mann, whose election as vice-president in charge of purchases and stores of the Illinois Central, with headquarters at Chicago, was announced in the *Railway Age* of December 10 (page 1046), was born at Effingham, Ill., on September 1, 1881. He entered railway service in January, 1900, as a stenographer in the office of the commercial agent of the Illinois Central at St. Louis, Mo., and soon became bill of lading clerk. In February, 1902, he was appointed secretary to the general agent, and four months later was transferred to Chicago as secretary and chief clerk to the coal traffic manager. In June, 1904, Mr. Mann was assigned to the purchasing department as secretary to the purchasing agent, and was subsequently price clerk and chief clerk in that department. He was promoted to assistant purchasing agent in January, 1912, but left the service of the Illinois Central in May of that year, when appointed purchasing agent of the Central of Georgia, with headquarters at Savannah, Ga. He returned to the Illinois Central in September, 1913, to become purchasing agent, a position which he held until March, 1918. At that time he accompanied C. H. Markham, of the Illinois Central, when the latter was appointed director of the Southern Region by the United States Railroad Administration, being connected with the department of purchases and stores of the Southern Region. Since July 1, 1919, Mr. Mann has been vice-president of the International Steel Corporation, with headquarters at New York.

Operating

F. H. Wagner has been apointed assistant trainmaster of the Philadelphia & Reading with headquarters at Philadelphia, Pa.

W. H. Ogborn has been appointed general manager of the Dayton, Toledo & Chicago, with headquarters at Dayton, Ohio, effective December 15.

H. C. May, general manager of the Chicago, Indianapolis & Louisville with headquarters at Lafayette, Ind., has resigned, effective December 15.

S. Williams has been appointed trainmaster on the Los Angeles & Salt Lake, with headquarters at Las Vegas, Nev., succeeding **J. P. Fitzpatrick,** who has been assigned to other duties.

R. King, acting superintendent on the Canadian National, with headquarters at Saskatoon, Sask., has been appointed superintendent, with the same headquarters, succeeding **W. R. Munro,** who has been transferred, effective December 3.

J. A. Moran, assistant superintendent on the St. Louis-San Francisco, with headquarters at Birmingham, Ala., has been transferred to Neodesha, Kansas, succeeding E. E. Carter, whose promotion to superintendent of terminals, with headquarters at West Tulsa, Okla., was announced in the *Railway Age* of October 15 (page 679).

R. B. Turney, division superintendent on the Michigan Central, with headquarters at Detroit, Mich., has been appointed passenger trainmaster, with the same headquarters, effective November 4, succeeding E. P. Herlehy, who has been assigned to other duties. **M. T. Wright,** superintendent of Detroit passenger terminal, with headquarters at Detroit, succeeds Mr. Turney, the Detroit passenger terminal and Detroit division having been consolidated.

H. H. Vance, superintendent of the Southern with headquarters at Birmingham, Ala., has been promoted to general superintendent of the Southern district with the same headquarters, succeeding **J. W. Wassum,** who has been transferred as general superintendent of the Southeastern district with headquarters at Macon, Ga. Mr. Wassum succeeds **F. P. Pelter,** who has been transferred to the Southwestern district with headquarters at Chattanooga, Tenn., succeeding W. T. Caldwell, resigned. **O. K. Cameron,** superintendent of the Memphis division with headquarters at Sheffield, Ala., succeeds Mr. Vance, and **L. H. Woodall,** terminal superintendent at Jacksonville, Fla., succeeds Mr. Cameron. These appointments are effective December 1.

Traffic

R. H. Ludham has been appointed commercial agent of the Norfolk & Western, with headquarters at Richmond, Va.

V. Schaffenburg, assistant general freight agent on the Texas & Pacific, has resigned to become traffic manager of the Myles Salt Company, Ltd. Mr. Schaffenburg's new headquarters will be at New Orleans, La.

E. E. Shumate has been appointed commercial agent of the Norfolk & Western, with headquarters at Winston-Salem, N. C., effective November 1.

V. L. Campbell has been appointed general agent of the New York, New Haven & Hartford at Brockton, Campello and Montello, Mass., effective December 10.

R. Macsherry has been appointed assistant general freight and passenger agent of the Lehigh & New England with headquarters at Bethlehem, Pa. **M. A. Gangawer** has been appointed chief of the tariff bureau. These appointments are effective December 15

J. L. Scott, general agent on the Western Pacific, with headquarters at Salt Lake City, Utah, has been transferred to San Francisco, Cal., succeeding **R. V. Crowder,** who has resigned to become associated with the Los Angeles Steamship Company, effective December 10. **E. R. Jennings** succeeds Mr. Scott.

A. J. Dickinson, assistant general passenger agent on the Great Northern, with headquarters at St. Paul, Minn., has been promoted to passenger traffic manager, with the same headquarters, succeeding C. E. Stone, whose retirement was announced in the *Railway Age* of October 22 (page 728). **E. H. Wilde,** assistant general passenger agent, with headquarters at St. Paul, has been promoted to general passenger agent, with the same headquarters, and **F. T. Holmes,** general agent, with headquarters at Kansas City, Mo., succeeds Mr. Wilde. The appointments were effective December 1.

Engineering, Maintenance of Way and Signaling

R. W. Williams, assistant to the chief engineer of the Southern with headquarters at Washington, D. C., has been appointed engineer of maintenance of way and structures of the Southwestern district with headquarters at Chattanooga, Tenn., succeeding M. J. Connerton, resigned, effective December 1.

George Cottingham, Jr., roadmaster on the Northern Pacific, with headquarters at Carrington, N. D., has been promoted to engineer maintenance of way of the Eastern division of the Chicago Great Western, with headquarters at Chicago, effective December 7, succeeding H. Wilson, whose appointment as trainmaster on the Denver & Rio Grande, with headquarters at Denver, Colo., was announced in the *Railway Age* of October 22 (page 728).

H. G. Morgan, office engineer in the signal department of the Illinois Central, with headquarters at Chicago, has been promoted to signal engineer, effective December 1, succeeding **W. M. Vandersluis,** who has been appointed secretary of the Illinois Central Electrification Commission—Chicago Terminals. Mr. Morgan was born in Huntington, Ind., in 1883. He was educated at Purdue University, receiving a degree in electrical engineering in 1904. His first technical experience was with the Bell Telephone Company, where he held a position as service inspector for three years. In 1907 he entered the service of the Illinois Central as a draftsman in the signal department, remaining until 1909, when he accepted an appointment as chief draftsman in the signal department of the Chicago & North Western. In 1910 he was appointed assistant engineer with the General Railway Signal Company at Rochester, N. Y., a position which he held until 1913. In that year he returned to the Illinois Central as office engineer in the signal department, where he served until 1914, when he was transferred to the valuation department as pilot signal engineer. In September, 1917, he was promoted to signal engineer to fill a vacancy left by W. M. Vandersluis, who had entered military service. Upon the return of Mr. Vandersluis from service Mr. Morgan resumed his duties as office engineer.

Purchasing and Stores

J. B. Fowler has been appointed division storekeeper on the Pennsylvania, with headquarters at Fort Wayne, Ind., effective December 1.

H. B. Smith has been appointed fuel agent of the Kansas City Southern, with headquarters at Kansas City, Mo., effective December 10, succeeding B. B. Brain, who has been promoted to purchasing agent.

L. Lavoie, assistant general purchasing agent of the Canadian National with headquarters at Toronto, has been appointed general purchasing agent with the same headquarters, effective December 1, succeeding **E. Laugham,** who is retiring from active service.

Special

A. L. Green, who has been appointed special representative, freight claim prevention, American Railway Association, with headquarters at Chicago, effective December 1, was employed in the freight claim department of the New York Central for 20 years previous to his recent appointment. When the government took over the railroads Mr. Green was serving as assistant to the freight claim agent of the New York Central, and during the period of federal control he served as secretary to the regional director's Committee on Freight Claims, and as secretary of the Association of Railroad Chiefs of Police. Subsequently he was associated with the Eastern Claim Conference, as secretary, and served as regional claim agent of the United States Railroad Administration, with headquarters at New York.

J. Marshall, who has been appointed special representative, freight claim prevention, American Railway Association, with headquarters at Chicago, effective December 1, was born in April, 1879, at Collinsville, Ill., and entered railroad service in 1891 as a messenger in the commercial office of the Missouri, Kansas & Texas at St. Louis, Mo. In 1896 he was transferred to the local freight office of the Katy, where he served during the next seven years as press boy, tracer clerk, check clerk and chief claim clerk. In December, 1904, Mr. Marshall was made claim investigator in the freight claim department, and later was promoted to chief of the lawsuit and live stock claim bureau. In February, 1909, he was appointed traveling freight claim agent, with headquarters at Parsons, Kan., a position which he held until January, 1914, when he was made freight claim agent for the Texas lines and transferred to Dallas. Another promotion, in April, 1917, made Mr. Marshall superintendent of claim prevention of the system, with headquarters at Dallas. When the system was divided between separate federal managers during government control, he resumed his duties as freight claim agent of the Texas lines and was serving in this position at the time of his recent appointment.

Fred E. Winburn, who has been appointed special representative, in freight claim prevention, for the American Railroad Association, with headquarters at Chicago, effective December 1, was born at Gainesville, Ga., on May 28, 1874, and entered railroad service in December, 1893, in the local freight agency of the Nashville, Chattanooga & St. Louis at Atlanta, Ga. In January, 1904, he entered the office of the freight claim agent of the Atlanta & West Point, and was promoted to freight claim agent of that road in 1908. He served in that position until January, 1914, when he was promoted to general claim agent of the Atlanta & West Point, the Western of Alabama, and the Georgia. When the railroads were placed under government control, Mr. Winburn was made assistant general claim agent, with jurisdiction over the Atlanta, Birmingham & Atlantic, the Atlanta & West Point, the Western of Alabama, the Georgia, and the Charleston & Western Carolina. When the roads were returned to private control he was appointed auditor of the Atlanta & West Point and the Western of Alabama. Mr. Winburn served as secretary of the Southeastern Claim Conference from January, 1908, until 1918. He was elected president of the Freight Claim Association in June, 1917, and served in that capacity until October 1, 1918. He was also a member of the Committee on Marking, Packing and Handling of Freight of the American Railway Association, and a member of the executive committee of the American Perishable Freight Association.

EDITORIAL
Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

A New Argument for Reclamation

The success of all efforts to obtain savings through reclamation is determined largely by the spread between the scrap value of the released article and the cost of a new one to replace it. During the war and again during much of the past year reclamation was of increased significance, for at times it became practically a necessity owing to the extreme difficulty of obtaining certain manufactured goods at any price. This situation, of course, is now relieved and the weakening of prices might lead to the assumption that reclamation is of less importance. But a new factor has been introduced, namely, the present low price of scrap. While nearly all iron and steel products have decreased in price, the reductions are small as compared with those taking place in most scrap items. Consequently, the sale of almost any released material at present scrap prices involves a distinct sacrifice.

Motor Trucks For Handling Company Materials

We have referred in recent issues to the possibilities for the use of motor trucks in the handling of less than car load freight in interchange between the railroads and between outlying freight stations and central points of assembly on the same road. There is a further opportunity for the use of these trucks in the handling of company materials about terminals of large or medium size. Owing to the congestion prevailing in terminals, to the frequent shortage of cars and to the heavy expense of switching cars from one point to another in a large and busy terminal, a number of roads are now installing motor trucks at such points to deliver materials from local storehouses to the points where they are needed by the gangs. Not only does this effect a distinct saving in cost, but it greatly expedites the delivery of the materials, a point of importance in keeping gangs busy. Most bridge, building and track supervisors located in terminals of any considerable size can show excellent returns from such use of a truck. Closely allied with the handling of company materials about a terminal is the transference of supplies about a divisional or central store yard. As indicative of the possibilities for using motor trucks in this service, one western road, when rebuilding its central storehouse, laid out an extended system of concrete roadways on which motor trucks are used to transport materials from one place to another.

Delays and Their Explanation

The Delaware, Lackawanna & Western suburban service out of Hoboken, N. J., handles about 20,000,000 passengers yearly. The larger part of this service is handled over two tracks to Harrison and Newark, the first stations west of Hoboken, and respectively seven and eight miles distant. The unfortunate feature is that this line crosses two rivers, the Hackensack and Passaic, both of which are comparatively busy streams, necessitating frequent movements of the drawbridges. The result of this situation is that sometimes in the rush hours the service becomes somewhat erratic and erratic service simply does not appeal to commuters, even if they do ride in electric-lighted steel cars and seldom fail to secure seats. The road has recently adopted a policy of taking its commuters into its confidence. For example, passengers found in their seats on the evening of December 15 last, a leaflet reading as follows:

DELAY TO SUBURBAN TRAINS

The serious delay to certain westbound trains which occurred on *Tuesday evening, December* 14, was occasioned by a *broken rail* on the west bound track at Sanford's Crossing (about one mile and a half west of the Hackensack River).

The first train affected was No. 231, leaving Hoboken at 5.15 p. m., which was delayed eight minutes at Sanford's Crossing and was then allowed to proceed slowly over break, as were several trains following, after which, as it was considered unsafe for further trains to so proceed, it was necessary to divert them to the slow-speed freight track running from the Hackensack River to Harrison Tower.

This caused serious delays to all trains following, up to and including train leaving Hoboken at 7.20 p. m., the necessary repairs having been made as quickly as possible.

This idea has been found to appeal greatly to the Lackawanna's patrons, for it has been regarded as a real manifestation that the road is proud of its suburban service and is showing in a concrete way that it has at heart the comfort and convenience of its patrons. Obviously the issuance of circulars of this kind does not improve the service or help materially in keeping it up to its desired standard of perfection. Nevertheless, the idea is a good one and a real creator of good will in a situation that could be quite fruitful in causing friction.

A Difficult Feat of Bridge Engineering

On another page of this issue we present an account of a complicated bridge transfer carried out successfully on the Baltimore & Ohio crossing of the Allegheny river at Pittsburgh, Pa. This operation involved not only the common sidewise shifting to replace old spans by new ones built alongside, but it also required one new span of 1,200-tons weight to be jacked up 15 ft. The rolling operation has been repeated so often that it has become a relatively simple matter. Dynamometer tests made by bridge erectors during earlier operations of a similar nature have given them rather definite information on the rolling friction obtained when moving these large loads and also on the mechanical efficiency of wire rope tackles of many parts so that it is now possible to calculate very closely how much hoisting engine power is required. There has been much less experience with jacking. It is also a much more cumbersome operation. Unlike the hauling with wire rope tackle, the jacking is an intermittent process since the distance that a jack may be extended is a matter of inches rather than feet. Consequently, frequent resettings of the jacks are necessary and this means that much time is expended in building up temporary supports for the jacks as the load is raised. Moreover, the load must be safeguarded at all times against failure of any part of the hydraulic system which furnishes the power for the lifting process. This is an entirely different condition from that imposed in the rolling operation. In the event of a break in the pulling tackle for the latter, all that occurs is that the movement

stops, while if any part of the jacking apparatus should fail, the load would drop if it were not for the temporary blocking that is built up to provide for such a contingency. Thus, it is seen that the lifting of heavy bridge structures is a very laborious and time-consuming process, entailing a considerable interruption in the use of the bridge. For this reason the lifting of bridge spans is undertaken only when absolutely necessary, as in the case of the bridge at Pittsburgh, where requirements of the United States War Department made it necessary to develop a most intricate erection program.

The Full-Jeweled Locomotive

Nothing could be more obvious than the statement quoted elsewhere in this issue to the effect that the application to locomotives of various efficiency and capacity increasing devices represented nothing in itself. The value of these appliances is wholly dependent upon the degree of intelligence with which they are operated and the care exercised in their maintenance. It is conceivable that every one of the specialties designed to increase locomotive efficiency and capacity would become a positive detriment if not properly maintained but, on the other hand, each one of the devices that contribute toward making the locomotive a "full-jeweled movement" will earn a large return upon its cost if properly handled and adequately maintained. Thus the problem of modernizing old locomotives by equipping them with efficiency and capacity increasing devices is closely linked to the problem of providing suitable facilities for the maintenance of these devices. This implies up-to-date locomotive terminals, and conversely, the full value of an investment in terminal improvements can never be realized until the locomotives handled through this terminal are equipped with the most modern appliances. What is needed is a consistent policy toward both terminal development and modernized locomotives. Considered in connection with the so-called "full-jeweled" locomotive, consistency is indeed a rare jewel.

Economy of Repairing Cars Now

The importance of each railroad putting its own freight cars in the best possible condition of repair while the cars are on the home lines was brought out very forcefully in an investigation of adjustment allowances for maintenance during the guaranty period conducted by a sub-committee of the adjustment committee for the carriers under federal operation. Assuming the cost of repairs to be unity if 100 per cent of the freight equipment of the country were on home rails, the findings of the committee indicate an accelerating increase in the average annual cost of maintenance as a progressively decreasing percentage of the equipment is on the home line. This is not entirely due to the greater cost of doing the work on foreign cars, but in a measure to the patchwork method of deferring necessary heavy repairs until the car reaches home or can no longer be made safe for movement. When 50 per cent of the cars are at home, as was the case under pre-war normal conditions, the average maintenance cost is shown as 121 per cent of the ideal. Coming down to 21.9 per cent at home, the condition at the time the roads were returned to private operation, the average cost has increased to over 149 per cent of the ideal, or an increase of about 23 per cent as compared with normal conditions. Again, comparing March 1 with November 15, the latest date for which figures are available, when 32.5 per cent of the equipment was on home roads, the average cost of freight car maintenance is shown to be about 137 per cent of the ideal or a proportional decrease of 8 per cent. With the depleted supply of equipment, it is doubtful whether it will be possible to maintain the present favorable percentage of cars on home lines should there be the marked increase in the volume of traffic generally expected within the next few months. The economy of pushing heavy repair work at the present time while so many cars are on home lines, is therefore very evident.

One Way to Expedite Car Movement

Although there is now a supply of cars sufficient to meet the needs of shippers in practically all parts of the country, railway men should not lose sight of those methods of expediting car movement which recent experiences proved to be meritorious. They should also bear in mind that the responsibility for the full execution of these movements does not rest solely with the shippers, for frequently co-operation on the part of the road's officers may help greatly, even in the unloading and loading of cars on shippers' tracks. Typical of such measures is a plan which was inaugurated on the Northern Pacific recently to give consignees and shippers advance notice of the arrival of loaded and empty cars. In the working out of this plan the yardmaster delivers to the despatcher or to the operator at the yard office a consist of way freight trains showing the number, contents, consignee and destination of each car consigned to points on the division, as well as a list of the empty cars to be set out. The operator then calls each station in turn, giving the agent a list of the cars for his station, and the agent in turn transmits this information promptly to consignees and shippers. With this advance information the agent is enabled to ascertain where the consignee wants his cars placed and the consignee is enabled to have his unloading force ready to unload a car when it arrives. With empty cars the agent is able to make his distribution and to deliver a switch list to the conductor immediately on the arrival of the train, while the shipper himself is enabled to have his loading organization ready to begin the loading of the car as soon as placed. In numerous instances the agent has taken advantage of this plan to the extent of notifying a shipper who is waiting for a car that he may have for outbound loading a car which is coming in under load for a certain consignee on that day. The shipper then brings pressure to bear on the consignee to unload the car as quickly as possible in order that he in turn may be able to load it. While this arrangement might appear to involve a large amount of additional work, it has been found that the additional work is practically negligible. Measures such as this can well be continued during these times of car surplus, for the habits thus acquired will be of particular value when cars are at a premium and every hour's delay needs to be avoided.

The New England Situation

The New England carriers and the trunk line railroads were unable to get together on the division of rates and the question was carried before the Interstate Commerce Commission in formal hearings last week in Washington. The situation that confronts the New England roads is a serious one. It is serious enough to the holders of the common stock of the Boston & Maine and New Haven, who have been without dividends since 1913. It is equally serious to the banks and insurance companies who hold the bonds of these and the other New England roads. It is, however, most serious to the industries of New England which are confronted with the fact that the financial situation of the roads in their territory is becoming such that they are unable to make large ex-

penditures for improved railroad facilities necessary for a region of such intensive industrial development. The New England carriers are handicapped in many ways. Among these are the high cost of coal, the short hauls, many branch lines, diffusion of traffic, etc. More especially, they are handicapped because they are terminal roads and have high terminal costs which they are unable to compensate for by a long haul over their lines. This handicap affects them in several ways, not the least of which is per diem, for with so much delay for loading and unloading cars by shippers, they are unable to release cars as promptly as their connections to the west. These carriers are now asking for larger divisions of their through rates. They are presenting the arguments already mentioned as justification. They are also pointing out that in the recent rate case their valuation was included in the total valuation on which the increase of 40 per cent was figured for the trunk line roads, but they contend that they have themselves not received the share of the increase to which this inclusion of their value in the eastern group entitled them. The case is especially interesting in view of the fact that it is the first case in which such a large group has come before the commission in an appeal for larger divisions. The New England roads have much in favor of their argument and whether it is settled as they wish it to be or not it is evident that something must be done and done quickly, to the end that the industries of New England can have the transportation service to which their importance to the rest of the country entitles them.

Elimination of Train Orders Will Accomplish Saving

A MATERIAL SAVING in the running time of trains may be accomplished on many roads at present equipped with automatic signals if operating officers will take advantage of the possibilities of the signal system to eliminate a large number of the train orders issued and will operate trains by signal indication. An analysis of all orders carried over from the preceding day, and those issued during 24 hours, including the effective, annulled, and superseded orders on a typical operating division, will indicate how great a loss of running time occurs in the handling of these orders.

One road found on making such an analysis for one day on a typical division with 12 passenger trains, 2 way freight trains and 17 other freight trains, that 139 orders were in effect during the 24 hours, of which 124 were "31" orders. On that day there was a total station delay of 78 hr. 4 min. for freight trains, exclusive of the way freights, a considerable part of which was due to the issuing of orders, and it was estimated that an average of 10 min. per "31" form order was a very modest allowance for time lost.

Another road which has practically eliminated the "31" order in signaled territory has reduced these orders by about 100 daily on a division having about the same number of trains as indicated above. In reducing the number of stops of freight trains it was estimated that an average of 15 min. delay is saved in stopping and starting, while engine and equipment trouble was reduced approximately 6 per cent; coupler trouble about 16 per cent; and tieups for the 16 hr. law about 25 per cent. Train movements were scheduled about 10 per cent, while a material saving in coal was made.

At the present time when it is so desirable to decrease expenses and at the same time increase operating efficiency with the existing plant and equipment an analysis of the unnecessary time lost in the delivery of orders should help materially in maintaining an average of 12.5 min. per hr. for freight trains by getting all possible service from the signal system, which makes possible the elimination of Form B orders directing a train to pass or run ahead of another train; Form D-E, time orders; Form G, extra trains (on double track), and Form J, holding orders.

The Decline in Freight Business

THE DECLINE in the movement of freight which has occurred since the highest record was made in October has been quite large, but the total amount of freight handled continued, down to the last week for which information is available, to be larger than in any former year. The number of cars loaded in the four weeks ending October 25 was 4,002,347. The number of cars loaded in the four weeks ending on December 11, the latest period for which figures are available, was 3,385,260. This shows a decline, as compared with the four weeks ending October 23, of 617,087 carloads. While this reflects a sharp decline in traffic, the figures for the four weeks ending December 11 compare very favorably with those of the corresponding weeks of 1918, when the largest record for the same weeks of any previous year was made. In these weeks of 1918 the number of cars loaded was 3,251,011, or 134,249 less than in the four weeks ending December 11. Since the average load being handled per car is larger than it was in 1918, the total tonnage being handled is substantially larger.

The traffic which is causing the total loadings to hold up so well in spite of the recent sharp decline in general business activity is the coal traffic, a larger amount of which is being moved than at the same time in any past year. The fact, however, that in spite of the general decline in business activity which has occurred within recent months the railways are still moving more tonnage than ever before at the same time of year, probably has a significance of much importance. It undoubtedly means that the producing and consuming capacity of the country has increased so much within recent years that no decline in business activity will ever again carry the total freight business of the railways down as low as it used to go. By the same token a revival of business activity will result in giving the railways a much larger freight traffic to handle than they ever had before. This is a strong argument for shippers who can ship now, while the railways have surplus capacity, to do so, for it must mean that when business activity again revives the difficulty of getting sufficient transportation will return. It also seems to suggest something of great importance to the railways, and this is that they should spare no reasonable effort to get their equipment and other facilities ready to cope with a larger traffic than they ever have had to handle.

Need for Increased Locomotive Efficiency

NEVER BEFORE did conditions on the railroads demand so imperatively as now that locomotives shall be put and kept in the highest state of efficiency and so operated as to get from them the best and the most service they can be made to render. The conditions which create this necessity are numerous, but there are three of special importance. One is the present high cost of new locomotives. Another is the high cost of fuel. Another is the fact that the railways must pay punitive overtime to all employees in freight train service when trains fail to make an average speed of twelve and a half miles an hour.

The fact that new locomotives now cost so much more than before the war makes the problem of determining when an old locomotive shall be scrapped, and a new one bought to replace it, a very different one from what it used to be. It has made the fixed charges upon the capital invested in a new locomotive much higher compared with the cost of improving and maintaining an old locomotive than they formerly were. If, however, old locomotives which formerly would have been scrapped are to be kept in service they must have improvements made in their equipment that for-

merly would not have been made, and they must be better maintained than they formerly would have been, or they will not be able to render the service in producing train miles and ton miles which, from an operating and financial standpoint, will justify their use.

Furthermore, if the greatest practicable efficiency in producing ton miles and train miles is to be obtained from locomotives, whether new or old, facilities must be provided for turning and repairing them which will keep them actually handling traffic just as much of the time as possible. The true test of the efficiency of a locomotive as an operating mechanism is not merely how many tons it hauls in a train, but also how many times it actually hauls trains in a month and in a year. The purpose of a freight locomotive, like that of a freight car, is to produce ton miles, and it is not producing ton miles when it is not actually working. Nobody can study the statistics upon the subject without being convinced that on a large majority of railways the facilities for handling power are so inadequate that locomotives are being prevented from producing monthly and annually anywhere near as many revenue earning ton miles as they could be made to produce.

The statistics of the Interstate Commerce Commission show that the average cost per ton of the coal used by the railways was 46 per cent greater in September, 1920, than in September, 1919. The amount of coal consumed in that month in freight service apparently was only a little larger than in September, 1919, but it cost $12,960,000 more. Apparently the total increase in the cost of the coal used in passenger service was $2,510,465, and the total increase in the cost of coal consumed in road service by both freight and passenger trains, $14,663,582. This is at the rate of almost $180,000,000 a year. It need hardly be added that even before September, 1919, there had been since before the war a large increase in the cost of fuel. These figures emphasize with the greatest force the necessity for the adoption of better methods of supervision, and the installation of better devices on locomotives, for the saving of fuel. A very great deal has been done within recent years to so improve the construction and equipment of locomotives, and the supervision of their operation, as to increase economy in the use of fuel. The amount of fuel consumed per freight train mile in September, 1920, was, however, almost the same as in September, 1919. The facts argue conclusively for greater efforts to economize in the use of fuel. Since for years to come most of the fuel consumed will be used in the locomotives that are now in service, most of the economies in its use for many years to come must be obtained through the improvement, maintenance and operation of existing locomotives.

The amount of punitive overtime which must be paid to employees in train service is so large that the problem of handling freight with the utmost economy is no longer mainly that of increasing freight trainloads as much as practicable. It has become, also, in very large measure, the problem of getting trains over the road at an average speed of not less than twelve and a half miles an hour. In other words, the problem of today is that of both increasing trainloads and maintaining and increasing train speeds. There are many factors in this problem of maintaining and increasing the average speed of heavily loaded trains, but one of the most important is that of so improving locomotives, and keeping them in such condition, that they can make better average speeds. It is hardly necessary to say that the strain imposed upon a given locomotive which hauls a trainload of a given amount so that it will cover 100 miles in eight hours is, under any set of conditions, much greater than the strain imposed upon it in hauling the same trainload the same distance in ten or twelve hours. But when punitive overtime has to be paid to a crew after eight hours the difference in the operating cost of getting the train over the road in eight hours, and in ten or twelve hours, is large; and the way the locomotive is equipped and maintained may, and often does, determine whether the cost of running the train will be based on the making of an average speed of twelve and a half miles an hour, or of only ten miles or eight miles.

Much has been said recently about the increases the railways have made in the efficiency with which they have used their freight cars. But their success during the last year in handling a record-breaking traffic, in spite of an actual reduction in the number of freight cars, could not have been achieved without an increase in locomotive efficiency, for, after all, it is the locomotives with which they switch cars and make up and move trains. Probably there is nothing else the managements of the railways could do which would contribute more toward enabling them to handle the largely increased traffic which is bound to come within a few months with greatly increased economy than to devote more study and larger expenditures to improving the equipment and the condition of their locomotives, and to improving and enlarging the facilities for turning, repairing and maintaining them.

Southern Railway

AN ANNUAL REPORT of the Southern Railway from the pen of President Fairfax Harrison is always interesting. The report for 1919 is particularly so for it was written after the termination of the guarantee period, and President Harrison reviews the controversy between the corporate officers of the company and the Railroad Administration. This controversy was one of the most acute which developed during federal control. It had its inception when the Railroad Administration took over the Southern general office building in Washington for its headquarters; it was intensified by the failure to reach an agreement as to compensation, and it continues today in respect to claims of the road against the government aggregating $84,700,000, against which the government has set up claims aggregating $71,650,000.

At the time the government took over the railways the Southern was completing the reconstruction and double tracking of its main line from Washington to Atlanta at a cost of over $52,000,000. An aggressive campaign for the development of traffic, combined with the increased capacity which this and other improvements made possible, was resulting in large increases in gross and net revenues. Neither of these conditions was reflected fully in the average annual railway operating income for the test period which was ascertained by the Interstate Commerce Commission to be $18,653,893 for the Southern proper. The company therefore made application for additional compensation to the amount of $4,771,399 per annum. In reply, the government offered to allow additional sums of $203,166 for 1918, $439,655 for 1919, and at the annual rate of $521,250 for 1920. This the railway company considered inadequate and it therefore refused to sign the standard contract, preferring to assert its claim in the manner provided in the Federal Control act. It is interesting to note in this connection that the Southern Railway earned $10,695,890 in excess of its standard return in 1918.

In view of the company's refusal to accept the compensation offered by the Railroad Administration during the period of federal control, it is not surprising that it decided to resume the operation of its property on March 1 without accepting a continuance of the guarantee. The directors adhered to their conviction that "the amount guaranteed by the government was not a fair measure of compensation for the use of the property; they believed that the revenue re-

sulting from the prosperous business of the South, together with an intelligent control of expenses, might yield as much or more net income, and they were convinced that the advantages to be derived through stimulating with a sense of responsibility the efforts of the working organization toward getting business and handling it efficiently and economically fully justified the assumption of whatever business risks might be involved."

Three of the other constituent properties of the Southern Railway system, the Cincinnati, New Orleans & Texas Pacific, the Alabama Great Southern, and the New Orleans & Northeastern made the same decision. Although these properties were turned back to their owners with an empty treasury, so that they were compelled to earn their first payroll due four weeks later, this "adventure in self-reliance," as President Harrison terms it, was justified as is shown by the following statistics regarding the railway operating income earned by the system in the six months ending August 31, 1920:

	Less than guarantee	More than guarantee
Southern	$712,492	.....
C., N. O. & T. P.	.....	$563,260
A. G. S.	.....	533,267
N. O. & N. E.	.....	258,048
Excess above the guarantee for the system..		$642,078

Special interest attaches to these figures because the Southern was the largest road to reject the guarantee. This showing was made after paying approximately $4,195,000 in increased wages under the ruling of the Labor Board on July 20, and without any compensating increase in rates. While the Southern was not affected directly by the switchmen's strike, except at St. Louis and Cincinnati, it was hard hit by the inability of other roads to accept freight from it. The coal shortage also increased its operating costs sharply, as it was forced to confiscate large quantities of coal at prevailing high prices as late as November. Nevertheless, the railway operating income of the Southern proper was $3,449,734 greater than from the government operation of the same lines in the corresponding months of 1919 and it earned its preferred stock dividend for the period.

Referring to the operations during 1919, the railroad did not do as much business, either freight or passenger, as in 1918, the ton miles of revenue freight, totaling 6,303,441,042, representing a decrease of 12.87 per cent from 1918, and the passenger miles handled aggregating 1,361,153,876, a decrease of 14.69 per cent. The freight revenue was $81,811,428, an increase of 7.39 per cent, and the passenger train revenue aggregated $42,302,970, a decrease of 7.82 per cent. Operating expenses increased from $91,801,425 to $113,744,813, leaving a net railway operating income of $10,611,610, as compared with $29,291,869 for the previous year and with the certified standard return of $18,653,893.



The Southern Railway System

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In an operating way a particularly creditable performance was made in 1919. In the face of a decline in freight traffic of 12.87 per cent the average revenue train load was increased from 399.09 to 446.10, or 11.78 per cent, while the average number of loaded cars in each train was increased 23 per cent and the average number of empty cars decreased 4.56 per cent.

The Southern did not add to its equipment in 1919; in fact, there was a slight decrease in freight equipment. It

did, however, accept 70 locomotives and 2,000 coal cars which were purchased by the government and allotted to it and which "have been, since they were delivered, an essential element of operating strength." President Harrison further states that "the management would welcome now a much larger addition to equipment, but the current business situation, meaning the high manufacturing cost, the prohibitive cost of capital, the unsettled state of accounts with the government, and the uncertainty of the effect of the new rates, has not yet justified a commitment in that respect." In common with other roads the termination of federal control left the Southern's equipment in a deteriorated condition, and while it has prosecuted the work of rehabilitation actively, a large amount of its equipment was scattered over foreign lines and has not reached home. The statement is further made that "in roadway there was a conspicuous lack of rail and tie renewals but when this is stated it is fair to add that the roadway of the busy main lines on which the maintenance efforts had been concentrated remained in good condition."

One of the characteristic features of President Harrison's reports of the Southern in recent years has been his optimism regarding the industrial and agricultural development of the portions of the South served by that system. This year's report is no exception in this respect. It is pointed out that the number of new industrial establishments now in course of construction, including additions to enterprises already in operation, is greater than at any time in the history of the South, 508 new industries being completed and put in operation along the line of the Southern Railway system and 294 industries being enlarged during 1919 and the first six months of 1920. Capital to the amount of $225,816,000 was invested in new industries and in the extension of old enterprises in this territory during the three years from July 1, 1917, to June 30, 1920, and the estimated cost of plants under construction on the latter date was $153,165,000. The importance of this growth is indicated by the fact that a single important industry, which it was estimated in the annual report for 1907 would yield the railway freight revenues of $500,000 per annum, is now paying it for freight transportation at the rate of $1,200,000 per annum, and the traffic handled for it in 1919 amounted to 24,132 car loads.

This industrial development is characterized principally by a movement toward the complete conversion of raw materials into finished articles. Thus, while but 528,895 bales of cotton were consumed by Southern mills in 1890, they consumed 3,491,000 bales of cotton in 1919. Again, the production of pig iron in the South in 1919 was 2,321,000 gross tons, an increase of 86 per cent over 1890, while over 50 per cent of the production in 1919 was converted in the South into a large variety of finished articles as compared with only 20 per cent in 1890.

With industrial development such as this, and the double track between Washington and Atlanta in operation, which "has materially enlarged the capacity of the plant, the benefit of which is now felt more than ever before as is evidenced by the fact that since March 1 the company has handled a larger traffic than at any other time in its history," the outlook for the Southern is bright. This is particularly shown to be so by the fact that none of the advances in rates are reflected in the return for the guarantee period.

In commenting on the advances in rates, President Harrison states that, "It is futile to attempt at this time a prediction of future net income under the present scales of rates and wages. Only experience under the new order of things can determine what will be the effect upon the divisible income, but we face the future with courage and with confidence."

Mention has been made above that the standard return for the Southern railway in 1919 was $18,653,893, which is the same amount given in the report as for 1918. The total corporate income was $20,884,020, as compared with $20,832,627 in 1918. The amount of $15,742,453 was deducted for interest, rentals and other charges, leaving a balance of income over charges of $5,141,567, as compared with $5,708,913 in 1918. The same dividends were paid in 1919 as in 1918; namely, $3,000,000, or 5 per cent, on the preferred stock. The surplus for the year was $2,137,260 in 1919 as against $2,700,205 in 1918, the decrease being represented chiefly by an increase of $626,689 in interest paid on unfunded debt; namely, on interest bearing obligations required of the company by the director-general of railroads and the War Finance Corporation in return for funds applied toward the payment of fixed charges during the period of federal operation.

The following table shows the principal figures for operation under the government in 1919 and 1918:

	1919	1918
Mileage operated	7,102	7,102
Freight revenue	$81,811,428	$76,183,282
Passenger revenue	42,302,970	45,891,606
Total operating revenues	129,787,812	126,574,297
Maintenance of way and structures	24,169,452	13,568,311
Maintenance of equipment	27,467,881	24,570,010
Traffic expenses	1,554,890	1,493,452
Transportation expenses	56,335,718	48,772,492
General expenses	3,285,091	2,659,714
Total operating expenses	113,744,813	91,810,425
Taxes	4,042,116	3,742,144
Net railway operating income	10,611,610	29,291,809

Praise for Our "Ship Now!"

CLEVELAND.

TO THE EDITOR:

Permit me to congratulate you on your editorial, "Ship Now," in your December 10 issue.

The shortsightedness of American business in the aggregate is amazing. We will pass through a period of congestion such as we have had during the present year and which has undoubtedly cost the country hundreds of millions of dollars, and yet make little or no change in our business methods which would prevent a repetition of the same thing occurring another year, and it is constructive editorials such as yours which make us think and which will help us avoid further pitfalls.

CHARLES F. LANG,
President, The Lakewood Engineering Co.

New Books

Annual Statistical Report, American Iron and Steel Institute for 1919, 6 in. by 9 in., 96 pages, bound in cloth, published by the American Iron and Steel Institute, 61 Broadway, New York City.

This book is a most complete compilation of iron and steel statistics of production, consumption, exports and imports, with a brief summary of prices. It covers the basic materials, pig iron and steel ingots and the principal classes of products, such as steel rails, plates, structural shapes, wire rods etc. Some of this information, as for instance the production of steel rails, has appeared in advance bulletins issued during the year, abstracts of which have been published in these columns. One table in this volume gives the approximate consumption of rails in the United States based on calculations made from figures on production, imports and exports. According to these figures the consumption in 1919 was only 1,568,402 tons, as compared with 3,052,635 tons in 1913 and 3,654,794 in 1915.

THE EXPORTS OF OIL from Mexico in the first six months of the calendar year 1920 reached nearly 60,000,000 barrels, representing an increase of 72 per cent over the exports in 1919.



***Before the Final** Shift—the 434-ft. Span on the Left—the 261-ft. Span on the Right*

Complex Bridge Transfer Successfully Completed

A 3,200-Ton Span Rolled 38½ Ft. and a 1,200-Ton Span Raised 15 Ft. During Interruption to Traffic

LAST MONDAY the Baltimore & Ohio successfully transferred traffic from its old Allegheny river bridge at Pittsburgh, Pa., to new spans at the same site by one of the most complex bridge span shifting operations ever attempted during an interruption of traffic. The loads were not as great as those involved in the transfer completed in the Union Pacific bridge at Omaha, or the Allegheny river bridge of the Bessemer & Lake Erie, but the restoration of traffic in this case was contingent upon the successful completion of such a number of diversified operations that the successful outcome of the transfer marks a noteworthy accomplishment in bridge engineering.

This work comprises a most important step in the replacement of a bridge built in 1884 by the Pittsburgh Junction Railroad, now a link in the Baltimore & Ohio's New York-Chicago line. The old bridge was designed by Theodore Cooper and consisted of four through-truss, double-track spans varying in length from 167 to 250 ft. and crossing the river on a skew of 75 deg.

On the east or Pittsburgh end, this bridge has a long steel viaduct approach occupying Thirty-third street, while on the west end there is a long curved approach consisting of several deck girders and a through-truss span on a sharp skew across the back channel of the river. Inadequacy of load carrying capacity in spite of extensive reinforcement necessitated the renewal of the entire old bridge with the exception of the east approach, which had been rebuilt several years ago. The character of the new structure is shown in the general plan and profile.*

Had this project involved simply a replacement by a structure of identical outline but of larger loading capacity, the engineering problems involved would have been relatively simple, but in accordance with the policy laid down by the United States War Department, the railroad was required to build a new bridge affording greatly increased waterway provisions. This necessitated main river spans of 434 ft. and 261 ft., respectively, as well as an increased head room above the pool level of 8.4 ft. On account of the deeper floor of a new bridge and other considerations, the actual raise in grade was considerably more than this. The position and length of these spans was such as to necessitate

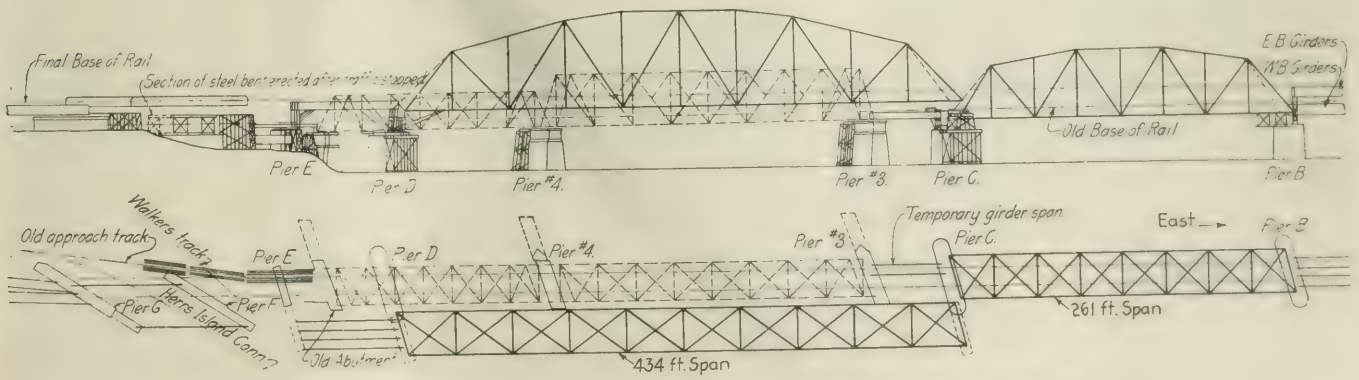


Diagram Illustrating Conditions Just Previous to the Shift Made on December 19

*A general description of the new bridge with an account of the construction of the substructure was given in an article by H. A. Lane, chief engineer of the Baltimore & Ohio, appearing in the *Railway Age* of May 28, 1920, page 1504.

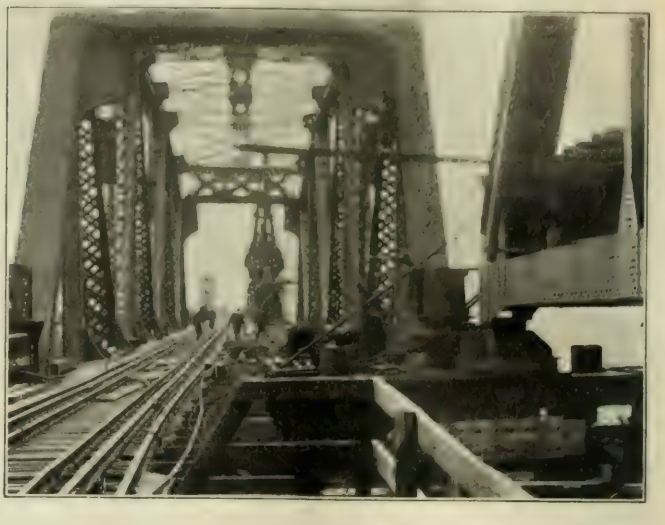
an entirely new substructure and owing to the prohibitive cost of a new right of way for the Pittsburgh approach, the plan was definitely committed to the use of the original center line for the new bridge. This condition, together with the raise of grade, imposed a complex problem not only in the main spans but also in the approaches. This had been anticipated in the reconstruction of the steel viaduct of the east approach in 1916 which was fabricated in such a way that the raise in grade could be readily accomplished. In the west viaduct the problem was solved by building an entirely new approach on an independent location except where the two approaches come to a point of tangency on the center line of the bridge.

Had no further conditions been imposed, it is probable that the new river span would have been erected on the new grade and then shifted over by a sidewise transfer according to established practice. However, a further condition was introduced in the requirement of the War Department that a 150-ft. channel way, clear of falsework, must be maintained at all times. The difficulty with this provision lay in the fact that the construction of the new piers left only one waterway opening of 150-ft., namely that between the old Piers 3 and 4, which lie within the limits of the new 434-ft. span. Consequently, the placing of falsework to erect this large span would close this gap of 150 ft. It was suggested that this difficulty could be overcome by the partial use of the cantilever method of erection, but since the span would have to be erected to one side of the old structure, this would have involved cantilever erection without the security afforded by a masonry substructure. This suggestion was therefore discarded as involving too great an element of risk.

Upon further study it was concluded that the only feasible method applicable was to erect the shorter river span first, substitute this for the two old Spans 1 and 2 and after removing them, tear out the old Pier 2 and thus provide a temporary waterway of 150 ft. that could serve for navigation while falsework for the 434 ft. span closed up the other channel. This plan, however, introduced another complication. Owing to the fact that the new 261-ft. span would be used to carry traffic for a time with portions of the old bridge, it was necessary that this span be on the same grade as the old bridge. As other conditions pointed to the advisability of erecting the 434-ft. span on the new grade, it was necessary that the 261-ft. span be raised to the new grade at the time that the longer span was rolled into position.

The two truss spans are curved chord Warren trusses riveted throughout. There are no sub-panels and the panel lengths are greater than usual; namely, about 44 ft. The design provides for two tracks 14 ft. center to center with a side clearance of 8 ft. and a vertical clearance of 25 ft. In general one inch diameter rivets have been used with 1¼ in. rivets for field connections of main members. The shorter span weighs about 1,100 tons and the longer one 3,200 tons. As the combined length of the two new river spans is less than that of the four old ones, the east and west approaches were lengthened by deck girder span 93 ft. and 73 ft., respectively.

The smaller of the two river spans was erected on falsework down stream from the old bridge, the erecting equipment and material being delivered from the east approach by means of a short trestle spur from the eastbound track.

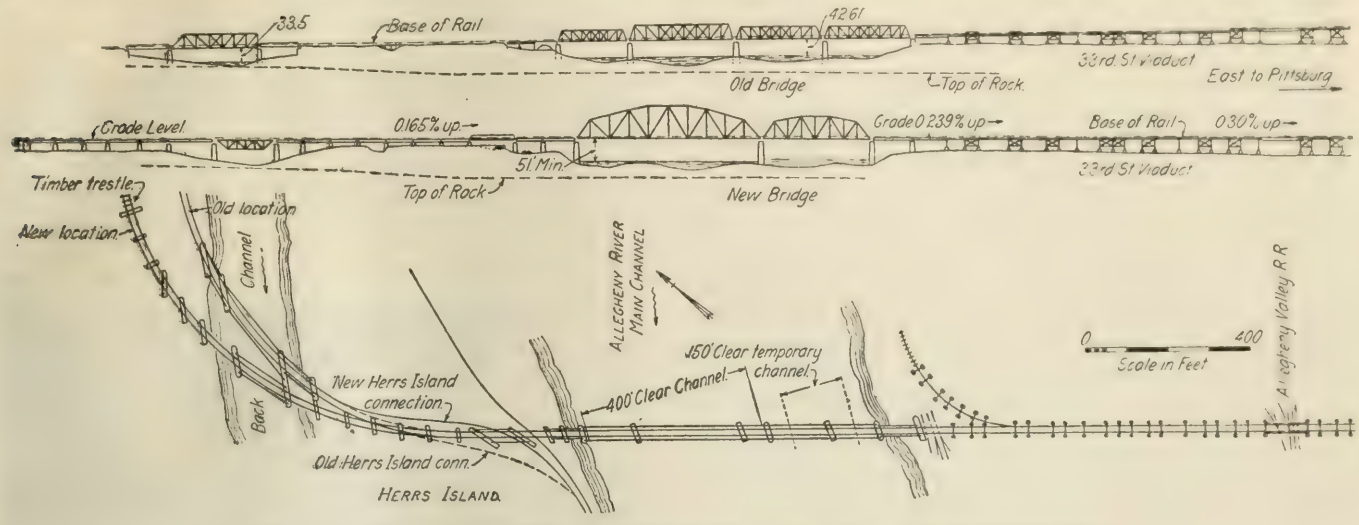


Looking Through the 261-ft. Span—The Temporary Girder Span in Foreground.



East End of Skew Girder Span F7 Before Being Rolled Into Place

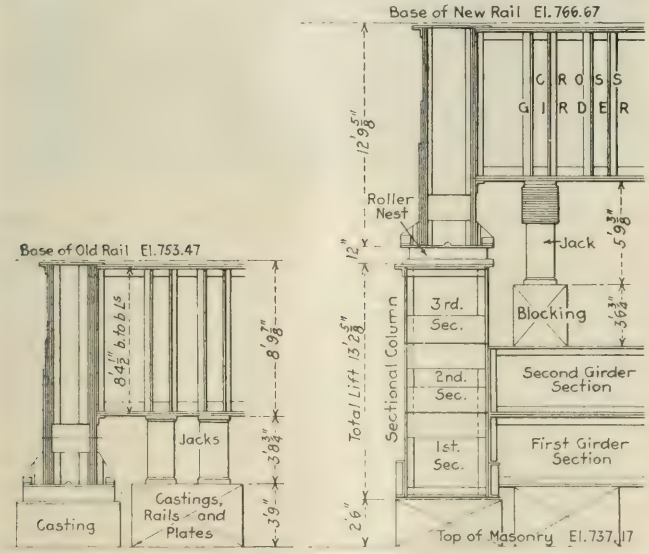
The erection was facilitated to some extent owing to the fact that the limited load carrying capacity of the old bridge had resulted in restricting traffic to a single track, so by using the westbound track for traffic, the eastbound track on the east approach could be given over largely to the use of the erecting forces.



Location Map of the Bridge and Elevations of the Old and New Structures

The Erection of the 261-Ft. Span

This span and the new 93-ft. approach girder span flanking it on the east were rolled into position on September 1, the old Spans 1 and 2 being rolled out in the same operation. The entire change required an interruption to traffic of only three hours and three minutes. This change also involved the insertion of a temporary girder span in the westbound track to make up the gap between the west end of the new 261-ft. span and the east end of old Span No. 3.

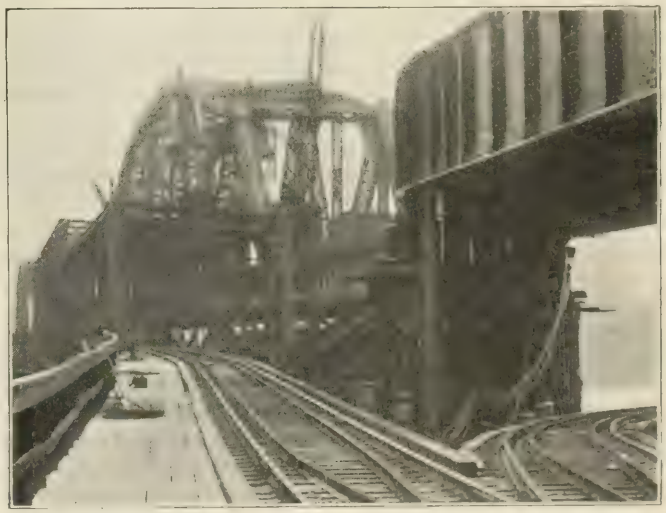


Initial and Final Positions of Jacking Rig for Raising the East End of the 261-ft. Span

The 434-Ft. Span

Immediately following this change the floor systems were taken out of the two old spans and the two old trusses pulled over against the north truss of the new span, to which they were lashed securely and dismantled. This operation released Pier 2 so that it could be removed to provide a new channel opening and thus permit the completion of the falsework for the 434-ft. span.

The erection of the new 434-ft. span and the new 73-ft. girder span to the west of it was prosecuted from the new west approach which had been erected previously. Owing to the fact that the new piers built for the 434-ft. span and the girder span to the west of it had to clear the under side of the old truss spans still carrying traffic on the old grade, the new piers could not be built up to the full height necessary to receive the new spans on the high level. Consequently, it was necessary to provide the new steel spans with steel bents to support them on the piers until the concrete work could be built up around them after the spans were in final position. At Pier C, supporting the east end of the long span, this bent could be set in place as soon as the old spans had been removed. Consequently, the top of this bent was made to serve as the base for rolling in the span, but on Piers D and E this could not be done, so the bents were erected on the falsework under the ends of the old span with the rollers placed underneath the bents. In other words, it was arranged to roll the bents in with the spans.



The Old Bridge from the West Approach—New 434-ft. Span in Background—The Skew Through Girder Span F6 on the Right

Similar complications arose in connection with the through girder span F-G which crosses the Herr's Island connection track. This span was also erected to one side of the final location but owing to interference with the operated track the steel bent used to roll in the east end of this span could

not be erected complete until traffic was suspended. Owing to the fact that this span is on a skew of a different angle than the river bridge, the ends of the intervening span E-F are not parallel. Consequently, it was not practicable to roll in that span and it was necessary to erect the girders after the adjacent spans had been shifted into final position. The west approach involved less complications since it was possible to raise the girders for the eastbound track to the new grade following the placing of the 261-ft. span. Consequently the eastbound track on the approach was ready for service on the new grade by the time that the final shifting operation was to be carried out.

The Final Transfer

The final change to the new superstructure was made on December 20 according to a plan in which each step was carefully arranged in advance. Each member of the erecting organization was assigned to particular duties which were rehearsed beforehand insofar as this was practicable. As in previous operations of the same character, extensive use was made of telephones as a means of co-ordinating work.

Following the passage of the last train at seven o'clock, a. m., the track was cut and temporary girders removed in the Span C-3. They were lifted out by a derrick car and carried back out of the way. Similarly, the track was cut at Pier E to remove the I-beam spans carrying the operating track across that pier. This left the pier clear for rolling the new Spans C-D and D-E and the old Spans 3 and 4, the four spans being handled as a unit. The entire operation was completed by nine o'clock a. m. Power for this operation was supplied by two locomotive cranes standing on the long span and by a derrick car standing on the new west approach. As soon as the new spans were in final position, they were jacked up sufficiently to remove the rollers and rails and then lowered to permanent bearing on the masonry.

While this work was in progress, the track was cut over Pier F and the steel bent on that pier was extended to enable the Span F-G to be rolled over to final position and then lowered onto the masonry. After a slight adjustment of the ends of the girders to the span immediately to the west, the track was connected up and a derrick car came out on the Span F-G and erected the girders for the Span E-F picking them up from trucks on the track crossing below. With the completion of this operation the entire new superstructure was in place on the new center line ready for the operation of traffic over the eastbound track except that the 261-ft. span was still on the old grade.

The raising of the 261-ft. span was accomplished as shown in one of the drawings. Two 500-ton jacks were placed under the end floor beam at each corner of the span, the arrangement being to have one jack lifting while the other one was being fleeted preparatory for the next lift. The jacking was carried on simultaneously with the building up of the supporting columns under each shoe, these columns being made up in sections about four feet high, which were inserted in place as fast as progress in the jacking made room for them. To afford suitable transverse bracing for the sectional columns, sectional girders or diaphragms were introduced between the two columns at each end of the span as the raising progressed and further advantage was taken of these girders by using them as supports for the jacks so that it was not necessary to build up blocking for the jacks to the full height of the lift. Two of these girders were provided at the west end of the span and three at the east end, the total lift of the span being about 13 ft. at the west end and 15 ft. at the east end. While this process was being carried on, the span was being followed up by rail grillages placed on the top of the partially completed columns and arranged in such a way that only one-half of this grillage was removed until the next column section was slipped half way into place. As a further safeguard the heads of the jacks were followed up by filler plates surrounding the plungers. This stage of the work occupied the longest time, being started about nine a. m., and completed ready to take traffic at 1:40 a. m. Tuesday.

Before train service can be turned over the westbound track it will be necessary to raise the girders for the westbound track on the east approach trestle to the new grade. As explained previously provision for this raise of grade was made when this viaduct was built. This was done by framing the first 16 spans of longitudinal girders nearest the bridge between the cross girders of the steel bents, while the remaining girders of the trestle were all placed on top of the cross girders. The raise in grade was, therefore, accomplished by shifting the longitudinal girders from between



Jacking Operations on Pier B While Raising the 261-ft. Span

the cross girders to their top flanges, supplemented by the use of shims or blocks of varying thickness, while further raise of grade was provided for in the seven spans nearest to the bridge by designing the connections of the cross girders to the columns so that the cross girders could be moved up a variable distance on the columns. As this last change could not be made until the girders for both tracks were raised, the girders for the eastbound track, which were raised first, were supported temporarily on cross-braced pedestals standing on tops of the cross girders.

The tracks at the bridge are subjected to 28 scheduled train movements per day in addition to a variable number of extra freight trains and frequent switching and light locomotive movements. During the time that traffic over the bridge was suspended, arrangements were made to have all local passenger trains running west of Pittsburgh operate in and out of the Allegheny passenger station, while all through passenger trains were operated over the Pittsburgh & Lake Erie between New Castle Junction and McKeesport.

The steel in the new superstructure aggregated approximately 6,000 tons and was fabricated and erected by the American Bridge Company. The work has been carried out under the supervision of H. A. Lane, chief engineer, Baltimore & Ohio, Baltimore, Md.; W. S. Bouton, engineer of bridges, and P. G. Lang, Jr., assistant engineer of bridges. A. C. Clarke, district engineer, is in direct supervision of the work in the field. J. E. Greiner & Co., Baltimore, Md., are the consulting engineers.

Annual Dinner of the New York Railroad Club

James A. Emery, Counsel of National Industrial Council, Principal Speaker of Evening

THE ATTENDANCE of 1,750 members and guests at the annual dinner of the New York Railroad Club at the Hotel Commodore Thursday evening, December 16, might well be taken as an indication that the annual dinners of this organization have become one of the real functions of the railway and railway supply field. This was the second annual dinner of the club; last year's dinner—in January—was properly termed a "rousing" success; but the attendance at this year's dinner exceeded that of last year's by something like 350.

The principal address of the evening was made by James A. Emery, counsel of the National Industrial Council, who spoke on "Transportation Combinations and the Public Interest."

The introductory address was made by John A. Droege, general superintendent of the New York division of the New York, New Haven & Hartford, who has recently been elected president of the club. The toastmaster of the evening was William G. Besler, president of the Central of New Jersey. One of the features of the evening was the presentation of a loving cup to H. C. Manchester, superintendent of motive power of the Delaware, Lackawanna & Western, the retiring president; the presentation was made by H. H. Vreeland of the Interborough Rapid Transit Company, who is one of the leading members of the club and one of long standing.

"Bobby" Besler, daughter of President Besler, was in charge of a very successful musical entertainment for the occasion. She led mass singing of a number of popular songs reworded in some cases to make railroad songs.

Mr. Emery's address on "Transportation Combinations and the Public Interest" discussed principally the right of railway employees to strike. "It cannot be the legitimate object of any (labor) combination," he said, "to deprive the public of a service vital to its existence, to stop its water supply, to deprive it of fuel, light or heat, to obstruct the mails or production intended for national defence, above all, to starve a community or the nation by deliberately and concertedly depriving it of that transportation without which it cannot live. If these are purposes which we cannot permit combinations to undertake, for the same reason they cannot be the means through which any other purpose, however good in itself, may be accomplished." He discussed the matter of National Labor Boards of Adjustment and offered three tests as to labor agreements to determine whether the purpose of Congress, as stated in the Transportation Act, is being executed and the interest of the public protected.

An abstract of his remarks follows:

Transportation Combinations and the Public Interest

The vast service of the American railroad system is today performed through private corporations, subject to public regulation. In it is invested a vast capital that must be continually renewed and enlarged if it is to adequately perform its task. Its operation demands highly trained executives and a numerous, ever-increasing operating and mechanical force. No field of enterprise or service has presented more inspiring examples of the exceptional opportunities and rewards of American life. During the past quarter-century, which has witnessed the widespread organization of labor, the operating and ultimately the mechanical and industrial departments of the American railroads have been largely organized into unions of their craft. In the industrial, as distinguished from the operating divisions, widespread organization was brought about during the period of government control and operation. Were these organizations committed to purposes and methods as compatible with the public interest, and did they enjoy a leadership and administration as conservative as that which formerly characterized the great railroad brotherhoods, there would be small cause for public anxiety. But they boldly assert the unrestrictable right and, if necessary, the intention to concertedly withdraw from the service in which they are engaged as a means of compelling the acceptance of such demands as they may make in the defense or furtherance of their common interest.

Reduced to its plainest terms, it is the assertion of the right to deprive the people of the United States, in whole or part, of railroad transportation, through the combination of those who have voluntarily engaged in that service. We have witnessed such movements in operation in the United States upon a national scale in the famous Debs' strike and, in a lesser degree, on several other occasions, the most notable recent example of which was the so-called outlaw switchmen's strike.

Within a year, the same spectacle has been presented in England, France and Italy. The suspension of traffic there, as here, caused heavy loss and great suffering, but in no instance was the strike successful nor did it fail to excite popular reaction that was as vigorous as resentful. The issues involved in the rights asserted and in the consequence of their exercise are far larger than any issue between employer and employee. Although they may arise out of that relationship, they transcend even the field of transportation, though the principle at issue finds no better exemplar than that area. The question is, does our modern industrial society possess adequate powers of self-defense or not? Are the people of the United States powerless to restrain a combination of those voluntarily engaged in the public service within the limits of social safety, or must they submit to the unrestricted exercise of its collective power even though it imperil their social structure?

The Responsibility of the Individual

To ask that question is to suggest its answer, for there is a principle written in the hearts of men older than any script of black-letter law that the safety of the people is the supreme law. It might, therefore, be enough to answer the question in terms of the limitation which the common good may impose upon association and combined action, but it reinforces that consideration and clarifies the answer to the plausible and ambiguous declaration that "no man may be required to remain at work against his will" if we first consider social responsibility in terms of the individual. Is it true that even the individual is free to arbitrarily refuse or withdraw his service whenever he pleases, under any circumstances and in any civil employment? Common sense, common morality and common law will equally answer "no." Quite apart from any mere breach of contract, there are many circumstances in which it is not merely morally wrong for the individual to quit but he is or may be placed under legal penalty if he does.

The Restraint on the Combination

If the dearest rights of the individual must yield to such restraint as is essential to protect the common good, how can

a combination of individuals avoid such restraint as is necessary to assure social security. For whatever the power of social harm which resides in the individual, that of the combination is infinitely greater. For the combination is not a mere aggregate of individuals. It is not a crowd or a mob. It is the organized numbers in which the will and judgment of each is subordinated to the common purpose of all. Great and beneficial as are the uses, as the tool of social progress, and the instrumentality of collective defense and advancement, abused, it may become the most destructive weapon in the social arsenal. Conscious of the vast power which combinations may create for good or evil, government, as the representative of the people, scrutinizes with critical eye the conditions and circumstances under which many obliterate their individuality, subordinating it to the accomplishment, by common methods, of the associated purpose. It is therefore those methods and this purpose which becomes the test, morally and legally, of its evil or good, its harm or help, its legality or illegality. If, therefore, the public necessity may require the individual to meet the social responsibilities of his job, for an obviously greater reason, it must be true that no form of combination which does not itself add, but, rather, subtracts from the freedom of the individual, can minimize that controlling social obligation. Furthermore, if the individual may not do that which is socially injurious, for a far greater reason the combination may not be permitted to do so. Pursuing this consideration, it cannot be the legitimate object of any combination to deprive the public of a service vital to its existence, to stop its water supply, to deprive it of fuel, light or heat, to obstruct the mails or production intended for public defense, above all, to starve a community or the nation by deliberately and concertedly depriving it of that transportation without which it cannot live. If these are purposes which we cannot permit combination to undertake, for the same reason they cannot be the means through which any purpose, however good in itself, may be accomplished.

"The Ballot Would Have Lost Its Meaning"

Nay, once accept the principle that any group is permitted to exert its collective economic power without restraint as to purpose and you have made the strike an accepted weapon of political revolution. Through such means the British miners would have secured a parliamentary nationalization of the coal mine, the Italian factory operatives a socialistic control of industry. Within recent memory that principle propelled the Adamson Act through an unwilling Congress. Asserted by organization in an indispensable utility and reinforced by sympathetic action in other fields of activity it could enforce its political program through threat of social demoralization. The ballot would have lost its meaning.

Labor and the Transportation Act

With all these conditions to which I have alluded fresh in its mind, Congress undertook, in the spring of this year, the formulation of a Transportation Act. An important and inevitable part of its problem was to protect the paramount public interest in uninterrupted and efficient transportation by such regulation of the relations between the carriers and their employees that, while recognizing the right of each, continuous train movement was assured against arbitrary interruption.

The Senate and House, after lengthy hearings, undertook to meet the problem by different methods. Before the interstate commerce committee of each body, the right of employees of carriers to engage in direct or sympathetic strikes in defense or promotion of their interests has been emphatically asserted and it had been more than intimated by authorized representatives that valid legislation restricting this right not only might not be obeyed but disobedience to it might not be counselled.

The Senate met this challenge of public authority by providing for the compulsory arbitration of disputes between interstate carriers and their employees, which threatened the interruption of commerce. The House committee proposed a method of voluntary adjustment and arbitration, but the House itself amended the committee's bill by the adoption of the so-called "Anderson amendment" providing for three original and appellate boards of adjustment and arbitration. The membership of these was to be composed of representatives of the carriers selected from their management, and of the employees from the officers or members of 16 unions named in the bill. There was, however, no final requirement for the acceptance of the ultimate conclusions of these tribunals. In the nature of things, the proposal made it impossible for the unorganized employee to obtain representation in the presentation or adjustment of his petition or complaint except through an organization of which he was not a member. Its practical effect was to unionize railroad employees by statute.

These conflicting proposals were reconciled in conference between the House and Senate by mutual concession, resulting in the formulation of provisions for a permanent tribunal of ultimate adjustment and arbitration in which, for the first time, the public is formally represented. This body, known as the Railroad Labor Board, is composed of nine members appointed by the President of the United States and confirmed by the Senate. Three are to be named from nominations made by the employees of the carriers, three from the nominations of management, the three public representatives being directly appointed by the President.

Upon management and men alike, the act places the legal responsibility of utilizing every means of avoiding an interruption of service. It recognizes conference between the parties as the original mode of settling differences. It validates agreements which they may voluntarily make between themselves, and approve such means of adjustment as they may jointly establish. But throughout, it equally recognizes and asserts the rights of unorganized employees.

The Railroad Labor Board

The Railroad Board may itself compel investigation, but not arbitration. To it is reserved the right of ultimately reviewing any finding of original instrumentalities of adjustment which the carriers and their employees may set up. It may assume jurisdiction of any dispute at any stage in a controversy, if there be undue delay or other good cause, and it is empowered to suspend the operation of any wage decision until it has examined the effect upon the rate structures. It is required that at least one representative of the public shall be part of the majority which approves such decision.

The tribunal and its procedure is novel in that for the first time the direct representation of the public is assured not only in any controversy which may threaten the interruption of transportation, but in any wage dispute tending to enlarge the burden of transportation.

These provisions grew out of elaborate Congressional discussion, in which it was conceded that Congress possessed the power to compel arbitration of disputes threatening the interruption of rail transportation between the states, but the direct prohibition of strikes and lockouts, originally incorporated, was abandoned and moral compulsion substituted. There is no direct penalty for refusal to arbitrate, but it would be a bold carrier or union that would exhibit such contempt for the means of adjustment and adjudication by law, or so poor an estimate of the justice of its own cause that it would decline to submit its case to an impartial tribunal upon which national attention was fixed, and rather prefer to enforce its demands by the paralysis of an indispensable service.

The first dispute offered to the consideration of the Rail-

road Board involved pending wage adjustments which had been at issue for months before its creation. These, you will recall, despite some angry demands for haste, were adjudicated after a full hearing and the decision of the Board accepted. There was recently submitted to it a controversy the implications of which are of the deepest public consequence. The Standard Associated Railroad organizations, some 16 great national unions, demanded, through their executives, the establishment of National Boards of Adjustment, which was in effect the continuation of existing boards of adjustment provided under National Agreements with the same organizations negotiated during the war and immediately thereafter by the United States Railroad Administration.

National Boards of Adjustment

The Railroad Executives did not concur in this and referred the matter to the Railroad Labor Board, with the suggestion that it be made the subject of a public hearing. To this the representatives of the unions, in turn, disagreed, suggesting that it be a matter of conference between the Board and the representatives of both managment and the men.

Under date of December 7, the Board itself has decided "that Congress did not intend the United States Railroad Labor Board should exercise jurisdiction over the question of the creation of adjustment boards." The Board, however, offers its friendly offices and its advice in conference with representatives of the carriers and employees involved.

I feel this is neither the time nor the place to discuss the serious issues involved in this controversy, but I venture to emphasize the fact that the creation of National Boards of Adjustment presupposes the continuation of the national agreements established as a wartime necessity, but, in their terms and conditions, admittedly unfitted for the circumstances of peace, and by their nature and operation, imposing, through the carriers, an extraordinary economic burden upon the public.

These are great and serious issues. They affect not merely the carriers and their employees. They relate directly to the continuity, efficiency and cost of railroad operation. By their circumstance, they inevitably react upon our industrial, political and social life. It is therefore vital that the public should be represented in any consideration of these great policies that are to ultimately determine their adoption, modification or rejection. In the light of this supreme public interest, there are certain tests that it seems to me may determine whether the purpose of Congress, as stated in the Transportation Act, is being executed and the supreme interest of the public protected.

Four Tests Suggested

I submit:

1. No mode of adjustment nor agreement should receive approval that does not assure a review participated in by a representative of the public of every serious controversy or negotiation. Any proposal to establish relations between carriers and their employees the purpose or effect of which is to eliminate review or supervision by the representatives of the public should be rejected.

2. No form of adjustment or agreement is in conformity with the purpose of Congress nor should be approved by the Board that does not equally recognize and protect the rights to employment, adjustment and representation of unorganized employees of the roads.

3. No form of adjustment or agreement should be approved that does not safeguard the efficient and continuous operation of train service. To this end each road should be considered as the unit of operation and self interest, management and men stimulated to the cultivation of personal relations by continuous contact between executives and employees, that each man may find in the road which he serves the prompt means of protecting his interest and the opportunity of advancement through merit.

4. Since the public interest requires the assurance of uninterrupted service, the Board should ask the carriers and their employees, in whatever form agreement between the respective roads and their employees take, to accept without strike or lockout the ultimate decision of the Board upon any question within its jurisdiction.

The British Coal Strike

By Robert E. Thayer
European Editor of the *Railway Age*
London, November

THE BRITISH COAL STRIKE which lasted from October 16 to November 4 has been settled with a compromise, the men getting their 2 shillings (40 cents) a shift advance up until January 3, 1921, and after that an adjusted increase based on output up until the end of March, when a permanent scheme of wages will have been determined between the mine owners and the miners' union.

This strike may well be classified as the best organized affair, with respect to both sides of the controversy—the miners and the public—of any similar undertaking. The miners followed their leaders and the well established precepts of their union to a man. The public, including the industries, railways, etc., having had due warning—the strike was anticipated since July 7, when the miners first presented their claims—were as well supplied with fuel as their storage capacity would allow. It is, of course, by no means inferred that the strike did not inflict great economic damage to the entire nation—the Minister of Transport estimates the loss in revenue to the railways on account of the strike at from £2,000,000 ($8,000,000) to £3,000,000 ($12,000,000) per week—but as to the actual suffering from the lack of coal there was no difficulty experienced.

Certain industries which depended upon large daily supplies of fuel from the mines were forced to suspend business soon after the beginning of the strike owing to a lack of storage space. The railways, although, taken as a whole, well supplied with coal, cancelled many through trains as a matter of precaution. The householders, for similar reasons, were rationed to 112 lb. per week provided that they had less than half a ton in stock. Transatlantic sailings were cancelled in fairly large numbers. All export of coal was absolutely prohibited. With all these precautions, however, there was nothing apparent to the man on the street that a strike of such damaging possibilities was in progress.

No reproach can be placed on the government—the mines being still under state control, the government carried on all the negotiations—on the one hand and the union leaders on the other for the manner in which the strike was handled. The government held itself ready at all times to treat with the miners' leaders. The miners, on their side, were always ready to treat with the government. The strike came about by the rank and file of the miners rejecting, by ballot, the terms accepted by their executive committee in its negotiations with the government. With the disposition of the men thus ascertained by the union leaders, every means was taken to make the strike thorough and effective. It was the work of a wonderfully well organized body of men which, by the way, is characteristic of English labor unionism.

During the first week of the strike there was no apparent move on the part of either side to effect a settlement. The government used no forceful tactics to drive the miners to a settlement. For it a waiting policy was the only one followed. With the miners, however, it was quite different. Labor in all its branches is very closely allied throughout

England. The strike had progressed only a few days when the transport workers, made up of bus men, teamsters, tramway workers, etc., threatened a sympathetic strike. They were followed later by the National Union of Railwaymen. So at the end of the first week the general situation appeared serious. The threatened sympathetic strikes were the work of the extremists, of which England has quite a number but who by no means have control. The more moderate of the union leaders were able to keep the men in check and prevented any precipitate action by the plea that there still was a hope of settlement.

The effects of the threats were not lost, however, and undoubtedly hurried the reopening of negotiations by the government with the miners. On Sunday, Mr. Lloyd George, the prime minister of a coalition government and perhaps the greatest "compromiser" England has ever seen, called the miners' executive into consultation and as a result of a series of secret conferences an agreement was reached between the three parties—the government, the owners and the miners' executive. This agreement put before the men in a ballot form was rejected by a bare majority of 8,459 votes or 0.62 per cent of the votes cast *but* under the rules of the miners' union—"If a ballot vote be taken during the time a strike is in progress, a vote of two-thirds of those taking part in the ballot shall be necessary to continue the strike"—the strike was declared "off" and the men returned to work on November 5.

The Terms

The original demands of the miners were published in a short article, giving an idea of the situation in September, in the *Railway Age* of October 1, on page 566. They were briefly:

1—That the price of household coal should be reduced by 14 shillings 2 pence (about $2.84) per ton.

2—That an increase of two shillings (40 cents) a shift, and corresponding increases for youths and boys be given immediately.

With undisputed evidence being given by the Government that the profits of the coal industry would not support such demands—the reduction in price involved £36,000,000 and the increase in wages £27,000,000 against which there was only a profit of £32,000,000—the miners' executive committee agreed to waive the demand for the reduction in the price of household coal but still insisted upon the increase in wages. It was not difficult for the miners to make this concession for they found, not as they had hoped, that they did not gain the least bit of sympathy from the public for their cause. They were very much surprised to find the public so little interested in their price reduction demand and not a little disappointed to find that it had not one iota of influence in winning the public over to their side.

With demand No. 1 eliminated the miners set about winning the two-shilling increase. To this the government objected without a definite guarantee on the part of the miners for increased output. The negotiations had, up to this time, been conducted by the Board of Trade but with this "empasse" the negotiations were carried to a higher court—the prime minister. He brought the mine operators into the discussion and succeeded in having the date of the strike, which was called for September 25, postponed. An agreement was reached between the then three parties on October 1, to the effect that:

An increase of one shilling, six pence and 4½ pence will be paid to the men, youths and boys, respectively, for an average output of 240,000,000 tons per year.

An increase of 1½ shillings, nine pence and 6¾ pence, respectively for an average output of 244,000,000 tons per year.

An increase of two shillings, one shilling and nine pence, respectively, for an average output of 248,000,000 tons per year.

This was put before the rank and file of the miners by ballot and rejected by a vote of 181,428 *for* and 635,098 *against*. As a result of this ballot the strike went into operation on October 16.

The terms of settlement were concluded, as mentioned above, during the second week of the strike. It gave the men their two shillings advance per shift for eight weeks with an adjustable increase based on output after that time and until March 31, 1921, when an entirely new and permanent wage scale will be developed by the miners and the owners. The provisions of this final settlement are unique. While the wages for the first three months of 1921 are, in effect, based on output, the agreement states that the increases for these three months shall be governed by the amount of the proceeds from export coal over a previous test period and further that all coal mined above the rate of 219,000,000 tons per year shall be considered export coal, whether it is exported or not, and that the price per ton of the export coal is to be considered at the price which prevailed during the September quarter—a very favorable quarter for the miners—regardless of what price it actually sold for.

Another interesting item in the agreement is that the mine owners, who now receive standard profits plus 10 per cent of any surplus profits, agreed that their 10 per cent of the surplus profits should be reduced upon the same principle as the miners wages if the proceeds necessary to justify the wage were not realized. In this way both the miners and the mine owners have a direct interest in improving the output—a condition the government has throughout the controversy sought to obtain.

Report on Globeville Collision

The Interstate Commerce Commission has issued a report, dated November 17, and signed by W. P. Borland, chief of the Bureau of Safety, on the butting collision of electric cars on the Denver & Interurban, near Globeville, Colo., on September 6 last, in which 11 passengers were killed. The cars met, on a single track, when both were running at about 30 miles an hour, or faster, and two employees were killed and 209 passengers and five employees were injured. The northbound train, extra 158, had no right over the southbound, which was regular 308; but it started from Globeville at 11:30 a. m., which was the minute that 308 was due there.

Globeville is the north end of double track, and there is a train register there; but the conductor and the motorman of the extra had both neglected to check it. Conductor Schulze said afterward that he was "under the impression" that No. 308 was due there at 12:30 instead of 11:30. He had no time table and depended upon one carried by Motorman Cripps. He had asked for a time table, but was told that the supply had run out. He had received two train orders at Globeville and had given copies to the flagman; but the collision occurred within a minute or two and before the flagman had read them; and therefore he did not know that these orders gave his train no right over the southbound regular train. It was the duty of the conductor to check the register and fill out Form 1514 (showing that he had done so) and hand it to the motorman; but this he did not do. It appears that the operator at this station, contrary to the rule, had habitually made entries on the register for trainmen.

Conductor Schulze had never run a train over this line before, but had served two days in July as assistant conductor. The motorman had been ill with ptomaine poisoning and had lain off on the day before; he had tried to lay off on the day of the collision, but was told that is was impossible since there was no person to take his place. Conductor Schulze had had seventeen years' experience on the Colorado & Southern as a conductor.

Rehabilitating Our Railroad Organizations

A Discussion of the Means Available for Aiding the Re-establishment of Employee Morale

By C. F. Balch

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BUILDING IS A SLOW PROCESS; tearing down is more easily done. Rebuilding is an even slower process because it not only requires new and constructive effort, but the tearing down of the structure to be replaced, and the clearing up of the debris resulting. Rebuilding our railroad organizations involves the task of moulding the mentality of many men of many minds and directing their thoughts into the right channels.

Our railroads, structurally, are the greatest achievement of the age, and yet, with all their excellent qualities, they will not run themselves. The more powerful a locomotive becomes, the more brains it takes to operate it successfully, not only on the part of the man who drives it, but on the part of the man who despatches it, assigns its load, determines its field of operations, and how much or how little it does each day; i. e., the marvelous machine is capable of marvelous performance, with its possibilities all dependent upon the brains that direct it.

Our railroad organizations are even more of a structural achievement than the railroads. To operate one of our trunk lines requires the united mental effort of some 50,000 individuals acting in harmony, in addition to the physical effort involved in the maintenance of the property and the manufacturing of the power which drives the 2,000 or more locomotives.

This mental effort is the basis of all action, and improperly applied, is the basis of all accidents. Think of the economic loss incurred when, after a farmer has expended his efforts to produce 1,000 bushels of grain, hauled it to the station, and the railroad has hauled it to the central market, it is found that the car into which the grain was loaded has a leaky roof, and the grain had been damaged because the railroad agent had failed to discover the condition of the roof. It might have required but ten minutes to have prevented the loss, but the result was disastrous, not only practically nullifying the farmer's effort for a year, but ruining the food of the people who are dependent upon it for sustenance.

Rebuilding Morale

Our organizations have lost much during the last three years of that which is called "Morale"; possibly not more than in other lines of industry, but the loss in the field of transportation is more noticeable because its effect is further reaching, and thus is felt by a larger number of individuals. Those who live in cities have had it very vividly impressed upon their minds that they are dependent upon the railways for the necessities of life every day and that a cessation of transportation facilities for even a day is a public calamity.

The rebuilding of this organization, then, will require the eliminating from the minds of railroad employees of the elements of carelessness, indifference, and disloyalty and the substitution therefor of a spirit of conscientiousness, ambition and loyalty which can only bring success. What is needed is not an antidote, but a process of resuscitation, a truly constructive effort that will include some new stimulants that may properly be substituted for the practices of bygone days. This opens the way for many suggestions. How may we appeal to the employee in order to effect the change desired? Inasmuch as the effect desired is mental, the appeal must be to the intelligence as well as to the conscience of the employee.

Twentieth Century Supervision

In a recent issue of the *Railway Age* the statement was made that there was a demand for a new and advanced type of supervision—that something must be done to answer the need of the times for a closer co-operation of the forces making up railroad organizations. That article presented a real need.

There appears to be in industry, a great unrest, seemingly born of the changes of the times, and tending to get away from the form of supervision which, in the past, has been successful. This old type of supervision has followed the thought of military discipline. If an employee made a mistake, discharge him. This line of conduct is the practice among autocratic governments, both in national and industrial life. Its basis is the fact that human beings are actuated by "fear," and the supposition that an employee, trembling for the safety of his employment, will be urged to his highest effort.

The government of the United States is founded upon the principles of representation, co-operation and democracy, the fundamental basis of which is not fear, but faith—faith in each other, in our governing officers, in our institutions, in our future, and in our plan of civilization, which, if not the final form, is at least a step in advance of autocracy. It is, therefore, natural that within this civilization should develop the highest and best of human activity, and that each individual should achieve the most efficient life. This suggests that since all organized society must depend upon co-operative action for its results, and since co-operative action can develop only through intelligent supervision, there is a demand for a new type of supervision which will meet the need of the hour by producing an incentive for each employee to utilize his every effort in every instance in the best possible way.

If this is really the trend in which progress may be expected, it may be well to give serious consideration to the available resources which may be applied toward the development of such a theory, the success of which will require: (a) the cultivation of a new type of intelligence and conscience on the part of the worker, and (b) a new type of supervision which will tend to enlighten and educate the employee.

The best part of a man is his thinking apparatus, and it is the activity of his mind which is producing the unrest. The proper remedy is not an antidote, but the direction of his thoughts into proper channels. Every man has a desire to excel, and, further, every man derives a certain amount of enjoyment from the performance of those duties in which he excels, aside from the remuneration he may receive. All men are somewhat ambitious, and to realize upon that factor of human nature, it is only necessary that the effort to satisfy that ambition shall be directed intelligently at all times and places.

The question then arises as to what methods or instru-

mentalities may be employed for this purpose, and among these readily understandable, are the following:

Use of Statistical Information

Statistical statements, comparisons, and analyses, have been the foundation of all successful achievements in railroad operation to date. They have pointed the way for that investigation and supervision which has enabled operating officers to direct their efforts into proper channels and achieve results. Statistical information has heretofore, generally stated results in groups, by divisions, districts, or lines, following the lines of supervisory effort, and with few exceptions, has gone no further than to group facts so as to be useful to "Supervising Officers," and to indicate to the principal executives, the responsibilities of "Division Officers."

Experience has fully demonstrated that where statistics are so grouped as to state the results obtained by divisions, thus setting out the facts for which every division officer is responsible, they have stimulated the effort of the division officers and have proved to be an effective incentive toward better operation. Similarly, whenever (as in the case of fuel statistics) the facts set up indicate the responsibility of the individual, the result has been correspondingly satisfactory.

Use of Employees Magazines

In order that the full value of statistics may be realized, it is necessary that they be disseminated so that each employee may have that information which will enable him to comprehend the part his action plays in the final results. A popular employees' magazine may be made of great value in this manner, by extending the influence of statistical information, not only to the supervising officers, but to those employees who are actually performing the service, and who should have the same regard for economy and the same ambition for success as the management. Supplementing this, there should be a type of supervision which will bring personally before those individuals who are especially in need of correction, instruction, or assistance, such changes in methods or practices as are necessary to improve their service.

The one object to be held in view in this connection is not only to produce more complete information, but to use it, and see that the influences which may be set in motion by correct information are fully developed and that the desired result is obtained. Many competent operating officers are lacking in their appreciation of statistics, and the constant recurrence of monthly statements, varying little in contents, grows monotonous to them until some distinct feature or set back arouses them to renewed interest and activity.

Establishment of "Executive Staffs"

Supervision of the character implied may be made effective by what is known in manufacturing organizations as an "Executive Staff," a bureau or department whose function is to investigate and plan new processes or improvements, and later to record and analyze the results obtained. Such an "Executive Staff" should be so constituted as to be adequate:

(a) To procure such information as may be necessary to bring before the employee the facts, general or specific, or both, as will enable him to understand his particular part in the general scheme of his employer, and the manner in which he may contribute to its greater efficiency and success;

(b) To disseminate such information through individual, divisional or general statements and documents, published in the form of an employees' magazine, issued as statistical statements, general letters, group meetings, with lectures, or any practical manner that may be found desirable.

(c) To get into closer touch with the employee, through such supervision as traveling representatives of "Fuel Conservation Committee," "Loss and Damage Committee," "Safety First Committee," "Operation of Cars Committee," or other lines of activity which may be deemed expedient;

(d) To conduct all activities on a constructive basis, following the theory that the fundamental cause of error on the part of the employee is not from his lack of willingness so much as from his lack of information.

Disseminating Railroad Information

Behind this line of reasoning lies the suggestion that one of the greatest expandable assets of any of our great trunk lines is the minds of its employees. If a manager could have 50,000 men as well informed as himself, the operation of his line would be simple and, therefore, any manager may consider that whatever information he is able to impart to those assisting him will lighten his task by increasing their usefulness; and whatever he withholds, detracts from the reaction which his efforts produce.

Every manager knows that his own usefulness is based largely upon the information at his command, and that just as he is helped by the point of view which he obtains from statistics and reports, so will everyone below him be similarly helped by corresponding influence. The effort of every manager should be to pass to his assistants or subordinates, as much useful information as possible, in order that he may receive from them that assistance which each is able to perform.

Another idea which may properly accompany this is to give due publicity to the good results, progress, or achievements of different individuals, with a view to stimulating a spirit of emulation among all employees. There is much talk of self-determination, self-government, and such, and this craving for recognition on the part of all ambitious Americans may well be properly developed and become a real asset to an organization. All along this line of thought is the corollary that no railroad, however fine, will run itself, and the great achievement in American railroading has been the development of many organizations whose intelligence and integrity were their outstanding features.

Appealing to the Conscience

The appeal to the intelligence alone is not always sufficient, for many men know full well how to conduct themselves properly, but do not do so. No thief will claim that stealing is right, or that he has a special privilege to violate the principles of society by so doing.

The appeal to the conscience may be made along the line of public service. All railroad employees should get a new perspective as to their employment being a "public service," a service to society which they render, and a spirit akin to patriotism should pervade the entire railroad organization. Patriotism has in the past been one of America's outstanding qualities, and this should be purely of an American type for the reason that, surrounded by American influences and amid our great institutions, a loyalty to them and a faith in them is a natural development. Hence, the effort should be toward a more complete understanding of all these relationships.

Co-operative Supervision

As stated before, supervision in the past has had its basis largely upon driving methods which, in the main, mean punishment for all offenses. The predominating factor played upon has been the employees' sense of "Fear," following the idea that the "Fear of God" (or the employees' immediate superior) is the great actuating principle of human conduct. This is old testament philosophy, and contrasted with it is the real philosophy of "Faith" as exemplified in the life of the World's Redeemer and his followers. Faith, as he taught it, would inspire a man to his highest and best activity, actuated by a desire to please, "not with

eye service as man pleases but ***with good will doing service*** knowing that whatsoever *good thing* any man doeth, the same shall he receive of the Lord." This admonition, followed properly, would produce an irreproachable line of conduct on the part of all, both employee and supervisor.

The thorough unionizing of the railway employee has impeded the old channels of action, and through its influence reacted against the threatening processes without substituting any new incentive, and while this proposed remedy is some 1,900 years old in its enunciation, it is still largely untried as to its vital application. Is it too much to suggest that the time is here to attempt to realize on this teaching as a business proposition and demonstrate a little of applied Christianity in railroad organization?

It may be urged that all men will not respond to this treatment, but that did not deter its author, and those who do not respond should be considered as lacking in fitness for the railroad branch of the "public service," which should eventually rise to the condition which would entitle it to a commendable place in a Christian civilization.

Senate Committee Criticises Priority Orders

SENATOR CALDER, of New York, as chairman of a select committee of the Senate which has been conducting an investigation into the general building situation, including such measures as may be deemed necessary to stimulate the development of construction work, has submitted a preliminary report which, in connection with the transportation phase of the subject, criticises the priority orders issued by the Interstate Commerce Commission giving preference in car supply to coal shipments. The references to transportation in the report of the Senate's select committee on the building situation include the following:

"The building industry was disrupted during the war by federal intervention, and has been unable to get back on its feet since the armistice because of transportation, fuel, and labor difficulties, because of the diversion of credit to commercial purposes, and because of handicaps of taxation. The industry would naturally have revived, because of the great need of construction, if it had enjoyed pre-war transportation conditions (both as to promptness of delivery and low cost), pre-war fuel conditions, pre-war labor efficiency, and if investment capital had not been diverted to other channels, especially through tax-exempt securities, and had not been driven from the building industry by high income and excess-profits taxes. It now seems beyond the power of private individuals, municipalities, or states to overcome the present handicaps of transportation, fuel, finance, and taxation.

"The freight rates on building materials were increased some 50 per cent in June, 1918, and some 40 per cent in August, 1920, making a total cost of freight on building materials of nearly $2.10, as compared with $1 before the war; the total for other industries being about $1.75, compared with $1 before the war. Shortly after the appointment of this committee the transportation facilities of the country were allocated to coal movement through priority orders of the Interstate Commerce Commission, and the subsequent irregularities of delivery of building materials have been instrumental in bringing about the recent stagnation in the building industry. The committee believes that the issuance of ex parte orders by the Interstate Commerce Commission has occurred without a full appraisal of their consequences by the commission and that such orders have made opportunities for profiteering and have been injurious to general industry. It is the function of the Interstate Commerce Commission to regulate railroads and not to regulate industries. The committee would direct the attention of the Senate Committee on Interstate Commerce to this matter, with a view to amendment of the transportation act in order to check the issuance of ex parte orders. Intelligent supervision of transportation matters should insure the co-ordination and full use of railways, waterways, coastwise shipping, and terminals, so vitally necessary at the present time.

"Coal profiteering, especially as it has followed the priority orders issued by the Interstate Commerce Commission, has continued unchecked by the Department of Justice, and is a national disgrace.

"The imperative necessity of continuity of supply of fuel demands the fulfillment of contractual relations in this industry more than in any other, and yet one of the primary causes for the disgraceful and disastrous conditions during the past six months has been the repudiation of contracts. An exceptional demand not only brings about reckless and unwarranted repudiation of contracts made for delivery of coal but the substitution of inferior quality at higher prices. Indeed, coal contracts are so drawn as to be breakable in delivery, in quality, and in price.

"Our investigation into the coal situation has convinced us that the private interests now in control of the production and distribution of coal, in spite of efforts by some, are actually unable to prevent a continuance or a repetition of the present deplorable situation, and that it is the duty of the government to take such reasonable and practical steps as it may to remedy the evil.

"An inherent responsibility of the government is the protection of its people. To assure the mining, transportation, and distribution of coal at fair prices is a public duty from which the government can not escape. But your committee believes that governmental administration of the production and distribution of coal should be a last resort, as governmental activities should always be directed toward encouragement of private initiative and enterprise."

Senator Edge, a member of the committee, also undertook to criticize the Interstate Commerce Commission, saying in part:

"In a general way, it looks to me as though revision or amendment of the Interstate Commerce Commission law might be necessary. At present, that body seems to have almost autocratic powers and to be virtually free from accountability to the executive or legislative branches. It apparently acts on its own initiative through ex parte orders on lines which were not contemplated in the theory on which it originally was constructed. Its present judicial powers might well be transferred to the courts, and its administrative powers to some agency to be established to take them over. For instance, a division on fuel and another on transportation might be opened in the Department of Commerce. Such departments could be empowered to see whether contracts were respected in the coal industry, as they are not at present; they could cure the crying evils of reconsignment as now practiced by the coal men; they could detect monopoly of cars by producers or dealers, and any scheme by which some groups might be deprived of cars—there are a thousand and one evils that might be exposed. Then, evidence could be presented to the appropriate prosecuting authorities for action under existing laws against restraint of trade, and so on. I believe we have enough laws now on the statute books for the punishment of most of the wrongful action that might be exposed, if only these laws were enforced; if not, further laws can be provided for the purpose.

"Production, transportation, and distribution are the three chief points involved, and I think Congress can provide reasonable government supervision and the regulatory powers without government bureaucratic control or participation in private business, and with protection for the people without oppression of any industry."

Pullman Company Adopts Employee Representation

THE PULLMAN COMPANY has recently adopted a plan for arbitrating differences and improving relations between the company and its working forces through the selection of employee committees. These committees are to be empowered to confer with the management on questions of wages, working conditions and other matters of importance to the welfare of the employees. In submitting the plan to the employees, J. S. Runnells, president of the company, stated that it complies with the provision of the Transportation Act that "employers and employees shall exert every reasonable effort to adjust and settle their differences by conference between themselves." He calls attention to the fact that the plan is not intended to prevent any employee from appealing to the Railway Labor Board, providing he has been properly authorized to do so under the Transportation Act.

The plan, in brief, provides for an organization divided into two branches. One division provides representation for employees in the operating division of the company. The other takes care of the workers in the manufacturing and repair shop end of the business. At the head of the entire system stands the Bureau of Industrial Relations which is to be a supervisory body with power to make final decisions in cases where a settlement cannot be reached by the committee and representatives of the company. Members of this bureau are to be executive officers of the company, appointed by the president, and responsible direct to him. The active work of the bureau is to be under the direction of a supervisor and such assistants as may be required.

The employees in the operating branch of the company secure direct representation through the selection of local committees. In each district there are to be four local committees chosen by employees under the following classifications: One committee is to be chosen for district office forces, conductors, and storeroom clerical employees. A second committee is to represent minor supervisory forces, yard mechanics, car cleaners and storeroom non-clerical employees. Porters and maids are to choose a third committee, and a fourth committee is to be provided where "conditions justify it."

Each local committee is to consist of not less than three representatives or one committeeman for each 200 employees, and a like number of members appointed directly by the Bureau of Industrial Relations to represent the management. The local committees are to give full hearings at any time to any suggestions, complaints, or requests presented by employees or the management, provided these cannot be settled by immediate supervisory officers first.

Next above the local committee are to be seven "Zone General Committees," one from the zone of each superintendent. Each "Zone General Committee" is to consist of six employee representatives chosen by and from the district local committees, and an equal number of members selected by the Bureau of Industrial Relations. Each zone general and local committee is to select a chairman who will hold office for six months. The chairman will have the same voting privileges as other members. Employees who have been in the service of the company not less than two years are eligible for election to the committee and members are to hold office for one year.

To avoid confusion and possible delays a complete arrangement for electing committee members has been worked out. Elections are to be held in each district annually on the second Tuesday in November. In addition such special elections are to be provided as may be necessary to fill vacancies. All employees who have been in the company's service more than six months, except supervisory officers and other employees having the power of employment or discharge, are given the right to vote. The nominations and elections are to be supervised by a temporary chairman, secretary, and an election committee, one of whose members is to represent the management. A sort of primary balloting, called the nominating election, will be held five days before the regular election for the purpose of selecting candidates for the committee "to the number of twice the employee representatives" to be elected. If 25 or more employees are dissatisfied with the first count of the votes they may demand a recount at which two of their number may be present, and which will be considered final. Voting will be by secret ballot.

Within 15 days after the election of local committees, each will meet to vote on six representatives from the committeemen in their respective zones to serve on the zone general committees. The zone general committees are to meet at least once every six months in the offices of the superintendents. They will endeavor to settle all matters which have not been disposed of satisfactorily by the local committees. They are to consider all possible means of promoting cordial relations between the company and its employees.

The plan for employee representation in the company's manufacturing plants and repair shops differs somewhat in organization from that provided for the operating section of the company. In the manufacturing plant at Pullman, Ill., local committees consisting of not less than three representatives, or one representative for each 200 employees, are provided for each of the freight, automobile, rolling mill, iron, brass finish, and passenger departments. On the same basis a local committee is provided for each repair shop. These committees are to be supplemented by representatives appointed directly by the Bureau of Industrial Relations and not exceeding the number of employee representatives on each of the respective committees.

The general committee representing the entire manufacturing plant is to consist of six employee representatives selected by and from the local committees and is also to include the supervisor or his representatives, the plant superintendent, and the vice president in charge or his representatives. The same general scheme applies to the repair shops where a general committee is to be chosen, consisting of five representatives, one from each of the local committees, supplemented by the supervisor or his representative, the mechanical superintendent, and the vice president in charge or his representative. The election machinery, duties and method of procedure for these committees representing the manufacturing and repair departments is to be identical with the organization set up for the operating division.

The supervisor of the Bureau of Industrial Relations is to act as an adviser and harmonizer of the work of the various units of the organization. He is to respond promptly to any calls for his own or his representatives' services at conferences of employees, local committees or general committees. The supervisor is to investigate questions referred from a local committee to the general committee, obtaining complete information and arranging a settlement through the local committee if possible. Matters of routine are also to be arranged by the supervisor, his office is to keep record of all matters coming before the committees, and he is to take the responsibility of putting all decisions reached into immediate effect.

In submitting the plan to its employees, the Pullman Company makes it clear that "the right to hire and discharge, the management of the properties and the direction of the working forces shall be vested exclusively in the company." The employees' representation plan is designed to settle grievances arising in connection with the working out of these company functions.

Increasing the Capacity of Old Locomotives*

Suggestions for Modernizing Old Locomotives and the Possibilities of This Development

By C. B. Smith
Mechanical Engineer, Boston & Maine

IN THESE DAYS of the high cost of railroading, responsible officers of the mechanical departments realize that the necessity for reducing the cost of all locomotive operation and maintenance is more urgent than ever. Such saving can be accomplished in two ways, one by using new and modern locomotives, the other by rebuilding old types.

On the majority of our roads there are still locomotives of the earlier modern types whose general features of construction are satisfactory, and which only require modernizing to make them economical transportation units. Improvements for such classes of locomotives may include, in addition to superheaters, piston valves in place of slide valves, outside valve gears in place of Stephenson motion, and such other improvements as are usually made upon engines at general shoppings.

When setting out to rebuild a locomotive the experienced supervisor appreciates the opportunity to apply many devices and facilities which will standardize the engine in accordance with the railroad company's practice, and in so doing, reduce repairs and stores department expense in maintenance.

The aggregate of such improvements results in a locomotive which in proportion to its capacity will produce service results comparable with those of entirely modern construction, and at a cost approximately one-half that for a new locomotive of similar capacity. The difficulty in carrying forward an extensive reconstruction program, however, is in finding the shop facilities either on the railroad or among the locomotive builders in order to advance the work at a satisfactory rate of progress. Despite this difficulty the results which could be obtained from the operation of reconstructed locomotives, if they could all be rebuilt within the next few years, would justify a special effort on the part of railroad managements to bring it about.

On roads where the number of old locomotives which warrant rebuilding is sufficient to require a period of more than three years to complete the work, it would seem necessary to arrange for enlargement of shop facilities in order to hasten the reconstruction. If, however, adequate shopping facilities are not forthcoming, the improvement program for locomotives must be confined chiefly to the application of superheaters and the substitution of piston for slide valves; together with the minor but relatively important betterments that may usually be applied at the shopping period. On some roads this work alone will require six years at the present rate to equip what can rightly be called the "early-modern" locomotives.

Some of the engines built within the past ten years have developed weaknesses in frames and in parts of running gear. It has proved justifiable to reconstruct them by substituting new parts of stronger design and thus avoid recurring breakages which interrupt both the road service of these engines and the repairs to others. On roads whose traffic and service conditions now demand and will continue to demand the use of light locomotives for passenger trains and freight trains on branch lines, the better classes of the light locomotives should also receive their share of improvements along with the heavier power.

Old locomotives requiring new boilers have very generally been scrapped, but where light train service demands no heavier engines than formerly, the writer believes it advisable to rebuild such engines with radial-stay boilers, superheaters, new piston-valve cylinders, main frames when necessary, and outside valve gears. If there is to be no increase in the boiler pressure over that formerly carried by the locomotive and the valve motion has given little trouble by breakages, the Stephenson motion may be connected to the piston valves through the usual rocker-shaft connections.

When rebuilding locomotives there is a favorable opportunity for replacing old tenders as well, transferring the latter to older locomotives for spare use or as substitutes for damaged equipment. When the condition of old steel tender frames requires that they be replaced, the one-piece steel casting and a larger-capacity tank should be used, as both will reduce future expense in repairs. The success of autogenous welding eliminates any objections to the use of large steel castings for fear of breakages.

Tanks should be reconstructed in coal space to permit gravity delivery of the greatest amount of fuel that is possible at the coal gates within reach of the fireman's shovel. Application of power-operated coal pushers should be made to tanks where alterations for the gravity delivery of coal cannot be satisfactorily made and where the service conditions will show a saving in expense by its use over hand methods of shoveling forward coal while on the road or at short lay-over stations.

Discussion

The discussion following the presentation of this paper at the recent meeting of the Railroad Section of the American Society of Mechanical Engineers was unusually broad and comprehensive. Through the efforts of the committee on meetings and papers, some of the best authorities on this subject had been engaged to participate in this discussion. The first to speak in regard to increasing the capacity of old locomotives was Frank McManamy now assistant director-general of railroads. Without going into all of the details relating to those features essential to increasing the capacity of old locomotives, Mr. McManamy outlined some of the conditions essential to the successful modernization of power. It was pointed out that the value of any specialty applied for the purpose of increasing the capacity of old locomotives would be nullified unless the railroads possess a trained organization and adequate facilities for the proper maintenance of these appliances. The application of such appliances was strongly endorsed by Mr. McManamy who claimed the credit for the liberal modernization program undertaken during the period of federal control.

The application of the superheater, the stoker and the feedwater heater were commented upon as among the best measures toward modernization, but with the application of these, as with other devices, intelligent handling and adequate maintenance are essential before they can be of any real value. The simple application of these devices is not sufficient; they must be properly used and adequately maintained. In view of this fact Mr. McManamy believes that the improved locomotive terminal is, in fact, the key to the situation. So many complicated specialties are now being applied to locomotives that it is now common to refer to

*Abstract of a paper presented at the Railroad Section of The American Society of Mechanical Engineers on December 8, 1920.

these locomotives as being "full-jewelled," and in many instances the application of these specialties has proved a detriment because the railroads did not have adequate terminal facilities to insure their maintenance.

In a written discussion of the subject submitted by W. O. Moody, mechanical engineer of the Illinois Central, the necessity for adequate shop, as well as locomotive terminal facilities, was emphasized. Mr. Moody pointed to the fact that in the absence of shop facilities adequate for current maintenance of locomotives, little could be hoped for toward the modernization of locomotives upon any considerable scale. In this connection it should be remarked that the locomotive companies who, until recently, have been busily engaged on new locomotive construction, are now in a position to undertake considerable modernization work for the railroads, and in view of the possibilities in this direction it would appear to be an opportune time for the railroads to assign some of this work to the locomotive builders, where they are unable to undertake it in their own shops and are not justified in the purchase of new locomotives.

Mr. Moody spoke of the locomotive booster as one of the most promising appliances designed to increase the capacity of old locomotives. It is believed that any comprehensive plan of modernization should include consideration of the booster. It was also pointed out that the modernization of locomotives offered an excellent opportunity for the further standardization of parts to such an extent as would permit a considerable reduction in the number of parts that must be carried in stock to protect the locomotives in service. Any reduction of this character should be welcomed as a means for reducing overhead charges.

J. C. Hassett, mechanical engineer of the New York, New Haven & Hartford, also advocated the modernization of old locomotives as a means to increase their capacity and laid particular stress upon the necessity for strengthening locomotive frames in connection with this development. Some interesting facts in connection with this work as undertaken on the New Haven were described by Mr. Hassett, who said that it had been found necessary to materially strengthen the frames of certain locomotives before they could be modernized and that this had also resulted in improving their riding qualities as well as increasing their capacity.

Forceful Arguments for Feed Water Heating

Some strong arguments in favor of locomotive feed water heating were presented by E. A. Averill, vice-president of the Locomotive Feed Water Heater Company, who contributed to the discussion as follows:

"Increasing the capacity of all old or semi-modern locomotives, whenever increased capacity can be used and increasing the efficiency of those which are in a service where increased capacity will not show a return, should be the first feature to be investigated and carefully analyzed.

"You will be astonished at the returns that can be obtained in investments made to this end. As an example of what can be accomplished on even some of the more modern locomotives, built within the last six or eight years, let me quote the results recently obtained from road tests with a locomotive feed water heater which is one of the appliances mentioned in this paper. These tests were made on three different railroads and each was as carefully conducted as is possible with tests made in regular operation. On the first road, the test showed a saving, due entirely to the appliance being investigated, of $252 a month, based on coal costing $5 a ton. On the second road, the direct saving was $233 a month, and on the third it was $226 a month. This is an average for the three roads of $237 saved per month per locomotive.

"Do you not think that a net saving of over $200 a month from each locomotive will make a welcome addition to the net operating income on any railroad? The feed water heater is applicable to all kinds and classes of locomotives at a moderate expense and offers one of the quickest and most positive methods by which the capacity of a locomotive can be largely increased. It has the further advantage of not requiring any additional shop facilities for its extensive application. From the standpoint of the motive power department doing its full share towards making visible the net profits of a railroad, I would recommend a thorough study of feed water heating to be placed near the top of the list of things to be considered.

"It may interest you to know that feed water heaters, which will raise the temperature of the water from 40 deg. or 50 deg. to from 230 deg. to 250 deg., have been in successful railroad service for over three years. Furthermore, these heaters filter all the water formed from the condensed exhaust steam and return it, free from oil, to the tender. This adds about 14 per cent to the capacity of the tender and greatly extends the distance that can be made between stops for water.

"On most locomotives an increased boiler capacity can be fully used in regular service and furthermore since any boiler is most economical and most efficient at its lower rates of working, an appliance which makes the boiler larger always shows returns. It gives the increased capacity when it is needed and it gives greater efficiency when the larger capacity cannot be used. A feed water heater lies entirely in this class of equipment. It permits the boiler to deliver 9 lb. of steam for each pound of coal burned where, without the heater, it would deliver but 7.8 lb. of steam for each pound of coal. If, however, service conditions were such that only the smaller quantity of steam could be employed, a boiler equipped with a feed water heater would be operating at 65 per cent efficiency, as compared with 61 per cent for the same quantity of steam, without the heater, and thus this appliance is giving a return of one sort or another at all times.

"I have mentioned the fact that there is a return to the tender of 14 per cent of distilled and filtered water, and inasmuch as any study of increased locomotive capacity must be based on a consideration of the locomotive as a producer of economical transportation, this feature, many times, is found to be one of great importance. The ability to continue the train in operation past a water station, where it would have been compelled to stop if not equipped with a feed water heater, frequently means a difference of hours in the arrival of the train at the terminal and a very large saving of overtime wages and loss of service of the locomotive. Again this feature at periods of congested traffic frequently permits the despatcher to keep everything moving on the division and opens up the possibility of very large returns from this cause alone. Where feed water heaters have been applied to locomotives, it is almost universal that the train despatcher is one of the strongest advocates of a heater on an engine."

Superheat as a Means to Increased Capacity

In commenting on the subject of increasing the capacity of old locomotives, H. B. Oatley, chief engineer of the Locomotive Superheater Company, took this opportunity of bringing out, somewhat in detail, the features which have prompted the very extensive superheating programs which have been in vogue on many of the railroads for a considerable period. A table presented by Mr. Oatley gave some comparisons between saturated and superheated locomotives. The locomotives considered were typical of each class. The cylinders, boiler pressure and maximum tractive power were shown as being the same for both the saturated and superheated steam conditions, although many engines have had the tractive power increased when superheaters were applied, under the conditions referred to later.

"By the addition of a high degree superheater," Mr.

Oatley said, "it has been demonstrated that the steam consumption per horsepower hour is reduced about 28 per cent. The figures commonly accepted as representing good practice are 27 lb. for saturated steam and 19.5 lb. for superheated steam. In the case of the 0-6-0 type boiler, the horsepower has been increased 15 per cent; for the 4-4-0 type 14 per cent; for the 2-6-0 type 13 per cent; for the 2-8-0 type 10 per cent, and for the 4-4-2 type 10.2 per cent. The maximum cylinder horsepower, using the American Locomotive Company's figures, has, by the addition of a superheater, been increased about 8 per cent.

"The ratio between boiler horsepower and cylinder horsepower, therefore, has been improved. When consideration is also given to the fact that a boiler with a superheater is at a greater advantage when worked under high rates of evaporation, for the reason that the degree of superheat increases under such conditions, the marked improvement is evident. It is very clear that the additional boiler capacity afforded by the addition of the superheater should, if possible, be utilized by providing greater maximum tractive power. When considering existing locomotives the increase in the maximum tractive power requires consideration of, 1st. The factor of adhesion. 2nd. The strength of the running gear which has to withstand the thrust of the piston.

"As in all other problems, the cost of making improvements must be balanced against the advantages which can be realized. For example: if the engine at the present time has adequate power for the work which is to be done, the expense in providing additional power would not be justified. Such cases are, however, believed to be rare, as the very large majority of existing locomotives are for all or a part of their working time required to handle every ton behind the tender that they will move. If the factor of adhesion and the strength of the parts taking piston thrust are such that an increase in cylinder tractive power can be utilized, such additional power may be attained by, 1st. Increasing boiler pressure. 2nd. Increasing cylinder diameter.

"If the amount that the maximum tractive power can be increased effectively is greater than can be obtained by boring existing cylinders, or by increasing boiler pressure, or a combination of the two, the use of new cylinders should be carefully considered. If new cylinders are applied a cylinder diameter should be selected which would permit the utilization of pistons, cylinder heads, steam chest covers, etc., and, if possible, cylinder patterns which are in use on other classes of engines on the road. It is many times found that a cylinder diameter can thus be selected which will give the desired increase in tractive power, even with a decreased boiler pressure. A decrease in boiler pressure in very many instances, particularly on the older boilers, is especially attractive, as such boilers are frequently of an age and condition which would in any event require either scrapping or operating at a lower pressure.

"Many instances will be found where for one or another of the conditions already mentioned, an increase of cylinder diameter above that which is obtainable by boring will not be advisable, and if, in such cases, slide valves are existent on the engine in question, the application of superheaters need not be foregone, as the use of piston valve steam chests fitted to existing slide valve seats has demonstrated its practicability and economy."

Modernize Eventually! Why Not Now?

In his remarks on the subject of increasing the capacity of old locomotives, J. T. Anthony, vice-president of the American Arch Company, stated that with 65,000 locomotives in service on American railroads, only 35,000 are equipped with superheaters; 43,000 with arches; 37,000 with automatic fire doors; 15,000 with power reverse gears; 2,000 with automatic driving box wedges, and only 30 with feed water heaters. The reasons commonly given for this condition, he said, "are lack of shop facilities and inability to get appropriations with which to carry on the work. But it is difficult to understand why the responsible officials who willingly make appropriations of millions of dollars for grade reductions, curve eliminations, etc., with the sole idea of increasing train loading and reducing operating expenses, should turn a deaf ear to the requests of the mechanical departments when they have the same object in view.

"The railway shop equipment is woefully inadequate at the present time; but this will not serve as an excuse for the fact that 22,000 locomotives are being operated today without brick arches. This simple device can be installed in the round-house in less than 24 hours, and its maintenance not only does not require any increase of the round-house force; but effects a reduction in boiler repairs and engine failures. Many years of use and a large number of carefully conducted tests have shown conclusively that the arch is good for a fuel saving of 7 to 14 per cent, or for an increase in boiler capacity of 8 to 16 per cent. To use a conservative figure the arch is good for an average reduction in fuel consumption of 10 per cent, or an increase in boiler capacity of 11 per cent. Under the present condition of high price of fuel each dollar invested in the brick arch for old locomotives is

COMPARISON OF SATURATED AND SUPERHEATED STEAM LOCOMOTIVES OF VARIOUS TYPES

Line		4-4-0		4-4-2		2-6-0		0-6-0		2-8-0	
		Sat.	S.H.	Sat.	S.H.	Sat.	S.H.	Sat.	S.H.	Sat.	S.H.
1	Cylinders	20" x 24"		22" x 26"		19" x 26"		20" x 26"		21" x 30"	
2	Wheel diameter (drivers)	69"		80"		63"		51"		63"	
3	Boiler Pressure	190#		205#		200#		180#		210#	
4	Tractive Power (maximum lb.	22470		27470		25300		31100		37500	
5	Weight on Drivers, lb.	94000	96000	124100	126000	125500	128000	144600	147600	172500	176500
6	Factor of Adhesion	4.18	4.27	4.51	4.59	4.96	5.06	4.65	4.74	4.6	4.7
7	Heating surface, tubes sq.ft.	1957	1035	2474	1335	1732	948	1750	987	3194	1737
8	Heating surfaces, flues " "	-	402	-	506	-	392	-	412	-	650
9	Htg.surf.firebox & water tubes sq.ft.	232	232	166	166	158	158	156	156	189	189
10	Total " "	2189	1669	2640	2007	1890	1498	1906	1555	3383	2576
11	Superheating Surface " "	-	314	-	435	-	296	-	306	-	530
12	Combined Total " "	2189	1983	2640	2442	1890	1794	1906	1861	3383	3106
13	Total Water Evaporated (1) Lb.	31530	25930	32228	25728	26720	22120	28430	23610	40960	32510
14	Steam per ind. h.p. hour Lb.	27	19.5	27	19.5	27	19.5	27	19.5	27	19.5
15	Boiler Horse Power	1165	1330	1196	1320	999	1135	1052	1210	1515	1667
16	Boiler H.P. Increase %	-	14	-	10.2	-	13	-	15	-	10
17	Maximum Cylinder Horsepower (2)	1265	1369	1655	1786	1202	1300	1199	1297	1543	1667
18	% Boiler H.P. of Cylinder H.P.	92.3	97.5	72.3	74	82.9	87.4	87.7	93.2	98.1	100

(1) American Locomotive Co.'s method used but figures are those used by Locomotive Superheater Co.
(2) American Locomotive Co.'s figures used.

good for at least a five dollar reduction in operating expenses.

"There are only three methods of increasing the heating surface of an existing firebox, i. e., by the installation of a combustion chamber, or arch tubes, or thermic syphons. At the present time there are only 6,000 locomotives equipped with combustion chambers, and something over 100 equipped with thermic syphons, this device being of rather recent origin. Many of the existing boilers can be improved by adding combustion chambers when new fireboxes are put in, thereby increasing the firebox volume and reducing the oft-time excessive flue lengths, and in other cases new back-ends should be put on when it is necessary to renew fireboxes of narrow and antiquated designs, thereby increasing the grate area and firebox volume. Too little attention has been paid to the possibility of improvements in old boilers by these means. While it is true that the addition of superheaters and brick arches often reduces the demands made upon it, there is still a lot of room for improvements in the firebox, particularly in regard to the firebox as a furnace wherein fuel may be burned efficiently. In this connection, we might call attention to the poor designs of ash-pans on thousands of our present locomotives, on many of which it is impossible to secure an adequate air supply. Such conditions can be remedied at comparatively little expense and effect a large saving in fuel.

"As a tip to the skeptics who are prone to wait for someone else to demonstrate that improvements are possible, I quote the following figures obtained from tests of Consolidation locomotives on a large western road where the operating conditions were such that the locomotives made 40,000 engine miles per year; the cost of coal being $4.50 per ton on tender, which is much below the average price at the present time.

	Annual fuel consumption per locomotive		Annual saving	
	Tons			
Saturated Consolidation without arch	7,500	$33,750	.....	
Saturated Consolidation with arch	6,752	30,384	$3,366	(Saving credited to brick arch)
Superheated Consolidation with arch	4,989	22,450	7,934	(Saving credited to superheater)
Superheated Consolidation with arch and syphons	4,257	19,156	3,294	(Saving credited to thermic syphon)

"The addition of the three devices mentioned resulted in an annual saving of $14,594 per locomotive; this 44 per cent reduction in the fuel cost being accompanied by an increase of approximately 20 per cent in tonnage hauled. And this does not represent the limit to improvements, for there are other devices that might be added, and changes made that would result in still further improvements.

"In the last paragraph of his paper Mr. Smith voices the hope that the discussion at this meeting will result in outlining some practical action to be taken by the various roads to hasten the work of reconstructing old locomotives, and states that the application of all desirable auxiliaries is prohibitive without radical provision for the carrying out of such a program. We join him in that fond hope, but, in our opinion, it will be necessary to first bring about a radical change in the attitude of many railway officials before any adequate provisions for such a program can or will be made.

"The many improvements that have been made in locomotive design in the past 10 or 15 years have not come about in answer to any loud and sustained cry from the railroads for more efficient locomotives. The railroads asked for larger and more powerful locomotives; but the devices that have made the locomotives of increased capacity and efficiency possible, have been largely left to the ingenuity of the railway supply companies and, in a smaller degree, to the locomotive builders. The development of the several well-known fuel economy and capacity increasing devices has been due to the labor and efforts of men who have left the railway service, in many cases on account of the lack of interest of the railroad in the device which the individual was trying to get perfected and used.

"If we can judge the future by the past, there will be no radical provisions made for the carrying out of a locomotive reconstruction program until the officials of the mechanical and operating departments awake to a full realization of the possibilities of reducing present operating expenses by the maintenance of a high standard of efficiency of *all* their locomotives, and by their urgent demands and intelligent presentation of facts, convince the higher authorities—those who have to dig up the money—of the feasibility and desirability of such a program."

Superpower Survey

THE ANNUAL REPORT of the Secretary of the Interior contains the following, regarding the superpower survey: "Congress at its last session placed upon this department the duty of making a special investigation of the possible economy in fuel, labor, and material that could be secured by electrification of the railroads and industries of the region between Boston and Washington. The plan contemplated is a unified system of power generation and power distribution, and its investigation has been called the superpower survey. This is now under way. The engineering profession and large business interests are giving this project support that is at once an indorsement and a promise of public confidence. The engineering staff engaged in this intensive study of the power needs and the means of meeting that demand includes men who have done pioneer work in applying electricity to the use of man; while serving on an advisory board are men of vision and experience, representing our larger railroads as well as electric railways, our manufacturing and mining industries, and the engineering and chemical professions, busy men who have accepted my invitation to help direct this investigation along lines of greatest practical usefulness. Every industry that has to do with either making power or using power is giving generous co-operation.

"The area being studied, while only a small fraction of the United States—2 per cent—uses 24 per cent of the electic output of the central stations of the country and produces about 47 per cent of its manufactured products. It is properly termed the finishing shop of American industry. The report of this investigation will be completed June 30 next, and its purpose is to give an engineering solution to the problem of the demand of the nation for greater production and better transportation. That answer is electrification, but its details must include the accurate statement of costs in capital and of savings in coal and labor. I believe the report will deserve public confidence."



Station on the Chinese Eastern Railway at Harbin, Manchuria

Express Consolidation Approved by Commission

Combination of Companies Into American Railway Express Approved Despite Some Protest

THE CONSOLIDATION of the express transportation business and property devoted to that business of the Adams, American, Wells Fargo & Co., and Southern express companies into the American Railway Express Company was approved and authorized in a decision by the Interstate Commerce Commission announced on December 20. An abstract of the commission's decision follows:

At the beginning of the period of federal control there were seven express companies operating over the railroads of the United States, the Adams, American, Wells Fargo, Southern, Great Northern, Western, and Northern express companies. Of these, the first four named operated over approximately 92 per cent of the railroad mileage of the country, and transacted approximately 95 per cent of the express business of the country. After the government assumed control and operation of the railroads the director general of railroads declined to carry out the separate contracts between the railroads and express companies under which the express business had theretofore been conducted, but advised the express companies that if they would form a single corporation he would make a contract with that corporation to conduct the express business as his agent. In June, 1918, the Adams, American, Wells Fargo, and Southern express companies, which jointly had secured by lease the express business and the property devoted to that business of the other express companies hereinbefore mentioned, entered into a contract with the director general by which it was provided that the express companies would cause to be organized a corporation to carry on the express transportation business for the director general. Thereupon, the American Railway Express Company was organized under the laws of Delaware and, under a contract with the director general, took over the express business upon the railroads under federal control as agent of the director general. The Adams, American, Wells Fargo, and Southern express companies exchanged all the property devoted to them to the express transportation business, estimated by the director general to be of the value of $30,000,000, as of November 30, 1917, together with $3,000,000 in cash for working capital, for the stock of the American Railway Express Company. Including additions and betterments not charged to operating expenses made between the latter date and July 1, 1918, the authorized issue of capital stock of the applicant at par aggregated $34,642,110.

A number of protests against the approval and authorization of the consolidation, in the form of resolutions adopted by commercial organizations, letters, and telegrams, have been received by us. In most of these complaint is made that the service rendered by applicant was and is inadequate and unsatisfactory, and this is attributed, largely to the lack of competition. In a number of others the policy of at least two of the predecessor companies with respect to the adjustment of claims which arose prior to the consolidation is criticised, and it is urged that if the consolidation is authorized suitable provision should be made to protect the rights of claimants.

The railroad commissions or other public utilities commissions of 33 of the states were represented at the hearing. Only four states voiced objections to granting the application on ground other than the matter of old claims against the Adams and Southern express companies. The State Corporation Commission of Virginia offered evidence regarding the claim situation, but the other state commissions offered no evidence. A representative of the Richmond Chamber of Commerce also testified with respect to the claims situation. Representatives of the National Poultry, Butter & Egg Association, which has 1,200 members scattered throughout the country, and the Boston Fruit & Produce Exchange, which has a membership of 900, offered evidence to show that applicant's service was inadequate. They contend that this is due to lack of competition and are opposed to the continuance of the consolidation. A representative of the National Industrial Traffic League, an association of commercial organizations, firms, and individuals, located at points throughout the country, appeared on behalf of that organization, the Boston Chamber of Commerce, and the New England Traffic League in support of the application.

Applicant admits that its service has been and is unsatisfactory, but attributes this to abnormal conditions growing out of the war.

Applicant urges that the service rendered by it, admittedly not satisfactory, has been and is far better than could have been performed by the predecessor companies, because the unification of their facilities under the one management effected by the consolidation permitted better distribution of those facilities and rendered practicable many economies impossible under separate operation. It is said that formerly each of the predecessor companies had its quota of vehicles traversing the same routes both in the pick-up and delivery service, carrying on many occasions only partial loads. The consolidation enabled this equipment to be handled as a whole and distributed throughout the cities so that the vehicles were utilized more nearly to their capacity, besides avoiding duplication of service.

It was testified that great savings had been accomplished by reason of one company's transacting the business in lieu of four as formerly, through the elimination of duplicate wagon service, duplicate offices in various cities, the establishment of a uniform accounting system and the consolidation of various departments of express business into one. It is estimated that these methods have reduced the cost of operation over $13,000,000 annually below what it would have cost the former companies.

Applicant states that better service also results by reason of the fact that the consolidated company routes traffic via the direct lines, thus reducing distance and time of transportation. It is said that with two or more companies in the field it was natural that those companies should endeavor to secure the long haul on traffic. As an illustration, it was testified that formerly three companies operated in New York City, the American, Adams, and Wells Fargo. Shipments from New York to Pittsburgh, Pa., could be delivered at destination by any one of the three companies. The American Express Company operated over the New York Central lines, and its route to Pittsburgh was via Ashtabula and Youngstown, Ohio. The Adams Express Company operated over the Pennsylvania Railroad, the direct route, and the express matter despatched by it would be delivered in Pittsburgh before the traffic handled by the American had passed Buffalo en route to Pittsburgh.

The commissions of Florida, Louisiana, Mississippi, and Texas oppose without reservation the granting of the application on the ground that a monopoly will be created which can never be broken; that the competing railway systems which are to come into existence under the plan of this commission in accordance with the provisions of the interstate

commerce act ought, in the public interest, so far as possible, to be served by competing express companies, and that hence this consolidation must necessarily be out of harmony with any plan which we may make for consolidation of rail lines.

It is urged by applicant that the consolidation of these companies was not voluntarily accomplished for the purpose of securing a monopoly of the express business but that it was compelled by the conditions and circumstances existing at the time. It is insisted that the approval by us of the organization and its continuance in business will not destroy competition; that applicant at present competes for a large part of its business with the parcel post, which operates on all lines in the United States; that in normal times it competes for package business with fast freight lines hauling less-than-carload traffic; and that it is in direct and keen competition with motor trucks which operate over considerable distances between principal cities in general. It is further said that it is doubtful if the old companies would resume business. Officials of the Wells Fargo, Adams, and Southern express companies testified that they would advise those companies against returning to the express transportation business. The provisions of the interstate commerce act with respect to prospective consolidation of rail carriers contemplate that competition shall be preserved but do not require that competition shall be inaugurated or increased.

On behalf of the Wabash Railway it is stated that on June 1, 1911, that road entered into a contract with the Wells Fargo providing for the conduct of the express business on the lines of that carrier for a period of 20 years commencing August 1, 1911; that when the government assumed control of the railroads the Wabash Railway was unable in its own name to continue operation under the contracts, but that under an arrangement with the director general, who declined to be bound by any of the contracts between the express companies and the rail carriers, the Wells Fargo continued to operate over the lines of the Wabash Railway; that when the consolidation of the express companies was effected the Wells Fargo announced that it was no longer bound by the contract with the Wabash; and that since the termination of federal control the Wells Fargo and the consolidated company have declined to be bound by the terms of the contract. It appears that the Wabash Railway brought suit to recover under the contract approximately $190,000 from the Wells Fargo for services rendered the express company during the period of federal control preceding the consolidation of the express companies and that this suit is pending in the courts. The Wabash Railway asks that we impose as a condition precedent to the approval of the application here in question that applicant assume and discharge the obligation of the Wells Fargo, or that the consolidated company assume and carry out the contract referred to, subject to the determination of its validity and enforceability as against the Wells Fargo by a court of competent jurisdiction. The president of the Wells Fargo testified that that company was able and willing to pay any judgment rendered against it in the courts. We think that this controversy between carriers is one which should be determined by the courts and that the imposition of the condition requested by the Wabash Railway is not such as is necessary or required in the public interest.

The consolidation having been accomplished, there is today no actual competition between express companies. Even prior to federal control and the existing consolidation, there was practically no competition so far as express transportation rates and charges were concerned, express rates being made on the block system prescribed by us and applying alike to all express companies. While to some extent there was competition with respect to the service rendered, the economies and elimination of wasteful services resulting from the consolidation would appear to be more than sufficient to offset any advantages to the public growing out of the separate operation of the four express companies, even if, on a denial of this application, they should resume operations as such, as to which there appears to be some doubt. As to the rates and practices of the consolidated company, we may regulate and control them to the same extent as if they were separate.

While the methods of the Adams and Southern express companies in the settlement of claims against them merit the severest condemnation, we are not persuaded that the approval by us of the consolidation, if otherwise in the public interest, should be conditioned as urged by certain of the protestants so as to require the constituent companies to provide for the handling of claims and the service of legal process in the jurisdictions where they formerly operated and to revive claims which may have been barred by the two-year-and-one-day limitation with respect to filing suit. We are not authorized under the interstate commerce act to approve the maintenance of the existing consolidation and in connection therewith to prescribe terms as to the manner in which these claims shall be handled as a condition of the continuance of the consolidation. Nor are we authorized to require the resumption of operation by the constituent companies. We are merely empowered to approve and authorize the existing consolidation. The principal objections raised are that claimants must bring suit in New York and that many of the claims, while meritorious, are too small to justify the expense of suit. Under such circumstances hardship obviously results to the claimants, but that does not justify us in requiring the express companies, as a condition precedent to our approval of the consolidation, to waive any legal defenses which they may elect to make in the courts. We have repeatedly held that we have no jurisdiction over claims for loss and damage. However, we do have jurisdiction to determine the reasonableness and propriety of carriers' published rules and regulations relating to transportation.

Upon consideration of all the facts and circumstances of record we are of opinion and find that the public interest will be promoted by the consolidation. An order will be entered approving and authorizing the consolidation.

Commissioner McChord Dissents

Commissioner McChord filed a dissenting opinion in which he said, in part:

The authorization of the consolidation will destroy every semblance of competition in the express business, both as to rates and service, thus confirming an existing monopoly. It may be true that there is no competition as to express transportation charges, but prior to the consolidation there was competition with respect to service which was of benefit to the public. It will now be practically impossible for another company to enter into the express business in competition with this consolidated company. We, of course, may regulate the rates and certain of the practices of the American Railway Express Company, but we will have no control over its attitude toward the public. We can not require it to render to the public that efficiency, courtesy, and fair dealing which competition compels.

It is my view that the time has come when the carriers should give serious and further consideration to the question of conducting the express business themselves. That business has reached such proportions that it is now a parasite upon the freight traffic of the railroads. They should no longer permit outside agencies to transact it. It can be clearly demonstrated that the carriers can readily adapt their existing organization, equipment and facilities to enable them to handle the additional traffic. It would need but slight extension of certain branches of their organization, the acquisition of some additional equipment and possibly some enlargement of present facilities to place them in a position to satisfactorily conduct the express business at considerably less expense than it is being done by the express company, and with greater profits to the railroads.

Commissioner Meyer also dissented.

Labor Board Denies Jurisdiction Over Interurbans

Decision Holds That Transportation Act Confers No Authority to Regulate Electric Railways

THAT THE RAILROAD LABOR BOARD has not been conferred jurisdiction over the wages and working conditions of employees on electrically operated interurban railways, by the terms of the Transportation Act, and that therefore the interurban lines brought before the Board in its recent hearings on demands of employees of short lines for the same rates of pay awarded to employees of Class 1 roads are dismissed, is the substance of the first part of the Board's decision in this case. The ruling is dated December 11, but was not made public until a week later.

The petitioners in the case are the Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen and Enginemen, the Brotherhood of Railroad Trainmen, the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, the Brotherhood of Railroad Signalmen of America, the Order of Railway Conductors, the American Train Dispatchers' Association, the Railway Employees Department of the American Federation of Labor, the International Association of Machinists, the International Alliance of Amalgamated Sheet Metal Workers, the Brotherhood of Railway Carmen of America, the International Brotherhood of Electrical Workers, the International Brotherhood of Boilermakers, Iron Ship Builders and Helpers of America, the International Brotherhood of Blacksmiths, Drop Forgers and Helpers, the Order of Railroad Telegraphers, and the United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers.

The respondents in the case are the Spokane & Eastern Railway & Power Company (Inland Empire), the Interurban, the Fort Dodge, Des Moines & Southern, the Piedmont & Northern, the Lackawanna & Wyoming Valley, the Pacific Electric, the Denver & Interurban, the Hudson & Manhattan, the Chicago, Lake Shore & South Bend, the New York, Westchester & Boston and the Washington & Old Dominion.

The Labor Board's Decision

The interpretation of the Transportation Act included in the Board's ruling is of particular interest and the entire decision is therefore reproduced as follows:

Representatives of employees on the electric railways named herein have brought before the Labor Board for consideration and determination, disputes between these railways and certain of their employees. All the organizations which are petitioners do not have a dispute with every respondent railway, but each petitioner has a dispute with one or more of the respondents and each respondent has a dispute with one or more of the petitioners. The railway representatives having questioned the Labor Board's jurisdiction, this decision is upon that question solely.

The ground upon which jurisdiction is questioned is that these railways are interurban electric railways not operating as a part of a general steam railroad system of transportation, and that they are therefore excepted from Section 300 of the Transportation Act, 1920, Sub-section 1 of which is as follows:

> "(1) The term 'carrier' includes any express company, sleeping car company, and any carrier by railroad, subject to the Interstate Commerce Act, except a street, interurban, or suburban electric railway not operating as a part of a general steam railroad system of transportation."

It is clear that Congress intended to exclude certain kinds of transportation facilities from the jurisdiction of the Labor Board. So far as the railways here in question are concerned, if they either are not interurbans or are operated as a part of a general steam railroad system of transportation, then they are not excluded and remain within the Labor Board's jurisdiction

The 11 railways divide themselves, roughly speaking, into two groups. In one are the Hudson & Manhattan, the New York, Westchester & Boston, and the Denver & Interurban, which do almost exclusively a passenger business. In the other group are the eight remaining railways, which in addition to a passenger service, do a more or less extensive freight interchange business with steam trunk lines, carry mail and express, and, in general, perform the same public service as steam lines. In each group are roads which operate equipment jointly with steam trunk lines. They range in size of road operation from the Lackawanna & Wyoming Valley, with 20 miles of road, to the Pacific Electric, with 600 miles. Several are interstate in their operation.

While no two railroads are exactly alike, they are generally similar as to method of operation and character of employment, except for the Hudson & Manhattan, whose equipment and operation are similar to that of the Interborough and the Brooklyn Rapid Transit Companies of New York. There are also certain other features characterizing one or more of the railways which, being emphasized by the petitioners to prove that particular railways are within the jurisdiction of the Labor Board, deserve careful consideration. Such consideration will obviate the necessity of presenting in detail the facts about each railway. The points to consider are as follows:

(1) That this or that railway is physically an interstate property;
(2) That it performs the principal functions of a steam railroad;
(3) That its charter permits it to operate either by steam or by electricity;
(4) That it has at some time in the past operated by steam;
(5) That to a certain extent it operates jointly with a steam trunk line certain equipment and makes certain joint use of track;
(6) That its stock is entirely or partially owned by a steam trunk line;
(7) That it does a considerable interstate business;
(8) That it has received a freight increase from the Interstate Commerce Commission under Ex Parte 74.

Noting the further fact that none of the respondents is under the same operating management as any general steam railroad system, as hereinafter defined, what bearing do the above described characteristics have on the question whether any of these railways is an interurban, and whether it is operating as a part of a general steam railroad system of transportation?

(1) The interurban status of an electric railway is not affected by the fact that it operates between states. (See Spokane & Inland Empire Railroad Company v. United States [241 U. S. 244], in which the court says: "The railroad company operated a street railway system in Spokane and several interurban electric lines, one of which existed from Spokane to Coeur d'Alene, Idaho, a distance of about 40 miles. . . . In addition to its passenger trains the interurban line also operated freight trains.")

(2) The fact that an electric railway performs the functions of a steam railroad is characteristic of a large number of so-called interurban railways and is not regarded by the courts as bearing upon the roads' interurban status. (See Sandquist v. Ft. Dodge, Des Moines & Southern [159 Iowa 194], in which the court says: "The defendant is an interurban railroad operating a line of road for the carriage of passengers and freight between the cities of Des Moines and Fort Dodge, run by means of electricity.") The distance between Des Moines and Fort Dodge is 85 miles and the service rendered, except for minor details, is primarily that which a steam road would perform.

(3) That the road is chartered so that either steam or electricity may be used as a motive power has no practical bearing on the status of the road. The important thing is the actual nature of its operation.

(4) Similarly, the past history of the railway cannot be considered as important as its present actual operation. To hold otherwise would raise a number of awkward questions.

For instance, the Washington & Old Dominion and the Piedmont & Northern are doing the same kind of business as the Spokane & Inland Empire, and the Fort Dodge, Des Moines & Southern, both of which are recognized interurbans. How can it fairly be said that the Washington & Old Dominion, and the Piedmont & Northern are not interurbans

merely because one once ran by steam and the other may now run by steam if it so elects. How long must a road have operated by steam to prevent it subsequently becoming an interurban when the motive power changes to electricity, or, having once been operated by steam, how long must it operate by electricity before it may become an interurban? Does the fact that a road once operated by steam prevent it from ever becoming an interurban?

(5) The joint use of equipment and trackage is not regarded in the case of the Pacific Electric as disqualifying it from being an interurban. (See decision 1961 of the California Railroad Commission, which, speaking of the Pacific Electric, says: "Applicant operates a large suburban and interurban railway system in southern California, and its financial condition has heretofore been investigated on several occasions when applications were made for the issuance of securities."

(6) Neither does the above decision consider important the fact that the Southern Pacific owns the stock of the Pacific Electric, and that certain of the officers of these two companies are the same persons, or that certain equipment is operated jointly with the Southern Pacific.

(7) The amount of interstate freight business is immaterial on the question whether or not an electric railway is an interurban. (See Sandquist v. Ft. Dodge, Des Moines & Southern Railroad, cited above.) The interstate freight business of the Fort Dodge, Des Moines & Southern amounts to approximately 80 per cent of its total business.

This feature of interchange of freight, however, raises a further question: It is argued that such interchange, which is sometimes accompanied by interstate passenger traffic, brings the railroad within the definition—"Part of a general steam railroad system of transportation," thus raising the questions: (1) What is a general steam railroad system of transportation? (2) What constitutes operating as a part of a system?

The word "system," as used throughout the Transportation Act, 1920, means a system similar to the Pennsylvania System, the Baltimore & Ohio System, the Southern Pacific (Pacific System), etc. The word "system" is used, in other words, in customary railroad parlance. (See also the opinion of the court in Hines v. Dahn—267 Fed. 105, where the Illinois Central Railroad is referred to as a system within the Federal Control Act.) Such roads, and others, doing a general railroad business with country-wide connections, are general steam railroad systems within the meaning of the Act.

It is to be noted, also, that the Act specifically says "a" system of transportation, which cannot be interpreted to mean "the" systems of transportation in the United States, or a group of systems.

Operating as a part of a system means, as a practical matter, operating as an integral part of that system and under a unified control. If there is a physical connection and a common control and the lines are used together as one general system, the definition of the Act would cover and include such a road. But when there is separate control and management, mere contiguity at points of connection, or even some common officials, would not be a decisive test. If a road is under such separate control that its officials can manage its own business, make its own contracts and regulate its own affairs, then it is not a part of another.

The idea that engaging in a large interstate freight business, in the course of which it interchanges cars with several steam trunk lines, brings a railway within the term "operating as a part of a general steam railroad system of transportation," is negatived by the phraseology of various sections of the Transportation Act of 1920.

Interurbans Are Excluded from Provisions of the Act by Three Clauses

Interurban electric railways are excluded from the provisions of the Act under three heads:

(a) In all matters pertaining to federal control, namely, Section 204-A: "reimbursement for deficits"; and Section 209-A: "guarantee to carriers," the exclusion covers an "interurban electric railway which has as its principal source of operating revenue, urban, suburban, or interurban passenger traffic, or sale of power, heat and light, or both."

(b) In Section 1, Sub-section 22, forbidding extension and further construction without authority from the Interstate Commerce Commission; in Section 20-A requiring the assent of the Interstate Commerce Commission to the issuance of securities; and in Section 300, giving the Labor Board jurisdiction, the exception is "a street, interurban or suburban electric railway not operating as a part of a general steam railroad system of transportation."

(c) In Section 15-A, dealing with rates, are excluded "interurban electric railways, unless operated as a part of a general steam railroad system of transportation or engaged in the general transportation of freight."

The contention that interchange of freight makes an electric line part of those trunk lines with which it interchanges assumes that Section 300 includes by inference exactly what Section 15-A specifically states, namely, . . . or engaged in the general transportation of freight." If that is what Section 300 means, then the use of the words, " . . . or engaged in the general transportation of freight," as used in Section 15-A is surplusage. As a matter of fundamental legal construction such an assumption is unsound.

On the other hand, Congress must be assumed to have spoken with discrimination. The purpose here of differentiating in the phraseology of the two sections was to differentiate in the meaning. Had Congress meant to describe the same kind of railways in these two sections, it would have described them in similar terms.

The Labor Board is not bound by interpretations of the Interstate Commerce Commission. Nevertheless, it should give careful thought to such interpretations where the Labor Board itself is interpreting identical language.

For example, Section 20-A, above quoted, includes interurban railways in exactly the same language as Section 300 Under Section 20-A the Interstate Commerce Commission has not thought itself warranted in assuming jurisdiction over the issuance of securities by interurban roads, some of those here in question. In other words, the Interstate Commerce Commission does not regard engaging "in the general transportation of freight" as equivalent to "operating as a part of a general steam railroad system of transportation." And again, directly interpreting Section 300 with regard to the nominations of members of the Labor Board, the Interstate Commerce Commission excluded from participation in such nominations both interurban electric railways and the most important organization of employees engaged in operating these railways.

(8) The railways have received a freight increase from the Interstate Commerce Commission. They have not received a passenger increase. The reason they have received the former and not the latter is that the freight business done by interurban roads is sufficiently general to give Congress jurisdiction over the matter. Passenger traffic, on the other hand, is so local that Congress cannot properly regulate it. Therefore, such rates are left to the state commissions.

Labor Board and Interstate Commerce Commission Are Interdependent

Apart from the significant exclusion of the Labor Board from jurisdiction over railways engaged in the freight business, it is obvious as a practical matter, that the granting by the Labor Board of a wage increase, without corresponding authority to the Interstate Commerce Commission to raise rates, would result in serious complications. The Labor Board and the Interstate Commerce Commission were clearly intended to be interdependent in this matter. Such intention would be nullified if the Labor Board assumed jurisdiction where the Interstate Commerce Commission was without it. And so it does not seem to the Labor Board that any or all of the eight factors above discussed materially affect the question of jurisdiction. It remains to say a word regarding the matter of statutory construction and the purpose of Congress.

In construing Section 300 of the Transportation Act, 1920, in reference to the railways before the Labor Board, it is well to bear in mind the settled rules of construction and interpretation. Whether an act be remedial or not, it is to be strictly construed as to the classes of people, citizens, parties and subjects included, and none are to be included by any intendment not expressed in the terms used.

The intention of Congress becomes material only in case of an ambiguity in the language of the Act. While such an ambiguity does not exist here it nevertheless is not inappropriate to consider what the intention of Congress was.

It is plain that Congress has dealt in discriminating language with interurban electric railways throughout the Interstate Commerce Act and the Transportation Act, 1920, and has consistently treated them differently from steam lines. Congress has done this because there is a material difference generally speaking between steam and electric roads in the matter of equipment, nature of service and standards of employment. With a few exceptions, one service is general, the other is local. The difficulty is that a few electric railways have developed far beyond the original idea of an interurban. They have now come to rival many steam lines in service and size. And still the definition of what is an interurban has

likewise broadened, not only by popular conception, but by legal, statutory and executive decree, so that the Pacific Electric operating upward of 600 miles of road, the Fort Dodge, Des Moines & Southern, owning 2,400 box and coal cars, and the Spokane & Inland Empire, crossing state lines and operating passenger and freight trains, are all judicially labeled "interurban." It is difficult, if not impossible, to get away from this definition.

All the respondents are electrically operated. Some have been judicially determined to be interurban; the remainder either are so similar in character that they cannot be successfully differentiated or are otherwise clearly excluded by the words of the Act. Neither are the respondents operating as a part of any general steam railroad systems of transportation. Therefore, the Labor Board must decide that it has no jurisdiction over any of these respondents, and it herewith dismisses the applications of the petitioners for further hearing.

Labor Board Issues Warning to Employees and Carriers

A warning to railroad employees and transportation officers to obey the spirit of the Esch-Cummins law in submitting wage questions to the Labor Board before taking strike votes was issued by the board on December 17. The warning followed a hearing at which officers of the Order of Railway Conductors and Brotherhood of Railroad Trainmen were called upon to explain why they had taken a strike vote on the Norfolk & Western. The board set the hearing in the Norfolk & Western dispute between the employees and the company for January 3, but announced it had no objection to the parties continuing their discussions in the meantime.

"The importance of maintaining the uninterrupted operation of the railroads must be manifest to every one," the board's warning to the carriers and unions says. "Congress, by the Transportation Act of 1920, made it the duty of all carriers and their officers, employees and agents to exert every reasonable effort and adopt every available means to avoid any interruption to the operation of carriers growing out of labor disputes. The Act further makes it the duty of the carriers and employees directly interested in the dispute to confer, and if possible decide such disputes in conference. Any dispute not decided in such conference is required by the Act to be referred by the parties to the United States Railroad Labor Board for its decision."

Calling upon the roads to obey the law and refrain from intimidating employees, and advising the unions not to issue strike ballots, but to refer their grievances to the Board, the statement concludes:

"The Board for its part will continue its efforts to expedite the hearing and decision of disputes referred to it."

Hearing of the request for several changes in rules and working conditions, submitted to the Board last April in connection with the wage demand covered by the $625,000,000 wage increase granted on July 20, was set for January 10.

Color of Cypress Heartwood No Criterion.—Southern bald cypress is about the most variable in color of any of our native woods, and in different localities is known as red cypress, yellow cypress, white cypress, and black cypress. There is a rather prevalent belief that cypress with dark-colored heartwood is the most durable, but the opinion of the U. S. Forest Products Laboratory is that as far as durability is concerned the color of the wood makes very little difference. In service records obtained by the laboratory, any difference in the length of service of red cypress and yellow cypress appears to be due entirely to a difference in the amount of sapwood in the timbers. Cypress trees with light-colored heartwood usually have more sapwood than those with dark-colored heartwood, and sapwood is not resistant to decay. The important thing if durability is desired appears to be to select the heartwood of cypress regardless of its shade

Pennsylvania Officers and Men Get Together

About 310 representatives of the four train service brotherhoods on the Pennsylvania were in attendance at a meeting in Philadelphia on December 21 to talk over with the operating officers of the railroad the matter of labor committees or boards of adjustment.

General W. W. Atterbury, vice-president in charge of operation, in opening the meeting spoke of the decentralization of the organization of the Pennsylvania system into four regions and said:

"I have waited, with a great deal of interest, to see whether the employees themselves would recognize that with the change in the system organization there could also come a similar change in the method of handling all matters as between the management and the employees. It could mean to the men exactly what it means to the public—that is, quick and intelligent decisions.

"It has been clear to me that the existing overlapping of the schedules, or contradictory schedules, on the divisions or in the regions, would, necessarily, create a situation which the men would themselves recognize, and would voluntarily organize themselves to provide regional committees to correspond with our regional organization.

"I have been willing to await this time, but our hands have been forced, I feel, by the decision of the Labor Board that they have no jurisdiction in regard to Boards of Adjustment—the Boards of Adjustment can only be formed by the voluntary act of the management and its employees.

"Three principal points should be discussed:

"First: Regional committees;

"Second: The principles of schedules—whether System, Regional, or Divisional;

"Third: The setting up of machinery to promptly handle controversial questions.

"The railroad officers who are present," he further said, "represent the management of a property in which about two billion dollars is represented, approximately half of which is in bonds, and the other half in stocks. The bonds are largely owned by life insurance companies, savings banks, and other financial institutions, and in the stability of these bonds a very large majority of the people of the country are directly or indirectly interested, through their life insurance policies, or their deposits in the savings banks. The other half of this great investment—that is, the stock—is owned by some 140,000 stockholders, almost half of whom are women.

"Bear in mind that the policy of the Pennsylvania management has never been to pay large returns to its stockholders. The aim has been to assure to stockholders a reasonable return upon which they could depend. Furthermore, the Pennsylvania Railroad has no watered stock and the records will show that over a period of nearly 75 years it has paid regular dividends to its stockholders averaging approximately six per cent.

"The duty of the management is threefold. They have a direct duty to see that the capital already invested shall be given a fair return. Surely that duty is owed to those who have entrusted their money to our care. Further, if a fair return is not earned, new capital for improvements, extensions and betterments cannot be obtained. The management also has a duty to the public. If the railroad is granted reasonable and fair rates, the public in return is entitled to efficient and satisfactory service. Last, but not least, is the duty of the management to the employees—that is: good wages, good working conditions, and discipline fairly and impartially maintained. Kindness, courtesy and consideration are not incompatible with good discipline. Lax discipline is not kindness, for in your occupation lax discipline spells death and disaster.

"The employees, equally with the management, have their responsibilities. Given fair wages and fair working conditions, the management has the right to expect and exact from the employees an honest day's work; prompt, willing and cheerful observance of orders; and economical use and care of the property entrusted to them.

"The management has the right to ask the same kindness, courtesy and consideration to the officers and to the public on the part of the employees which the employees have the right to expect from their officers.

"The successful solution of the problems that are before you, if carried to a logical conclusion, means that not only will there never be a strike, but that it will never be necessary to take a strike vote on the Pennsylvania System.

"It should mean the setting up of proper machinery for the prompt consideration of changed working conditions and of grievances, and, finally, that failing to agree between yourselves on a settlement of any of these questions, there shall have been provided beforehand the machinery of a tribunal to which the question can be submitted for final decision."

Freight Traffic Still Declines

WASHINGTON, D. C.

FREIGHT CAR LOADING for the week ending December 11, as reported to the Car Service Division of the American Railway Association, shows a further decrease as compared with the preceding week of over 37,000 cars, although still greater than for the corresponding weeks of the last two years. The total number of revenue cars loaded for the week was 834,897 as compared with 761,957 in 1919 and 820,202 in 1918. There were decreases as compared with 1919 in the Pocahontas and Northwestern districts but increases in the others. The total increase over last year is due to the coal loading as compared with that during the strike period of last year. All classes of commodities shown in the accompanying report showed a decreased loading as compared with the week before, except coal and livestock.

According to the semi-monthly report of locomotive equipment condition compiled by the Car Service Division of the American Railway Association for the second half of November, there were 3,953 locomotives held out of service for repairs requiring less than 24 hours, or 6.2 per cent of the total, and 10,957, or 17.2 per cent of the total, for repairs requiring over 24 hours.

Adler's Visual Highway Crossing Signa

AT BUENA VISTA, VA., the Norfolk & Western has installed a highway crossing signal which gives the stop indication to travelers on the highway by disks, lettered with the word STOP, and by a light, no audible apparatus being used. This signal was devised by Charles Adler, Jr., of Baltimore, Md., whose highway crossing signals in use on the Maryland & Pennsylvania were briefly described in the *Railway Age* of August 6, page 222.



The signal on the Norfolk & Western is shown in the illustration. The vertical shaft supporting the disks turns on its axis and when the crossing is clear the disks are held with their edges to the highway, this position of the shaft being maintained by an energized solenoid. The signal is controlled in the usual manner, and the relay in the box at the foot of the post, when actuated by an approaching train, de-energizes the solenoid and the shaft is revolved a quarter turn by gravity. The disks then face the highway. The lamp (electric) controlled by the same relay is contained in the tube suspended between the two disks. The lamp is in service both night and day, the same as the disk.

This signal is made by the Safety Signal Appliance Corporation, 929 Chestnut street, Philadelphia, Pa.

THE RAILWAY MAIL SERVICE may have been operated with increased efficiency, as the postmaster general says, as compared with the previous year, for there were some important extensions of service; though one fears that these were, in part, counterbalanced by curtailments of service elsewhere. But the Railway Mail Service will not be as efficient as the country has a right to demand until enough space is used to permit the distribution of important first-class mail on all trains where such distribution will expedite delivery. The foreign mail service will not be satisfactory until the sea post-offices are restored.—*Springfield (Mass.) Republican.*

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS: COMPARISON OF TOTALS: THIS YEAR, LAST YEAR, TWO YEARS AGO, FOR WEEK ENDED SATURDAY, DECEMBER 11, 1920

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year, 1920	Total revenue freight loaded: Corresponding year, 1919	Total revenue freight loaded: Corresponding year, 1918	Received from connections: This year, 1920	Received from connections: Corresponding year, 1919	Received from connections: Corresponding year, 1918
Eastern	1920	6,212	4,121	59,577	2,425	6,308	4,779	45,821	72,738	201,981	.....	.....	242,909	.....	.....
	1919	6,369	4,282	34,368	3,973	7,643	2,450	34,503	100,025	.....	193,613	200,184	.....	232,603	235,264
Allegheny	1920	3,273	3,618	68,620	7,337	3,657	4,687	36,527	57,950	185,669	.....	.....	131,661	.....	.....
	1919	3,268	3,937	37,108	3,242	4,329	2,628	39,671	69,154	.....	163,338	187,802	.....	117,797	173,200
Pocahontas	1920	123	130	22,832	471	1,771	129	2,626	6,068	34,150	.....	.....	16,212	.....	.....
	1919	181	205	23,790	312	1,951	318	182	9,042	.....	35,981	34,724	.....	18,435	20,610
Southern	1920	2,967	2,263	34,471	1,128	16,539	2,203	36,463	33,285	129,319	.....	.....	70,280	.....	.....
	1919	2,752	2,690	14,075	272	17,323	2,417	19,905	54,329	.....	113,763	116,506	.....	73,658	71,716
Northwestern	1920	11,271	9,039	9,645	1,374	12,324	1,697	26,171	25,884	97,405	.....	.....	48,067	.....	.....
	1919	11,164	10,155	12,870	383	13,612	1,681	19,319	33,449	.....	102,613	116,887	.....	50,027	76,699
Central Western	1920	9,552	10,549	28,014	510	3,493	2,363	28,831	36,349	119,661	.....	.....	56,458	.....	.....
	1919	10,090	11,971	7,116	458	3,630	2,728	21,381	40,751	.....	98,115	108,430	.....	56,770	60,500
Southwestern	1920	3,422	2,079	7,257	659	7,102	1,815	16,704	27,694	66,712	.....	.....	48,591	.....	.....
	1919	3,315	2,948	2,088	639	5,944	1,477	14,661	23,445	.....	54,517	55,669	.....	47,495	45,660
Total all roads	1920	36,820	31,799	230,396	13,904	51,194	17,673	193,143	259,968	834,897	.....	.....	614,178	.....	.....
	1919	37,129	36,188	131,416	9,279	54,431	13,679	149,622	330,195	.....	761,940	.....	.....	596,785	.....
	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	820,202	.....	.....	683,649
Increase compared	1919	.....	.....	98,950	4,625	.....	3,994	43,521	.....	72,957	.....	.....	17,393	.....	.....
Decrease compared	1919	309	4,389	.....	.....	3,238	.....	.....	70,227	.....	.....	.....	.....	.....	.....
Increase compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	14,695	.....	.....	.....	.....	.....
Decrease compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	69,471	.....	.....
December 4	1920	37,109	30,903	230,228	15,643	53,971	27,195	195,577	281,542	872,162	.....	.....	.....	.....	.....
November 27	1920	33,922	29,844	205,985	14,338	50,154	31,445	173,958	258,027	797,673	.....	.....	.....	.....	.....
November 20	1920	36,442	40,427	216,322	13,259	54,760	37,009	199,922	282,387	880,528	.....	.....	.....	.....	.....
November 13	1920	34,287	39,023	228,035	13,894	57,529	49,361	196,819	300,961	919,909	.....	.....	.....	.....	.....

L. C. L. merchandise loading figures for 1920 and 1919 are not comparable as some roads are not able to separate their L. C. L. freight and miscellaneous of 1919. Add merchandise and miscellaneous columns to get a fair comparison.

General News Department

Train-robbers, early on the morning of December 3, entered a mail car on a passenger train of the Chicago, Milwaukee & St. Paul as it was approaching Minneapolis, Minn., bound three mail clerks and escaped with about $10,000 in negotiable papers.

The Interstate Commerce Commission has asked Congress, through the Secretary of the Treasury, for a supplemental appropriation of $1,540,000, to cover a deficiency for the fiscal year ending June 30, 1921, as the result of additional duties placed upon the commission by the transportation act. The estimate includes $1,000,000 additional for valuation work, $40,000 for safety work, and $500,000 for general expenses.

The Southern Railway, in the reconstruction and double-tracking of its line between Washington and Atlanta, shortened it 11 miles (648 to 637), and beginning January 1, 1921, fares will be reduced accordingly. Between Charlotte and Atlanta, the old distance was 267 miles, new distance, 260 miles, reduction 7 miles. The present fare between Washington and Atlanta, $23.36, will be cut to $22.97, a reduction of thirty-nine cents.

The New York Central has inaugurated a system of engineering bulletins which will be issued from time to time and distributed to the engineering employees desiring them. These bulletins will be divided and issued under about 18 general heads, covering such subjects as roadway, masonry, track work, engine terminals, etc. Each main head will be sub-divided and the different subjects under the sub-division treated in separate bulletins.

Representative Bland, of Indiana, has introduced in the House a bill to require railroads to maintain at all places where 20 or more employees are customarily employed, or customarily begin or end their day's work, such washrooms as may be required for their health or safety, including, when required, facilities for changing clothes. The Interstate Commerce Commission would also be authorized by this bill to order carriers to provide washrooms.

Samuel W. Dudley, chief engineer of the Westinghouse Air Brake Company, has been chosen Professor of Mechanical Engineering, on the Strathcona Foundation by the Yale Corporation, it was announced Tuesday. Professor C. J. Tilden, of the Department of Engineering Mechanics, the announcement also says, has accepted the directorship of a national movement which has for its immediate object a broad educational program along highway engineering and highway transportation lines, the details of which are yet to be announced.

Henry E. Huntington, chairman of the Board of Directors of the Chesapeake & Ohio, has received from New York University the honorary degree of Doctor of Laws. Mr. Huntington is noted as a collector of English and American literature, and he has amassed one of the finest collections of literary masterpieces in the world. It includes the original manuscript of Benjamin Franklin's autobiography, Washington manuscripts, Lincoln letters and original manuscripts of many other authors and statesmen. Some of these books and papers are housed in his residence at 57th street and Fifth avenue, New York city, and others at his winter home at San Gabriel, California.

The railroads in California have been asked by the State Department of Agriculture for assistance in protecting California crops from four very dangerous pests: the alfalfa weevil, the cotton boll weevil, the gypsy and the brown tail moth, and the citrus canker. The first of these, the alfalfa weevil, is already west of the Rockies, while the others, though a constant menace, have been kept out of the state only through constant vigilance of the authorities in testing seed after it has been shipped into California and before it has been distributed. Station agents are being asked to assist in the enforcement of plant quarantine laws, and thus safeguard the crops which now represent a daily movement by freight or express of 1,000 carloads.

The pension list of the Philadelphia & Reading, established in 1902, now contains 485 names, of whom four have records of 57 years or more of service, and 72 others served 50 years or more. In the last issue of the "Roll of Honor," A. T. Dice, president of the road, expressed the management's appreciation of the long and faithful service these men had rendered. He said: "The prosperity which our company has enjoyed is due in no small part to your faithful service. Accordingly, it is just and right that you should share in that prosperity. You are entitled, also, in your retirement, to the satisfaction of knowing that by your work you have largely contributed to the upbuilding of the strong and important system of railroads we are now operating. The troublous times through which our country has passed since the beginning of the great war make clearer than ever before the value of efficient railroad service, and the vital interdependence of the country and the railroads."

The net railway operating income for October of 203 railroads, as tabulated by the Association of Railway Executives, amounted to $91,761,090, which is approximately $20,674,000, or 18.4 per cent below the net return expected to be earned for that month. The compilation is based on reports received by the Interstate Commerce Commission from railroads with a total mileage of 235,837 miles. On the basis of these figures the railroads of the country would earn annually 4.9 per cent on the value of their properties as tentatively fixed for rate making purposes (at $18,900,000,000), by the Interstate Commerce Commission. This is an increase of three-fourths of one per cent over that for September as computed from the net operating income for that month. To realize a return of 6 per cent on their valuation as provided by the act, the railroads should have earned $112,435,000 in October. Gross operating revenues for the 203 railroads totaled $642,341,119, or an increase of 26 per cent over October, 1919, while operating expenses were $522,877,298, or an increase of 28.8 per cent. The net operating income is an increase of 20.2 per cent. The net operating income in every district fell below a 6 per cent basis.

Transportation of Dangerous Articles

The lower house of Congress, on December 20, passed the bill, H. R., 12,161, recommended by the Interstate Commerce Commission, which amends the legislation authorizing the commission to regulate the transportation of explosives to cover the transportation of dangerous articles other than explosives which have recently become an important item in transportation. The bill also includes amendments to cover certain explosives not now definitely named in the act and extends its provisions to water lines engaged in interstate commerce. It gives the Interstate Commerce Commission the right to utilize the services of the Bureau of Explosives and to avail itself of the advice and assistance any department, commission or board of the government.

Letter Ballot on Replacing Car Ends

The Mechanical Division of the American Railway Association has issued Circular No. 3, announcing a special letter ballot on the proposition submitted in the report of the Committee on Car Construction, requiring that when the ends of cars are broken out, they should be replaced with ends specified for new cars.

This proposal failed to receive a sufficient number of votes for adoption when the regular letter ballot was submitted following the annual meeting at Atlantic City, N. J., last June, but as the vote indicated that the failure of adoption grew out of a misunderstanding of the meaning of the recommendation, the General Committee has ordered the proposed rule to be stated on the special letter ballot as follows: "On house cars (other than refrigerator cars) with steel underframe or steel center sills, having a center sill area of not less than 24 sq. in., when an end requires repairs consisting of new poles and braces, the ends shall be replaced with ends specified for new cars, this to be done under the direction of the car owners." The ballot closes at noon, December 18, 1920.

Subjects for 1921 Convention— Traveling Engineers' Association

The list of subjects of committee reports to be presented at the 1921 annual meeting of the Traveling Engineers' Association, which has recently been issued, includes the following topics:

The Best Method of Operating Stoker Fired Locomotives to Obtain the Greatest Efficiency at the Least Expense; Joseph Kelley (L. V.), Chairman.

A Comprehensive Standard Method of Employing, Educating and Examining Engineers and Firemen; J. B. Hurley (Wabash), Chairman.

What Are the Advantages of the Self-Adjusting Wedges, the Feed Water Heater and Devices for Increasing the Tractive Power of the Locomotive in Starting and at Slow Speed; T. F. Howley (Erie), Chairman.

Subjects for Discussion: J. H. DeSalis (N. Y. C.), Chairman.

Distribution of Power and Its Effect on Operating Costs; Robert Collett (N. Y. C.), Chairman.

Recommended Practice for Conservation of Locomotive Appurtenances and Supplies; J. P. Russell (Southern), Chairman.

Arguments on Railroad Guaranty

Oral arguments were presented before Chief Justice McCoy, of the Supreme Court of the District of Columbia, on December 16 and 17, on the petition of the Grand Trunk Western for a mandamus to require the Secretary of the Treasury to honor a certificate of the Interstate Commerce Commission for $500,000 on account of this road's guaranty for the six months from March 1 to August 31. J. H. Covington, appearing for the railroad, contended that if the Secretary of the Treasury can find refuge in the decision of the comptroller of the Treasury, who has held that the Treasury cannot honor certificates for anything less than the finally determined amount of the guaranty, he can defy Congress and the courts together. No decision by the comptroller, he argued, could turn a merely ministerial duty of the Secretary of the Treasury into one for the exercise of his discretion; and the law providing for payments to the railroad companies on certificates of the Interstate Commerce Commission gives the discretion to the commission and makes the signing of a warrant on such certificate a purely ministerial function of the secretary. Assistant United States Attorney Mason represented the Treasury Department and contended that the decision of the comptroller is binding on the Secretary of the Treasury and that the law provides for only one warrant after a final audit of the guaranty.

International Railway Association

Railroads contemplating taking membership in the International Railway Association can secure a statement giving conditions of membership and other information about the association by applying to the Association of Railway Executives, 61 Broadway, New York City. The International was revived last year and the American Railway Association has renewed its membership therein. Railroad companies which join pay $20 a year, plus an assessment proportionate to the length of their lines. The reorganization of the association was noticed in the *Railway Age* of September 26, 1919, and the program for the next session, which is appointed to be held at Rome, Italy, in April, 1922, was given in the issue of June 18, 1920.

The affairs of the association are managed by a Permanent Commission, with headquarters at Brussels. The American Section of the Permanent Commission consists of the following eight railroad officers: R. H. Aishton, Fairfax Harrison (Southern), W. W. Atterbury (Penn.), Stuyvesant Fish, Hale Holden (C., B. & Q.); J. H. Hustis (B. & M.); H. G. Kelley (G. T.), and L. F. Loree (D. & H.). The chairman of the American Section is R. H. Aishton, and the secretary is J. E. Fairbanks, 75 Church street, New York City.

The Bulletin of the Association, published monthly, is furnished to members without charge; others may secure it for nine dollars a year, payable in advance, by sending to the printer, M. Weissenbruch Co., 49 rue du Poincon, Brussels, Belgium.

Bill to Postpone Clayton Law Passed

The Senate, on December 16, and the House, on December 18, passed the bill to change the effective date of Section 10 of the Clayton law from January 1, 1921, to January 1, 1922, in order to allow further time for the consideration of a more workable substitute for Section 10. Chairman Esch, of the House committee on interstate and foreign commerce, submitted a report recommending the extension, in which he said:

"The transportation act of 1920 was approved February 28, 1920, of this year. Shortly thereafter a bill amending section 10 of the Clayton Act was introduced in the Senate and was referred by the appropriate committee of that body to the Interstate Commerce Commission for a report. Owing to the pressure of business before the commission, caused by the enactment of the transportation act of 1920, the forwarding of a report was overlooked and it was impossible for the Senate committee to take action prior to the expiration of the second session of this Congress, June 5. It was impossible for either Senate or House committee having the legislation in charge to secure action on an amendment of section 10 of the Clayton Act prior to January 1, 1921, when the year's extension granted in section 501 of the transportation act expired. In view of the necessity of some material amendment of section 10 of the Clayton Act, your committee deems it necessary to ask for a further extension by the passage of the pending bill. The committee is of the opinion as a result of the hearings held that the carrying into effect of the existing provisions of section 10 of the Clayton Act will result in needless expenditures on the part of carriers in many instances; that some of its provisions are unworkable, and that the changed status of the carriers and the enactment of the transportation act require a revision of section 10 in order to make it consistent with provisions of the transportation act."

The committee received a letter from Commissioner Hall, of the Interstate Commerce Commission, stating on behalf of the legislative committee of the commission that in the light of the difficulties encountered in the application of Section 10 and of the understanding that because of changed conditions, counsel for the carriers are considering proposals for other legislation in this regard which would seem better adapted to present needs, the committee has no objection to offer to the proposed extension of time.

President W. H. Johnston of the International Association of Machinists has formally requested President Wilson to veto an amendment to the transportation act to defer until 1922 the effective Section 10 of the Clayton anti-trust act.

"This amendment simply legalizes a great steal from the American public," said Mr. Johnston, in a statement to the press. "In filing this protest it is our purpose to afford the President an opportunity to exercise his constitutional right to protect the people against the disastrous effects of a measure which has been slipped through both Houses without debate and without the members having had a chance to ascertain what was back of the legislation. Section 10 of the Clayton Act," said Mr. Johnston, "is one of the most important pieces of protective legislation ever adopted by the representatives of the American people. It has been the established custom for railroad officials and directors to be heavily interested in concerns from which railroads buy their supplies and equipment. Through private deals by these boards of directors and officials, free from the public scrutiny, prices were paid which netted millions of dollars in profits to these railroad interests. By Section 10 of the Clayton act Congress in 1914 intended to forbid these acts of piracy."

"Recent deals," he claimed, "between railroads and equipment concerns with which they are allied have come to light. These have involved unwarranted charges for the repair of locomotives and cars which will mount up into tens of millions of dollars. This money has been extracted from the public. Evidence as to these contracts through which enormous profits have been realized is at present in the possession of the Interstate Commerce Commission. This shows that work has been charged for at rates two, three and four times legitimate costs, as shown by the actual cost of similar work in railroad shops."

Anti-Strike Bill Passed by Senate

The Senate on December 16 passed without discussion the drastic anti-strike bill introduced at the last session of Congress by Senator Poindexter. The bill was passed when very few Senators were in the chamber and without any discussion. Senator La Follette, on entering the Senate chamber shortly afterward, entered a motion to reconsider the vote by which the bill was passed.

The bill prohibits attempts to persuade railway employees to quit their employment with intent to obstruct, delay, hinder or prevent the movement of commodities in interstate or foreign commerce, the use of violence or threats to seek to prevent any person from engaging in employment or continuing in employment in connection with any means or agency of interstate or foreign commerce; also any destruction of property with intent to obstruct, delay, hinder, impede or prevent the movement of commodities in interstate or foreign commerce. The bill also makes it unlawful for two or more persons, officers, agents or employees of carriers to enter into any combination or agreement with intent substantially to hinder, restrain or prevent the operation of trains, and provides that nothing in the act shall be taken to deny to any individual the right to quit his employment for any reason whatever.

A number of members of the House and the Senate, who are described in a statement by William H. Johnston, president of the International Association of Machinists, as "liberal" members of Congress, met on December 17 at Washington, with the heads of the railroad labor organizations and the leaders of "the other progressive organizations," to discuss the general legislative situation. According to Mr. Johnston's statement, the conference grew out of the fact that the leaders of the railroad labor organizations were meeting at this time in Washington to discuss various problems and the time was thought to be opportune for general discussion of the entire legislative situation. Mr. Johnston said that suggestions were made that a bureau of legislative information should be established to act with the liberal members of Congress and that this suggestion was emphasized by the passage of the Poindexter anti-strike bill because opponents of the measure had not been properly warned that it was to be taken up by the Senate. It was agreed that later meetings would be held, at which plans "for bringing about a better co-ordination of the liberal forces of the country with their representatives in the House and Senate" would be formulated.

Store Door Delivery to Relieve Congestion

The question of store door delivery as a means to decrease the congestion in railroad terminals was the feature of a recent meeting of the Transportation Committees of the Federal Highway Council held at the Commodore Hotel, New York, on December 10, 1920. In regard to the relation of highways to railroads and waterways, A. E. Beck, traffic manager of the Merchants' and Manufacturers' Association of Baltimore, Md., presented a paper on the merits and history of store door delivery as applied to the cities of Baltimore and Washington, submitting also an outline for discussion. B. F. Fitch, president, Motor Terminal Company, Cleveland, Ohio, described the use of motor trucks in terminal work illustrating his remarks by lantern slides of the Cincinnati, Ohio, installation. The questions of the development of rural express service and of transportation surveys, traffic control and snow removal and many other subjects were also fully discussed.

Mr. Beck in his paper sketched the history of store door delivery at Washington and Baltimore and essayed to show how well the plan was liked by shippers. He touched upon the decisions of the Interstate Commerce Commission in connection with the store door delivery in these two cities and showed how as a result of the Commission's decision the carriers felt it necessary to abandon the service. He expressed the opinion, however, that store door delivery had justified itself particularly from the standpoint that it overcame the handicap of inadequate terminals and prevented congestion and accumulation. He also discussed the plan proposed for store door delivery at New York. "I think we agree," he said in reference to store door delivery in general, "that store door delivery is the proper method to employ for the more intensive use of existing facilities."

Mr. Beck then took up the question in more detail and treated the subject under the following heads: Should store door delivery be a carrier service? The form of drayage service to be employed; the extent of delivery; the transfer or drayage charges; should zones or drayage charges be published as a part of the carrier's tariff; collection and delivery, objections by consignee.

In conclusion, he said: "Manifestly, there will be a number of difficulties attendant upon the establishment of store door delivery in any community, but I do not feel that any of these difficulties are insurmountable. As soon as the people, generally, realize the tremendous advantages of the store door delivery service, I am confident that they will become as much, or more, enthusiastic as those of us who have studied and understand the relief that this agency may convey to the totally inadequate freight terminals of our railroads of today."

The paper was discussed by the meeting with Col. Charles D. Hine, F. E. Williamson (New York Central), F. S. Holbrook (American Express Company), and J. C. Lincoln (Merchants' Association of New York), leading the formal discussion.

Freight Operating Statistics

The Interstate Commerce Commission has issued an analysis by its Bureau of Statistics of the principal items in the summary of operating statistics of the Class I roads for the month of September, 1920, and for the nine months ended with September, compared with the corresponding periods of 1919.

"It is noted," the statement says, "that the roads during the month of September, 1920, produced in exclusive freight service 40,651,000,000 net ton-miles. This performance exceeds that of September, 1919, by 1,973,000,000 net ton-miles. The volume of traffic in September, 1920, shows a *decrease* of 2,000,000,000 net ton-miles as compared with August of this year, while a comparison of the corresponding months of last year shows an *increase* of 2,262,000,000 net ton-miles. It should be recalled that there was a rush in August to take advantage of the old freight rates. This decline in September of this year and the increase recorded in September of last year result in reducing the percentage of increase in September, 1920, over same month of 1919 to 5.1 per cent, as against a 17.1 per cent increase shown for August.

"The tables indicate that while the volume of traffic increased 5.1 per cent, the freight train-miles increased 6.7 per cent. The loaded car-miles show an actual decrease of 0.7 per cent, the increase in train-miles being in part explained by an increase of 13 per cent in empty car-miles. Because of the increase in empty car-miles, the average train-load shows a decrease of 1.4 per cent, while the car-load increased 6 per cent. As indicated, the per cent loaded of total car-miles shows a decrease of 4 per cent, and the car-miles per car-day increased 6.4 per cent. The net ton-miles per car-day shows an increase of 7.8 per cent. The cost per freight-train-mile of locomotive repairs, enginemen, trainmen, fuel, enginehouse expense and other locomotive and train supplies, shows for the total an increase of 31.3 per cent.

"During the nine months now reported, there were produced by Class I roads in exclusive freight service, 330,964,000,000 net ton-miles, being an increase of 44,062,000,000 net ton-miles or 15.4 per cent over the same period of 1919; and over the same period of 1918 the increase is 6,645,000,000 net ton-miles, or 2 per cent. Train-miles increased 14.3 per cent over September of last year and the loaded car-miles increased 12.6 per cent. The train-load increased 1 per cent and the car-load increased 2.5 per cent. The per cent loaded of total car-miles increased 2.4 per cent. Car-miles per car-day increased 8.1 per cent and the net ton-miles per car-day, the resultant of car-load, per cent of loads and car-miles per car-day and which is the ultimate measure of freight car utilization, although not necessarily of efficiency, shows an increase of 13.3 per cent. The cost per freight train-mile, selected expense accounts, referred to in the comparisons for the month shows for the period an increase of 21.6 per cent over the corresponding period of 1919."

Civil Service Examinations for Attorney Examiner of Finance, Interstate Commerce Commission

The United States Civil Service Commission has announced open competitive examinations for vacancies in the Bureau of Finance, Interstate Commerce Commission, as attorney examiner of finance, with salaries ranging from $3,600 to $5,000, and assistant attorney examiner of finance at salaries ranging from $2,400 to $3,480. Appointees will be employed by the commission in the administration of the provisions of the transportation act relating to finance and other provisions of law delegating to the commission powers and duties in connection with the construction, operation or abandonment of railroads, the acquirement by one carrier of the control of another carrier, the consolidation of carriers, the issue of securities or assumption of obligations by carriers, the determination, certification or payment of deficits, guaranties or loans to carriers, the recapture of excess earnings, the management of contingent or revolving funds or other financial activities.

The duties of these positions will involve the analysis of applications under the provisions of law indicated above, the preparation of information supplemental to that contained in the application, where such additional information may be required, conducting formal hearings upon applications, examination of witnesses, conducting investigations initiated by the commission, writing reports, drawing orders, and other work of a similar nature.

Competitors will be examined in the following subjects, which will have the relative weights indicated:

Subjects.	Weights.
1. General and interstate commerce law	40
2. Common carrier accounting and finance	20
3. Education (a) general, 8; (b) legal, 8; (c) accounting, finance, or engineering, 4	20
4. Experience (a) law, 14; (b) common carrier accounting and finance, 6	20
Total	100

The ratings on the subjects of education and experience will be based upon the competitors' sworn statements in their applications and upon corroborative evidence.

For eligibility for either of these examinations applicants must show educational qualifications fully equivalent to a four years' high-school course, must have been admitted to the bar, and must show that they have been engaged actively in the practice of law, general or special, for a period of at least two years subsequent to their admission to the bar.

In addition to the above, applicants for the position of attorney examiner of finance must meet the requirements specified in one of the following groups:

(a) Two years' educational training in engineering or accounting and the theory of finance, and three years' experience in positions requiring a knowledge of railway accounting and finance.

(b) At least three years' experience as a member of a state public service commission having jurisdiction of the issue of railway securities, or as an employee in a responsible position with such commission, or with the Interstate Commerce Commission.

(c) Graduation from a recognized law school, and at least two years' experience with railroads, financial institutions, or law firms having practice in corporation matters, or in legal or accounting positions involving substantially similar duties, or in independent practice requiring similar qualifications.

(d) A combination of parts of the training and experience indicated in (a), (b), and (c) equivalent at least to any one of them.

Additional credit will be given for legal work involving the formalities and validity of corporate bonds, mortgages, and other securities. Such legal work will also be credited as accounting and financial experience.

"Applicants for attorney examiner of finance who do not meet the additional requirements prescribed for this position, but who meet the requirements for the position of assistant attorney examiner of finance, will be considered for the latter position, unless the applicant states that such consideration is not desired."

Traffic News

The railroads operating suburban passenger service out of Chicago telegraphed the Interstate Commerce Commission on December 11 for permission to increase all suburban fares 20 per cent.

The Traffic Club of Waco, Tex., has elected the following officers: President, C. H. Carringer; first vice-president, B. R. Long; second vice-president, W. N. Miner; secretary and treasurer, Lloyd Bailey.

The Traffic Club of Kansas City, Mo., was reorganized at a meeting on December 9. The new officers are Frank M. Cole, of the W. P. Tanner, Gross & Co., president; J. D. Yates, assistant general freight agent of the Missouri Pacific, first vice-president; C. D. Dooley, traffic manager of Peet Brothers Manufacturing Company, second vice-president; and Fred B. Blair, traffic manager of the Hoyland Milling Company, secretary and treasurer.

The Traffic Club of Lansing, Mich., has elected Karl P. Hodges, traffic manager of the Duplex Truck Company, president; John Thomson, agent on the New York Central, vice-president; John T. Ross, traffic commissioner of the Lansing Chamber of Commerce, secretary and treasurer. These officers, together with E. L. Jennings, agent of the Michigan Central; Marshall S. Graham, traffic manager of the Reo Motor Car Company; W. G. Davis, traffic manager of the Auto Body Company, and W. K. Andrews, agent of the Pere Marquette, will make up the executive committee.

The subject of the "Get Together Traffic Discussion" of the Traffic Club of Chicago on December 22, was "Demurrage, Theory and Practice." Leaders of the discussion for the railroads were: C. W. Crawford, chairman of the general committee of the Division of Transportation of the American Railway Association, and J. R. Pickering, superintendent of transportation of the Chicago, Rock Island & Pacific; for the shippers, R. O'Hara, assistant traffic manager of Swift & Co.; Walter Williams, traffic manager of the Chicago Mill & Lumber Company, and W. W. Manker, assistant traffic manager of Armour & Co.

Carl Howe, traffic manager of the Michigan Central, has been appointed national councillor of the Traffic Club of Chicago to represent it in the Chamber of Commerce of the United States. The National Council of the Chamber of Commerce of the United States consists of one representative each from the more than 1,400 commercial and industrial organizations making up the Chamber's membership. It serves as an advisory body to the National Chamber's Board of Directors. The council holds a special meeting preceding the annual convention of the National Chamber to pass on the program and to select a nominating committee. The councillors also act as chairmen of the delegations representing their organizations. A councillor occupies a position of liaison between the National Chamber and his own organization on important questions.

New York State Passenger Fares

The injunction issued by the New York Supreme Court last month against the advancing of passenger fares was vacated by Justice Hasbrouck, at Kingston on December 19; and on the 20th the New York Central, the Delaware & Hudson and other roads advanced intrastate rates to 3.6 cents a mile. The surcharge on fares in parlor and sleeping cars was also added.

On the 21st the United States District Court, Judge John C. Knox, granted a temporary injunction prohibiting the Public Service Commission, First and Second districts, their counsel, and State Attorney-General Charles D. Newton from interfering in any way with the New York Central Railroad Company in the collection of the passenger rates ordered into effect by the Interstate Commerce Commission. The

order to show cause why the injunction should not be made permanent is returnable December 31. The bill of complaint filed by the railroad recited that the company, which had inaugurated the new fares Monday, was carrying out the orders of the Interstate Commerce Commission, and that there had been interference and threats of interference on the part of the State Attorney-General and the Public Service Commission.

New England Rate Hearing at Washington

Hearings before the Interstate Commerce Commission on the application of the New England roads for larger divisions of the through rates into and out of New England were adjourned on December 18, after four days had been spent in the presentation of the evidence on behalf of the New England lines. The hearing was adjourned to December 28, when evidence will be presented on behalf of the trunk lines. Among the witnesses were Morris McDonald, president, Maine Central; J. H. Hustis, president, Boston & Maine; E. J. Pearson, president, New York, New Haven & Hartford; Howard Elliott, a director of the New Haven; H. L. Brigham, assistant to the president, Boston & Maine; J. E. Slater, assistant to the general manager, New Haven; George S. Hobbs, vice-president, Maine Central; John L. Dempsey, assistant general freight agent, Central Vermont; and Prof. William J. Cunningham, of Harvard University. The evidence consisted largely of statistical exhibits to show that the needs of the New England railroads as terminal carriers have not been adequately recognized in the fixing of divisions, and to show that the New England roads are faced with a very serious condition unless some relief is afforded. Mr. Elliott said that in the next three years the New England carriers have to meet debts amounting to $526,000,000, including a large indebtedness to the United States, and that unless their income is increased most of them would be forced into bankruptcy. Mr. Elliott said that a revision of the divisions would not afford a complete remedy for the situation, but that it would go a long way to relieve the present crisis.

Coal Production

Recovering from the Thanksgiving Day depression, the production of soft coal during the week of December 4 rose to a new maximum for the year. The total output, including lignite and coal coked, is estimated at 12,757,000 net tons. "Not only was this the largest production attained the present season," says the weekly bulletin of the Geological Survey, "but it has been surpassed only four times during the period over which reports of weekly production extend. The record was made possible by the railroads, which furnished empty cars sufficient to load 232,340 cars of soft coal, an achievement the more creditable because on Monday, November 29, the priority in the use of open top cars was withdrawn completely.

Production of bituminous coal during the first 287 working days of the year has been 512,431,000 tons, within 3¾ million tons of the record for 1917, a year when requirements were large and when production about equalled consumption. For the week ending November 27, according to the report, the percentage of full time output lost on account of transportation disability was 17.4. The cumulative lake movement for the season to December 4 was 23,432,000 tons.

For the second time in two weeks production of soft coal set a new maximum for the year during the week of December 11, according to the weekly bulletin of the Geological Survey. The total output for the week is estimated at 12,865,000 net tons, an increase of 33,000 tons over the revised figures for the preceding week. The bulletin says the week was the tenth in a period of sustained heavy production which has been equalled but once before and that in the summer of 1918, when the zone system, car pools and other wartime measures designed to stimulate production, were in force. Cumulative production for the calendar year up to December 11 now stands at 525,403,000 net tons, which slightly exceeds the production for the corresponding period of 1917. If this rate be continued for the 16 working days of the year remaining, the total output for the year will be more than 554,000,000 net tons.

Commission and Court News

Interstate Commerce Commission

The Interstate Commerce Commission has further suspended until January 23, 1921, the proposed rules for the construction of combination rates on petroleum oil and its products published in tariffs filed by western roads.

The Commission has suspended until April 17, freight tariffs between points in defined territories in eastern and southern groups and points in Southwestern territory which propose to increase by 35 per cent the rates to and from the basing points, used in the construction of through rates, in lieu of the interterritorial percentage increase of 33⅓ per cent heretofore established. The suspended tariff also proposes the application of combinations of rates in certain instances where through rates are now applicable.

State Commission to Hold Hearing for Interstate Commerce Commission

The Interstate Commerce Commission has announced a proceeding of investigation and a hearing before the Railroad Commission of California at San Francisco, on December 28, on the proposed discontinuance of an arrangement initiated during the period of federal control for the joint use by the Atchison, Topeka & Santa Fe and the Southern Pacific of terminal properties of the latter company, at Oakland, Cal. The commission's notice says that by Section 13 of the interstate commerce act it is authorized to avail itself of the cooperation, service, records and facilities of state authorities in the enforcement of any provision of the act and that the Railroad Commission of California has consented to give its services in the hearing of this matter.

I. C. C. Orders Advance in Intrastate Rates

The Interstate Commerce Commission has rendered its decision in the Arkansas and Minnesota intrastate rate case, in which it finds that the intrastate passenger fares and excess baggage charges required by state authority to be maintained for transportation within the states lower than the corresponding interstate fares and charges authorized by the Interstate Commerce Commission, are unduly preferential and discriminatory against interstate commerce. The railroads of the two states are ordered to increase the state rates by the amounts of the increases allowed for interstate traffic.

Upon petition of the tidewater coal exchanges for a modification of the 96-hour credit rule as applied to demurrage charges on tidewater coal, the Interstate Commerce Commission has rendered a decision holding that the period of 96 hours heretofore fixed for the payment of transportation rates and charges may be computed from the first 4 p. m. after the time when such exchanges present demurrage bills to individual shippers.

State Commissions

The Railroad Commission of California has authorized the South San Francisco Belt Railway to increase its charges for switching to $3.50 for each car. The company, which serves the industries of South San Francisco, has been charging $2.50 for the first car and $1 for each additional car handled.

The report of the Railroad Commission of California which has recently been forwarded to Governor Stephens, says that during the period from July 1, 1919, to June 30, 1920, the Commission received 2,663 informal complaints against all classes of utilities. Of the total number 487 were complaints based on rates, 62 of these being directed against steam railroads, and 16 against electric lines. The remaining complaints all were caused by dissatisfaction with service; 49 registered against steam railroads and 35 against electric lines.

Court News

Liability for Cutting Fire Hose Across Track

The Maryland Court of Appeals holds that a railroad is liable for wilfully or negligently running cars over a fire hose on its track, which prevents the extinguishing of a fire.—McAdoo v. Railway (Md.), 108 At. 446.

Fencing at Sidings, Etc., Not Required in Montana

Under the Montana fencing law railroads are not required to fence at spurs, Y tracks, sidings, crossings, and turntables, and are liable for injury to animals at such places only where negligent.—Knop v. Chicago, W. & St. P. (Mont.), 187 Pac. 1020.

Negligence of Automobilist with Defective Brakes

The Wisconsin Supreme Court holds that an automobile driver who approaches a crossing knowing of the defective condition of his brakes without so decreasing his speed as to be able to stop in safety is guilty of negligence and not merely of a slight want of ordinary care.—Puhr v. Chicago & North Western (Wis.), 176 N. W. 767.

Contract for Free Switching Void

The New York Appellate Division holds that a railroad may recover for the transportation of interstate freight from its yards to a shipper's mill yard, notwithstanding a contract that no extra charge should be made therefor in addition to tariff rates to the freight yards; such contract being against the federal prohibition of preferences and rebates.—B. & M. v. Standard Wall Paper Co., 191 App. Div. 307.

United States Supreme Court

Limitation of Liability as to Passengers' Baggage Applies to Transportation From Adjacent Foreign Countries

On March 14, 1917, Mrs. Woodbury took the Galveston, Harrisburg & San Antonio at San Antonio, Texas, for El Paso, Texas, and checked her trunk, which she took with her. It was lost and she sued the company in a state district court for the value of trunk and contents, which the jury found to be $500. Mrs. Woodbury was traveling on a coupon ticket purchased at Timmins, Ontario, from Timmins to El Paso and return, apparently with stop-over privileges. The company contended she was on an interstate journey and that its liability was limited to $100 under the Interstate Commerce Act of 1887 as amended. Mrs. Woodbury claimed her transportation was not subject to the act, as it began in a foreign country. The Supreme Court of the United States holds that the act does apply to the transportation of both passengers and property from an adjacent foreign country, such as Canada. Section one declares that the act applies to a carrier engaged in such transportation to an adjacent foreign country, and such a carrier is ordinarily engaged in transportation from that country to the United States. The test of the application of the act is not the direction of the movement, but the nature of the transportation as determined by the field of the carrier's operation. There is a later clause in section one which deals specifically with the transportation of property to or from foreign countries; but cases arising under that clause are held not applicable here. That clause applies where the foreign country is not adjacent to the United States. The cases which hold that the act does not govern shipments from a foreign country in bond through the United States to another place in a foreign country, whether adjacent or not, are also not in point. Since the transportation here in question was subject to the act, both carrier and passenger were bound by the provisions of the published tariffs. As these limited the recovery for baggage carried to $100, in the absence of a declaration of higher value and the payment of an excess charge, and as no such declaration was made and excess charge paid, that sum only was recoverable. Judgment for the plaintiff was therefore reversed.—Galveston, Harrisburg & San Antonio v. Woodbury. Decided December 13, 1920. Opinion by Mr. Justice Brandeis.

Equipment and Supplies

Locomotives

THE LAKE CHAMPLAIN & MORIAH is inquiring for 1, 2-8-2 type locomotive.

THE MISSISSIPPI CENTRAL is inquiring for some Consolidation type locomotives.

THE GREAT NORTHERN is inquiring for 15 locomotives for passenger service.

THE CENTRAL DOMINCANO has ordered 2 locomotives from the Baldwin Locomotive Works.

THE YUNNAN KOPEI RAILWAY, China, has ordered 4 locomotives from the Baldwin Locomotive Works.

THE CUYAMEL FRUIT COMPANY, New Orleans, La., has ordered 4 locomotives from the Davenport Locomotive Works.

THE SPANISH GOVERNMENT is inquiring through the locomotive builders for a number of locomotives including Consolidation, Mikado and Mountain types.

THE SOUTHERN LOCOMOTIVE & EQUIPMENT COMPANY, 1002 Empire building, Atlanta, Ga., is in the market for an 80- to 90-ton geared locomotive, standard gage, of recent construction and in first-class condition.

THE RIO GRANDE DO SUL STATE RAILWAY (Brazil) has ordered 15 Mikado type locomotives from the American Locomotive Company. These locomotives will have 16 by 22 in. cylinders and a total weight in working order of 110,000 lb. and will be equipped with superheaters. These are in addition to the 5 locomotives ordered from the same company and reported in the *Railway Age* of December 17.

THE MISSOURI PACIFIC, reported in the *Railway Age* of November 12 as being in the market for 15 switching, 5 Mountain type and 5 Pacific type locomotives, has ordered this equipment from the American Locomotive Company. The switching locomotives will have 6 wheels, and cylinders 21 by 28 in., and a total weight in working order of 165,000 lb.; the Mountain type locomotives will have 27 by 30 in. cylinders, and a total weight in working order of 345,000 lb.; the Pacific type locomotives will have 26 by 26 in. cylinders, and a total weight in working order of 265,000 lb. All these locomotives will be equipped with superheaters.

Freight Cars

THE OLIVER IRON MINING COMPANY, Duluth, Minn., is inquiring for 12 flat cars.

THE LOUISVILLE & NASHVILLE will be in the market soon for 2,700 miscellaneous types of freight cars.

Passenger Cars

THE UNION PACIFIC is inquiring for 14 dining cars.

THE LOUISVILLE & NASHVILLE has ordered from the American Car & Foundry Company 15 coaches, 5 coaches with smoking room in the center of the car, 5 coaches with smoking room at end of the car, 8 baggage cars, 3 postal cars and 7 diners.

Iron and Steel

THE PHILADELPHIA & READING has ordered 5,000 tons of 130-lb. steel rails from the Carnegie Steel Company.

Miscellaneous

THE DUTILH-SMITH, MCMILLAN & CO., 50 Broad street, New York, is in the market for a number of locomotive boilers, for use on the South African Railways, and has an inquiry from its London office for 1,000 pairs of Sharon couplers.

Supply Trade News

The Ewald Iron Company, Louisville, Ky., has opened an office in the Aeolian building, 33 West Forty-second street, New York, in charge of **John P. Bourke,** who has been appointed eastern sales manager.

E. W. Englebright, who was engineer for the New York office of the Union Pacific until that office was merged recently with the organization of the assistant to the president at Omaha, Neb., where he has been located since that time, has resigned to become associated with the **Elvin Mechanical Stoker Company,** 50 Church street, New York. Mr. Englebright was born on January 12, 1885, at Oakland, Cal., and attended public schools until 1903. He then entered the employ of the Southern Pacific at Oakland, Cal., in its engineering department and served as rodman, levelman and transitman until 1905, when he entered the University of California, pursuing a course of civil engineering until 1909. He then returned to the Southern Pacific and served as assistant engineer on the Shasta division at Dunsmuir, Cal., until 1910, when he was appointed assistant division engineer. In 1912 he served as roadmaster at Klamath Falls, Ore., remaining there until 1913, when he became assistant to E. E. Adams, then consulting engineer of the Union Pacific System for engineering, motive power and equipment standards, with headquarters at New York. Following the appointment, in 1918, of Mr. Adams as engineer for the Division of Capital Expenditures, at Washington, Mr. Englebright was appointed acting consulting engineer for the Union Pacific System corporations, with the added duties of purchasing the large number of locomotives and cars, orders for which were placed by the Union Pacific System prior to the termination of federal control. On the return to private control he became engineer for the New York offices of the Union Pacific System.



E. W. Englebright

Ralph Lane, manager of the eastern sales of the **Germain Company,** Pittsburgh, Pa., has been placed in charge of all the eastern sales, including the territory from Montreal to Norfolk, for the **Mummert Lumber & Tie Company,** Chicago, Ill.

H. G. Keller, manager of the Philadelphia, Pa., office of the **Independent Pneumatic Tool Company,** Chicago, has been promoted to manager of the New York office and **F. H. Charbono,** manager at St. Louis, Mo., has been promoted to manager of the Philadelphia office to succeed Mr. Keller.

James C. Currie, eastern representative of the **Nathan Manufacturing Company,** New York, was killed in an elevator accident in New York City on December 11. Mr. Currie was born in Scotland 69 years ago and came to the United States when he was 12 years of age. Shortly afterwards he entered the service of the Pennsylvania Railroad as a fireman, and later served as engineman on the Congressional Limited. About 26 years ago he went to the Nathan Manufacturing Company as its eastern representative and was with that firm until his death. Mr. Currie was well known in the railway supply field and was assistant grand chief of the Brotherhood of Locomotive Engineers.

Frank H. Fayant, assistant to the chairman of the Association of Railway Executives, has been appointed vice-president of Thomas F. Logan, Inc., advertising agents for the New York Central, General Electric Company, Consolidated Coal Company, Radio Corporation of America, United Shoe Machinery Company and other corporations. Mr. Fayant directed the public relations work of the railroads, leading up to the enactment of the Transportation Act, 1920. He was at one time London correspondent of the New York Herald, and later a member of the staff of the Wall Street Journal. For some years he acted as advertising and publicity counsel to various banking and industrial interests.

Don L. Clement will again represent **Pratt & Lambert, Inc.,** Buffalo, N. Y., in the railroad field, effective January 1, with headquarters in New York. Mr. Clement represented Pratt & Lambert, Inc., in a like capacity until November, 1917, when he was commissioned in the Engineer Corps of the United States Army, and was immediately assigned to the 35th Engineers, a unit organized for the purpose of erecting railroad cars in France. He was overseas 16 months, and during the greater part of this time was assistant adjutant and adjutant of the 35th Engineers, which eventually became one of the grand divisions of the Transportation Corps. He was discharged in May, 1919, with the rank of captain. Since Mr. Clement's return to civilian life, he has been connected with Pratt & Lambert, Inc., on inside work of a special character.

The **American Vapor Torch Company** was organized at Chicago on December 1, with **V. J. Burry,** president; **W. McK. White,** vice-president, and **D. A. Hultgren,** secretary and treasurer. **V. J. Burry,** the president of the company, upon leaving school in 1903, entered the employ of the Youngstown Engineering Company, Youngstown, Ohio, as a draftsman. In 1904, he entered railway service with the Pittsburgh & Lake Erie, serving this road successively as draftsman, apprentice instructor, and chief draftsman. He was appointed mechanical engineer of the Joliet Railway Supply Company, Chicago, on January 1, 1917, and was later promoted to engineer and works manager. On April 1, 1920, he organized the Burry Railway Supply Company, Chicago, and is also president of that organization at the present time. **W. McK. White,** vice-president of the company, is president of the White Manufacturing Company, Goshen, Ind., and was formerly with Holden & White, Chicago. **D. A. Hultgren** was formerly chief engineer of the C. F. Massey Company, Chicago.



V. J. Burry

Eversley Childs, chairman of the board of the Barrett Company, New York, and **William Hamlin Childs,** president, offered their resignations at a meeting of the directors of the company on December 18. **William N. McIlravy** was elected chairman, **Thomas M. Rainhard,** president, and William Hamlin Childs was elected chairman of the executive committee. The following directors resigned: **Harry W. Croft, J. H. Fulton, William S. Gray, Alexander C. Humphreys, Isaac B. Johnson, Powell Stackhouse, Hamilton Stewart, J. Harry Staats, H. D. Walbridge** and **Horace S. Wilkinson,** and the following directors were elected: **E. L. Pierce,** president, Solvay Process Company; **W. H. Nichols, Jr.,** president, General Chemical Company; **Orlando F. Weber,** president, National Aniline & Chemical Company; **Walter B. Harris,** sales manager of the Barrett Company; **M. H. Phillips,** New York manager of the Barrett Company; **D. W. Jayne,** man-

ager chemical department of the Barrett Company; **Clark McKercher**, general counsel of the Barrett Company and **E. J. Steer**, secretary and treasurer of the Barrett Company.

The American Malleable Castings Association inaugurated a research program in 1915 to improve the works practice of the member companies and insure a uniform high-grade product. The improvement in the properties of mealleable iron, which has been brought about as a direct result of this policy, is set forth in a statement recently authorized by the association. Records of tests made in 1911 showed the average ultimate strength of malleable iron as manufactured to be about 39,000 lb., and the elongation under 5 per cent. A report made in September, 1920, showed an average ultimate strength of over 53,000 lb., and an average elongation of over 14 per cent. The report also showed that the result of this co-operative research work was not only to increase ultimate strength and elongation, but to increase the uniformity of the product.

Richard G. Harris has been appointed Pacific Coast manager with headquarters at San Francisco, Cal., of the **Standard Underground Cable Company,** Pittsburgh, Pa., succeeding **John P. Bell,** who will hereafter devote his time to his export and import business. Mr. Harris has been connected with the Standard organization since 1909, when he was a member of the staff of the general offices of the company at Pittsburgh, and was engaged on special development matters at its Perth Amboy, N. J., factories, and later sales engineer with the New York office. For the past eight years he has been manager of the Montreal office territory of the Standard Underground Cable Company of Canada, Ltd. **Vinton Smith,** who has been connected for several years with the San Francisco office staff, has been appointed assistant Pacific Coast manager, and **W. G. Stearns,** also many years with the company on the Pacific Coast, has been appointed special sales agent.

The Engineering Business Exchange, New York, has opened a Pacific Coast branch, with **James T. Whittlesey** as director, and offices in the Claus Spreckels building, San Francisco, Cal. This will make available to the engineers and engineering industries of the Coast states the same service in bringing together the buyers and sellers of engineering and technical business properties that is being rendered by the New York office of the exchange. Mr. Whittlesey is a Yale graduate and served a long time in the street railway field. He did some of the pioneer work in street railway electrification on the Brooklyn street railways. For 12 years he was chief engineer of the Public Service Electric Company of New Jersey, and built a number of that company's large power stations and developed a comprehensive ten-year program for the unification of the various plants and systems in New Jersey. He went to California eight years ago and since that time has been engaged in general consulting practice. He has also been confidential advisor to the Spreckels' interests, investigating and reporting on a variety of industrial and public utility enterprises in various localities.

Steel Prices to Stand

The United States Steel Corporation has decided to adhere to its present prices for rails, angle bars, tie plates, bolts and spikes during 1921. The prices for rails stand at $45 and $47 per ton for Bessemer and open-hearth steel, respectively, with a premium of $1.60 per ton when rolled according to the 1914 A. R. E. A. specifications and of $11.80 per ton when rolled, according to the 1920 A. R. E. A. specifications. These prices will govern on large tonnages which have been placed with the corporation recently for rails in which the price has been left open until this time.

Although the independent steel companies have been quoting prices on rails ten dollars above the United States Steel Corporation, rumors now persist that they will shortly revert to the latter's scale and it is known that one company is already quoting these prices.

Railway Construction

CHICAGO & NORTH WESTERN.—This company is constructing a 40 ft. by 100 ft. brick car repair shed at Erie St. and the North Western tracks, Chicago. The work is being handled by company forces.

CHICAGO, MILWAUKEE & ST. PAUL.—This company contemplates rebuilding its passenger station at Watertown, Wis., to replace a structure recently destroyed by fire.

GEORGIA, SOUTHWESTERN & GULF.—This company has under survey 60 miles of a 155 mile line which it proposes to construct from Albany, Ga., to St. Andrews, Fla.

ILLINOIS CENTRAL.—This company will soon accept bids for the construction of a frame freight and passenger station at Sarpy, La., to cost approximately $20,000, and a frame freight and passenger station at Dowell, Ill., to cost about $8,000.

MICHIGAN CENTRAL.—This company contemplates the construction of a 30 ft. by 128 ft. brick freight station and office at Albion, Mich., replacing a structure destroyed by fire October 13.

MICHIGAN NORTHERN.—The Interstate Commerce Commission has denied the application of this company for a certificate of public convenience and necessity to construct a line of railroad in the counties of Ingham, Eaton, Clinton, Gratiot, Isabella and Midland, Mich., on the ground that public convenience and necessity has not been shown to require the construction of the line. The report says that if the record now before the commission is not as strong as it can be made and the parties interested in the project desire to supplement the existing record, early opportunity to do so will be afforded.

MISSOURI, KANSAS & TEXAS.—This company has awarded a contract to H. D. McCoy, Cleburne, Tex., for the construction of a roundhouse, shop, storehouse, and roundhouse foreman's office at Oklahoma City, Okla. The company contemplates enlarging its roundhouse and car facilities at Osage, Okla.

PEARL RIVER VALLEY.—This company has applied to the Interstate Commerce Commission for a certificate authorizing it to abandon the operation of its line between mile posts 13 and 17 from Nicholson, Miss., and to construct a shorter line.

WISCONSIN & MICHIGAN.—This Interstate Commerce Commission has issued a certificate authorizing this company to rebuild and resume the operation of a line of 7.17 miles between Faithorn Junction, Mich., and Aragon Junction.



Photo from Keystone View Co.

Debris of an Accident on the Nanshin Electric Railway, Japan

Railway Financial News

ALBANY & SUSQUEHANNA.—A special dividend of 2 per cent has been declared on the $3,500,000 capital stock, payable January 8, 1921. The regular semi-annual dividend of 4½ per cent has also been declared, payable January 2, 1921.

ATLANTIC COAST LINE.—This company has filed an application with the Interstate Commerce Commission for authority to assume the obligations imposed by a trust agreement with the Safe Deposit Company of Baltimore as trustee for the purchase of equipment to the amount of $6,220,000, of which it is to pay in cash $1,720,000 and $4,500,000 in equipment trust certificates maturing semi-annually for 15 years at 6½ per cent. The certificates are intended to be sold to J. P. Morgan & Co. at not less than 94.06 per cent of par.

BOSTON & MAINE.—This company has filed an application with the Interstate Commerce Commission for authority to issue $609,000 of 7 per cent bonds dated January 1, 1921, under its mortgage of December 1, 1919, maturing 1931, to be exchanged for maturing bonds of the Boston & Lowell and the Connecticut River.

CENTRAL VERMONT.—The Interstate Commerce Commission has authorized this company to issue not to exceed $1,359,000 of refunding mortgage 5 per cent gold bonds to satisfy an equal amount of indebtedness to the Grand Trunk Railway. The company had asked for authority to issue $15,000,000 of the bonds. In an order of August 25, the commission authorized an issue of $12,000,000 for the purpose of retiring the applicant's 4 per cent first mortgage gold bonds, which matured on May 1. Action on the remaining $3,000,000, which the applicant proposes to use in paying its unsecured indebtedness to the Grand Trunk, was deferred on the ground that sufficient evidence had not been presented to justify it. Additional facts have been submitted in support of the application, which the commission has now granted in part.

CHESAPEAKE & OHIO.—This company has been authorized by the Interstate Commerce Commission to enter into a proposed equipment trust agreement for $4,500,000 for the purchase of cars and locomotives.

CHICAGO & NORTH WESTERN.—This company has applied to the Interstate Commerce Commission for authority to issue and sell $440,000 of 5 per cent bonds under its general gold mortgage of 1987, and $416,000 of 6 per cent bonds, and $1,000,000 of 5 per cent bonds under its first and refunding mortgage of 1920, to reimburse the treasury for money expended in the retirement of certain underlying bonds reserved for in the mortgage and for permanent improvements and additions. The company proposes to invite bids for the bonds at not less than 90.

CHICAGO GREAT WESTERN.—The Interstate Commerce Commission has approved a loan of $1,929,373 to this company to enable it to provide itself with rebuilt freight-train cars and betterments to its roadway and structures.

COLLINS & LUDOWICI.—Pursuant to a court order this road will be sold at foreclosure on January 4, 1921, at Reidsville, Ga.

DENVER & RIO GRANDE.—Confirmation of the sale of this road to the Western Pacific was deferred by Federal Judges Sanborn and Lewis at St. Louis on December 18, pending a decision from the Court of Appeals on the right of the stockholders to intervene in the foreclosure proceedings.

EAGLES MERE.—H. L. Geyelin was appointed temporary receiver for this road on December 22. The company leases its nine and one-half miles of line between Sonestown, Pa., and Eagles Mere Park, to the Williamsport & North Branch Railroad, which is also in the hands of receivers.

FREDERICKSBURG & NORTHERN.—This company has applied to the Interstate Commerce Commission for authority to issue a note for $36,935 to cover money advanced during 1918, 1919 and 1920 by the directors and stockholders now carried in open accounts on the books of the company.

LEHIGH & HUDSON RIVER.—The Interstate Commerce Commission has authorized this company to issue and sell $2,987,000 of additional capital stock at not less than par, the proceeds to be used to retire $2,587,000 of bonds issued under a mortgage of July 1, 1890, and $400,000 of debenture bonds issued under a trust agreement of May 1, 1907.

MICHIGAN CENTRAL.—This company has applied to the Interstate Commerce Commission for authority to guarantee a 6 per cent, 10-year promissory note of the Indiana Harbor Belt for $173,000 to the Secretary of the Treasury.

MINNEAPOLIS & ST. LOUIS.—The Interstate Commerce Commission has authorized this company to issue approximately $182,000 of promissory notes, bearing interest at the rate of 6 per cent and payable to Union Refrigerator Transit Company, in part payment for 100 refrigerator cars to be purchased from that company at a contract price of $227,500.

NEW YORK CENTRAL.—This company has applied to the Interstate Commerce Commission for authority to guarantee a 6 per cent, 10-year promissory note of the Indiana Harbor Belt for $174,000 to the Secretary of the Treasury.

NEW YORK, CHICAGO & ST. LOUIS.—This company has declared a dividend of 5 per cent on the common stock, payable on January 15 to stock of record, January 3. The last dividend was 4 per cent paid on March 1, 1913.

SOUTHERN PACIFIC.—Henry W. de Forest and Paul Shoup, vice-presidents of this road, have been elected, respectively, chairman of the board and president of the new Pacific Oil Company. This is the company which has taken over the California oil properties of the Southern Pacific. Hugh Neill has been elected secretary and treasurer. Mr. de Forest, Charles A. Peabody and Mortimer L. Schiff have been elected directors and members of the executive committee. The other directors are: James S. Alexander, Gordon M. Buck, B. D. Caldwell, Samuel Rea, E. P. Swenson and Paul Shoup.

TENNESSEE, ALABAMA & GEORGIA.—Charles Hicks, general manager of this road, has been appointed receiver. The road operates between Chattanooga, Tenn., and Gadsden, Ala., 96 miles.

TOLEDO TERMINAL RAILROAD.—This company has applied to the Interstate Commerce Commission for authority to issue certificates of indebtedness aggregating $98,685 at 6 per cent, payable on demand, to the various railroads that own its stock for advances they have made from time to time.

TRANS-MISSISSIPPI TERMINAL.—The Interstate Commerce Commission has approved a loan of $1,000,000 to this company to aid it in meeting the maturity of its 6 per cent gold notes, due November 1, 1920, in principal amount of $3,653,000. The applicant itself is required to finance $2,653,000 to meet the loan of the government.

WASHINGTON & LINCOLNTON.—This company has applied to the Interstate Commerce Commission for authority to issue $100,000 of 7 per cent cumulative preferred stock, the proceeds to be used in improving the condition of its roadbed and in the purchase of rolling stock.

WESTERN MARYLAND.—This company has applied to the Interstate Commerce Commission for authority to issue twelve 6 per cent marine equipment gold notes aggregating $225,000, the proceeds to be used for the purchase of a steel car float. Arrangements have already been made for the sale of the notes at par.

IN THE RAILROAD BUSINESS or any other business where different grades and qualities of endeavor are required, and in or out of labor unions, workers have got to be paid on a basis of the natural value of the work performed under conditions which the workers must face or the effort will relax and the worker become demoralized. The labor union system itself will break down.—*N. Y. Herald.*

ANNUAL REPORT

Twenty-Sixth Annual Report of the Southern Railway Company

RICHMOND, VA., OCTOBER 12, 1920.

To the Stockholders of
Southern Railway Company:

The Board of Directors submits the following report of the affairs of the Company for the year ended December 31, 1919.

INCOME ACCOUNT.

The total corporate income for the year was $20,884,019.97, an increase of $51,393.40 over 1918. So much of this figure as represents compensation from the Government is limited to the so-called "standard return" ($18,653,893.15) certified by the Interstate Commerce Commission pursuant to the Federal Control Act. After deducting $15,712,452.69 for interest, rentals and other charges, the balance was $5,141,567.28, out of which the $3,000,000.00 required for the dividend of five per cent. on the preferred stock was appropriated. The final surplus was $2,137,259.65 compared with $2,700,205.38 in the preceding year. This decrease of $562,945.73 in the amount carried to the credit of profit and loss was due to an increase of $626,689.31 in interest paid on unfounded debt represented by interest bearing obligations required of the Company by the Director General of Railroads and War Finance Corporation in return for funds applied toward the payment of fixed charges during the period of Federal operation.

THE LAST YEAR OF GOVERNMENT OPERATION.

The Government operated the property during the entire year 1919 and until March 1, 1920. When the property was turned back to the Company it was found:

ON THE PHYSICAL SIDE:

The standards of maintenance established during the antebellum period had not been kept up during Federal control. In roadway there was conspicuous lack of rail and tie renewals, but when this is said it is fair to add that the roadway of the busy main lines, on which the maintenance effort had been concentrated, remained in good condition. As to equipment, it is even yet impossible to report actual condition, for much of it was scattered and has not yet reached home, but on such evidence as is available it seems clear that the car equipment was seriously under maintained.

ON THE FINANCIAL SIDE:

The property was turned back with an empty treasury, so that the Company was compelled to earn the first pay roll, due four weeks later.

RELATIONS WITH THE FEDERAL RAILROAD ADMINISTRATION.

No contract was effected defining the compensation to be paid by the Government for the use of the Company's property during the period of Federal operation. As stated in the report last year, the Federal Control Act authorized contracts with railway companies for the payment to them by the Government of annual compensation equivalent to the average annual railway operating income for the three years ended June 30, 1917, with the provision that the President of the United States might agree with any company upon a different sum in exceptional cases where the average income for the three years would be plainly inequitable as a fair measure of just compensation. The average annual railway operating income of Southern Railway Company for these years has been certified by the Interstate Commerce Commission, pursuant to the Act of Congress, to be $18,653,893.15. As this sum was not, in the judgment of your Board of Directors, a fair measure of just compensation for the use of your property by the Government, a confident application was made for additional compensation, in the aggregate amounting to $4,771,398.97 per annum. As stated in detail in the last annual report, this application was supported by what seemed to us to be persuasive specifications. After twelve months of waiting for a decision upon this application, we were advised by the Railroad Administration that they were prepared to allow us the following additional compensation:

For the year 1918	$203,165.84
For the year 1919	439,655.24
For the year 1920, or any part thereof, at the annual rate of	521,250.40

No hearing on the application and no explanation of the award were vouchsafed. Under these circumstances it seemed to the Board that the award was inadequate. The Company expects, therefore, to assert its claim for additional compensation in the forum provided by law for the case of failure to agree with the Railroad Administration.

There are, furthermore, many other unsettled questions arising out of Federal control, upon which there is a wide difference of opinion at this time. Thus, the claims of the Company against the Government now formulated total $84,700,000.00, and we are advised of Government claims against the Company totaling $71,650,000.00. This issue also must be tried out.

It is, then, to be anticipated, however unfortunate it may be, that there will be protracted delay in final settlement of the Company's accounts with the Government growing out of Federal control.

THE RESUMPTION OF CORPORATE OPERATION.

By the Act of Congress approved February 28, 1920, known as the Transportation Act of 1920, the Company had the option of operating its property for the six months period from March 1 to August 31, 1920, for account of the Government, receiving one-half of the annual compensation paid during the period of Federal control and surrendering to the Government any income in excess of such amount. The Board of Directors decided to resume the operation of the Company's property for its own account from March 1st. In arriving at this decision the Directors adhered to their conviction that the amount guaranteed by the Government was not a fair measure of compensation for the use of the property; they believed that the revenue resulting from the prosperous business of the South, together with an intelligent control of expenses, might yield as much or more net income, and they were convinced that the advantages to be derived through stimulating with a sense of responsibility the efforts of the working organization toward getting business and handling it efficiently and economically fully justified the assumption of whatever business risks might be involved.

Three of the companies (The Cincinnati, New Orleans and Texas Pacific Railway Company, The Alabama Great Southern Railroad Company and New Orleans and Northeastern Railroad Company) in which Southern Railway Company has substantial investment interests and whose properties are operated as part of the Southern Railway System, made the same decision.

In the event this adventure in self-reliance was justified. The Board believes that the indirect effects of stimulation of the staff are, and will continue to be, of value, but even in the account of immediate income there was success. The results of "railway operating income" for the System were:

Six Months ended August 31, 1920.

	Below Guaranty	*Above Guaranty*
Southern	$712,491.79	
C. N. O. & T. P.		$563,260.17
A. G. S.		533,266.67
N. O. & N. E.		258,043.41
Excess above the guaranty for the System		$642,078.46

If, by reason of the addition to its expenses for four months of the period of approximately $4,195,000.00 in increased wages, under the award of the Railroad Labor Board on July 20, 1920, without a contemporary compensation of increased rates, the Southern proper failed to secure the equivalent of the full guaranty in the period, nevertheless its "railway operating income" was $3,449,734.18 greater than that from the Government operation of the same lines in the corresponding months of 1919, and, moreover, the Southern earned its preferred stock dividend for the period by its own operations. Comparing like with like, the result of operation of the Southern was thus more than $7,500,000.00 better than the Government operation.

THE RATE INCREASE.

The increase of railroad rates authorized by the Interstate Commerce Commission's decision of July 29, 1920, seems to complete the cycle of Government management of the railroad industry. Such an increase was necessary to support the scale of expenses set up by the United States Railroad Administration. It remains, then, for private management to resume the practice of competitive efficiency which distinguished the American railroads during so many years, so to justify the preference, declared by Congress, of the American people for that form of administration, by making possible not only the success of individual companies and the prosperity of their loyal employees, but a constant and progressive reduction of rates accompanied by an enlargement of service to the public, such as may be traced through the old-fashioned railroad statistics. No one can expect this to be accomplished over night, considering the practical conditions, but a start can be made at once. Invoking the cooperation and support of the employees, the management of the Southern Railway System will make the effort.

It is futile to attempt at this time a prediction of future net income under the present scales of rates of wages. Only experience under the new order of things can determine what will be the effect upon the divisible income, but we face the future with courage and with confidence.

IMPROVEMENTS AND BETTERMENTS IN THE CAPITAL ACCOUNT.

No additions and betterments to the fixed plant, of any significance, were undertaken during Federal control. The work of laying a double track on a revised grade between Washington (Alexandria, Va.) and Atlanta was, however, finished. As originally contracted and estimated, this work was to cost $34,838,000.00. It actually has cost $52,134,000.00. Of this, $5,216,586.24, representing the work done during Federal control, was advanced by the Railroad Administration out of its profits from the operation of the property in 1918 and is included in the claim of the Railroad Administration against the Company. The work itself has fully justified the hopes with which it was undertaken, despite the increased cost. Before the Government took possession of the property the double track in operation had materially enlarged the capacity of the plant, and the benefit is now felt more than ever, as is evidenced by the fact that since March 1st the Company has handled a larger traffic than at any other time in its history. Other such profitable projects of heavy reconstruction, which can be equally justified, await the halcyon time when again capital shall be available. In like manner many comparatively minor improvements to the plant, which also promise conspicuous profit, are waiting on the budget.

It has been necessary, for the same reason of lack of working capital, to postpone also customary contributions to many municipal improvements throughout the territory which are expected by local public opinion. The aggregate of these claims now in hand, accumulated during the fallow years of Government control, is over ten million dollars. If this sum was so invested, it would not add a penny to the revenue producing, and little to the expense controlling, power of the plant, but the insistence of local public authorities that it shall be invested represents none the less a burden of citizenship and a current administrative problem of no little concern. At a time when the good will of the public is of prime importance it is thus necessary to postpone things in which the local communities are impatiently interested. It may suffice to point out that the new Transportation Act contemplates that these non-revenue producing improvements shall be undertaken by a railroad out of a fund to be accumulated from the new rates, but this is cold comfort to the interested communities, for it means delay.

Since the close of the year the Company has entered into an equipment trust agreement, dated January 15, 1920, with the Director General of Railroads and Guaranty Trust Company of New York, Trustee, whereby the Company will acquire title to ninety-six locomotives and two thousand coal cars which were purchased by the Government and allotted to and accepted by the Company, and will pay therefor, in fifteen equal annual installments bearing interest at the rate of six per cent, per annum, the price charged by the manufacturers, which price has not yet been definitely ascertained, but will be not less than $10,293,250.00 and not more than $10,977,193.00. The ninety-six locomotives had been ordered by the Company before Federal control became fully effective, were needed, and have been, since they were delivered, an essential element of operating strength. The coal cars were needed also; indeed, on the transportation side the management would welcome a much larger addition to equipment, but the current business situation, meaning the high manufacturing cost, the prohibitive cost

of capital, the unsettled state of accounts with the Government, and the uncertainty of the effect of the new rates, has not yet justified a commitment in that respect.

INDUSTRIAL AND AGRICULTURAL DEVELOPMENT OF THE TERRITORY SERVED.

The South, released from the absorbing activities of war, has turned to the pursuits of peaceful industry. It does so with renewed energy stimulated by greater resources than it ever before enjoyed. The South is now recognized by the business world to be prosperous, measured by every economic test. The long generation of struggle for bare existence has passed. Among the causes for this one of the most potent is that the average standard of living has been raised. In the years following the war between the States the South produced at low costs what it had to sell, and sold it as raw material at low prices, but it bought and consumed the manufactures of the North at the high prices which were maintained by the relatively high wages paid at the North. As a result the South was kept poor. With the development of Southern industry in recent years have come higher prices for Southern products and higher wages for Southern people, thereby increasing the purchasing power of the average Southern family. Not only has property been distributed in a way never before known in the South but the sectional aggregate of prosperity is greater. This, we take it, is the best sense in which the recent war has made "the world safe for democracy" in the United States. The argument that there is inflation and extravagance in the present situation may be justified and will be tested by the event, but the cheerful fact remains that the South is today feeling what Dr. Johnson called "the potentiality of growing rich beyond the dreams of avarice." We append a few specifications, in support of this general statement, from the facts which come to the attention of a railroad management.

The number of new industrial establishments now in course of construction, including additions to enterprises already in operation, is greater than at any time in the history of the South. Five hundred and eight new industries were completed and put in operation along the lines of Southern Railway System and two hundred and ninety-four industries were enlarged during the year 1919 and the first six months of 1920. Capital to the amount of $225,816,000.00 was invested in new industries and in the extension of old enterprises in the territory served by the Southern Railway System during the three years from July 1, 1917, to June 30, 1920, and the estimated cost of plants under construction on the latter date was $153,165,000.00.

It is interesting in connection with these figures to recall that at the time of the establishment of a single important industry on our lines, noted in the annual report for 1907, we expected that the revenue therefrom to the Company would reach $500,000.00 per annum. Our revenue from this plant to-day is at the rate of $1,200,000.00 per annum. The traffic handled for it in 1919 amounted to 630,783 tons, or 24,132 carloads.

There is a marked increase in the variety of manufactures in the South. The movement is toward the complete conversion of raw materials in finished articles. Thus, in 1890 but 528,895 bales of cotton were consumed by Southern mills and this cotton went into the manufacture of yarns and unbleached fabrics which were sent to other manufacturing districts for conversion or for bleaching and finishing processes. In 1919 the Southern mills consumed 3,491,000 bales of cotton. These mills now are finishing and bleaching all goods which they manufacture. They are producing all varieties and grades of cotton cloth, and much of this product is being converted within the South into articles of wearing apparel and other finished articles ready for immediate use. These products now find their way directly from the mill doors to distributing markets throughout the United States and in many foreign countries. The number of new spindles in operation on June 30, 1920, represents an increase of 8.3% over the number in operation at the end of 1918.

Again, the production of pig iron in the South in 1919 was 2,321,000 gross tons, an increase of 86% over the quantity produced in 1890. More than 50% of the 1919 production was converted in the South into a large variety of finished articles, while only 20% of the 1890 production was melted in the South and that chiefly into castings and pipe.

The progress thus noted in the manufacture of finished articles from cotton and iron is fairly representative of the general development of the South's natural resources

The exportation of manufactured articles and of coal from the South is rapidly increasing. Difficulties of transportation affecting the movement of traffic through congested terminals of the Eastern seaboard have occasioned a larger flow of export traffic through South Atlantic and Gulf ports. Rate adjustments have been established which permit the movement of such traffic in competition with routes through the Eastern seaboard. This traffic has reached a substantial volume and is engaging more vessels than ever before frequented Southern ports. A healthy increase in this traffic is assured. The service is attracting increased imports as well.

The raising of live stock is being conducted on an increasing scale. The number of animals in the Southern States on January 1, 1920, is set forth in the following table, together with the percentages of increase during a period of four years:

Horses	2,018,000	Increase	1.2%
Mules	2,045,000	"	9.8%
Milch Cows	3,507,000	"	13.1%
Other Cattle, for meat	5,668,000	"	17.5%
Hogs	16,784,000	"	22.5%

This increase in the production of live stock has been accompanied by the location of stock yard facilities which are being profitably operated, and by the construction and operation of numerous packing houses, the number of the latter now in operation in the South being twenty-one. These packing houses afford a home market for a large proportion of the stock produced in the South. At the same time live stock traffic has increased, our lines handling 264,466 tons during the year 1919, an increase of 10.7% over the preceding year. With prosperity the Southern people have become larger consumers of beef. "Hog meat and hominy" is no longer the chief of their diet. The economic consequences of this development are likely to be important.

Municipal improvements, including the improvement and extension of streets and public roads, largely suspended during the period of war, have now been resumed and are being pursued with great activity, stimulated by the current market for municipal bonds which have become attractive by reason of their exemption from federal taxes. This activity of municipal construction results, of course, in increased traffic for a railroad, as well as in increased taxation.

Census returns are not yet sufficiently complete to report the growth in population in the South as a whole, but definite returns from twenty-nine of the more important cities of the South show an increase of 35.4% in the population of 1920 over that of 1910. It seems fair to assume that the South has doubled its population in the last forty-five years.

SERVICE OF EMPLOYEES.

The efforts of railroad management in the country generally to render the full measure of service required were hampered by strikes which followed closely upon the surrender of the railroads by the Government. With intense gratification we record the fact that our employees did not join in these strikes. They stuck steadfastly and loyally to their jobs, and to them are due, and heartily are tendered, the thanks of the stockholders as well as of the management.

[redacted]

The Directors, with deep regret, record the death on April 24, 1920, of their esteemed associate on the Board, Walter Kerr.

[redacted]

Respectfully submitted, by order of the Board,

FAIRFAX HARRISON,
President.

Table 1—INCOME STATEMENT

	1919	1918	1917.
Capital Stock:			
Corporate Income:			
Certified Standard Return under Federal Control Act	$18,653,893.15	$18,653,893.15	.....
Operating Income — Revised	.....	.....	$26,085,574.49
Income from Lease of Road	59,676.90	60,176.84	6,899.19
Miscellaneous Rent Income	233,091.68	243,333.27	148,559.18
Net Income from Rail Leased	53,787.87	41,163.18	40,360.75
Dividend Income	1,035,492.67	1,020,562.30	1,231,859.32
Income from Funded Securities	684,548.35	682,623.15	1,052,591 62
Income from Unfunded Securities and Accounts	158,840.44	129,317.94	469,149.03
Miscellaneous Income	4,688.91	1,556.74	107482.12
Total Corporate Income	$20,884,019.97	$20,832,626.57	$29,142,475.70
Deductions:			
Rent for Leased Roads	$2,400,254.73	$2,338,822.14	$2,135,499.86
Miscellaneous Rents	38,414.73	31,007.35	52,593.36
Separately Operated Properties	6,980.24	5,591.90	458,756.28
Interest on Unfunded Debt	668,985.12	42,295.81	70,482.08
Corporate Expenses	381,351.37	187,519.38	.....
War Taxes	426,343.91	574,006.75	612,910.74
Miscellaneous Income Charges	94,249.47	89,328.49	182,096.89
Total Deductions of this Class	$4,016,579.57	$3,268,571.82	$3,512,339.21
Total Available Income	$16,867,440.40	$17,564,054.75	$25,630,136.49
Interest on Funded Debt	$10,901,408.88	$10,947,490.00	$10,680,242.24
Interest on Equipment Obligations	598,456.24	681,643.89	686,471.03
Dividend on Southern Railway—Mobile and Ohio Stock Trust Certificates	226,008.00	226,008.00	226,008.00
Total Deductions of this Class	$11,725,873.12	$11,855,141 89	$11,592,721.27
Balance of Income Over Charges	$5,141,567.28	$5,708,912.86	$14,037,415.25
Dividend of 5% on Preferred Stock	3,000,000.00	3,000,000.00	3,000,000.00
Additions and Betterments Charged to Income	4,307.63	8,707.48	120,210.19
Balance Carried to Credit of Profit and Loss	$2,137,259.65	$2,700,205.38	$10,917,205.03

Table 2.—PROFIT AND LOSS.

Credit Balance December 31, 1918		$44,840,214.28
Add:		
Credit Balance of Income for the year		2,137,259.65
		$46,977,473.93
Deduct:		
Discount on Securities charged off during the year	$608,958.91	
Adjustment of Revenues and Expenses prior to January 1, 1918	212,609.01	
Net miscellaneous debits	267,528.55	
		1,089,096.47
Credit Balance December 31, 1919		$45,888,377.46

Table 3—GENERAL BALANCE SHEET

ASSETS

	December 31, 1919	December 31, 1918	December 31, 1917
Investments:			
Investment in Road	[illegible]	$341,547,790.46	$341,175,364.34
Investment in Equipment	75,582,323.13	77,435,555.19	75,292,977.97
Total Investment in Road and Equipment	$418,314,014.98	$418,973,345.65	$416,468,342.31
Cash Deposited in Lieu of Mortgaged Property Sold	$2,072.50	.....	$5,000.00
Miscellaneous Physical Property—Rails and Fixtures leased to others	$691,282.43	$742,083.37	$708,385.28
Investments in Affiliated Companies:			
Stocks	$33,987,805.90	$34,187,445.90	$33,971,354.90
Bonds	28,301,459.04	28,300,459.04	28,300,459.04
Notes	1,918,782.84	2,001,885.91	1,989,004.59
Advances	2,813,956.73	2,532,310.95	2,503,518.32
Miscellaneous (Matured interest coupons)	.....	.....	18,825.00
Total Investments in Affiliated Companies	$67,054,704.51	$67,022,101.80	$66,783,161.85
Other Investments:			
Stocks	$347,972.00	$348,062.00	$298,222.00
Bonds	5,159,963.45	5,263,913.45	5,273,913.45
Notes	432,085.33	452,300.73	499,380.11
Advances for Purchase of Additional Equipment	.....	111,072.08	2,184,476.04
Total Other Investments	$5,940,020.78	$6,175,348.26	$8,255,991.60
Total Investments	$492,202,155.20	$492,912,879.08	$492,221,081.04
Current Assets:			
U. S. Government—Accrued Compensation (Balance)	$12,577,772.62	$16,153,893.15	.....
Cash	516,296.18	279,479.79	$7,445,217.08
Time Deposit	.....	.....	1,530,789.15
Special Deposits	3,195,578.10	3,236,059.80	2,951,472.95
Loans and Bills Receivable	2,077,770.05	1,545,917.63	1,515,665.99
Traffic and Car Service Balances Receivable	116,550.64	439,419.23	3,250,905.69
Balances due from Agents and Conductors	.....	.....	1,220,422.07
Miscellaneous Accounts Receivable	886,588.98	1,735,440.75	7,192,708.43
Material and Supplies	6,338.41	.....	10,250,687.63
Interest and Dividends Receivable	698,409.32	770,454.79	597,145.46
Other Current Assets	1,462,791.05	1,758,543.86	2,499,421.41
Total Current Assets	$21,538,095.35	$25,919,209.00	$38,454,435.86
Deferred Assets:			
Working Funds Advanced to Agents and Officers	$14,945.24	$41,205.08	$146,590.65
Liberty Bonds—Subscribed for Employes	.....	26,200.00	195,900.00
Cash and Securities in Insurance Fund	1,283,487.00	1,070,673.51	1,022,891.45
Cash and Securities Deposited under North Carolina Railroad Lease	175,000.00	178,600.00	178,600.00
Other Deferred Assets	840,800.35	93,713.16	119,873.74
Total Deferred Assets	$2,314,232.59	$1,410,391.75	$1,663,855.84
United States Government—Deferred Assets	$33,500,703.16	$32,018,343.89	.....
Unadjusted Debits:			
Insurance Premiums and Rents paid in Advance	.....	$8,677.05	$133,234.80
Unextinguished Discount on Funded Debt	.....	.....	182,434.60
Additions and Betterments Expenditures: Freight Claims: Foreign Mileage and Sundry Items in Suspense	$742,425.09	1,345,186.24	3,314,306.45
Total Unadjusted Debits	$742,425.09	$1,353,863.29	$3,629,975.85
United States Government — Unadjusted Debits	$18,512,875.97	$12,703,654.60	.....

Securities of the Company held by it:	1919	1918
Unpledged	$302,200.00	$223,200.00
Pledged	59,745,000.00	54,374,000.00
Total	$60,047,200.00	$54,597,200.00

Grand Totals	$568,810,487.36	$566,318,341.61	$535,969,348.59

LIABILITIES

	December 31, 1919	December 31, 1918	December 31, 1917
Capital Stock:			
Common	$120,000,000.00	$120,000,000.00	$120,000,000.00
Preferred	60,000,000.00	60,000,000.00	60,000,000.00
Total Southern Railway Company Stock	$180,000,000.00	$180,000,000.00	$180,000,000.00
Southern Ry. Mobile & Ohio Stock Trust Certificates	5,650,200.00	5,650,200.00	5,650,200.00
Total Stock	$185,650,200.00	$185,650,200.00	$185,650,200.00
Long Term Debt:			
Funded Debt (Table 4)	$234,206,500.00	$235,402,500.00	$225,429,500.00
Equipment Trust Obligations (Table 5)	11,324,000.00	14,550,000.00	17,846,000.00
Total Long Term Debt	$245,530,500.00	$249,952,500.00	$253,275,500.00
Total Capital Liabilities	$431,180,700.00	$435,602,700.00	$438,925,700.00
Governmental Grants:			
Grants since July 1, 1914, in aid of Construction	$82,953.39	$82,628.39	$73,220.09
Current Liabilities:			
Loans and Bills Payable	$9,710,270.00	$8,579,480.00	$455,000.00
Traffic and Car Service Balances	38,885.47	605,953.72	1,982,322.00
Audited Accounts and Wages	89,658.17	444,323.85	12,521,524.91
Miscellaneous Accounts	196,261.88	379,166.25	1,734,504.14
Interest Matured, including interest due January 1	2,921,961.30	3,097,678.50	2,932,649.15
Dividends Matured—Unpaid	8,417.50	1,822.50	7,545.00
Funded Debt Matured—Unpaid	264,357.80	135,573.80	10,673.80
Dividends Accrued—Unmatured	56,502.00	56,502.00	56,502.00
Interest Accrued—Unmatured	1,801,372.83	1,661,102.53	1,669,852.96
Rents Accrued—Unmatured	182,331.08	195,664.33	289,322.57
Expenses, Accrued not vouchered	73,936.66	300,575.71	993,665.56
Other Current Liabilities	490,421.83	1,259,672.36	2,460,196.04
Total Current Liabilities	$15,834,376.52	$16,717,515.55	$25,113,758.13
Deferred Liabilities:			
Deferred Payments Account Reconstruction Rogersville Branch; Contractors' Per Cents Retained and Sundry Items	$380,200.52	$909,336.10	$816,545.10
United States Government—Deferred Liabilities	$34,167,073.69	$31,038,683.16	.....
Unadjusted Credits:			
Taxes	$509,584.09	$917,133.53	$976,848.49
Insurance Reserve	1,283,487.00	1,070,673.51	1,022,891.45
Operating Reserves	869,852.40	1,317,782.32	3,632,223.58
Car and Ticket Mileage Suspense	.....	.....	1,132,085.01
Depreciation accrued on:			
Rail Leased to Other Companies	123,686.92	111,308.52	95,114.27
Equipment Owned	20,676,414.38	18,612,515.89	16,941,357.50
Equipment Leased from Other Companies	493,705.51	342,525.32	349,676.11
Sundry Items	907,953.92	709,358.95	794,355.27
Total Unadjusted Credits	$24,864,684.22	$23,081,298.04	$24,944,551.68
United States Government Unadjusted Credits	$13,373,332.40	$11,080,758.65	.....
Corporate Surplus:			
Additions to Property since June 30, 1907, through Income and Surplus	$1,538,284.88	$1,464,703.16	$1,306,906.94
Reserve for 2½% Dividend on Preferred Stock	1,500,000.00	1,500,000.00	1,500,000.00
Miscellaneous	504.28	504.28	504.28
Total Appropriated Surplus	$3,038,789.16	$2,965,207.44	$2,807,411.22
Profit and Loss—Balance	$45,888,377.46	$44,840,214.28	$43,288,162.37
Grand Totals	$568,810,487.36	$566,318,341.61	$535,969,348.59

Railway Officers

Executive

Hiram R. McCullough, vice-president in charge of traffic of the Chicago & North Western, will retire January 1, after 47 years of railroad service, 40 years of which were spent with the Chicago & North Western. Mr. McCullough was born at Elkton, Md., on October 7, 1850, and was educated at Washington and Lee University. He entered railroad service in 1873, in the freight department of the Illinois Central. In 1880, he was appointed division freight agent of the Chicago & North Western, with headquarters at Winona, Minn., and from 1883 to 1885 he held a similar position at Chicago. On the latter date he was promoted to assistant general freight agent, retaining his former headquarters, and was made general freight agent in 1887. After 9 years of service as general freight agent Mr. McCullough was again promoted, being made general traffic manager. He has served continuously as vice-president in charge of traffic of the North Western for the past 22 years, having been elected to that position in 1898.



H. R. McCullough

A. C. Johnson, who has been elected vice-president in charge of traffic of the Chicago & North Western, succeeding H. R. McCullough, who will retire January 1, was born in Crawford County, Pa., on May 20, 1861, and was educated at Meadville (Pa.), College. He entered railway service in 1894 as a special agent on the Chicago & North Western, a position which he held until 1899, when he was appointed general agent of the company in South Dakota and Minnesota, with headquarters at Winona, Minn. In May, 1910, he was promoted to passenger traffic manager, with headquarters at Chicago, and served in this capacity until May, 1916, when he was promoted to general traffic manager. During the period of federal control, Mr. Johnson was appointed chairman of the Western Freight Traffic Committee, which was given jurisdiction over all freight matters in Western territory. Upon the reorganization of the Chicago & North Western personnel at the termination of federal control, Mr. Johnson again assumed his position as general traffic manager. He has been closely associated with Mr. McCullough, whom he now succeeds, throughout his entire railroad career.



A. C. Johnson

In accordance with the pension regulations of the Norfolk & Western, **L. E. Johnson,** chairman of the board, **W. G. MacDowell,** assistant to the president, and **T. S. Davant,** vice-president in charge of traffic, will retire on December 31. The jurisdiction of **A. C. Needles,** vice-president in charge of operation, will be extended to include the traffic department.

F. P. Brady, whose appointment as assistant to the executive of the Canadian National was announced in the *Railway Age* of December 10 (page 1046), was born June 22, 1853, at Haverhill, N. H., and entered railway service in 1869 as a station baggageman on the Passumpsic (now part of the Boston & Maine). Subsequently he became a telegraph operator, despatcher and chief despatcher. In 1888 he went to the Canadian Pacific as trainmaster and the following year was promoted to assistant superintendent. In 1898 he was appointed superintendent and served in that capacity on several divisions. In 1903 he was promoted to assistant general superintendent with headquarters at North Bay, Ont. Mr. Brady left the Canadian Pacific in 1908 to become a member of the Canadian Government Railway Board of Management, serving at the same time as a general superintendent of the Canadian Government Railways. In 1913 he left the Railway Board but remained in his position on the Government Railways. In 1917 he was promoted to general manager, Western Lines, of the Government Railways. In 1918 he went to the Canadian Northern (which subsequently became a part of the Canadian National) in the same capacity and continued in that position until his recent promotion.



F. P. Brady

Operating

C. G. McCaulley, assistant superintendent of the Jacksonville Terminal, has been appointed superintendent, effective December 10.

J. W. Whitaker, general yardmaster of the Southern at Chattanooga, Tenn., has been appointed superintendent of terminals, with the same headquarters. Mr. Whitaker was born September 11, 1871, at Panola, Ga., and was educated at Flakes Academy, De Kalb County, Ga. He entered railway service in 1895 as a switchman on the Southern at Atlanta, Ga. Three years later he was promoted to yard conductor and, in 1904, to assistant general yardmaster at Chattanooga. The following year he became general night yardmaster and, in 1910, general yardmaster and remained in that position until his recent promotion.



J. W. Whitaker

R. E. Beach has been appointed chief despatcher of the Salt Lake division of the Southern Pacific, with headquarters at Sparks, Nevada, effective December 16, succeeding F. F. Small, resigned.

W. G. Powell has been appointed general manager of the Dansville & Mt. Morris, with headquarters at Dansville, N. Y., effective December 1.

G. W. Holdrege, general manager of the Chicago, Burlington & Quincy, lines west of the Missouri River, with headquarters at Omaha, Neb., will retire on January 1, after 51 years of continuous service with the Burlington. Mr. Holdrege was born on March 26, 1847, at New York city, and was educated at Harvard University, graduating in the class of 1869. He entered railway service in December, 1869, as a clerk in the general offices of the Burlington & Missouri River, now part of the Burlington. After serving as a clerk in the train service department, he became successively trainmaster, assistant superintendent, superintendent and assistant general manager. He has been general manager of the Burlington lines west of the Missouri River for the past 17 years, having been promoted to that position in July, 1903.

P. L. Gaddis, whose appointment as assistant superintendent of transportation of the Florida East Coast was announced in the *Railway Age* of December 10, 1920 (page 1046), was born March 20, 1886, at Jasper, Ga. At the age of twelve he began his railroad career as a water boy on the Marietta & North Georgia (now part of the Louisville & Nashville). In 1900 he became a telegraph operator for the same company at Apalachia, Tenn. In 1903 he went to Palatka, Fla., in the same capacity with the Plant system (now a part of the Atlantic Coast Line). He became chief operator and stationmaster for the Atlantic Terminal in the following year and resigned that position in 1905 to enter the mining business in Mexico, where he remained until 1915. Upon his return to this country he entered the service of the Florida East Coast as a telegraph operator. Subsequently he was promoted to despatcher, chief despatcher and trainmaster, which last position he was occupying when his latest promotion occurred.

Traffic

W. F. Griffitts, general passenger agent of the Delaware, Lackawanna & Western at New York, has been appointed passenger traffic manager with the same headquarters, effective December 20.

K. B. Hannigan, assistant general feight agent of the Southern at St. Louis, Mo., has been promoted to general freight agent, with the same headquarters,, effective December 1, succeeding R. A. Campbell, deceased.

H. Bierman, freight claim agent on the Missouri, Kansas & Texas, with headquarters at Parsons, Kan., has been promoted to general claim agent of the Missouri, Kansas & Texas Railway of Texas, with headquarters at Dallas, Tex. **W. H. Geagan** has been appointed freight claim agent with headquarters at Dallas. **J. W. Flnucane** succeeds Mr. Bierman.

Mechanical

W. A. George has been appointed master mechanic of the Jacksonville Terminal, effective December 10.

J. W. Lemon, master mechanic on the Central Kansas division of the Missouri Pacific, with headquarters at Osawatomie, Kan., has been transferred to the Colorado division, with headquarters at Hoisington, Kan., effective December 15. **S. L. Landis** has been appointed acting master mechanic succeeding Mr. Lemon.

Engineering, Maintenance of Way and Signaling

H. L. Newman, whose appointment as maintenance engineer of the Pittsburgh, Shawmut & Northern was announced in the *Railway Age* of December 20, 1920 (page 1002), was born May 12, 1886, at Randolph, N. Y. He was educated at the Randolph High School and entered the service of the Pittsburgh, Shawmut & Northern as a draughtsman in the chief engineer's office in 1906. Subsequently he served as a rodman and levelman. In 1911 he was appointed general foreman of maintenance and in 1912 transitman. The following year he became chief draughtsman. In 1918 he was placed in charge of all engineering, including valuation and location, and was serving in this capacity at the time of his appointment as maintenance engineer.

Purchasing and Stores

E. T. Burnett, general purchasing agent of the Norfolk & Western, will retire from active service on December 31.

Special

G. A. Hoverstad, development agent on the Minneapolis, St. Paul & Sault Ste. Marie, has been appointed development agent on the Chicago Great Western, with headquarters at Chicago, effective December 16. He has been given jurisdiction over agricultural development, location of new industries and immigration.

Obituary

James J. Reynolds, consulting engineer of the Elgin, Joliet & Eastern, whose death was announced in the *Railway Age* of December 3 (page 1002), was born at Cincinnati, Ohio, on September 12, 1855. Mr. Reynolds began his engineering career as a chainman with a field corps in the employ of the city of Cincinnati. He entered railroad service with the Illinois Central in 1886 and after three years with that road became associated with Joseph Torrence in the construction of the Calumet Terminal Railroad and the Chicago Terminal Transfer Railroad. In 1897 he entered the employ of the Snoqualmie Power Company, assuming charge of a project at Snoqualmie Falls, Wash. In 1900 he entered the service of the Chicago, Indiana & Southern, being associated with that company until 1906, when he was employed by the Elgin, Joliet & Eastern, having charge of the work of relocating and constructing additions to the line when the United States Steel Corporation decided on Gary, Ind., as a site for steel mills. From 1911 to 1914 Mr. Reynolds was a member of the Harbor and Subway Commission of the city of Chicago. Upon the completion of his work with this commission he returned to the Elgin, Joliet & Eastern as consulting engineer, the position which he was occupying at the time of his death.

THE ROADS ARE STILL SICK, still depleted by government folly. They have still to recover half a billion from the Treasury. They need financial nourishment if they are to recover.—*N. Y. Evening Sun.*



Photo by Ewing Galloway

Coaling Greater New York—Storage Yard of an Electric Power Company, Containing 240,000 Tons

EDITORIAL

Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

IMPORTANT FOR SUBSCRIBERS.—*In the interest of the conservation of paper, the Railway Age will print at the end of the present volume only a sufficient number of indexes to meet direct requests from its subscribers. Those desiring indexes should, therefore, immediately advise the New York office, 2201 Woolworth Building, New York.*

Keep the Power Loaded

One of the things needing careful watching during a period of decreasing traffic is a tendency to underload the power. In some cases such a tendency exists at all times, as is shown by the purchase of continually heavier locomotives, the potential capacity of which is not properly utilized. The possibilities for increasing the cost of operation by underloading are clearly brought out by the experience of one railroad where Mallet locomotives were placed in road service without increasing the train load in proportion to the increased tractive effort of the new locomotives. A study of the results of this operation showed a percentage increase in the amount of coal consumed on a ton mileage basis which varied directly as the increase in tractive effort per ton of train load. With the need for economy as great as it is during the present slack business period every effort should be made to keep locomotives loaded to their ratings. If traffic conditions are such that lighter trains are demanded, put the heavy power in white lead and use the smaller locomotives.

The Supervisor Should Be Out On the Line

Accounts are the bugbear of every maintenance of way officer. Because of them he is compelled to spend much of his time in the office. Unfortunately, there is no hope for any reduction or simplification of accounting. The progressive extension of the Interstate Commerce Commission's authority over the railroads has required a constantly increasing volume of records. This change has occurred so gradually that the railway managements have, in a sense, failed to appreciate the demand which the accounts make on the time of the division officer and the supervisors under his direction. A man selected because of his demonstrated ability as a field officer is only performing his function properly when he is out on the line directing the work of the field forces and using the fruits of his training and experience by passing judgment on the problems of the day. Every hour which he unnecessarily spends in the office represents a loss to his employers. The correction of this difficulty lies in the development of office organizations competent to handle the business routine and accounting with a minimum of attention by the field officer. This involves the development of engineer accountants who can be relied upon to carry on the complex accounting of the present day, while of course under all conditions the chief clerk or real business head of the office staff must be the man to take the great burden of office routine from his superior's shoulders. A thorough overhauling of the office organization will in many cases solve the problem of increasing field supervision.

National Industrial Traffic League

The National Industrial Traffic League, whose convention was reported in the *Railway Age* of November 26, page 939, is an organization of shippers. Shippers seek to get justice from the carrier, and the men at these conventions are the active agents in this matter. They have innumerable strenuous tasks. In many situations these ambassadors might seem to be engaged in actual combat with the railroad men. They do, indeed, find it necessary on frequent occasions to magnify the goodness of their own intentions and the badness of something that a carrier has done; but nothing is plainer than that these specialists perform their duties, so far as can be judged by their words and acts in their conventions, with constant dignity and altruistic moderation. Indeed, they are most favorably conditioned to deal with the railroads on a high plane of intelligent comity, for most of them were once in the railroad service themselves. They are familiar with the railroad side of every question. One who knows both sides of all the questions with which he has to deal is in position to settle such questions in the wisest possible way. This week, on another page, we give the substance of an address given before the traffic men while they were in New York by Lewis J. Spence, director of traffic of the Southern Pacific. Mr. Spence, in defining the attitude of the carriers, evinced a high public spirit. If every shipper can maintain the broad-minded public spirit manifested by the leading men in this League, and if every railroad traffic officer and agent can carry out the spirit of fairness exemplified by Mr. Spence, an immense amount of friction can be done away with—which, however, is not saying that carriers and their patrons will not continue frequently to have numerous hard nuts to crack. But is not that the kind of task which traffic men most enjoy?

Improved Versus Unimproved Locomotives

Small wonder, when we consider the large number of locomotives that are still operating without many of the most rudimentary capacity and efficiency increasing devices, that the advocates of locomotive improvement wax impatient. Are practical operating men unacquainted with the possibilities of locomotive improvements, or the bankers adamant in their refusal to advance the funds for these improvements? Perhaps the best answer to all these questions will be found in an acknowledgment of the inertia which in their inception all great movements are forced to overcome. Examples of a similar reluctance to accept improvements in other lines of industry are not wanting. But this is a great movement, nevertheless, and some day the bankers are going to get wise to the fact that the difference between modern locomotives and old locomotives may be the difference between a dividend and a deficit and that all modern locomotives do not necessarily have to be new locomotives. This is where the mechanical men can make a hit by showing the bankers how much cheaper it is to rebuild an old locomotive than to buy a new one of the same weight. By spending $22,000 on an obsolete locomotive an eastern railroad recently secured the equivalent of a new locomotive that would have cost over $50,000. While there is ample need for new locomotives,

the improved locomotive must be regarded as an important factor in any estimate of the country's future motive power requirements. The difficulty has been to accomplish enough of this rebuilding with the existing shop facilities. Now that the locomotive builders are in a position to take more work, would it not be advisable to see to what extent they can assist the railways in the modernization of obsolete power?

Passenger Service and Public Opinion

The article by William S. Wollner, which we publish on another page, is entitled to be given careful reading and serious consideration by the operating and passenger officials of the railways. Mr. Wollner is a railway man himself, but made the observations of railroad passenger service, which he records, as a passenger traveling in the ordinary manner. The *Railway Age* believes that however justifiable they were, the advances recently made in passenger rates and the surcharge added to sleeping car rates have caused more feeling and adverse criticism on the part of the public than the advances in freight rates, although the advances in freight rates will cost the public almost four times as much. The freight rate reaches the consumer only indirectly. The passenger charge is paid by him directly and therefore he feels an advance in it far more. Also, it should never be forgotten that the number of people who come in direct contact with railway passenger service, and who are irritated by its shortcomings or pleased by its good qualities, is far larger than the number who come in direct contact with freight service. Therefore, delayed trains, uncivil ticket agents and train employees, poor meals on dining cars, petty grafting by employees in the sale of sleeping car space, and so on, are adapted to cause even more public sentiment against the railways than poor and inadequate freight service. The less the railways think about merely competing with each other, and the more they think about giving all their passengers, on branch as well as through lines, and at non-competitive as well as competitive points, service devoid of irritating shortcomings, the better the effect upon public opinion will be.

The Express Consolidation

The Interstate Commerce Commission, in a decision abstracted elsewhere in this issue, has approved the consolidation of the express business in the hands of the American Railway Express Company and has given its sanction to the elimination of competition as developed by the four former operating companies. This case is an interesting working out of one of the elementary factors of the study of the subject of economics. The case that is ordinarily used in the teaching of that subject is the milkman, but the expressman supplied as good an example. The wagon routes of the several express companies duplicated and tripled each other and crisscrossed each other at all points. There was thus a great economic waste that has now been eliminated by having routes for but a single company. The consolidation of the express companies, once the new company is operating at its expected efficiency, should enable us to have a good service fully on a par with the service that was supplied formerly by several companies. The elimination of competition in any business may be a handicap to the conduct of the business. The difficulty, however, seems to have been that competition in the express business was not all that it should have been. Particular reference might be made to loss and damage and to claims. The commission in its decision uses these words: ". . . the methods of the Adams and Southern express companies in the settlement of claims against them merit the severest condemnation. . . ." This failure to pay claims for loss and damage was brought to the attention of too great a proportion of the American people to have impressed them with the value of competition in the express business. It might be added that it is the opinion of altogether too many people who have tried to collect such claims that the failure to give proper attention to claims was almost a national scandal and a real disgrace to American business ethics and courtesy.

Conserving Cash and Lumber

Neither the magnitude of lumber purchases in comparison with other items of material nor the importance of the savings that can be effected by the use of inferior grades are fully appreciated by all railroads. The following is quoted from a paper presented at a recent meeting of the Forest Products section of the American Society of Mechanical Engineers:

"In the early days when the supply of wood in this country was thought to be inexhaustible, clear grades of wood were generally demanded by the car builders, and in the construction of new cars this is generally the practice at the present time, especially for car roofing and siding—sound-knotted stock being used for decking and lining. Some of the more progressive railroads, however, have gone a step further in recent years and many are now using sound-knotted stock for siding and roofing for repair and maintenance work. There is no doubt but what such a practice is economical and based on sound judgment, for certainly there is no necessity for using clear material for the repair of many classes of freight equipment, the life of which may not be in excess of seven to ten years. One large railway system which not only constructs its own cars but does repairing on a large scale, has adopted a practice as to grades which has resulted in a saving to this railroad of over a half a million dollars per year."

Lumber is certain to increase rapidly in price as the available supply approaches a state of exhaustion. This is best emphasized by the fact that approximately one-half of all the available timber in this country is now located in three states bordering on the Pacific ocean. A survey of the records showing the annual rate at which lumber is being consumed in this country is even more startling. As a result of this situation, the railroads are already using grades that not many years ago were thought impossible and within an equally short period, it will obviously be necessary to specify grades of lumber for cars and other structures that are now regarded as unfit for this use. But, this being a fact, why should the railroads not anticipate this situation; particularly if the use of a slightly lower grade of timber at this time will reduce the cost of this lumber and assist in the conservation of one of our most valuable natural resources?

One of the Sore Spots

When it comes to buying coal a great many railroad men, particularly those in the mechanical department, have the idea that a purchasing agent would accept cobble stones painted black if offered at a lower price. Something should be said, therefore, for the purchasing agent of a northern railroad who, facing a winter with depleted stocks, has deliberately rejected 400 cars of inferior coal, many of which he personally inspected. A coal trade journal that has always regarded the railroads as the trade's worst enemy, has accused the purchasing agent of acting to relieve the railroad of some high priced coal in a falling market, but these comments may be ignored in view of a report submitted by the expert for the coal company in which many of the cars were frankly described as *unfit for any use whatever.* One of the compensations for the trying conditions imposed by the

economic readjustment now under way is the gradual alleviation of some of the sore spots that have been aggravated by conditions immediately following the war. Of these none has caused greater distress than the abominable character of coal that many railroads have been forced to accept as locomotive fuel. The inefficiency of a mechanic may be evidenced by a lessened output, but the inefficiency of a miner usually results in an increased output of coal in which there is a large percentage of every impurity to be found in the mine. Operators with a reputation to sustain have generally clung to some standards of quality, but many operators have sacrificed everything for quantity, knowing that the railroads, in their dire need for fuel, must accept anything. Where the coal was so bad that it would be rejected even under these circumstances, cars have been covered with a thin veneer of respectable coal to hide the inferior contents. It is safe to say that the fancy prices paid for coal within recent months have not cost the railroads half as much as the enormous tonnage of unburnable matter hauled from the mines to the coal chutes, loaded onto locomotive tenders, and either thrown on the right of way or eventually dumped in the ash pit after causing endless locomotive failures.

How Can Collisions Be Prevented?

The collisions in Oregon, Iowa, Missouri, Vermont and Illinois, referred to in our editorial of October 1, page 553, constitute a reproach to American railroad practice—a scandal. In commenting on them we observed that the railroads, by their action, dissented from the governmental view that, as a preventive of such collisions, the block system ought to be introduced everywhere on passenger-carrying lines. James B. Latimer, signal engineer of the Chicago, Burlington & Quincy, whose letter is printed in another column, thinks that this is too severe on the railroads. "Scandal" is, indeed, a severe word; but it is a serious situation that we are dealing with. Will any officer of any road involved say that he is not deeply chagrined at the record here cited, so far as it concerns the collision on his particular road? In the list of prominent collisions that occurred in a period of five years, on lines ostensibly equipped with the manual block system, which was presented by W. P. Borland in the *Railway Age* of July 16 last, we find the names of 25 prominent railroads. Are we wrong in assuming that the railroads generally ought to be made "respondents" in any inquiry concerning these grave lapses from safe practice? The only real difference, we imagine, between Mr. Latimer and the *Railway Age* is in regard to the point of view. He speaks of automatic block signals as the only up-to-date means of maintaining a space interval between trains. That, however, is only a partial statement. Passengers expect to ride in safety on roads too poor to install automatic signals. In our comments (as well as in those of Mr. Borland) the primary postulate was that some means of enforcing a space interval rule ought to be adopted on even the railroad with the lightest traffic. We spoke of the railroads' position as indicated by their action. By their words they adopt the (manual) block system on thousands of miles of lines not deemed important enough to need automatics. By their action the system is so loosely managed or so very freely suspended that the practice cannot fairly be called the block system. That five-year list of examples has to do mainly or wholly with lines on which the block system was ostensibly in use but in reality was not in use. A strictly managed manual block system would have prevented, probably, 95 per cent—perhaps 100 per cent—of those collisions. Such a manual system may not be entitled to be called "up-to-date"; but, with it, the road which cannot find money to buy automatics can at least say that its practice is as nearly up-to-date as the officers are able to make it. That cannot be said of these roads which figure in the collision records—nor of the innumerable other roads whose practice is no better than that here exposed.

Is There an "Irrepressible Conflict?"

THE RADICALS who expound extreme theories of socialism and bolshevism contend that there is an "irrepressible conflict" between capital and labor which can only end when working men have been reduced to practical slavery or the system of capitalism has been destroyed.

Developments within recent years in the railroad and other industries in this country might be used as arguments in support of this view. The demand for labor long exceeded the supply, and labor, especially organized labor, used its advantage ruthlessly. It forced wages up and hours of work down, secured unreasonable conditions of employment wherever it could, reduced its efficiency, and assumed an attitude of bullying never surpassed by the most arrogant employer.

Since the demand for labor began to be greatly reduced a few months ago employers in many lines of business have begun to use with equal energy, and in some cases with equal ruthlessness, the advantage the change has given them. In many cases the policies adopted have apparently been intended to "smash" the unions. The provocation labor unions have given within recent years has been great, and it is not surprising that many employers who formerly were friendly to them have been rendered hostile.

It is obvious, however, that, if in every period when the demand for labor exceeds the supply organized labor is going to use and abuse its power to the utmost, and if in every period when the supply of labor exceeds the demand employers are going to use and abuse their power to the utmost, the bitterness that exists between employers and employees will be intensified and they will be perennially engaged in conflicts which will harm both them and the public.

One of the principal causes of these struggles is that there is something more involved than a mere settlement of economic issues. This is conspicuously true in the railroad industry. The railroad labor organizations have constantly been striving to increase their power. They broadened their movements for higher wages and easier conditions of employment from local to national movements. Then two or more unions began to unite in national movements, and at the present time they have what amounts to a federation of all the national railroad labor organizations. Their purpose apparently has been to form a federated organization which would have so much power that the railway companies and the public would not dare oppose its demands to the point of risking a strike. With this power in their hands the labor leaders apparently have thought that they could get anything they might want.

The railway managers are anxious to increase economy and efficiency of operation. The public demands that they shall do so, and they must do so to enable the roads to earn adequate returns. The railway managers know that efficiency and economy cannot be substantially increased without either an increase of the efficiency of labor or a reduction of wages. They know that the power of the labor organizations has been used to secure the abolition of the means by which the efficiency of labor has been stimulated in the past, and to prevent the adoption of means by which it might be increased in future.

It is not surprising, therefore, that the railroads and other employers regard increases in the efficiency of labor and increases in the power of the unions as incompatible, and are opposed to all measures which are demanded by the unions for the obvious purpose of increasing their power.

So long as labor organizations continue to give employers and the public reason for believing that every increase in the power of the organizations will be an obstacle to the increase of industrial efficiency, the opposition of employers and the public to measures that will increase the power of the labor unions will grow greater.

But why have the labor unions always used their power to extort rules and conditions of work which have tended to reduce efficiency? Partly because, according to the superficial and fallacious economic philosophy of many of their leaders, the less work is done by each man the more there will be to do. Partly, also, because their leaders and members have believed that many efficiency methods favored by employers have been designed not merely to increase the efficiency of labor, but to break down the unions. As long as the unions use their power to destroy methods that will maintain and increase efficiency, and as long as employers use efficiency methods to break down the unions, the conflict between the unions and the employers will continue.

Theoretically, however, it is easy to see how the conflict might be stopped. It is conceivable that in any industry—the railroad industry, for example—representatives of the unions and representatives of the employers might in conference work out measures for increasing the efficiency of labor, and co-operatively adopt and carry them out.

Utopian as this plan may seem, it appears to be the only one the adoption of which will ever stop the conflict between capital and labor, or prevent it from growing fiercer. Labor organizations will always oppose every means which may be proposed for increasing efficiency if they believe one of its purposes is to break down the unions. Employers always must, as matter of self-preservation, struggle to increase the efficiency of labor, and therefore always will and must resist every effort to increase the power of the labor unions as long as they believe that the increased power will be used to reduce efficiency.

Hearings are to begin soon before the Railroad Labor Board upon the question of perpetuating the national agreements made by the Railroad Administration and some of the railroad labor organizations. Conferences are also to be held by representatives of the employees, representatives of the railways and the Railroad Labor Board regarding the establishment of national boards of adjustment.

The major premise from which all sound reasoning regarding the railroad labor problem must start is that measures must be adopted which will increase the economy and efficiency with which the railroads are being operated. Another premise on which all sound reasoning regarding the railroad labor problem must be based is that the present labor costs of the railroads are too high and must be reduced. Every kind of cost that enters into operating expenses—fuel costs, material costs and labor costs—must come down. The inevitable conclusion is that either the efficiency of railroad labor must be increased or its wages must be reduced.

The managers of the railways contend that with the national agreements now in effect, which require the railways to pay out millions of dollars annually in wages for work which is not done, and which compel them to promote and lay off men, not according to their merits but according to seniority, the efficiency of labor cannot be adequately increased and labor costs cannot be adequately reduced. They maintain that the perpetuation of national agreements and the creation of national boards of adjustment will greatly increase the power of the labor unions, and that their increased power inevitably will be used to prevent increases of efficiency.

It is useless for the representatives of the labor unions merely to reply that the national agreements and national boards of adjustment are needed to protect the members of their organizations. The public is very tired of increases in the power of labor organizations which are secured ostensibly for the protection of their own members, but which are used mainly to enable their members to exploit the public through increased wages and less work, as has been so conspicuously and notoriously the case in railway shops, for example.

The *Railway Age* is not in sympathy with some of the extreme "union busting" methods which are now being used by many employers. We do believe, however, that, in the public interest, either the power of many labor organizations must be broken or the unions must begin to use their power to promote the public interest by helping to secure increased industrial efficiency. The most effective means the labor unions could use to secure a continuance of the present high wages and favorable conditions of employment would be to use their utmost endeavors to get their members to increase the efficiency of their work in proportion to the advances in their wages. If there should be great increases in the efficiency of railway labor the present freight and passenger rates might be proved adequate, or might even be reduced, without reductions of wages. But no increase in power which the railroad labor unions ever can get will make it practicable to maintain present railway wages and working conditions without a very great increase in the efficiency of railway labor.

If there is an "irrepressible conflict" on the railroads or elsewhere between labor and capital, it is between those who are determined to increase the power of the labor unions and the inefficiency of their members, and those who are determined to increase industrial efficiency and to prevent every increase in the power of the unions which is used to reduce industrial efficiency. In such a struggle the public will be forced, for its own protection, to side with the employers. In the long run if the labor unions do not use their power to increase the efficiency of their members, their power will not only cease to be increased, but will be greatly reduced, if not actually destroyed.

Are Car Conditions Improving?

JUDGED SOLELY by the trend of the percentage reported in bad order the condition of freight cars is worse now than at the expiration of government operation, and the car departments have failed to carry out their part of the campaign for improved service inaugurated early in the summer by the Association of Railway Executives. An analysis of such facts as are available, however, does not justify this conclusion. Following the inauguration of the executives' campaign the first report available, that covering the first half of the month of July, showed that there were 176,672 freight cars in bad order, or 7.6 per cent of the 2,330,780 cars on the lines of Class I railroads. While the latest report, that for the first half of the month of November, shows an increase of 0.1 per cent in the proportion of bad order cars, the actual number in bad order was 2,400 less than shown on the July 15 report. During this period the per cent of cars on home lines had increased from 26 to 32.5 while cars on their home lines had increased from 57 per cent of the total number of bad order cars to 67.6 per cent, indicating clearly that there had been an extensive movement to the home lines of cars needing repairs.

This movement was essential before any permanent improvement could be made in the average serviceability of the freight car equipment of the country. The effect of this increase in the proportion of bad order cars on home lines is partially reflected in the changed ratios of those needing light repairs and those needing heavy repairs. While the total number in bad order decreased only 2,400 in the period from July 15 to November 15, there was a decrease of over

8,000 in those requiring light repairs, but an increase of nearly 6,000 in the number of cars which are held requiring heavy repairs.

There has been a material improvement in the condition of open top cars; 5,300 less of them were in bad order on November 15 than on July 15, the difference being approximately evenly divided between lights and heavies. Although there was, during this period, a reduction in the total number of these cars, there was an actual net increase of about 1,200 in the number actually available for service. While the number of box cars needing light repairs decreased over 3,000, there was an increase of about 8,000 in the number requiring heavy repairs, which was partly accounted for due to an increase in the proportion of bad order cars on home lines to the total number of cars in bad order, from 46.5 per cent to 63 per cent.

It is unsafe to assume that these changes in the bad order situation are due entirely to the extent to which advantage has been taken of the increasing homeward movement, because the sharp decline in traffic and the reduction of working forces doubtless have tended to cause an accumulation of cars needing heavy repairs, but these factors have not prevented an actual increase in the number of serviceable gondolas, in the face of a decrease in the total number of these cars. This marks a definite accomplishment, and before final judgment can be passed on the efforts of the car departments time must be allowed to determine what advantage will be taken of the present opportunity to effect a permanent improvement in the box car situation. Box cars needing repairs are now on the home lines in large numbers; material and labor to make the repairs can be secured. Will the railroads lose the opportunity presented because of drastic curtailments of maintenance expenditures?

New Books

Practical Locomotive Running and Management. By W. G. Knight, 519 pages, 5 in. by 7 in., illustrated, bound in cloth. Published by the author, W. George Knight, 36 Cushing street, Medford, Mass.

This is the second edition of a very popular book on locomotive operation distinguished for its plain common sense treatment of the many difficult problems encountered by those responsible for the operation of locomotives. The first chapters of this book are devoted to the fundamental facts relating to combustion and the generation of steam. In this connection the function of the brick arch, of the superheater and other appliances essential to the efficiency and capacity of the locomotive are described. The maintenance as well as the operation of these devices is dealt with in a commendable manner. There is also a chapter on locomotive front end appliances with particular references to the effect of these appliances upon the operation of the locomotive. Locomotive valve gears and the air brakes are discussed in separate chapters. The chapter on locomotive running is one that could be read to advantage by any locomotive engineer or supervisor of locomotive operation. The final chapter, which deals with a general study of the modern locomotive, does not, of course, deal with this subject in its entirety but contains a good deal of information in a convenient form relating to the principles involved in the design and operation of these modern locomotives. It should be understood, however, that this book does not add any amount of original matter to the subject and would not appeal to anyone who has already made a thorough study of the entire field. The great value of the book will be found in its use as a reference and guide by enginemen, and also by fuel and locomotive supervisors.

Powdered Coal as a Fuel. By C. F. Herington, 303 pages, 8 in. by 9 in., bound in cloth. Published by D. Van Nostrand Company, 8 Warren street, New York city.

This is the second edition of a book which made its appearance about two years ago, and represents both a revision and enlargement upon the original text, although at the time of its publication this book probably represented the best and most complete treatise upon this subject. Since that time it cannot be denied that powdered coal has assumed a wider field of usefulness and is now regarded as a most promising development. This applies particularly to industrial operation, as it has been demonstrated that the limitations imposed upon the locomotive in its present form make the successful application of this fuel to locomotive use decidedly problematical. However, it should be of particular interest to railroad engineers to know that one of the most successful installations of powdered coal under stationary boilers has been accomplished by the Missouri, Kansas & Texas at its Parsons, Kans., shops. It should also be stated in this connection that the American Locomotive Company has met with considerable success in the use of powdered coal in its metallurgical furnaces at Schenectady. Both of these installations are not only described at length in this book, but other installations of similar character in many industrial plants are described in detail. In fact, the book is largely of a descriptive character, relying more upon these descriptions than upon a theoretical analysis of the subject to demonstrate the possibilities of powdered coal. The book shows very completely just what is being done at the present time with powdered coal and may serve to convince many as to what can be accomplished with this fuel.

Developing Executive Ability. By Enoch Burton Gowin, 9 in. by 6 in., illustrated, bound in cloth. Published by The Ronald Press Company, 20 Vesey street, New York city.

While this book is designed primarily for the young executive, without particular reference to his attachment to railroad service, still there can be no question but that the subject is one which should be of keen interest to a very large number of railroad men. It is certainly the greatest personal and individual problem for every young man engaged in railroad service, as well as a problem of the greatest importance to many who have graduated into important executive positions with our railroads. Railroad officers are sometimes criticized on the ground that they do not handle their work with the same degree of precision and system practiced by executives in other business activities. The author, who is assistant professor of commerce, New York University School of Commerce, Accounts and Finance, has endeavored to show how the day's work may be so systematized that it can be cleared away with ease and precision, how the executive may utilize the time thus gained for constructive effort and for the development of mental vision, initiative and reasoning power, and show him how to develop and prepare himself for broader activities and greater responsibilities. The alert and ambitious railroad man, no matter what his relative position may be, will welcome any possible suggestions by means of which he can affect many economies of time, energy and money. The book is in no sense theoretical. It is simply a common sense analysis of those qualities which characterize executive ability and the means by which this ability may be obtained. It is more than interesting to note that in illustrating his point Professor Gowin has often referred to Harriman, Hill and Ripley, and it may be doubted whether the tremendous influence of the old school railroad executives on our modern business organization is even now fully appreciated. This is not only the kind of a book railroad men should read, but it is the kind of a book that they will want to read.

Letters to the Editor

Visual Signals vs. Automatic Stops

OMAHA, Neb.

TO THE EDITOR:

It has been stated that the practical development of automatic train control devices and their use to supplement existing automatic block signals is highly desirable for the purpose of compelling obedience to signal indications. Automatic block signals provide the most desirable and dependable known means of maintaining a space interval between trains. When installed properly and with efficient maintenance, false-clear signal failures are of rare occurrence, and the possibility of collisions from this cause is exceedingly remote.

Failure to obey signal indications that are seen and understood are very infrequent, and the use of automatic train control would, therefore, seem to be limited to preventing such accidents as are a result of an engineman failing to observe signal indications because of physical incapacity; division of attention; unfamiliarity with the district over which he is running, the scheme of indication or the location of the signals.

The difficulties in the way of design and construction of train control devices are varied and numerous. Their maintenance would require the most careful attention, involving an expense many times greater than that of maintaining an automatic block signal system. Train control devices will operate necessarily at infrequent intervals, and it is essential that they do not become inoperative through disuse. Divided maintenance of the roadside apparatus and the engine apparatus would cause difficulty in determining the cause of failures. The impracticability of testing out the engine and the roadside apparatus at any particular location is readily apparent. The many problems to be overcome in the design and maintenance would, however, not constitute as great an obstacle in the way of adoption as the operating problems involved in its use. A train control device of any type must be built upon the foundation of an automatic block system, to which it should be considered supplemental.

Is the large expense of installation and maintenance of train control justified as a corrective measure for the relatively few accidents which are due to enginemen failing to observe signal indications? Would not train control apparatus, in itself, introduce a fruitful field for disaster due to the failure of the apparatus to function properly? Would its adoption not tend toward decreased vigilance on the part of the engineman and transfer the responsibility for the observance of fixed signals to a mechanical contrivance? With its installation, would we not be looking for relief from the result of disobedience to rules through the agency of a mechanical device which is liable to fail?

The book of rules is our constituted authority and the successful operation of a railroad must be governed by rule. We find that few failures to observe the indications displayed by interlocking signals occur because of the moral effect of the derail which invariably records the violation of the rule requiring a stop when the interlocking system says "stop." Sometimes wheels are slid flat or a few drawbars are pulled out, but nevertheless the stop is made.

Would not some means of checking the indication of automatic signals eliminate the necessity of train control? Why not require a check of signal indications by the men on the engine? Obviously, the fireman could not be expected to be a party to this plan, as his time is much taken up with duties that prevent his observing signals. Investigation of accidents demonstrates usually that the fireman could just as well be excused from testifying, his evidence being recorded as: "I was putting in a fire and don't know anything about the accident."

Why not place a third man on the engine, preferably located on the front end, whose duty it would be to observe signal indications and check them with the engineman by means of a simple electrical or mechanical device which would record the acknowledgment that each had observed the signal. Would not such an arrangement stimulate the observance of rules through the moral effect of the checking device and in case of the physical incapacity or the failure of the engineman, the control of the train could be taken over by the third man and disaster averted. The heavy expense for the installation and maintenance of train control would thereby be saved and the money available for such protection purposes could be used to greater advantage in extending the use of automatic signals to lines now urgently in need of signal protection.

A. H. MCKEEN,
System Signal Engineer, Union Pacific System.

The Collision Scandal

CHICAGO.

TO THE EDITOR:

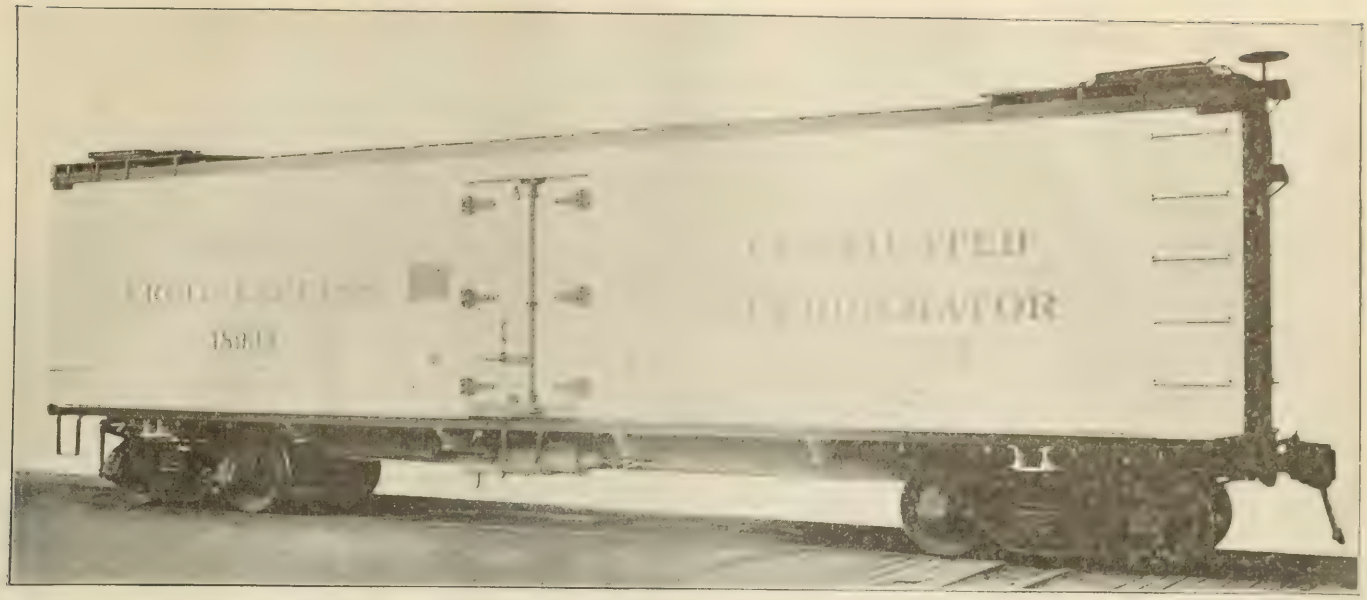
In your issue of October 1 you comment on a communication appearing on page 556 of the same issue on "What Is the Matter with Our Train Rules?" signed V. P. Smith. You say that the Interstate Commerce Commission says that the introduction of the block system is the remedy for the collision scandal, but that the railroads by their action deny that such action is needed. Don't you think this is a little severe on the railroads?

As one who has been deeply concerned in the introduction of the block system and other signaling arrangements on railroads for the past 17 years I must say, in justice to those who furnish the funds for improvements, that the block system has received its full share of support in all cases in which I have been consulted. At the outbreak of the European war in 1914 block signaling appeared to be coming to its own. But that catastrophe and its developments, including our own entrance into the struggle, slowed down, if it did not entirely stop the movement. The railroads have only just returned to the control of their owners and, as far as they can see now, are confronted with a 6-per-cent earning limit and an 8-per-cent price for the use of money. The cost of automatic block signals, which is the only type either the I. C. C. or yourselves would consider up to date, has just about doubled since 1914, and under present financial conditions it is not to be wondered at that those who control the expenditures for improvements are going a little slow in matters of this sort. Even at that I feel safe in predicting that when the 1921 budgets are made public it will be found that the appropriations for block signals will be found to be as liberal, in proportion to what the various railroads feel able to spend, as they ever have been. The mileage to be covered by new signals will probably not be as great during the coming year as it has been in some previous years, but the expenditures, I predict, will be as great or greater. As prices are reduced, as we all believe they will be, the mileage of signals each year will increase at a rising ratio.

It is not fair to attribute the fact that the past four or five years have been lean ones in the construction of block signals to a belief on the part of the railroad managements that such improvements were of no value, any more than it would be to attribute the slowing down of rail relays and permanent bridge work to the same cause.

We have all of us been compelled during the period of the war to wear our clothes longer than formerly.

JAMES B. LATIMER,
Signal Engineer, Chicago, Burlington & Quincy.



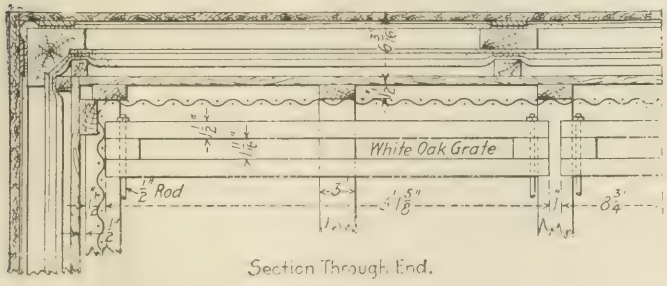
Pacific Fruit Express Refrigerator Cars

Insulation Around the Sides and Ends Is Unbroken; A Continuous Layer of Cork in the Floor

THE UNION PACIFIC has recently placed in service 4,000 refrigerator cars for the Pacific Fruit Express, 1,000 of which were built in the company's shops and orders for 3,000 of which were distributed among the following builders:

Pullman Company	900
American Car & Foundry Company	900
Haskell & Barker Car Company, Inc.	700
Mt. Vernon Car Manufacturing Company	300
Pacific Car & Foundry Company	200

These cars, in general, follow conventional lines of design but possess a number of details of interest, notably the type



Horizontal Section Through the End and Side of the Car, Showing the Method of Carrying the Insulation Around the Corner

and method of applying the insulation. The cars have the following general dimensions:

Length over sheathing	40 ft. 11⅛ in.
Length between ice tanks	33 ft. 2¾ in.
Width over sheathing	9 ft. 2⅝ in.
Width inside of lining	8 ft. 2¾ in.
Capacity of both ice tanks	10,500 lb.
Height, top floor to ceiling	7 ft. 5⅛ in.
Cubic capacity between ice tanks	2,029 cu. ft.
Distance from center to center of body bolsters	30 ft. 8 in.
Truck wheel base	5 ft. 6 in.
Capacity	60,000 lb.
Truck capacity	80,000 lb.
Light weight of car complete (Built up centre sill)	53,500 lb.
Light weight of car complete (Bettendorf)	52,200 lbs.

The cars were built to two designs, differing only in the trucks and underframe construction. In one of these the Bettendorf single I section center sill and Bettendorf trucks are used while the other involves a double fish belly center sill built up of plates and structural sections, and is carried on Vulcan trucks.

Underframes

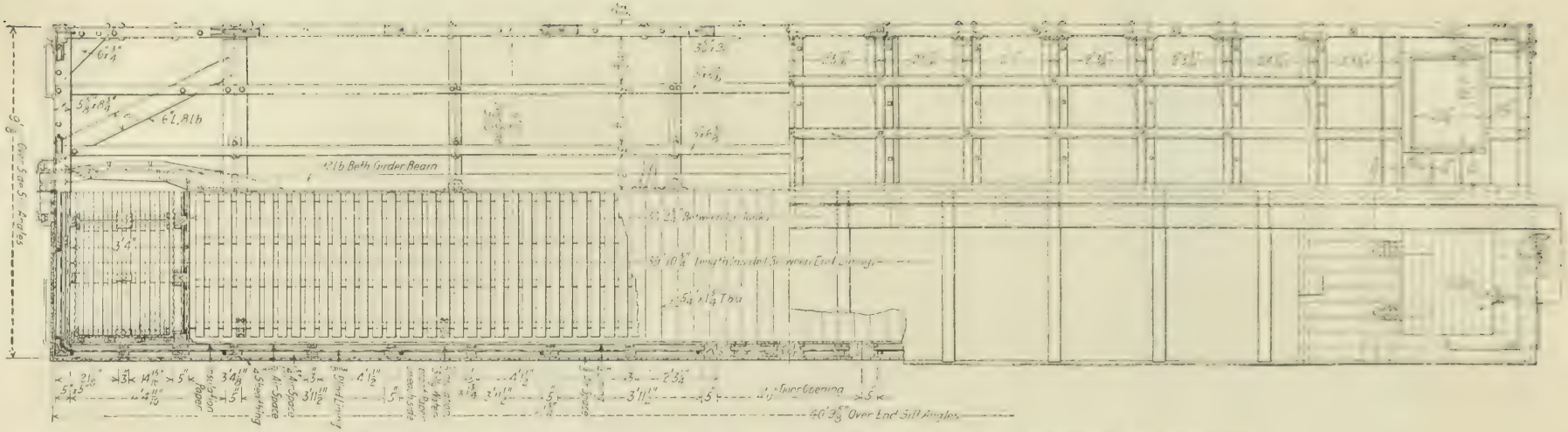
The principal member of the Bettendorf underframe is an 18-in., 92-lb. Bethlehem girder, the depth of which is reduced to 14 in. at the bolster. The bolster is an 8-in., 34.5-lb. H-section, which is framed through the center sill and the rear ends of the draft sill castings.

The center sills of the other underframe are built up of 5/16-in. web plates with 3-in. by 3-in. by 5/16-in. angle flanges at the top on the outside only and 3-in. by 3-in. by ¼-in. angle flanges on the inside and 3-in. by 3-in. by ½-in. angle flanges on the outside at the bottom of each plate. The sills are completed with two ¼-in. superimposed top cover plates, the lower one extending the entire length of the sills and the other extending 8 ft. toward each end from the transverse center line of the car. The bolsters on this underframe are also of built up box section; the 5/16-in. web plates are spaced 8 in. back to back and reinforced with 2½-in. by 5/16-in. angles on the outside at both top and bottom. The bolsters are completed with top and bottom cover plates, the latter being continuous, and are attached to the center sills on either side with one horizontal and two vertical corner angles.

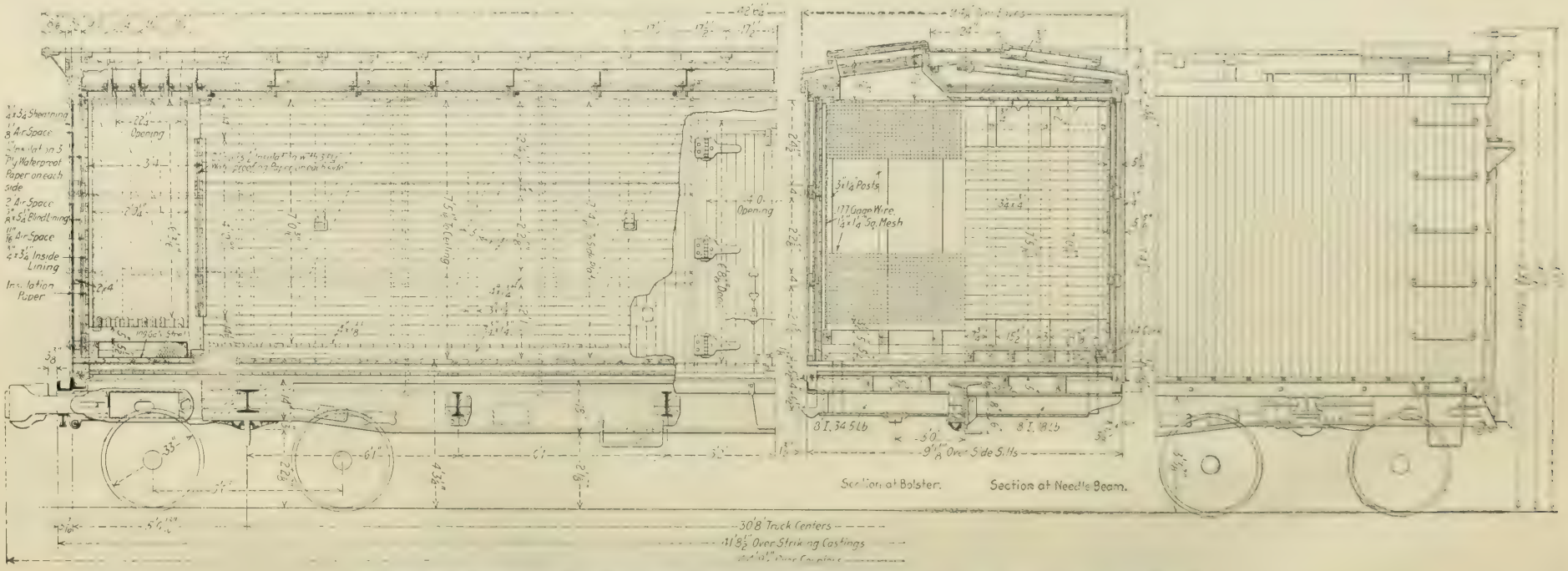
In other respects the two underframes are similar. Both have four 8-in., 18-lb., I-section needle beams, and in each case the end and side members are 4-in. by 4-in. by ⅜-in. and 4-in. by 3-in. by ⅜-in. angles, respectively. Both designs are fitted with Cardwell friction draft gears.

The Car Bodies

The construction of both car bodies is essentially the same. Both have wood frames with the exception of the carlines, which are of pressed steel. The bodies are built up on wood sub-sills; those for the sides and ends are framed into and bolted to the angle members of the steel underframe,



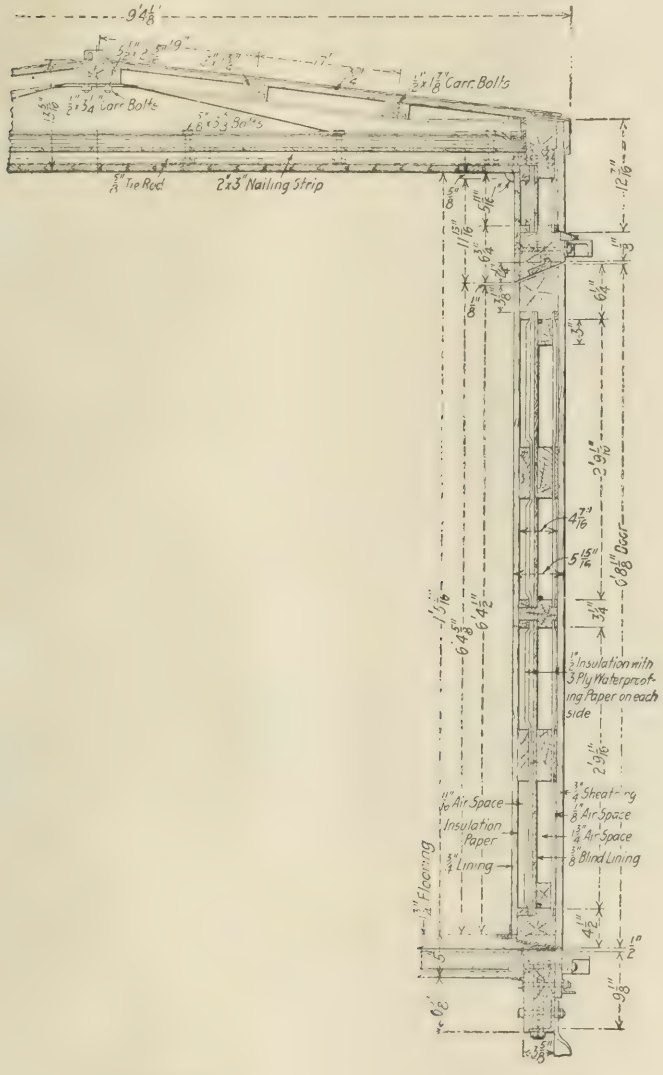
General Drawing of the Pacific Fruit Express Refrigerator Cars, with Bettendorf Underframe



General Drawing of the Pacific Fruit Express Refrigerator Cars, with Bettendorf Underframe

while the intermediate sills are bolted on top of the needle beams.

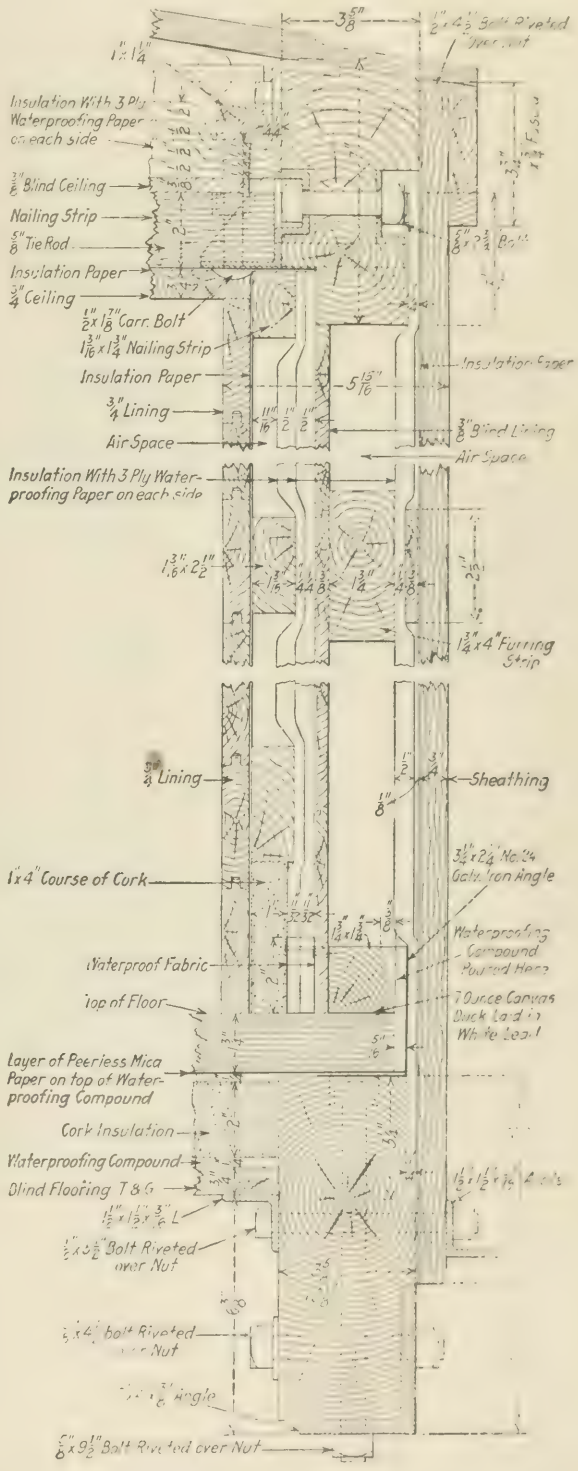
The entire floor construction is placed above the intermediate sub-sills with no enclosed air spaces, which makes it possible to provide continuous floor insulation. The lower floor is ¾-in. tongued and grooved material nailed directly to the top of the intermediate sub-sills, the ends of the boards resting on 1½-in. by 1½-in. angle supports bolted to the inside faces of the side sub-sills. This floor is covered with a ¼-in. coat of Sarco Bituminous Seal, applied hot. A 2-in. course of Nonpareil Cork Board is then laid while the bituminous compound is still hot and this is sealed with another ¼-in. coat of the hot waterproof compound. The insulation



Cross Section of the Car Body at the Door

thus built up is covered with a layer of Peerless mica surfaced insulating paper with the seams carefully joined to prevent moisture passing through and the upper floor, of 1¾-in. tongued and grooved material is then laid. The ends of the flooring are nailed to the tops of the side sub-sills and the boards are further secured by nailing through the insulation into the two center sub-sills.

The side construction provides three air spaces between the inside lining and the sheathing. The first course of insulation, consisting of one layer of ½-in. Keystone hair felt between courses of three ply waterproofing paper is placed outside the frame before the outside sheathing is applied. This insulation, as is shown in one of the drawings, extends continuously from door post to door post around each end of the car and is secured to the frame members by ⅜-in. nailing strips. After a layer of Per Bona insulating paper, also extending continuously from door post to door post, has been laid over the nailing strips, the sheathing is applied. There is a nominal air space of ⅛-in. between the unrestrained portions of the insulation and the sheathing.



Section Through the Side of the Car Showing Details at the Junction of the Side with the Ceiling and Floor

An intermediate lining of ⅜-in. ship lap material is mailed to the inside of the frame members, and against this is laid the inside insulation, consisting of two thicknesses of the hair felt covered on each side with three ply waterproofing paper. This extends continuously around the ends of

the car from door post to door post and is held in place by 1 3/16-in. nailing strips, over which is placed a continuous covering of Per Bona insulating paper before the inside lining is applied.

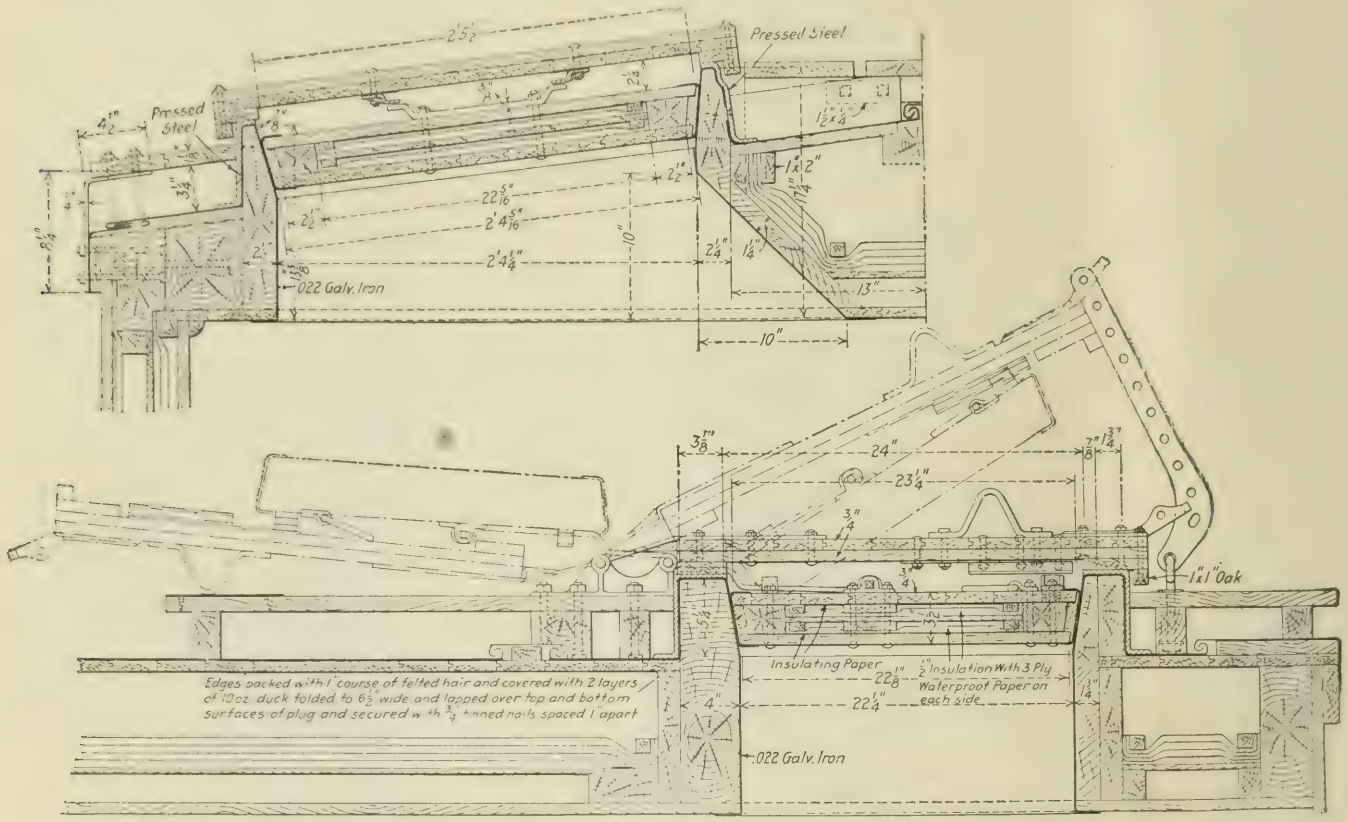
In the bottom of the side and end walls, a strip of 1-in. by 4-in. cork board is laid on top of the floor between the inside lining and the inside layers of insulation. This is held in place against the floor by a 1 3/16-in. belt strip placed directly above it. To further protect the insulation and the concealed wood work at the floor line from the penetration of moisture, the lower edges of the two inside layers of hair felt are enclosed in a waterproofed cotton fabric placed under the edges of the insulation and folded up the sides for a distance of two inches above the floor; the nailing strips for the blind lining at the floor are covered with canvas laid in white lead on the floor and lining sides, and the 5/16-in. spaces between the ends of the floor boards and the outside faces of the side sills are filled with hot waterproofing compound extending up 3½ in. to the top of the blind lining nailing strips.

The details of the construction of the hatchway openings and the methods of securing the insulation at these points are shown in the drawings. The hatch covers and plugs are both hinged from single sets of hinge fixtures with separate hinge connections and they are arranged so that the hatches may be opened for ventilator service.

The Bunkers

The bunkers are enclosed by a bulkhead the outside face of which is 3 ft. 4 in. from the end lining. The bulkhead is built up on 3-in. by 4-in. oak posts and consists of two courses of ¾-in. tongued and grooved material separated by two ½-in. thicknesses of hair felt insulation covered with three ply waterproofing paper. The first course is laid against nailing strips between the posts and the outer course is nailed directly to the faces of the posts. The top and bottom bulkhead openings are 14 in. and 12 in. deep, respectively.

The ice tank is fitted with a floor pan of galvanized steel and the lining of the end and sides of the car is covered with galvanized iron extending from the floor pan to the ceiling.



Transverse and Longitudinal Sections Through the Hatch, Showing Method of Ventilating the Car

The galvanized wire ice basket is spaced 1½ in. from the end lining, 1⅝ in. from the side linings and is attached directly to the inside faces of the bulkhead posts. The bottom of the basket is closed with an oak grate made up of 3½-in. by 1½-in. bars extending across the car and supported on six supports of 3-in. by 5-in. oak, the tops of which are 10½ in. above the floor.

The floor racks are built in two longitudinal sections at each end of the car, hinged at the sides to swing up against the lining. Each section is supported on four 1¾-in. by 3¾-in. longitudinal members and is made up of 1⅛-in. by 4-in. boards spaced 1 9/16 in. apart.

The trucks on the cars with the built up underframes have Vulcan side frames and Buckeye bolsters, the ends of which rest on Barber roller spring seats. The journals are 5-in. by 9-in. and Creco No. 2 brake beams are used.

The Roof

The cars are fitted with the Murphy X L A outside metal roof and, with the exception of those at the ends of the hatchways, the carlines are of pressed steel of inverted U-section with one side extending down to form a support to which the ceiling structure is bolted.

The roof insulation consists of four layers of the ½-in. hair felt insulation, covered on each side with three ply waterproofing paper. This insulation is placed between the steel carlines and the blind ceiling, which is built up of ⅜-in. ship lap material on top of 2-in. by 3-in. transverse nailing strips. On the lower face of the nailing strips the ¾-in. tongued and grooved ceiling is applied and the whole structure is secured to the carlines by ⅝-in. bolts with the nuts countersunk in the underside of the nailing strips.

The Transportation Problem in the Coal Industry*

Some Lessons for the Future Taught by the Experience During the War Period

By A. G. Gutheim

Manager, Public Relations Section, Car Service Division, American Railway Association, Washington, D. C.

THE FIRST EVIDENCE of difficulty in the transportation of bituminous coal is a coal car shortage,—that is, an inability on the part of the railroads regularly and adequately to meet the demands of the mines for empty cars in which to load and ship their production to market. Coal car shortages have been so serious and so nearly continuous for the past four years that there is a tendency to forget that the situation previously was just the reverse. For many years prior to the late summer of 1916 there customarily existed in this country a surplus of cars available for coal loading in excess of all demands therefor, almost 90 per cent of the time. The occasional coal car shortages were strictly seasonal and local: nation-wide or long continued difficulties of this sort were unknown.

The seasonal and local coal car shortage is the result of a sudden and heavy demand for coal which comes late each summer in anticipation, and later accentuated by the arrival of cold weather. The cure of such difficulties is more with the consuming public than with the producers and carriers. The former may, with little if any loss, purchase and store their extraordinary winter's coal requirements in part at least, earlier in the season, when mine and transportation facilities are not, as a rule, fully utilized. But the latter, in effecting a cure, must mine and transport with even greater intensity during the period of strong demand. This would require larger investment in mining and transportation equipment and more employees in those industries, and this is something to be avoided where possible, and certainly in the bituminous coal mining industry.

If the future held in store no more serious problems in bituminous coal transportation than those customarily met with prior to 1916, the subject could be dismissed as not of particular importance. But our experience since 1916 has been distressing, and at times attended with danger. That experience warrants serious consideration of its causes, and the best endeavors of all concerned to eliminate those causes henceforth.

General Effect of the War

War is essentially a consumer of iron and steel, and iron and steel production depends mainly on coal, coke, ore and fluxing materials as the basic raw commodities. Moreover, fuel is relatively a greater factor in iron and steel production than in most other lines of manufacture. The shift from peace to war industry called for extraordinary coal production long before we entered the war, and our activity as a belligerent greatly increased this demand. Simultaneously came greater demands for the other basic commodities of iron and steel production. All these commodities are invariably shipped in bulk and usually and by preference require open top cars, commonly called coal cars, for transportation.

The territory Chicago-St. Louis and east thereof and north of the Ohio and Potomac rivers is the great workshop of our country. It is the location of by far the greater part of our population, and the greatest density of population and traffic. If to its bituminous coal production is added that of the bordering states of Virginia, West Virginia and Kentucky, largely consumed in this great workshop, we account for fully 75 per cent of our total bituminous production. In this territory are located our great centers of iron and steel manufacture, producing perhaps 80 per cent of all our iron and steel articles. On its Lake Erie shore are the docks over which the regions beyond the lakes obtain their annual requirements of 25 to 30 million tons of coal and in return send their double quantity of ore. On its North Atlantic coast are great tidewater coal piers transshipping millions of tons of coastwise and export coal, both anthracite and bituminous, annually. There also are located the ports through which, first for convenience, and later for convenience and necessity, was handled most of the tremendous overseas movement of men and materials from 1915 on. And throughout this period, freight and troop movements within and to and from this territory, east, west, north and south, were conducted on lines of railroad never built to carry this concentrated load, and claimed by the owners to have been stunted in development during several years preceding by hostile, or at least unwise policies of government regulation. Furthermore, many of the more important gateways through which this war traffic had of necessity to move were manufacturing cities of major importance in the war program, which were then undergoing great industrial expansion and development, without contemporaneous development of their railroad facilities. Nothing, perhaps, more clearly emphasizes the stress in this territory than the action of the War Industries Board toward the close of actual hostilities, designed to effectually limit any further location of industry in the eastern portion thereof.

It would be just criticism of this paper to say that thus far many words have been used to outline a situation which the French sufficiently describe by a shrug of the shoulders and the comment, "C'est la guerre." The truth is that the war was the primary cause of our coal transportation difficulties, and as indicative of this, note the trend of bituminous coal production in the United States in recent calendar years:

	Net tons		Net tons
1910	417,111,000	1916	502,523,000
1911	405,907,000	1917	551,791,000
1912	450,105,000	1918	579,386,000
1913	478,436,000	1919	458,063,000
1914	422,701,000	1920 (Est.)	542,000,000
1915	442,622,000		

What has been said heretofore constitutes, in the opinion of the railroad man, the basis of a complete defence on the untrue charge so often made that "the railroads broke down" during the war. Perhaps nothing has contributed so much by way of ostensible support of this charge as the oft repeated statements and advertisements of gross coal car shortages at the mines. There were coal car shortages, to be sure, and their effects were at times serious, but the blame therefor lies at no one door. Accepting the war as the primary cause, it is profitable to study the supplementary causes right down to date, with some consideration of how to eliminate them in the future.

The War Demand and Its Results

Bear in mind that for some years before our war activity commenced the bituminuos coal mining industry in this country was much overdeveloped. Financial conditions

*Abstract of an address before the American Economic Association, at Atlantic City, N. J., December 28, 1920.

within the industry were by no means good and competition was exceedingly keen. Two rather lean years just before we hit our stride in war manufacturing did not, of course, better this situation. The market was chronically a buyers' one. The light demand and low production in these preceding years left no great stocks in consumers' hands upon which to play in undertaking our new industrial venture. A strong demand for coal came very quickly and by midsummer 1916 reached extraordinary proportions for that time. The war load was then well upon our railroads, and the demands for service required such continuous use of facilities as did not allow the desired opportunity for conditioning the same. Then began also the difficulties of the roads in obtaining additional equipment, due to the preemption of industry first by more profitable and later by what was deemed more essential work. But under the conditions as they then obtained the 1916 bituminous production went over 500 million tons, even with a late start, and such coal car shortages as developed were as a rule peculiarly the result of particular situations incident to expansion of production on certain lines not favorably placed to handle the same.

Under these circumstances, with no control over the marketing of bituminous coal except that afforded by the law of supply and demand, the inevitable happened. By the beginning of 1917 we were in a period of rapidly mounting coal prices, while contemporaneously there came to Washington in ever-increasing numbers, consumers whose very industrial life depended on regular and adequate coal supply and who found great difficulty in obtaining it. Statistics to show currently the true state of production, distribution, consumption, and stocks were utterly lacking, as indeed, is largely the case even today. There was, however, an undeniable shortage of cars at the mines and quite naturally the whole difficulty was attributed to this railroad disability.

Looking back at the production of 550,000,000 tons in 1917 and 580,000,000 in 1918, with stocks upwards of 25,000,000 tons at all times and reaching 63,000,000 tons on Armistice Day, it is easy to deduce that while the difficulty could have been cured by more transportation, permitting greater production, it might also have been cured largely and perhaps entirely by more economic distribution by the coal operators. That uneconomic distribution was at least a factor in the trouble was clearly shown by the nature of the demands made upon the railroads, and by the large stock piles of different consumers in different places. Admitting them to be extreme cases, it may be cited that one lot of Illinois coal, which does not ordinarily move east of Toledo and Detroit, went to the amount of 200 cars to Connecticut, while a coal car shortage on a southwestern railroad was found to result from shipments to the Twin Cities and beyond, whereas the normal market never went north of Omaha. Of the crosshauling of coal and the carriage of "coal to Newcastle" there was almost continuous evidence, although their exact extent could not be ascertained without the most thorough and complete policing and checking of the entire coal movement.

There was further waste of rail transportation, particularly in the bituminous coal movement to New England—one of the danger spots—because of the dislocation of ocean transportation. The fuel administrator for New England was not far wrong when he stated that removing coal-carrying vessels from coastwise services was equivalent to pulling up a four track railroad to his section. New England cannot be fueled all-rail any more than can our northwestern lake states. Instead of maximum ocean and minimum rail movement of bituminous coal to New England we found ourselves by force of circumstances in 1917 and early 1918, attempting the reverse. The rail gateways were incapable of handling what was attempted, and even so, the extraordinary use of such gateways for coal of necessity adversely affected other war movements. Furthermore, a car of bituminous coal moving to New England all rail requires at least double the car-days necessary to handle the same tonnage to New England rail and ocean. To those circumstances must be largely attributed the failure to protect New England more adequately in the winter of 1917-1918. And right here it may be noted that throughout this last year, New England, to escape foreign competition in the purchase of tidewater coal and ocean freight rates which greatly exceed rail rates, has leaned more and more on all-rail coal.

Nor was it possible to control distribution through the medium of our regulation of interstate commerce. The cardinal principle of that regulation is that carrier's rates, rules, regulations, and practices shall be just, reasonable, and not unduly discriminatory as between persons, places, and commodities. To be sure, the Interstate Commerce Commission early lent its support to the Council of National Defense and the Railroad War Board in their joint endeavors to cope with the situation. Always, however, there was before the carriers the statutory prohibition against undue discrimination, and the consequent possibilities of heavy suits for damages.

A suggestion early made to the Fuel Administration was that the movement of bituminous coal be zoned in such manner as to afford more economical distribution, both from the standpoint of war requirements and transportation possibilities. These efforts, although backed by the Council of National Defense and the Railroad War Board, were of no avail. Fortunately, the suggestion met with favor at the hands of the Railroad Administration shortly after it took hold. The immediate result was a prompt and careful study of the whole situation by a committee of both administrations on the basis of the original suggestions of the Council of National Defense and the Railroad War Board. The committee recommended, and, effective at the beginning of the coal year April 1, 1918, there was promulgated a zoning scheme which stood the test of the remainder of the strict war period. This greatly increased the ability of the railroads to transport bituminous coal and facilitated proper distribution. Shortly afterward the Railroad Administration, exercising its extraordinary powers, made even more stringent rules preferring coal in the use of open top cars than had previously existed. These new conditions, coupled with the more effective organization and efforts of the Fuel Administration, were responsible for the 1918 figure of 580,000,000 tons production. It has frequently been said that had the armistice not intervened production for that year would have reached 600,000,000 tons. The fact is, however, that the saturation point had been reached in some sections before the armistice, and it may be doubted whether production would have been maintained after that date at anything like the high rates established before, even had hostilities continued.

Coal Car Supply During the War Period

It will be profitable here to give consideration to some of the transportation features of the situation which faced the country in 1916, 1917 and 1918, and under which maximum, and in fact, reasonably adequate coal production was obtained for the country as a whole even though there was habitually throughout that period the cry of coal car shortage at the mines.

So far as the records of the coal loading railroads of this country permit such a comparison, it appears that on January 1, 1916, they were serving 3,646 mines with an established rate capacity of 43,524 cars per day. Of these, 190 mines were undergoing what is known as development. On January 1, 1917, the total mines served by the railroads numbered 4,916, with an established daily capacity of 55,158 cars; 358 of these mines were in the development stage. On

January 1, 1918, the mines served numbered 6,157, with a rated capacity of 59,968 cars daily, 840 of these mines being counted as developing. All mines included in this comparison are established tipple mines—mines which have a permanent arrangement at the location of the mine itself for loading coal over a tipple into cars. So-called wagon or country bank mines, which are of a temporary nature but in a period of strong demand for coal frequently number two or three thousand, are not included. An outstanding feature of the comparison is that in 1917 and 1918, two years during which there was no regulation of prices and distribution until the last five months, the number of tipple mines increased almost 70 per cent, and their capacity in the neighborhood of 40 per cent. Expressed another way, the average capacity per mine per day on January 1, 1916, was about 12 cars, whereas, on January 1, 1918, it was less than 10 cars. Although the established mines had during these two years been developing to even greater capacity, the multitude of new mines was enough to bring down the average capacity per mine. This in itself meant a waste of transportation.

For many years coal loading railroads have, in times of shortage, distributed the available cars to mines daily on the basis of their established rated capacity. One of the achievements of the Railroad Administration was the establishment of uniformity of practice on all roads in this respect. Common carriers are not equipped to handle all peak loads currently. This fact and the development of the bituminous mining industry far beyond maximum requirements of the country inevitably means a car shortage during such peak demands as have been made since 1916. Every increase in development of the industry without corresponding increase in demand for product and railroad facilities of necessity means that the available cars must be distributed to more mines in a lower ratio to established rated capacity. Expressed in another way, more mines must be served with the same number of cars in order to get from all mines in the aggregate the same tonnage of coal that could be produced by fewer mines served with more cars per mine. The point to be borne in mind is that even with a coal car shortage, and with a pronounced coal car shortage, it is entirely possible to keep the country fully and adequately supplied with coal.

The weekly reports of the Geological Survey enlighten us as to this. It is to be regretted that the data furnished the Survey as the basis of its reports is only about 60 per cent complete, but relying as it must upon the good will and co-operation of the coal operators, and without any law back of it, the Survey has been able to report week by week a fairly accurate figure showing the percentage of full time worked and the percentage of full time lost at the bituminous mines, for various named causes. Applying to the tonnage produced weekly the percentage of full time worked gives an idea of the potential capacity of the mines, and this furnishes some rather startling indications of the overdevelopment of the industry. Judged by these reports the mines have a potential ability to produce bituminous coal to the amount of 18,500,000 tons weekly, or considerably over 900 million tons per annum. One has merely to view this figure in the light of the maximum requirements of the country as indicated by our war experience and the assumption that our railroads can handle at least that, currently, to see that even a 20 to 30 per cent car shortage is inevitable at coal mines during a period of maximum demand for coal. That indeed, has been our experience this past summer and autumn even while production was exceeding current requirements week by week.

It is not, of course, to be contended that the mines would produce at the rate of 18,500,000 tons week by week even if the country would absorb the same, for manifestly the men could not continue maximum effort indefinitely. The point is that the failures of the carriers as shown by the reports of the coal operators are measured by a figure which reflects the maximum of productive effort in a greatly overdeveloped industry. It is significant that contemporaneously the demands for cars made upon the railroads by the same mines indicate a desire to load currently about 16,000,000 tons weekly. But even on this basis a car supply 25 per cent short would more than meet the country's needs for coal.

The Post-Armistice Difficulties

In the period following the armistice we find first, as a consequence of the industrial slump after the termination of actual hostilities, that the demand for coal fell off very quickly. There was further a seeming disposition throughout the country to utilize stocks which the Geological Survey estimates at the tremendous total of 63 million tons on Armistice Day. In consequence, production which had averaged 12 million tons weekly for months before the armistice, fell at once to a 10 million average, and in the first six months of 1919 to 8¼ million. The railroads meanwhile were carrying the greatest car surplus ever recorded in our railroad history, the maximum figure being about 450,000 of all classes of cars daily, out of a total serviceable ownership of about 2¼ million.

By June, 1920, in some producing districts and quite generally by late July, the demand for coal was again in excess of the ability of the railroads to furnish transportation therefor, and another car shortage period began. This time the fundamental causes were different than in 1916-1918, but the situation was certainly as acute. Surplus stocks had been largely consumed. The mines had been running on short time so long that there was even greater than ordinary eagerness on the part of operators and miners to get back to maximum production. The railroads had been through three war years during most of which the wheels had all but been run off their locomotives and freight cars in continuous service. Usual retirements of freight equipment and replacement by new units had been impossible for one or another war reason, while demands for empty coal cars exceeded even those of the war period. This task before the roads was rendered even more difficult in August, 1919, when employees in the railroad shop crafts began to strike. These strikes continued throughout that month and greatly militated against good service.

Bituminous Miners' Strike, November-December, 1919

By September 1 railroad conditions were somewhat more stable, but by this time the bituminous coal miners' strike was already in sight. Plans were laid by the Railroad Administration for immediate improvement in the service for coal. A minimum production of 11 million tons weekly was the mark set. It was attained in the first week of September, and consistently exceeded thereafter down to the date the strike broke, November 1, 1919. During the last two weeks of October preferential transportation for coal was accorded everywhere, even to the exclusion of other commodities, and production broke all previous records.

The advent of the strike cast additional burdens on the railroads, although the demand for coal-carrying equipment immediately fell off over 60 per cent. The Fuel Administration, recalled to activity and having neither organization nor funds, proceeded to exercise its principal function, that of distribution, through the medium of the director general of railroads. The program for the country's protection involved the holding on wheels of some 300,000 carloads of bituminous coal in the hands of the carriers on the morning of November 1 and the rationing of the same according as needs developed. This was an exact reversal of the railroads' usual function of transportation to destination and

delivery to consumers as rapidly as possible. It very effectively hindered transportation generally.

The work of the director general in his agency for the Fuel Administration has been much criticised. To be sure, it was by no means perfect, but undertaken at a moment's notice, and handled of necessity by a nation-wide organization created by wire overnight, it hardly could be. Speaking as a member of the director general's Central Coal Committee, the writer ventures the statement that the criticisms are based mostly if not entirely upon hindsight, and volunteers the information that the critics of history presented no concrete suggestions for improvement while the emergency was on. Even the accredited representatives of the bituminous coal producers in Washington throughout the strike were unable from day to day to furnish any dependable information with respect to the possibility of resumption of work. The same representatives who on one day would insist that settlement of the strike was in sight and that the coal on wheels could be safely released, would on the following day congratulate the Central Coal Committee for not having followed the advice previously given. Under such circumstances there was but one sound policy in the face of the rapidly declining coal reserves, as evidenced by the coal under load on wheels. That was to "play safe" and that policy was consistently followed until there was reasonable certainty that work would shortly be resumed.

Production during the strike was largely obtained in the northern Appalachian fields. Available reserves were most rapidly absorbed in Ohio and the states west of the Rocky Mountains. For their protection thousands of cars of eastern coal were moved west extraordinary distances and over extraordinary routes. Most of this eastern coal was higher priced than the coal customarily sold in that western section. The consequence was that with the cessation of the strike in sight and the possibility of cheaper production at hand, those for whose protection this coal had been moved west refused to accept it, and thousands of eastern cars were tied up under load in the west for weeks. Eventually the coal was parcelled out to the railroads, the steel companies, and other large consumers who were able to utilize it.

The Situation in 1920

Although the miners' strike was settled in mid-December, only fair production materialized in the winter months of January, February and March. It was not sufficient to accomplish more than current protection for the country, and gave no opportunity to build up the greatly depleted stocks.

Federal control of railroads terminated February 29, 1920, and private operation in March showed progress in improved bituminous production. But in the first week of April began the outlaw strikes of the switchmen. Again production dropped to exceedingly low figures, and low marks continued for many weeks. Net ownership of coal cars by our railroads had not increased during federal control and the "bad orders" were excessive. The small stocks, estimated by the Survey as 24,000,000 tons March 1, and the extraordinary dislocation of coal cars throughout the country, a result of the heavy movement of eastern cars west during the strike, made matters worse.

Profiting by our experience during the war, the Congress in enacting the Transportation Act, 1920, made provision that enabled the Interstate Commerce Commission to assist materially in meeting the situation. Under this legislation the commission, whenever in its opinion an emergency exists, may authorize some departure from the cardinal principles of just, reasonable, and not unduly discriminatory practices in our scheme of transportation. Immediately upon the representation by the railroads that such an emergency as the statute contemplated did in fact exist, the commission took active and energetic steps calculated to remedy the situation. First was an order relieving the railroads from the necessity of following shipper's routing, and simultaneously came a series of car relocation orders to bring back from the west to the coal mining territory of the east thousands of empty coal cars. Subsequently, for the further relief of the coal situation, the commission specifically authorized preferential utilization of coal cars for coal loading. Additional emergency service orders resulted in the reinstatement of war-time measures requiring the pooling of coal moving to Lake Erie and Tidewater ports for transshipment by vessel beyond, thereby avoiding car and vessel detention. Still further, in order to assure the territory beyond the Great Lakes and the people of New England of adequate coal supplies for the coming winter, preferences were set up for their benefit.

All these measures did, to be sure, discriminate to a certain extent against other industry, but the discrimination was only what Congress contemplated in authorizing the commission to take action of this sort to cope with emergencies. Much as it is to be regretted that other industry had to suffer, there is satisfaction in the thought that the programs laid down have all been fully completed, and there is every indication that the coal situation in the country as a whole is in a safe condition for this winter.

In the rather harsh experience of the past four years there are these signs for the future.

First. The bituminous coal mining industry is developed far beyond the present or immediate future demands of our domestic and foreign trade in bituminous coal.

Second. Our railroad facilities are probably adequate today to handle our necessary annual bituminous output produced with fair uniformity of rate throughout the year and will certainly be adequate when post-war rehabilitation of the properties is completed.

Third. Our railroad facilities are not, and without great waste of investment never can be, adequate to handle currently our necessary bituminous coal production when obtained by weekly peaks of 13,000,000 tons and valleys of 7,500,000 tons in a 12-month period, as has been the case these past two years.

Fourth. While the powers of the Interstate Commerce Commission are sufficient to force transportation for such extremes of production, the exercise of such powers necessarily involves discrimination against other traffic and should be avoided if at all possible.

Fifth. While our present railroad regulation can force production, it can control distribution but slightly, and prices not at all.

Sixth. Extreme variation in rates of production not only unduly burdens the transportation machine, but invites further overdevelopment of mining, with the consequence of greater irregularity in miners' working time.

Seventh. So long as regulatory power exists to force coal production at the expense of other industry, similar power should exist to compel proper distribution of such production, should necessity therefor arise.

Eighth. Provision should be made, by additional legislation if necessary, for the securing and compilation by proper governmental authority, of current and complete statistics of production, distribution, consumption, and stocks, of bituminous coal.

To conclude, let it be kept in mind that production, transportation, distribution, and consumption, are the four big factors in the bituminous coal industry, and should be reasonably well balanced. Of course, such disturbances as war and nation-wide strikes constitute emergencies which require corresponding treatment. But under ordinary conditions proper co-ordination of these four big factors is possible and the result should be better conditions of mining and railroading, lower costs of production and transportation, and better prices and distribution to the consumer.

The New Era of Railroad Transportation in America*

Importance, Both to Carriers and Shippers, of Maintaining the Spirit of Friendly Co-operation

By Lewis J. Spence
Director of Traffic of the Southern Pacific Company

THE FIRST CHAPTER of the railroad history of America was that of development; every section of the country clamoring for railroads; when this clamor was satisfied we had the period of restrictive legislation, the second chapter; this was primarily designed to correct evils, but it became severely repressive. The third chapter was that of the period of the world war, when the roads were in the hands of the government; and now, under the Transportation Act of 1920, we have the fourth chapter. During the first six months of private management the restoration and maintenance of existing equipment has cost $792,000,000, and during the same period $569,000,000 was expended for maintenance of way and structures. The American and Canadian railroads together since January 1 have ordered 1,770 locomotives at a cost of $106,000,000; 73,593 freight cars, at a cost of $221,000,000; and 997 passenger cars at a cost of $23,000,000—a total of $350,000,000. Abolition of off-line traffic agencies [which the speaker believed unwise] was remedied as soon as possible. Some lines even anticipated the return of the railroads on March 1 by re-organizing their agencies to be ready on that date; and the recruited forces now in the field have restored to their patrons a convenient medium of intercourse and accommodation. Freight train schedules have been materially improved and are better maintained. Daily merchandise cars have been extensively re-established. Systematic passing reports to shippers are being rapidly restored. Passenger train service will soon be as satisfactory to the public as it was prior to the period of federal control.

Re-organization of the tariff bureaus and creation of necessary expert rate committees and administrative committees to deal with readjustments and meet the current traffic problems of shippers and carriers have been accomplished. Besides the passenger organizations, which it is unnecessary to enumerate, we now have in the west the Transcontinental Freight Bureau, the Southwestern Freight Bureau, the Western Trunk Line Freight Bureau and the Western Classification Committee; in the south the Southern Freight Rate Committee and the Southern Classification Committee; and in the east the Trunk Line Committee, the Central Freight Committee, the New England Committee, and the Official Classification Committee—which embrace standing rate committees, composed of experts who have no connection with individual lines, thereby assuring every rate proposition shall receive the benefit of expert analysis and unbiased judgment, which ought to be of incalculable benefit to the shippers of the country as a whole.

In addition there are the Consolidated Classification Committee, and the National Perishable Freight Committee, whose chairman devotes his whole time to perishable freight problems. The standing rate committees are not clothed with any power to make rates and the full right of individual action is reserved to every line. Traffic executive committees have been created in each of the three territorial subdivisions of the country—the Eastern Committee with George H. Ingalls as chairman; the Southern Committee with Lincoln Green as chairman; and the Western Committee with your humble servant as chairman.

*Abstract of an address at the dinner of the National Industrial Traffic League at the Waldorf-Astoria Hotel, New York, November 18, 1920.

Public Opinion Vindicated

If there has been any failure to thus far accomplish anything which should have been accomplished since the return of the railroads to their owners, I am not here to excuse it by asserting that more might have been accomplished if shippers had utilized equipment more economically or efficiently. I am here to remind you that the railroads were relinquished by the government in deference to a crystallized public opinion that, with their credit rehabilitated and fostered, and confidence restored, adequate and satisfactory service would be best assured under private management. I am here to claim that public opinion has been already vindicated by the substantial progress that the railroads have made under private management in spite of their difficulties, and I am here to concede that these results could not have been obtained without the cordial co-operation of the shippers.

National Industrial Traffic League

The National Industrial Traffic League is a national organization. If any railroad officer has failed to realize its usefulness as an invaluable assistance to the carriers, he should stop and take his bearings. As a member of the executive traffic committee which met with your committees during the progress of the recent rate case, I can testify to a breadth of view and a spirit of co-operation on your part which every skeptical railroad officer should have witnessed. It is a great pleasure to publicly and gratefully acknowledge the invaluable service which you have rendered in crystallizing public sentiment against the perpetuation of governmental operation; in the passage by Congress of the most constructive transportation legislation that has ever been enacted; and in giving your affirmative support to the applications of the carriers for the increased revenue contemplated by the Transportation Act.

The Future

There is still much to be accomplished by the railroads, and no organization of men is better qualified than the National Industrial Traffic League to set up the sign posts of public opinion to guide us on our way. Every carrier is interested in stimulating the traffic of the section which it can most advantageously serve, and nearly every commodity rate is initiated by some interested line. You and I are too close to the subject to subscribe to the statement frequently made that there is no longer any competition of rates. Our present traffic machinery, while subjecting rate adjustments to expert examination to avoid destructive rates or wasteful transportation, is designed to preserve all of the benefits of individual initiative and competition among carriers.

I think that the National Industrial Traffic League should have been formally notified of the completion of our rate making machinery and supervisory traffic organizations. Answering the shippers' resolution formulated at Chicago on October 22, I would say:

1. The part taken by the shippers in advocating important and essential provisions of the Transportation Act, and of the National Industrial Traffic League in supporting the recent application of the carriers before the Interstate Commerce Commission, are not unappreciated.

2. The recent horizontal increase was granted by the

commission with the understanding that such readjustments as the facts might warrant would be promptly undertaken.

3. It is assumed that the dissatisfaction expressed by this resolution does not apply to legitimate efforts to obtain increased revenue where it can be shown that the revenue accruing to any group of lines under the new rates is insufficient to yield the result contemplated by the Transportation Act, and that it is realized that the rate readjustments to which preferred attention is advocated cannot all be made by reductions without impairing the aggregate revenue which the authorized rates were designed to yield. I have no knowledge of efforts to "put over" change after change in individual rates solely to secure further and unauthorized increases, and if such are made at this time I consider it the duty of executive traffic officers to suppress them.

4. The carriers should give immediate attention to the readjustments contemplated by their application.

5. The protest against a continuance of the general revision of consolidated classification has been anticipated by the Consolidated Classification Committee, which has adopted the policy that no action be taken at this time as to items in Appendix 6 as a whole. The Consolidated Classification Committee will proceed to handle in the regular way applications from shippers.

Before becoming impatient with any delay that may ensue in the readjustments that are expected to follow the horizontal increase of rates, permit me to urge due consideration of the fact that the carriers must proceed in a prudent, business-like way, that will commend itself to the Interstate Commerce Commission, which must now share the responsibility of preserving sufficient revenue to provide adequate transportation. As yet it is difficult to forecast the effect upon net revenues which the commission has undertaken to provide. Many of you gentlemen are sufficiently experienced to realize the practical obstacles that are encountered from day to day. I do not intend to excuse any unnecessary delay, and you may repose confidence in the traffic officers of the railroads doing everything that is consistent and practicable to expedite equitable readjustments.

Co-operation Between Shippers and Carriers

The co-operation that has been established between the National Industrial Traffic League and the carriers must not be, and shall not be, interrupted by any effort of railroad officers to shirk the responsibility that is now imposed upon them or by any failure to be guided by considerations of public policy. Railroad officers must realize that there are conditions under which changes may be inopportune that might be unobjectionable at some other time; that they must avoid relatively unimportant but very irritating changes of existing practices, and that they must give more thought to considerations of public policy. On the other hand, it should not be assumed that railroad officers are doing nothing of this kind, as many of you know that we are preventing changes of this character when they are brought to our attention, and those of you who do know should not hesitate to inform your associates in your councils, so that an unfair or biased conclusion may not be reached.

Conscientious and competent railroad officers are stimulated by the initiative that is permissible under private management and are deeply concerned with the estimation in which they are held by the public. They realize that public opinion will hold them accountable for the fidelity and efficiency with which their duties are performed, and that railroad policy must, therefore, be subjected to the test of public approval. Therefore, they cannot over-estimate the importance of a constant study and supervision of every point of contact between the carrier and its patrons whether it be the politeness and attention of an individual employee; the considerate handling and prompt payment of a just claim; the furnishing of a car with the promptness required to meet the shipper's needs; or the correction of an inequality, injustice or discrimination in rate adjustment. Failures to fully meet your expectations will not be due to lack of effort, and you may be assured that each discovered imperfection will stimulate us to increased endeavor toward improvement.

The relations between the National Industrial Traffic League and the railroad officers should be conducted in a more direct and intimate way. If it be found that cars are not being released by shippers as promptly as might be, or not being loaded as fully as they might be, a direct or implied criticism from the housetops should not be necessary. Shippers fully realize that their own interest in conserving the supply of cars is really paramount, and the National Industrial Traffic League will be a ready and useful medium through which the facts may be conveyed to shippers, if brought to you in a more direct and intimate way. The railroads and the traffic executive committees which have been created will always welcome a direct expression from the National Industrial Traffic League with respect to any general policies that are being pursued or that may be under consideration, and they will do well to seek the counsel of such a representative organization.

The National Industrial Traffic League and the railroad officers of the country *must not drift apart*. Never has there been so much in common between the railroads and the users of the railroads, and their mutual co-operation is indispensable. If you will undertake on your part to perpetuate and strengthen this co-operation, I pledge you my support of your effort.

Express Contract Approved

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION has issued its decision upon the petition of the Association of Railway Executives and of the express company for approval of a proposed contract between the American Railway Express Company and common carriers by rail over the lines of which it conducts or may conduct transportation by express. The commission holds that the relations and arrangements proposed, in so far as they are embraced within the provisions of section 5, paragraph (1) of the interstate commerce act, are in the interest of better service to the public and will not unduly restrain competition.

The report says in part:

We are asked to approve and authorize a proposed standard contract, to be entered into by the express company and the several rail carriers and to continue in force for five years, with provisions for termination at the end of two and one-half years and for extension beyond the term of five years, to which the express company and a large majority of carriers represented by the petitioning association have given their assent. On July 28, 1920, we entered upon a hearing under section 5, paragraph (1), of the interstate commerce act concerning the propriety and lawfulness of the provisions of article V of the proposed contract.

Under the terms of a contract between the director general and the express company which became effective on July 1, 1918, to "continue during the full period of federal control" the express company was employed as the "sole agent of the government under the supervision of the director general of railroads to conduct the express transportation business upon all lines of railroad under federal control and upon such other systems of transportation or parts thereof as in the judgment of the director general it may be necessary or desirable to include." Upon the termination of federal control the terms of the contract, with such modifications as were required to meet the changed conditions, were in the main and with few exceptions continued in force pending the establishment of permanent contractual arrangements, it being agreed that the arrangements thus made would terminate on September 1, 1920, or at such other time as might be mutually agreed upon.

Under the terms of the transportation act, 1920, the express company was guaranteed against a deficit in operating income during the period of six months beginning on March 1, 1920.

The form of standard contract here proposed is intended to define the relations of the parties after expiration of that period, and its consummation is contingent upon a continued consolidation of the express companies referred to, which was approved by us on December 7, 1920, as well as upon our authorization under section 5, paragraph (1), of the interstate commerce act, of the grouping or pooling arrangements detailed in article V of the proposed agreement. It should be here noted that the intent of Congress that our power and authority to approve and authorize the consolidation of two or more carriers shall extend and apply to the consolidation of the express companies into the American Railway Express Company is definitely expressed by the language of paragraph (7), section 5, of the interstate commerce act. The statute further directs that "pending the decision of the commission such consolidation shall not be dissolved."

The purpose of article V of the proposed contract is to divide into groups the carriers over whose property the express business is to be conducted, and to deal with express transportation revenues and expenses by groups of carriers rather than by individual settlements *ab initio*. Railroads and other carriers over the lines of which the express company will conduct its operations are to be divided into three groups, denominated eastern group, southern group, and western group, respectively, "except as any line or lines may hereafter be assigned to a different group by the Interstate Commerce Commission in its grouping for rate-making purposes." In *Increased Rates*, 1920, 58 I. C. C., 220 decided since the filing of the petition herein, we designated and defined for the purposes set forth in section 15a of the interstate commerce act four groups, referred to as eastern, southern, western, and Mountain-Pacific groups. Under the proposed standard contract the grouping so designated will be observed.

The plan of dealing with express transportation revenues and expenses is summarized by petitioners as follows:

> After making the deduction for expenses by groups as particularly set out in the proposal, the balance remaining is to be distributed as follows: Two and one-half per cent thereof to the express company, and the remainder among the railroads in the group executing this form of contract in the proportion that the gross express transportation for the month earned on the line of each such railroad bears to the gross transportation revenue earned on the lines of all such railroads in that group for that month, with further provision as to the division between the parties in interest of so much of the above-mentioned two and one-half per cent as exceeds a given percentage of the value of the entire real property and equipment and other capital of the express company employed in express business, with certain exceptions.

Article V of the proposed contract provides that for each year in which it is in force during which the amounts set aside for the express company at 2½ per cent of the "income for division" in the several groups shall exceed 6 per cent of the average value of the entire real property and equipment and other capital of the express company employed in the express business, with specified exceptions, such excess of profit shall be divided, one half to the express company and one half to the other carriers, and that the one-half proportion of the profit thus accruing to the express company shall be accumulated by it until a sum equal to 10 per cent of the value of the entire real property and equipment and other capital of the express company then employed in the express transportation business and any increases thereof, with specified exceptions, shall have been reached, after which any such profit shall be divided in the ratio of one-fourth to the express company and three-fourths to the other carriers.

Counsel for petitioners submit that inasmuch as the article referred to proposes to deal with a substantial portion of the revenues of the railroads, as to which certain responsibilities and duties are imposed upon us, and that as the proposal is to deal with express transportation revenues and expenses, not by reference to individual carriers but by groups of railroads, approval by us of the proposed arrangement is prerequisite to the lawful execution thereof, especially by reason of the provisions of paragraph (1), section 5, of the interstate commerce act.

The question at the threshold is, whether the proposed contract embodies a pooling arrangement within the purview of section 5 of the act, to the lawful consummation of which our approval is an essential prerequisite. Counsel for the railroad petitioners is of the opinion that it does; counsel for the express company takes the opposite view. We concur in the view that the plan proposed is a pooling arrangement, prescribing the division of "net proceeds of the earnings of such railroads" otherwise than according to individual performance. The act in terms relates to such arrangements between "competing railroads," and an ascertainment that the arrangement "will not unduly restrain competition" is one of the necessary elements of an approval by us. While primarily the provision plainly has in contemplation independently operated railroad lines competing with each other in rates and services pertaining to freight traffic, the language is broad enough to include all operations productive of railroad revenues. The lawfulness of unified express operations over all railroad lines by one express company is established by other provisions of the act, and the applicability of the pooling provision of section 5 rests finally upon the question whether in the situation there is or could be as between the railroad lines a competition which article V of the contract might unduly restrain. While counsel for those lines contends that there might be competition in point of service, it is not entirely clear that there could be competition of any character. The only rates and services here considered are those of one carrier, the express company; the statutory right of a shipper to designate the routing of his traffic and the correlative duty of a carrier to observe his instructions come into play only where "two or more through routes and through rates shall have been established" and there is "a connecting line" to which the initial carrier can make delivery pursuant to the instructions.

Because of these questions, as to which there is room for doubt, and because of our views of the merits, we shall for present purposes proceed upon the assumption that article V of the contract is within the provisions of section 5 of the act.

While theoretical considerations support the view that the consolidation of carrier corporations will effectually remove the element of competition, those considerations are of slight value in the instant proceeding. For a considerable period of time prior to the incorporation of the American Railway Express Company the separate companies of which it is composed conducted, as has been said, more than 90 per cent of the express transportation business of the United States. Their operations were effectually blanketed over the entire country and embraced the rural districts as well as the large industrial points. Their services and rates were, for all practical purposes, welded into those of a single company under *In Re Express Rates, Practices, Accounts, and Revenues*, 24 I. C. C., 380. The companies were separate legal entities, but they were so intertwined and interlocked by stock ownership and otherwise that it was difficult to trace any one of the larger companies as either wholly independent in its management or in its relationship to indidivual railroads or systems. While, under the combination of circumstances recited, competition between the separate companies was reduced to a minimum, an element of potential competition of no slight importance was and must always be a factor in the plan under which the express business is conducted in this country.

We find that the proposed grouping and the division of earnings in the manner outlined will facilitate the conduct of the express business of the country, will be in the interest of better service to the public, will promote economy in operation, and will not unduly restrain competition. Adoption of the plan proposed will, furthermore, ameliorate the objectionable conditions referred to in *Increase in Express Rates*, 51 I. C. C., 263, 268, under which needed revenues of the express company may be secured only by the establishment of rates sufficiently increased to include substantial payments of the revenues thus derived to the lines over which the express business is conducted, whether or not reasonably required by those lines.

Under the provisions of section 5, paragraph (1), of the interstate commerce act approval and authorization of such division of earnings are conditioned upon assent by the carriers involved. Our finding, therefore, extends only to contracts with rail carriers that have assented or may hereafter assent to the proposed arrangement, and it is limited to the general plan embraced in article V of the proposed contract in so far as it comes within the provisions of section 5, paragraph (1), of the act.

With regard to the requested approval of provisions of the proposed contract, it does not rest with us to give or withhold approval further than as above under section 5 of the act. If the contract is entered into and controversies should arise between the parties thereto the courts constitute the forum in which they could and should be adjusted, and we, therefore, decline to express any opinion with regard to the particular provisions of article V or any other part of the contract.

An appropriate order approving and authorizing the proposed grouping and plan for division of earnings will be entered.

Commissioners Eastman, Aitchison, Woolley and McChord dissented.

The Chicago, Rock Island & Pacific has appointed a general reclamation committee, of which C. A. Morse, chief engineer, has been appointed chairman, and is conducting a campaign among its employees for the conservation of materials. The committee is not only urging employees to save on new materials, but also that all articles in need of repair be gathered up and shipped to the shops and that all scrap be moved as well. Under the direction of the committee the system has been placarded with posters advertising the drive.

October Freight Traffic Statistics

WASHINGTON, D. C.

THE FREIGHT TRAFFIC handled by the railroads during October was slightly less than the record-breaking total for August, according to the statistics of freight car performance for that month just compiled by the Bureau of Railway Economics. The ton miles aggregated 42,562,685,000, which is 144,150,000 less than the total for August but greater than for any other month in railroad history and 2,218,935,000 greater than the total for October, 1919. October represents the fourth consecutive month, however, in which the total ton miles have exceeded 40,000,000,000 and the fourth consecutive month in which all records for the respective month have been broken. As the number of cars of revenue freight loaded in October was 4,979,377, which is greater than for any previous month, the fact that the ton mileage failed to make a new record is attributed to the large percentage of coal traffic which is subject to a shorter haul than general freight.

The average mileage per car per day, 28.5, was not only greater than for any previous month this year, but greater than for any month while the railroads were under federal control, having been exceeded only in May, 1917, when the average was 29 miles. In October, 1919, the average was 27.3 miles and in October, 1918, it was 26.2. The average carload, 29.9 tons, was slightly less than the average for August or September, when an average of 30.1 tons was attained.

The October summary is given below.

For the first time since the latter part of August the number of carloads of revenue freight loaded fell below that for the corresponding week of 1919 in the week ending December 18, according to the weekly report compiled by the Car Service Division of the American Railway Association. The total car loading for the week was 796,858 as compared with 806,734 in 1919 and 796,116 in 1918. During the preceding four weeks the number of cars loaded had fallen from 880,000 to 834,000. Decreases in loading as compared with the corresponding week of 1919 were shown for all classes of commodities except coal, coke and ore. The summary published by the Car Service Division is given below.

During the week of December 15 the surplus of freight cars increased to 103,849, an increase of over 29,000 cars in a week. Of the total, 79,943 consisted of box cars. The car shortage was further reduced to 12,377, about three-fourths of which were coal cars.

Region	Average miles of road operated	Net ton-miles (thousands)	Freight car miles (thousands)			Freight cars on daily line		Efficiency ratios		
			Total	Loaded	Per cent loaded to total	Total	Unserviceable	Car-miles per day	Tons per car	Per cent of unserviceable cars
New England Region	8,155	1,139,504	66,328	45,039	67.9	115,457	10,531	18.5	25.3	9.1
Great Lakes Region	22,123	7,424,300	381,984	253,705	66.4	442,797	37,065	27.8	29.3	8.4
Ohio-Indiana-Allegheny Region	26,567	10,352,673	439,361	265,436	65.0	598,658	36,549	23.7	36.3	6.1
Pocahontas Region	5,339	2,617,919	99,987	60,105	60.1	88,688	7,253	36.4	43.6	8.2
Southern Region	37,723	4,910,724	264,471	175,757	66.5	275,884	21,814	30.9	27.9	7.9
Northwestern Region	47,401	5,808,058	312,518	210,368	67.3	342,714	26,948	29.4	27.6	7.9
Central Western Region	52,206	7,240,296	420,755	274,859	65.3	354,353	25,996	38.3	26.3	7.3
Southern Region	32,073	3,069,211	170,339	116,924	68.6	220,461	11,510	24.9	26.2	5.2
Grand total, all Regions	231,587	42,562,685	2,155,743	1,422,193	66.0	2,439,012	177,666	28.5	29.9	7.3

IF THE LAW is wisely administered there is reason for believing that the managers will meet their obligations to the stockholders, the bondholders and the public; if the commission listens to politicians and habitual railroad baiters, railroad credit will be destroyed and the people will have unsatisfactory service.—*Providence Journal.*

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

Summary—All Districts, Comparison of Totals This Year, Last Year, Two Years Ago. For Week Ended Saturday, December 18, 1920

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year 1920	Corresponding year 1919	Corresponding year 1918	Received from connections: This year 1920	Corresponding year 1919	Corresponding year 1918
Eastern	1920	5,647	3,756	57,404	1,986	6,345	3,344	44,095	65,804	188,381	.....	.....	231,991	.....	.....
	1919	6,267	4,404	48,925	4,289	7,082	1,292	33,213	93,364	.....	198,836	193,727	.....	217,901	238,198
Allegheny	1920	2,747	3,546	69,494	7,011	3,306	4,370	35,473	54,651	180,598	.....	.....	125,859	.....	.....
	1919	2,897	4,136	46,976	4,400	4,158	2,459	40,803	62,849	.....	168,678	181,521	.....	114,236	172,219
Pocahontas	1920	104	116	22,024	404	1,936	136	2,478	5,230	32,428	.....	.....	16,214	.....	.....
	1919	186	175	23,693	491	2,178	334	172	9,039	.....	36,268	31,746	.....	15,937	19,609
Southern	1920	2,827	2,005	31,820	1,008	15,863	2,130	35,922	32,406	123,981	.....	.....	67,796	.....	.....
	1919	2,900	2,827	27,708	249	17,484	2,438	20,200	53,419	.....	127,225	112,115	.....	75,629	67,903
Northwestern	1920	11,224	8,630	8,773	1,409	10,387	1,392	25,059	23,709	90,583	.....	.....	45,611	.....	.....
	1919	10,793	10,125	12,293	559	10,137	1,539	19,638	32,253	.....	97,337	114,048	.....	48,114	73,983
Central Western	1920	9,544	10,461	26,450	392	3,622	2,217	28,092	35,466	116,244	.....	.....	52,702	.....	.....
	1919	10,790	13,669	23,503	449	4,280	2,538	21,528	42,222	.....	118,979	108,091	.....	55,625	58,348
Southwestern	1920	3,412	1,956	7,188	540	7,167	538	15,878	27,964	64,643	.....	.....	46,926	.....	.....
	1919	3,711	3,161	5,809	572	6,429	581	14,417	24,731	.....	59,411	54,868	.....	49,328	42,273
Total all roads	1920	35,505	30,470	223,153	12,750	48,626	14,127	186,997	245,230	796,858	.....	.....	587,099	.....	.....
	1919	37,544	38,497	188,907	11,009	51,748	11,181	149,971	317,877	.....	806,734	.....	.....	576,770	.....
	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	796,116	.....	.....	672,533
Increase compared	1919	.....	.....	34,246	1,741	.....	2,946	37,026	.....	.....	.....	.....	10,329	.....	.....
Decrease compared	1919	2,039	8,027	.....	.....	3,122	.....	.....	72,647	9,876	.....	.....	.....	.....	.....
Increase compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	742	.....	.....	.....	.....	.....
Decrease compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	85,434	.....	.....

L. C. L. Merchandise loading figures for 1920 and 1919 are not comparable, as some roads are not able to separate their L. C. L. freight and miscellaneous of 1919. Add merchandise and miscellaneous columns to get a fair comparison.

December 11	1920	36,820	31,799	230,396	13,904	51,194	17,673	193,143	259,968	834,897	761,940	820,202	614,178	596,785	683,649
December 4	1920	37,109	30,903	230,228	15,643	53,971	27,195	195,571	281,542	872,162	789,286	837,806	605,876	589,350	657,758
November 27	1920	33,922	29,844	205,985	14,338	50,154	31,445	173,958	258,027	797,673	739,197	735,628	604,966	611,793	641,479
November 20	1920	36,442	40,427	216,322	13,259	54,760	37,009	199,922	282,387	880,528	854,601	857,377	605,306	629,259	685,145

Labor Turnover—Not a Disease But a Symptom

Locating and Removing the Causes Will Greatly Increase the Efficiency of the Railroads

By J. C. Clark
Assistant to General Manager, Oregon Short Line

"WHAT IS YOUR LABOR TURNOVER?" If this question were put to most railroad executive officers, they would be forced to answer, "I do not know." Yet conditions which cause labor turnover are the most vital in the safe and economic operation of a railroad.

What first started me thinking about labor turnover was the large number of new men coming into the service. Before these men could be fully trained in the performance of their duties, a considerable percentage of them had left the service and other new men had taken their places. The fact that so many men had to be employed had a demoralizing effect upon the older men in the service. The result was an increased number of accidents and personal injuries, increased freight claims, and a general slow-down of operation. It takes time to educate men in railroad work. If new employees will not stay with their jobs long enough to learn them thoroughly, it is apparent that an efficient organization cannot be built up.

Why Do Men Leave the Service?

"But why do men leave the service?" When I began to investigate this question, I found that in most cases we had no information whatever, and the meager information available had not been compiled so that it could be used. I have made diligent inquiry of a good many railroads and I have yet to find one that is compiling information on labor turnover and rendering reports regularly.

By examining the headings of the labor turnover report form which accompanies this article the uses to which this report can be put become apparent. In column 1 will be listed the various departments or units between which the comparison is to be made. For example, all shops on a railroad could be listed, and the turnover for each shop could thus be easily compared with the others. The same thing could be done for all large stations, for roadmasters' districts, for divisions, or any other sub-division that it is desirable to make.

Columns 2 to 7, inclusive, are to indicate the permanency of the organization. For example, a certain shop might show a labor turnover of 30 per cent for one month, and still show that 90 per cent of the employees in that shop had been employed there for one year or over. This would indicate that 10 per cent of the employees were changing three times in one month. This again would indicate that there must be some aggravated circumstance or condition, probably in some one department, that was causing this excessive turnover. An investigation could then be made to determine the cause, and in many cases a remedy could be easily applied. Column 8 is the total number of employees on the first day of the month. The figures in this column would be used in determining the average employees for the month as a basis for the percentage of turnover.

Columns 9 to 13, inclusive, classify the different means by which employees enter the service of the department or unit under consideration. Column 14 is a total of these entrances.

Throwing Away the Company's Money

Columns 15 to 22, inclusive, classify the causes for discharges. When these causes have been subjected to thorough study and comparisons have been made between various units, there is no doubt that the headings will be changed. When any employee is discharged without sufficient cause, the employer loses a very definite asset. The employee's place often has to be filled by a new man, and it takes time and money to break in a new man. Unjust discharge starts trouble at once with the labor organization, and does more than any other one thing to create suspicion and lessen confidence between the employer and employees. If the turnover report should indicate an excessive number of discharges in any unit, the matter should be thoroughly investigated and it will more than likely be found that some one man in a supervisory capacity has found it easier to discharge men than to work with them and develop his organization, being blind to the fact that he is making his own job harder and throwing away the company's money.

Columns 24 to 29 should show the reasons why men quit. At present, the railroads of the United States are not even attempting to get this information. Still, it is an important factor in building up an organization and will undoubtedly indicate what can be done to lessen the number of resignations. This information could be obtained in most cases by requiring every man who resigns to have an interview with the employing officer before he can get his time check. No doubt the information thus obtained would not in all cases be correct, but if the man is approached in the proper manner, it will be correct in 99 per cent of the cases. The supervising officer cannot get this information because in a great many cases, it will be found that the employee is resigning because of dissatisfaction with conditions over which the foreman has direct control or because of personal reasons involving the foreman or supervising officer. For this reason, the employee who is quitting will not tell the truth to the supervising officer when leaving the service. If this in-

	% 5 YEARS AND OVER	% 3 YEARS AND OVER	% 2 YEARS AND OVER	% 1 YEAR AND OVER	% 6 MONTHS AND OVER	% 3 MONTHS AND OVER	TOTAL 1ST. DAY OF MONTH	ENTRANCES						EXITS																								
														DISCHARGES									QUITS							OTHER CAUSES										
								EMPLOYED	RE-EMPLOYED	TRANSFERED	PROMOTED	RE-INSTATED	TOTAL COL. 9 TO 13 INC.	APPLICATION NOT APPROVED	QUITTING ON SHORT NOTICE	UNSATISFACTORY SERVICE	ABSENT FROM DUTY WITHOUT PERMISSION	VIOLATION OF RULES	RESPONSIBILITY OF ACCIDENT	EXCESSIVE DEMERITS	OTHER CAUSES	TOTAL COL. 15 TO 22						TOTAL COL. 24 TO 29	PENSIONED	REDUCTION OF FORCE	TRANSFERED	PROMOTED	DECEASED	TOTAL COL. 31 TO 35	TOTAL COL. 23 + 30 + 36	TOTAL IN SERVICE 1ST. DAY OF MONTH COL. 8 + 14 - 37	AVERAGE IN SERVICE FOR THE MONTH COL. 8 + 38 ÷ 2	PER CENT TURNOVER COL. 37 ÷ 39	PER CENT UNDESIRABLE TURNOVER COL. 30 ÷ 39	PER CENT UNDESIRABLE TURNOVER LAST YEAR	ESTIMATED COST PER EMPLOYEE	TOTAL COST COL. 30 × 43	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45

Labor Turnover Report Form

formation is to be obtained in a reliable form, it must be handled by some outside agency and this should be the employment department.

Columns 31 to 35 need little or no explanation, although a great deal of discussion has taken place as to various features in connection with these causes. The employee who is pensioned has spent a great many years in the company's service, and there is no question that in nearly all of these cases the company has regained all of its investment through the long and faithful service of the employee. Because of this some authorities contend that terminations or exits of this character should not be considered in computing the total cost of labor turnover. Other authorities point out that regardless of this fact, a new man has to be trained to take the place of the pensioned employee and they therefore insist that terminations of this character should be included in computing the total cost. This matter, however, is one largely of personal viewpoint and is not vital.

As to whether or not the exits listed under reduction of force should be considered in computing the total cost of labor turnover depends largely upon the reasons for reduction of force. When a piece of construction work is completed, it is usually absolutely necessary to let a large percentage of the laborers go. Likewise, in other kinds of seasonal work, when the season ends or the work is completed, it is necessary to lay off a large part of the laborers. If reduction of force is occasioned by a temporary lull in business, every effort should be made to retain as many men as possible in the service, and transfer them to other departments where possible in order to keep in direct touch with them. A great deal can be done in this direction if the employment service is properly organized, and it will mean a great saving to any company that follows it up.

Transfers may likewise be desirable or undesirable. If an employee requests to be transferred because he is lazy and desires a soft job, it would be better to let him go entirely. On the other hand, if the employee desires a transfer to another department where he will have greater chances for advancement or where he will be better satisfied with his work, the transfer is desirable and should be encouraged. In some instances, it may be necessary for the company to transfer individuals or groups from one department or division to another in order to help out on emergency work. Transfers of this class are usually temporary and are often absolutely essential.

Column 38 is the total number of employees on the last day of the month. This figure is obtained by taking the number in service on the first day of the month, adding the number of entrances for the month, and subtracting the number of exits. In order to obtain the average for the month, which is shown in column 39, add the number of employees in service the first of the month and the last of the month, and divide by 2.

Labor Turnover Defined

In discussing the per cent of turnover to be shown in columns 40 and 41, it is necessary to give a definition of labor turnover. Most authorities agree that labor turnover is the change which takes place in an organization's working force due to all terminations of employment regardless of cause, and the study of labor turnover takes into consideration the study of the causes and effects of all such terminations of employment and the means of preventing such terminations as are undesirable. Labor turnover is measured in terms of the ratio of those who leave their employment in a given period to the average number who have been on the active payroll during the same period.

Railroad officers have not made any intensive investigation or study of labor turnover, and, as stated before, do not even know what it is and therefore we have no experience to guide us except the experience of industries where the problem is quite different from that of the railroads. It is evident, however, that at least some part of the labor turnover is desirable. Another part is undesirable but unavoidable. There is no doubt that a record should be kept of the total labor turnover so that comparisons can be made between different units and between the same unit for different periods. I am not so certain, however, as to what is desirable and what is undesirable turnover. Most authorities on this subject do not attempt to make any distinction between desirable and undesirable, or avoidable and unavoidable turnover. It seems to me, however, that this is necessary in railroad work. It will require additional investigation and experience, however, to determine whether or not it is practical to make such subdivisions.

Cost of Labor Turnover

Only one feature of this labor turnover report form remains to be discussed. That is, the cost. Every practical railroad man I have talked to with regard to this matter agrees that there is a very definite cost in breaking in new men, whether they have had previous experience or not. When it comes to estimating this cost, however, a serious problem arises because there are so many elements that enter into it. A few of these elements are:

First—The cost of hiring, which includes employment office expense and any other expense incident to placing a new man on the job.

Second—The cost of training, which includes the value of the supervising officer's time spent in instructing a new hand. It also includes the wages paid the new man in train, engine yard, or telegraph service until such time as he takes a regular place on the crew or in the office. Some roads do not pay any wages to student firemen, brakemen, or yardmen, but other roads do.

Third—The extra labor cost. It has been found that the new employee never performs a normal amount of work the first few days on the job. The length of time required for the new man to bring his labor output to normal depends largely on the class of work upon which he is employed. On account of this subnormal production of the new man additional force is required. The cost of this additional force is very properly chargeable to labor turnover.

Fourth—The cost of extra power, lubricants, and materials caused by reduced output. This item applies only to the shop crafts. It is evident that if full output is obtained from every machine operated, it would not be necessary to run so many machines or they could be operated for a shorter number of hours. Every new employee who is unable to get normal production from the machine he is operating makes it necessary to operate the machine just that much longer or else to operate more machines.

Fifth—Interest, depreciation, insurance, taxes and repairs on additional plant investment, made necessary because of the lessened output caused by the turnover.

Sixth—The cost of work spoiled by new operatives in excess of the normal rate of spoilage by workmen experienced in the operation.

Seventh—Greater wear and tear on machinery, which includes the greater cost of repairs due to breakage and the greater depreciation due to hard usage, caused by the inexperience of the operative and the necessity of running machinery a longer period in order to obtain the given output.

Eighth—Increased cost of accidents and claims resulting from accidents, due to greater accident frequency during the learning period. This item would also include freight claims due to improper handling of freight by new employees.

Ninth—Last and probably the hardest to estimate is the loss of good will, due to inefficient service provided for shippers and the travelling public on account of inexperienced employees. While this item is largely intangible, it is at the same time very real, and will have a great deal to do with

the success or failure of railroads under private operation.

It will be apparent that in order to obtain an estimate of these various elements of cost, a very thorough investigation will have to be made by a committee of experts in each department. In fact, it should be carried on under the direction of a personnel department, organized to handle the personal element.

In closing, I wish to quote a paragraph from "Personnel Administration" by Tead and Metcalf. "The logical necessity of centering attention in industry upon the effectiveness with which human labor is applied, has been the basic cause of a shift of managerial emphasis which has really only begun. Industrial management is thus far little beyond the threshold of a new method and a new evaluation of administrative ability. The new focus in administration is to be the human element. The new center of attention and solicitude is the individual person, the worker. And this change comes about fundamentally for no sentimental reasons, *but because the enlistment of human co-operation, of the interest and good will of the workers,* has become the crux of the production problem."

Labor turnover is only a symptom or an indication of where labor dissatisfaction exists, and a clew to the extent of such dissatisfaction. The cause and the remedy must be determined by thorough investigation and this investigation must deal largely with the individual person, the worker.

Review of the Railroad Situation for the Year

By Thomas De Witt Cuyler,
Chairman, Association of Railway Executives

THIS IS THE RECORD YEAR of American railroad operation. Not only has a larger gross tonnage been moved than ever before, but new records have been established in the amount of transportation gotten out of each car. Even during the war year of 1918 the highest performance was 494 ton miles per car per day, while for August, 1920, the average was 557, and for September and October, 565.

In the nine full months since the Government turned back the railroads to their owners on March 1, the railroad companies under private operation have:

1. Increased the average movement per freight car per day 6.3 miles—from 22.3 to 28.6 miles.
2. Increased the average load per car 1.7 tons—from 28.3 to 30 tons.
3. Made substantial reduction in the number of unserviceable locomotives.
4. Reduced the accumulation of loaded but unmoved freight cars from 103,237 on March 1, to 21,991 on December 3, of which only 6,386 were detained because of the inability of the railroads to move them.
5. Relocated approximately 180,000 box cars from the east to the west for the movement of farm produce.
6. Relocated approximately 180,000 open top cars from the west to the east to keep up the production of coal.
7. Moved the third highest coal production in the history of the country.
8. Spent over $500,000,000 extra on improving the maintenance of tracks, bridges, cars and locomotives.
9. Contracted to spend about $250,000,000, largely out of earnings, for additions and betterments to promote the movement of cars.
10. Made arrangements to purchase approximately 50,000 new freight cars, 1,500 new locomotives, and 1,000 new passenger cars.
11. Begun the reconstruction of thousands of old cars.
12. Moved—with a deteriorated plant, under disturbed labor and business conditions—the largest volume of traffic ever known in a single year, with the highest efficiency yet achieved, and with a minimum addition to the value of the property on which the public has to pay a return through rates.

When the railroad companies resumed operation of their properties on March 1 an unusually large number of cars and locomotives were in bad order; the stress of war conditions had compelled their use in a most intensive manner, and the time was at hand when much of the rolling stock was due for thorough repairs; a very small proportion of the cars of any road were on its own lines; equipment was badly distributed with reference to the needs of traffic; there were no stocks of coal left over from the preceding year; a vast amount of grain remained on hand from 1919; and a volume of business was being offered which seemed beyond the ability of the railroads to move.

In addition, railroad labor was in an uneasy and dissatisfied frame of mind. The railroads inherited pending wage demands amounting to approximately $1,180,000,000, and while every effort was made by the railroads to bring the wage question to a satisfactory conclusion through the U. S. Railroad Labor Board, outlaw strikes developed in April which produced effects wholly disproportionate to the number of men ceasing work.

Commissioner Aitchison's Comment

Interstate Commerce Commissioner Aitchison, who has been in direct charge of car service matters for the Interstate Commerce Commission, has said:

"The condition in the spring of 1920 was more menacing to the domestic welfare of the country than it was in the early winter of 1917 when Federal control was assumed. But the situation was met, squarely and courageously in a business-like way, without political interference or pressure of any character whatsoever, under the orderly processes of law, by privately operated railroads, directed along consistent lines to secure that unity of object and policy which was the end sought in placing the carriers under Federal control during the war."

The annual report of the Interstate Commerce Commission filed with Congress on December 9 states:

"Comparing August, 1920, with August, 1919, the increased mileage had the effect o increasing the car spuply 287,694 cars; the increased tonnage per car had the effect of increasing the car supply approximately 104,942 cars."

The railroad companies have manufactured increased transportation capacity, not out of new cars and locomotives, but out of increased efficiency. If the enlarged capacity provided by the companies during the past nine months had had to be produced by new cars and locomotives, it would have required the expenditure of approximately $2,000,000,000, a sum of money which would have been permanently added to the property value of the railroads, on which the public would ultimately have to pay a return through rates.

In avoiding the expenditure of this $2,000,000,000 or any substantial portion of it; in increasing the efficient use of our present facilities; and in restoring the orderly flow of commodities, the railroads have made a great contribution toward bringing about more normal economic conditions, and have fully met their responsibilities in this period of national readjustment.

For this result, however, the railroad companies do not take sole credit. The help of shippers in promptly loading and unloading cars—using Sundays and holidays as well as week-days—and the day-and-night, rain-or-shine work of hundreds of thousands of railroad employees in placing and removing those cars and in keeping them moving when once loaded, are gratefully appreciated.

It is the earnest hope of the railroad companies that this will be a national object lesson in the value of co-operation, and will lead shippers, railroad employees, railroad executives and the general public to pull together for an even better showing in 1921.

Higher Rates Not Expected

The statement is being made in various quarters that the railroads will shortly seek a further increase in rates. I know of no movement on the part of the railroads for a

general increase in rates, nor do I expect any. It is true that the railroad companies are not yet receiving from the increased rates anything like the 6 per cent return needed. But the railway executives realize that they are trustees of a great public interest in the reduction of railroad operating expenses to the lowest possible figure, and every effort will be made during the coming year to accomplish this by further economies and efficiency.

Private ownership and operation of railroads as a measure of sound public policy rests largely upon its superior efficiency and economy. In my judgment the American railroad companies during the present year have fully justified, and during the coming year will make every effort to continue to justify, the support and confidence which public opinion in gratifying measure has already accorded them.

Living Conditions of Trainmen Who Lie Over at Railway Terminals

THE INTERSTATE COMMERCE COMMISSION has submitted a report in response to a Senate resolution of January 16, 1920, upon living conditions of trainmen who are compelled to lie over at railroad terminals.

By a resolution adopted on January 16, 1920, the Senate directed the commission to investigate and report upon living conditions of trainmen who are compelled to lie over between trips at terminals of railroads, and also to investigate the feasibility on the part of railroad companies of furnishing to their men accommodations suitable to their needs at such terminals.

In compliance with the terms of this resolution, the commission, on January 29, instituted an investigation concerning the nature and extent of facilities, including buildings, rooms, food, and other accommodations, which are provided by railroad companies for their train-service employees who are compelled to lie over at terminals between trips, the plans, if any, for improving and extending these facilities, and if accommodations are not provided or existing facilities are not adequate the feasibility of providing such accommodations or extending existing facilities.

The information collected, which has been classified and tabulated, is appended to the report. Appendix A contains data furnished by the railroad companies listed therein concerning accommodations provided by them for their employees, together with information furnished as to the necessity and feasibility of increasing existing accommodations. Appendix B contains a list of railroad companies who have provided no living accommodations for their employees lying over at terminals between trips, together with reasons therefor which have been stated by the carriers. Appendix C contains data furnished by the Railroad Young Men's Christian Association relative to conditions at railroad terminals, as well as the facilities and equipment provided at certain of these terminals.

"Briefly summarizing these reports," the commission says, "481 carriers have furnished information in response to the request of the commission; by 164 lines or systems covered by these reports, living accommodations of some character are provided for train-service employees lying over at terminals; while on 317 lines for which reports have been received no such accommodations are furnished.

"The reports which are tabulated in Appendix A indicate extreme differences in living accommodations provided for employees lying over at terminals on the lines reporting such facilities. These accommodations in some cases consist merely of a shelter of the simplest form, such as box-car bodies removed from their trucks, provided with wooden bunks, without bedding or other facilities of any sort, and which the employees who use them are required to maintain and clean; on the other hand, on some roads there are completely equipped dormitories and clubhouses provided with modern facilities. The accommodations in general are of many forms, varying between these extremes.

"As shown by the tabulation in Appendix B, of the companies reporting that no living conditions are provided, 255 report that trainmen lie over only at home terminals on these lines and that the provision of living accommodations by the companies is unnecessary. Other reports merely indicate that no living accommodations are furnished by the carriers, no reasons or circumstances being stated.

"The Railroad Young Men's Christian Association has furnished information relative to 679 railroad terminals; the facilities and equipment provided at certain of these terminals are indicated in the tabulation in Appendix C.

"In addition to the requests for information in the matter which were made upon the carriers, similar requests were also addressed by the commission to the chief executive officers of the four organizations of train-service employees, namely, the Brotherhood of Locomotive Engineers, Brotherhood of Locomotive Firemen and Enginemen, Order of Railway Conductors, and Brotherhood of Railroad Trainmen. No response was received from three of these organizations; the Brotherhood of Locomotive Firemen and Enginemen furnished certain data which have been given due consideration.

"As to the 'feasibility on part of railroad companies of furnishing to their men accommodations suitable to their needs at such terminals,' this is altogether a local and financial question. If suitable and adequate accommodations are available and accessible at a terminal, such as boarding and rooming houses, restaurants, and hotels, there is no apparent necessity for similar accommodations to be provided by the railroad company. But in view of the necessity, particularly from the standpoint of safety in railroad operation, for train-service employees to procure proper as well as adequate rest, in order that they may be alert at all times while on duty, the provision by the railroad companies of suitable and readily available facilities to enable their train-service employees to secure a proper rest is required at many terminals. Some of the facilities provided, particularly sleeping quarters, obviously are not "suitable to their needs." A bunk house, which is not provided with necessary bedding, the maintenance of which is not assigned to an attendant who is held responsible for its condition, and which is supposed to be cleaned by transient occupants, ordinarily does not long remain in sanitary condition necessary for securing proper rest; and it is considered unreasonable to expect train-service employees, particularly enginemen, to carry bedding with them. These are conditions which should be voluntarily corrected by the railroads themselves. Dormitories, clubhouses, and other similar facilities, properly equipped and maintained, undoubtedly add materially to the efficiency of the men using them, and the provision of such facilities by railroad companies whose employees lie over at terminals away from their homes, where other suitable accommodations are not adequate or available, is highly commendable. The working hours of train-service employees in common practice are in the great majority of cases irregular at best, and improvement in accommodations and facilities which are conducive to trainmen securing proper rest should be systematically pursued by the carriers and encouraged in every practicable manner."

THE WESTERN SOCIETY OF ENGINEERS, Chicago, will devote Friday evening, January 14, to the consideration of timber preservation, at which time John Foley, forester of the Pennsylvania System, will present a paper on "The Tie Supply of the Future."

Observations on a Transcontinental Journey

The Importance of Good Passenger Service in Retaining the Good Will of Shippers and the Public

By William S. Wollner

PRIOR TO THE COMMENCEMENT of a transcontinental journey that included 7,000 miles over six of the country's principal trunk line railroads, the author of this article interviewed many of the leading shippers and receivers of freight in his home territory to learn their attitude with reference to freight rates and service. Every merchant and manufacturer whom he interviewed expressed a sympathetic attitude toward the nation's transportation system and a recognition of the problems that railroad management is striving to solve. These interviews disclosed an understanding upon the part of business men of the necessity for increased freight rates and the spirit to see that the facts were properly understood by the public at large.

While freight moves less rapidly than four or five years ago and deliveries are somewhat less certain, improvement in this respect since the return of the roads to private ownership was recognized and appreciated. All in all there seemed to be a general understanding of why the railroads were not giving 100 per cent freight service in accordance with the demands of the moment and a disposition to assist them in their efforts to re-establish this service.

The transcontinental trip which these interviews preceded disclosed an entirely different attitude of mind in the casual traveler and the man who is required to spend much of his time on railroad trains. Passengers on practically all the roads traversed were outspoken in their criticism of individual cases of what they considered inefficiency or a failure in the passenger carrying machine. Although most of the matters mentioned were the result of incompetency or lack of consideration on the part of an individual employee, criticism was aimed at the transportation machine as a whole. This attitude was so utterly at variance with that expressed by shippers and receivers of freight (and it was noted that many of the critics were as a matter of fact large shippers and consignees) that it could not fail to impress itself on one's mind that while the individual will look charitably upon the shortcomings of the railroads where he is not personally inconvenienced he is prone to charge every personal inconvenience suffered by him to a failure of the transportation machine as a whole.

If this is a fact, railroad management can well afford to give special attention to making passenger transportation a major study in its effort to retain the public's confidence in the ability of private ownership and operation to meet the nation's transportation needs. It is for this reason that the author feels justified in presenting herein a synopsis of the things most frequently and bitterly complained of.

Maintaining Schedules

As to both comparatively short journeys and long ones, the public demands that passenger schedules be maintained. Although the railroads seem to be making an especial effort to shorten the elapsed time between terminals, this does not seem to be as much the result of a demand on the part of the public as it does of the roads to compete with each other for business. With especial reference to long trips, that is, upward of 1,000 or 1,500 miles, there seems to be less demand on the part of the public for the cutting down of present schedules than for the assurance that if a trip is undertaken that the schedule may be depended upon.

Continual complaint was heard of trains dropping behind their schedules en route, even though they arrived at their terminals on time. These complaints emanated from persons traveling to terminals as well as those leaving them at intermediate stations. This was largely due to the traveler having very little to do en route other than to check up the performance of the train on which he is riding. It was noted in many cases that when a train was an hour or two late, passengers' comment would indicate that they expected to arrive at terminal at least that late. This suggests the desirability of Pullman conductors and other train employees informing passengers that although the train is sometimes behind its schedule, in most cases the lost time is recovered before the terminal destination is reached.

Sleeping Car Service

During federal operation of railroads or perhaps prior thereto, a practice grew up in many ticket offices of accepting "tips" for desirable Pullman transportation. In offices in some large cities it was practically impossible to obtain a lower berth, compartment or drawing room without paying the ticket clerk a premium therefor. Unaccompanied women, and women traveling with children, were compelled to resort to bribery in order to secure desired accommodations. In addition to this form of bribery there seems to be uncertainty in many ticket offices as to just what accommodations are available.

As an instance, a man telegraphed for sleeping car accommodation to a junction point two days in advance of his arrival there. Upon arrival at this junction point he was informed by the ticket clerk that there were absolutely no accommodations available on this particular train. He nevertheless boarded the train and found a Pullman car with only two other passengers in it. A woman traveling from the Atlantic to the Pacific Coast was informed at the ticket offices in three cities (the trip was not continuous) that there were no lower berths available and was then able to secure them upon "tipping" the clerk. Needless to say, passengers, while not believing that this practice is countenanced by the railroads, do believe that it could be stamped out if the railroads were minded to do so.

There was some complaint as to the attitude of porters toward passengers, but the principal complaint was as to misinformation given by ticket clerks and the need for bribing them in order to secure desired accommodations.

Dining Cars

From the viewpoint of the casual traveler as well as of the man who must spend much of his time on a train, the railroad dining car service is a failure inasmuch as it fails to serve an adequate meal for a reasonable price. It may be said that from a railroad point of view, or at least from that of some railroad managements, the dining car service is a failure because owing to the limited patronage and expense of operation, it fails to pay a return on the operating cost. It would be interesting to know what proportion of persons traveling on a given train are accustomed to having at home the standard of service and the "fancy" dishes served in the average dining car.

It was probably true some years ago that a large number of the persons traveling on de luxe trains to which dining cars were attached, were accustomed to the standard of serv-

ice maintained in the diner, but it is doubtful if this is true to-day, particularly on trains carrying tourist cars and coaches in addition to standard sleepers. As a matter of fact, more people in standard sleepers are to-day carrying food with them for both long and short journeys than ever did before. Unquestionably, most of the people traveling in tourist sleepers and chair cars do not use the diners because of the high standard of service to which they are not accustomed and the cost of the food served. If there is a relation between the quantity of the food served and the expense of operation, it would seem advisable to supply the plainer kinds of food with a simpler service, thus enlarging the number of patrons by drawing upon the tourist and chair cars as well as making patrons of all of the passengers in standard sleepers and parlor cars.

As an illustration: It was noted on a certain road which served "club" meals at a comparatively reasonable cost that not only were patrons drawn from all classes of equipment but that the 36-chair dining car was operated by a crew of seven consisting of a steward, three kitchen men and three waiters, whereas the dining cars on the other two roads traversed by this train and in which à la carte service was given exclusively, dining car crews of nine were required to handle 30-chair dining cars, that is, crews consisting of a steward, three kitchen men and five waiters. There was general complaint on all the roads covered of the quality of food and service even though, as stated herein, an effort was made to give far better service and fancier food than the average traveler is accustomed to having in his home. It is unquestionably a fact that the ordinary traveler would prefer plain wholesome food in sufficient quantity at a reasonable price with fancy dishes and other furbelows omitted.

Safety

So long as accidents do not occur, travelers and those contemplating traveling give little thought to their personal safety while en route, but as soon as accidents do occur, they immediately brand them the result of inefficient management.

In the trip from the Atlantic to the Pacific seaboard, the trains on which the author traveled were involved in three accidents two of which might have been serious in their consequence and all of which occasioned considerable criticism of railroad management on the part of passengers. The first accident was on one of the country's best known and most successfully operated properties. Some portion of the water elevating apparatus under the locomotive tender engaged an oak crossing plank that was said to have been 4 in. by 10 in. by 16 ft. The engine ran probably a mile before being stopped and the plank was broken up into small pieces, completely destroying the tender brake rigging, the tender scoop braces, etc. It was quite remarkable that the tender did not leave the rails. As a result the train reached its terminal two hours late.

A minor accident which did but little damage but which caused a great deal of comment among passengers was when a coupler slipped between a sleeping car and a dining car coming into a train-shed permitting the train to part and breaking air and steam hoses and tearing off vestibule curtains. The train came to a somewhat violent stop when the air hose parted, which drew the attention of the passengers to this accident.

The cause of the third accident was a section crew pushing a motor car from the section house onto the track directly in front of an approaching train running at a speed probably in excess of 60 miles an hour. The motor car was smashed into small bits; the pilot of the locomotive was entirely destroyed, air piping was damaged in such a way that the engineer lost control of his brakes and the water hose between tender and locomotive was broken off so that the entire contents of tank ran out onto the ground. The train ran probably 3,000 ft. before it stopped and was delaved several hours until a relief engine was secured. Fortunately, in this case also not a wheel left the rail.

If for no other reason than the effect that safety of operation has upon passengers, the railroads should continue and enlarge upon their safety work.

Conclusion

It is the belief of the author that private ownership and operation of railroads in the United States will stand or fall upon the belief of the public as to its efficiency. In other words, that the belief of the people rather than the actual fact of efficiency or inefficiency will be the controlling factor. Further, that the public when divided into individuals is far more concerned in the convenience and safety of passengers than in the adequacy of freight transportation. Therefore, it would seem as if railroad management should give considerable thought to the providing of a passenger transportation service that will serve to convince the public of the success of private operation of the railroads and the wisdom of continuing it.

A Means of Protecting Grade Crossings

The Nashville, Chattanooga & St. Louis is giving serious consideration to means of preventing collisions between automobiles and trains at grade crossings. On this road, which operates 1,250 miles of line, trains collided with 74 automobiles and 22 other vehicles, killing nine persons and injuring 53 seriously during the year ending May 15, 1920, while from March 1, 1920, to September 1, of this year, 29 automobiles and 9 other vehicles were struck in this manner. In an effort to prevent accidents of this character the general counsel of that road has prepared a law which it is proposed to have introduced into the coming session of the Tennessee legislature, providing for the installation of humps or other speed restriction devices, under the direction of the State Highway Commission, on all grade crossings of railroads within the state not already adequately protected. The plans for this protection have been developed under the direction of Hunter McDonald, chief engineer, who presented an outline of them before the American Association of Highway Officials in Washington, D. C., on December 16.

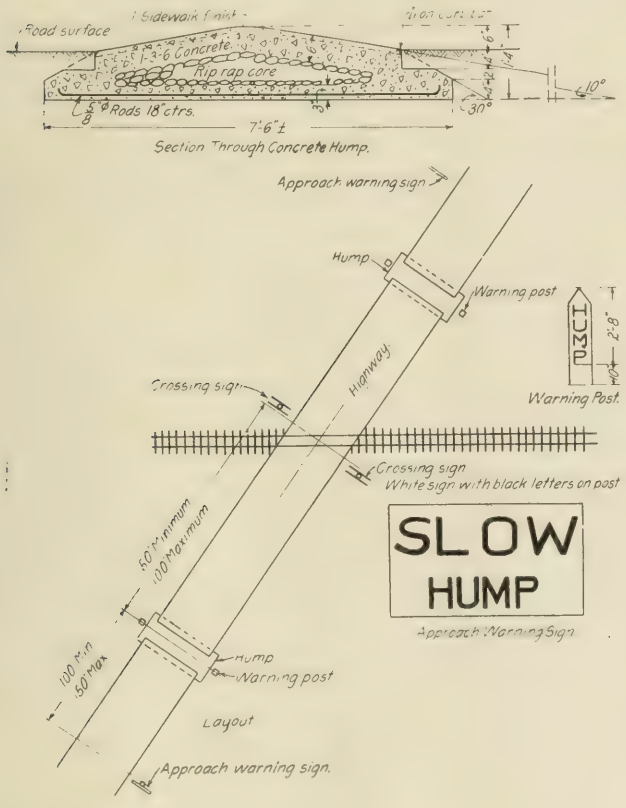
In this paper Mr. McDonald stated, in part, that their investigation shows that grade crossing accidents occur under two conditions. (1) The driver of the car is aware of the presence of the train on the track and deliberately races to beat it across. (2) The driver of the car is paying no attention and does not slow up at the track, nor look and listen. A law in Tennessee, passed at the last session of the Legislature, requires that every driver of an automobile or other motor vehicle shall stop before crossing a railroad track.

"Watchmen, wigwag signals, alarm bells and even safety gates are often ineffective in preventing men from recklessly sacrificing or jeopardizing their own lives and those of their children and friends by what is often nothing less than criminal carelessness. We have had instances where cars have collided with coaches of the train after the engine and several cars have already passed over the crossing. We recognize that separation of grades is the only absolute remedy, but this is a slow, tedious and expensive process, involving always the question of the equitable distribution of the costs of the work and the raising of the necessary funds. Whatever funds the railroads may have at their command in the early future are already badly needed to place and keep their properties in condition to move their traffic safely and promptly.

"Electric appliances, such as gongs and wigwags, when out of order are a decided menace at that very moment, inviting

the driver to cross in fancied security, although a train may be approaching. Any small boy with a piece of wire or a dragging part of equipment, can short-circuit the apparatus and give a false clear signal. It is almost impossible to keep such apparatus always in working order, and, even when working, their warnings are often disregarded.

"For a number of years I have been observing the operation of so-called 'Humps,' which have been installed at grade crossings on many of the highways and on the speedway of the parks in the city of Memphis. The secretary of the Park Commission of Memphis, under whose direction the humps have been installed and operated for eight years past, recently wrote our general counsel that no crossing accident had taken place since they were erected. He states that in one instance the driver of a machine running at a speed of about 25 miles an hour, was thrown out of the car and his arm broken. Suit was brought against the city, but the city won on the ground that a warning sign had been placed at a sufficient distance in advance of the hump to enable the driver to slow down.



"We believe, that pending the consummation of the ideal, grade separation, a forceful speed deterrent is absolutely essential, and that persuasive methods are of no avail. No law limiting the privileges of the individual can be effective unless applied by force. We are convinced that the hump affords the least oppressive means of applying the force necessary to secure the proper reduction of speed and necessary caution at grade crossings."

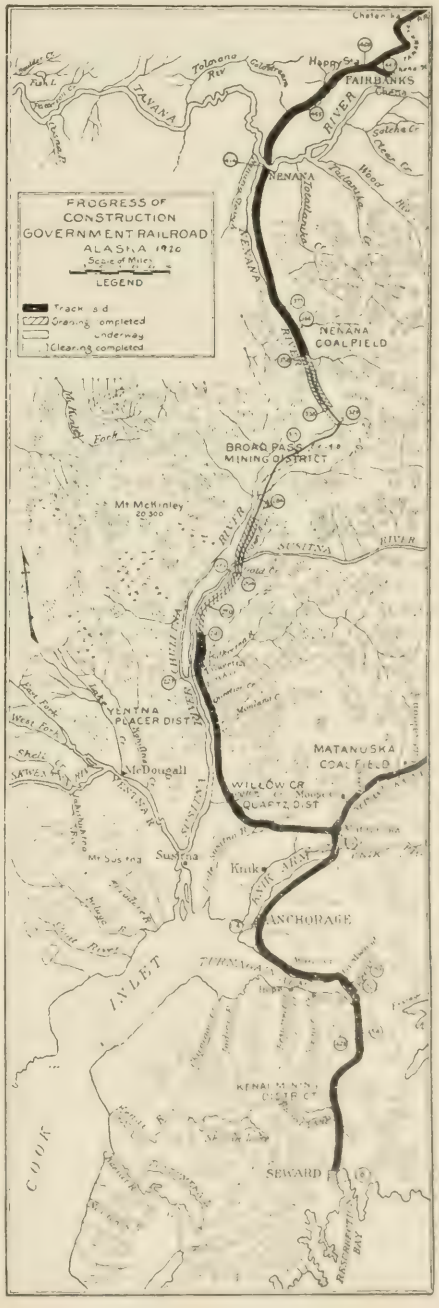
The proposed bill provides for a hump in the roadway, on each side of the railroad track; to be made sufficiently high and abrupt to compel a reduction of speed by reckless drivers. It stipulates that within 90 days from its passage the State Highway Commission and other state and county officers, constructing new roads or maintaining existing roads, shall construct at each crossing, within 100 ft. and not less than 50 ft. of the center of the railroad, and on each side, a hump, extending entirely across the highway. The hump is to be 7 ft. 6 in. wide at its base and sloping 10 deg. on each side, meeting in a rounded apex. The toe of the hump must be not less than 6 in. thick and its total thickness must be not less than 1 ft. 4 in. at the center. The proposed law would not apply to crossings in cities or towns.

The bill requires also the erection of signs, from 100 ft. to 150 ft. from the hump, bearing the words "SLOW—HUMP." The failure of the state officers to comply with the law shall be deemed a misdemeanor and subject to $25 fine, or imprisonment from five to ten days. The railroads would be required to pay one-half the expense of the humps.

Progress on Alaska Railroad

THE ANNUAL REPORT of the Secretary of the Interior includes the following regarding the progress on the Alaska government railroad:

Not a great deal was accomplished in actual new construction of the government railroad in Alaska during the first few months of the fiscal year 1920 because of the lack of appropriation and the uncertainty surrounding it. The original authorization of $35,000,000 was almost exhausted and data was being assembled for presentation to Congress asking for an additional authorization of $17,000,000. This was presented in July, 1919, and after extended hearings Congress granted the additional authorization in an act which was approved by the President on October 18, 1919. Of course, during these months the road was operated and maintained as well as possible under the circumstances, and some construction work done.



A plan of work was adopted in the early autumn which in its essential part embodied the following features:

Operation of a steamer to transport labor to and from Alaska, the labor forces in the territory being entirely inadequate for the prosecution of the work.

Purchase of supplies in the states sufficiently in advance for shipment to Alaska and their distribution along line over snow and ice during winter months.

Establishment of a supply division to attend to the securing and shipment of labor, handling of shipping of materials

and supplies, and to have general supervision over placing of orders for supplies, etc.

Consolidation of Seward and Anchorage divisions into one.

Completion of 1919 construction program on snowsheds, tunnel enlargement, and new bridge work between miles 40 and 60.

Continuance of work on reconstruction and rehabilitation, also ballasting, etc., of old Alaska Northern line.

Grading from mile 256 to 261, some parts of which had been finished but later damaged by action of river, rain, and snow.

Working of a few pile driver and bridge gangs all winter between Talkeetna and mile 261.

Attacking during winter of grading work from crossing of Susitna river to and including Rocky Canyon of Indian river, providing wagon road for freighting supplies ahead through Chulitna Pass to Hurricane Gulch.

Clearing of right of way for remainder of distance between miles 261 and 360, gangs working from both ends.

Construction of wagon road from Indian river through Broad Pass to connect with similar road on northern division.

Pushing forward of supplies, contractors' equipment, etc., for use in grading as far as Hurricane Gulch during summer of 1920 to permit construction of big steel-arch span over this gulch in winter of 1920 and 1921.

Completion of line north of Tanana river to Gold Stream and operation as narrow-gage line in connection with Tanana Valley Railroad as one unit.

Extension of track southward from Nenana to mile 358 (foot of Nenana Canyon).

Transfer of supplies to new camp at mile 358 for attacking heavy work in Nenana Canyon.

Congress having appropriated $6,000,000 on November 4, 1919, the plans as outlined were set in motion. The rehabilitation work on the Alaska Northern portion of the line reached the stage permitting the use of heavy locomotives and cars for the entire distance. To accomplish this, however, necessitated the construction of a switchback in mile 48 to eliminate the use of the high trestle, which was unsafe and will be replaced with a structure for permanent use.

In new construction on the southern division track was extended to mile 242½ by the end of June, 1920. Good progress was also made in new grading work northward to Hurricane Gulch, mile 284, and in making ready for track the grade constructed some months before.

Contracts have been let for practically all clearing of right of way remaining to be done. Clearing has been completed northward to mile 267½, and with the exception of about 8 miles, northward to mile 284.

On January 30, 1920, a contract was closed with the United States Steel Products Company for furnishing and erecting the first large steel bridge on the line as one progresses inland from Seward. This is the bridge over the Susitna river at mile 264, known as the Gold Creek crossing. The fabrication of this bridge was commenced soon thereafter, and it is contemplated that it will be erected during the fall of 1920 and winter of 1920-21.

The wharf facilities at Anchorage, including dredging, were completed to such extent that the largest vessels in the Alaska trade may tie up at the dock at all stages of the tide.

On the northern division (old Fairbanks division) the main line has been completed between the north bank of the Tanana River and Fairbanks, and track has been extended southward to mile 358, the foot of Nenana Canyon. Contracts for grading and tunnel work in the Nenana Canyon have been let and good progress made, considering adverse circumstances mentioned further on. Clearing has been completed on the division to mile 333.

The rehabilitation work on the Tanana Valley lines has been continued.

The branch line to Chena, no longer serving any useful purpose, inasmuch as the main line from Nenana to Fairbanks is completed, was taken up and the rail used elsewhere.

The operation and construction activities in this division were greatly retarded by the severe epidemic of Spanish influenza, which belatedly prevailed during the spring of 1920. Many deaths resulted therefrom and the physical weakness and demoralization accompanying the epidemic were greatly felt.

As stated above, when the program was formulated it was recognized that the labor situation would continue acute. However, after thorough investigation it was found inadvisable for the commission to operate a steamer of its own for the transportation of labor. Instead, an agreement was entered into with the two steamship lines operating to Seward and Anchorage for reduced rates for men and material. Under the arrangement, 715 unskilled laborers were shipped between January 1 and June 30, and details completed for the shipment of approximately 500 more laborers during the first few weeks of the fiscal year 1921. A great many more men could have been used, but could not be obtained.

The supply division was established as planned, with an office at Seward, and just before the close of the fiscal year moved to Anchorage to enable a close touch to be kept with the headquarters office.

During the past year the Alaskan Engineering Commission has employed from 75 to 85 men at Eska and from 30 to 35 at Chickaloon to furnish fuel for the government railroad and to prospect that portion of the Matanuska coal field immediately tributary to Chickaloon.

At Eska there are six coal beds under exploration, the average thickness approximating 3 feet. Upon these beds over 9 miles of underground workings have been driven since the commission acquired the property in 1917, providing over 3,300 tons monthly for the commission's current uses and blocking out over 100,000 tons for the future. This mine is not gaseous, and roof and floor conditions are good so that but few injuries have resulted from accidents underground. During the past two years Theodore Chapin, of the United States Geological Survey, has made extensive study of the geological conditions both at this mine and at Chickaloon, the results being published by the United States Geological Survey in Bulletin 712-E.

On June 17, 1920, a co-operative agreement was entered into between the Navy Department and the Department of the Interior, whereby the Chickaloon mine, theretofore operated by this commission, was taken over July 1, 1920, for the purpose of mining coal for the Navy.

The road will be of great benefit to all interior development, particularly if needed feeder wagon roads are constructed.



Photo by Underwood & Underwood

A Daily Sight at the American Canteen for Russian Refugees at Stamboul

Annual Report of the Chief of the Bureau of Safety

Recommendations Made in Previous Years Are Repeated—Fewer Casualties in 1919 Than in 1918

THE SAFETY APPLIANCE ACT and the Hours of Service law have been in effect for such a long time that their enforcement has now become largely a routine matter. The questions discussed in the annual reports of the Bureau of Safety vary little from year to year, and the report for the fiscal year 1920 is no exception. While there are a few recommendations in the report that are new, the fact that operating conditions warrant the chief inspector in renewing year after year the same recommendations regarding the maintenance of air brakes, the use of the block system and the observance of the hours of service law, indicates that railroad officers might well give more attention to the correcting of the conditions which have furnished cause for complaint for several years. A brief summary of the report of the chief inspector is given below.

Safety Appliances

The following statement affords opportunity for ready comparison of the results of inspections with previous years. It has been compiled from the figures for the fiscal years ended June 30, from 1915 to 1920.

	1916	1917	1918	1919	1920
Freight cars inspected....	908,566	1,100,104	1,059,913	1,023,942	864,775
Per cent defective.....	3.72	3.64	3.92	3.7	4.59
Passenger cars inspected.	27,220	29,456	25,732	23,712	19,849
Per cent defective.....	1.82	0.85	0.56	0.39	0.77
Locomotives inspected....	31,721	37,199	33,806	30,707	23.883
Per cent defective.....	3.66	2.69	2.18	1.84	2.38
Number of defects per 1,000 inspected.....	45.56	41.16	44.01	40.92	52.08

As shown by this summary, the number of cars inspected was less than for the preceding years, but the percentage for each class of equipment, as well as the number of defects found per thousand inspected, have materially increased. The decrease in the number inspected was occasioned by the numerous special investigations which the inspectors were called upon to make during the year, thus rendering it impossible to devote as much time as heretofore to regular inspection work. The proportionate increase in defects reported is attributed largely to the abnormal operating conditions which existed during the year, resulting in the use of equipment regardless of its age or condition and its continuance in service without necessary repairs, these conditions being aggravated by inadequate shop facilities and repair forces.

Of the total of 47,319 defects of all classes, 3,791 were to couplers and parts, 5,035 to uncoupling mechanism, 22,375 to air brakes, 4,049 to handholds, 1,940 to height of drawbars, 557 to sill steps, 1,444 to ladders, 2,399 to running boards, 5,507 to hand brakes, 36 to safety railings, 130 to footboards, 12 to pilot beam sill steps, 36 to handrails, 3 to steps for headlights, and 5 to power brakes on locomotives.

It will be noted that air-brake defects continue to represent by far the most numerous class. Nearly 50 per cent of all defects reported were to visible parts of air brakes, more than 20,000 of these defects being found in but five parts. The number of cars with brakes cut out of service continues unduly large. Of the 22,375 air-brake defects reported, 7,344, or nearly 33 per cent of the whole number, were cut-out brakes. At numerous terminals it is a common occurrence for cars with cut-out brakes to be made up in trains and permitted to depart in that condition, although facilities exist at such terminals for making necessary repairs to place all power-brake equipment in operative condition. This practice should be discontinued.

The condition of the air brakes in trains prior to departure, as ascertained by the commission's inspectors by means of terminal or standing tests is tabulated in the report. This table shows the results of tests of 938 trains, composed of 30,578 cars. The brakes on 94.7 per cent of these cars were in operative condition when the trains tested departed from the terminals. Of the total number of cars, there were 5 nonair cars, 178 cars with the brakes cut out, and 1,431 cars on which the brakes did not apply, making a total of 1,614 cars on which the brakes were not operative when leaving terminals.

Another table represents the condition of the air brakes, as ascertained by the commission's inspectors by means of terminal or standing tests, upon arrival of trains at terminals. This table shows that in 149 trains, consisting of 5,819 cars, the brakes were operative on 88 per cent of the cars. Of the total number of cars in these trains there were 194 with the brakes cut out and 477 on which the brakes did not apply, or 671 cars with inoperative brakes. This table shows that of 41 roads on which arriving tests were made there were 14 on which trains did not have an average of 85 per cent operative brakes. It is apparent that the law is not being complied with as to the minimum percentage prescribed by the order of the commission of June 6, 1910, nor as to the requirement that all air-brake cars associated with the minimum percentage must also be used and operated. The arriving tests show the condition of air-brake equipment from a practical operating standpoint. Carriers should take necessary measures to insure strict compliance with the law and see to it that trains at all times are operated not only with the minimum percentage of operative brakes specified by law, but also with all associated air brakes used and operated.

On March 2, 1920, application was filed by the American Railroad Association for a further extension of time within which to equip cars in service on July 1, 1911, to conform to the standards of equipment prescribed by the commission's order of March 13, 1911. This application for an extension of time was denied by the Interstate Commerce Commission on August 7, 1920.

The report calls attention to violations of the Safety Appliance Act occurring at interchange points. One carrier delivers cars to another with defective safety appliances and the receiving carrier moves the cars to its yard, thus making two violations of the law. Adequate inspection and proper repairs prior to assembling cars for interchange movement are recommended to eliminate this difficulty. The practice of permitting defective cars to accumulate and making them up in a train for movement to a repair point is also condemned. Recently two suits were instituted against carriers for movement of trains of this nature.

The handling of logging trains is again referred to and the chief inspector states, in view of the conditions existing, the law should be amended by placing further restrictions upon the operation of such trains.

Hours of Service

Mention is again made of the handling of trains down heavy grades by means of hand brakes supplemented by air brakes. Suits are being instituted for the purpose of compelling strict observance of the law. The statement is made that controlling trains by air brakes alone is the safer and better practice and is dependent merely on proper mainten-

ance of air brake equipment. Defective hand brakes are also mentioned as the source of many suits.

During the year ended June 30, 1920, hours of service reports were rendered by 1,192 railroads. Of these railroads, 447 reported a total of 106,501 instances of all classes of excess service, a decrease of 43,892 instances as compared with the previous year, or a reduction of about 29.1 per cent; the remaining 745 railroads filed reports showing that no service in excess of the limitations prescribed by law was performed by their employees.

The causes of instances in which train service employees remained on duty longer than 16 consecutive hours on roads reporting excess service, as shown by the Statistical Analysis of Carriers' Monthly Hours of Service Reports for the past five years, have been arranged in the following table for the purpose of comparison:

Causes	1916	1917	1918	1919	1920
Collisions	3,414	3,421	5,744	2,531	1,634
Derailments	25,013	30,395	40,849	24,556	22,604
Track defects and obstructions	4,696	3,982	4,514	1,774	1,786
Landslides, high water, fire	2,983	3,064	2,852	1,243	2,395
Adverse weather conditions	9,532	10,616	43,759	2,769	12,115
Congestion of traffic	1,769	16,250	20,026	4,631	2,829
Station work, waiting for orders, and meeting trains	2,822	5,057	14,621	3,862	2,456
Coupler and drawbar defects	5,113	6,292	15,894	12,881	6,978
Miscellaneous car defects	9,386	10,246	19,589	9,247	4,814
Hot boxes	332	491	1,848	388	220
Air brake troubles	1,054	854	2,433	2,136	1,906
Taking or running for water	466	1,016	2,653	433	587
Cleaning fires	45	181	679	136	69
Low steam:					
Poor coal	30	671	1,510	118	206
Bad water	46	28	87	....	....
Leaking	607	656	2,014	753	301
Miscellaneous locomotive mechanical defects	3,616	4,738	11,552	5,107	3,215
Wire troubles	168	206	497	108	92
Sickness, death, personal injury	131	173	339	319	93
Miscellaneous	1,932	2,905	7,829	5,177	3,168
Total[1]	73,055	101,242	199,289	78,169	67,468

[1]Railroads reporting fewer than 25 instances in the aggregate of all classes of excess service were not enumerated during the years 1916, 1917, 1918 and 1919. Figures for 1920 include all instances reported.

The foregoing table shows a decrease of 10,701 instances, or a reduction of about 13.7 per cent, in which employees remained on duty longer than 16 consecutive hours as compared with the number reported for the preceding year.

Approximately 51 per cent of the total instances of train service employees remaining on duty longer than 16 consecutive hours during the fiscal year is chargeable to derailments, coupler and drawbar defects, and miscellaneous car defects, there being 34,396 instances due to these causes. These figures, however, show a decrease of 12,288 instances, or a reduction of about 26.3 per cent, as compared with the number of instances resulting from the same causes during the preceding year. The only causes resulting in appreciable increases in the instances of employees remaining on duty longer than 16 consecutive hours were landslides, high water, fire, and adverse weather conditions, there being 14,510 instances resulting from these causes during the year as compared with 4,012 instances due to the same causes in 1919.

To aid in effecting enforcement of the hours of service law, as has also been stated in previous reports, it is necessary that the commission be informed of each and every instance, as was contemplated in its order of June 28, 1911, requiring such reports, in which employees are on duty beyond the limitations prescribed by the act, together with an explanation of the conditions and circumstances causing each such excess service. Therefore, in order to exact of the carriers full and complete reports, the law should be so amended as to provide a penalty for each omission by a carrier from its monthly report of instances of excess service performed by its employees.

Summary of Casualties

The casualties on steam railroads in connection with the operation of trains during the calendar year 1919 are summarized as follows:

Class of person	Number of persons	
	Killed	Injured
Trespassers	2,553	2,658
Employees	1,759	7,456
Passengers	273	36,601
Persons carried under contract, such as mail clerks, Pullman conductors, etc.	28	5,195
Other nontrespassers	1,882	52,601
Total of above classes	6,495	691

In addition there were 483 persons killed and 96,452 injured in nontrain accidents during the year, in comparison with 589 killed and 110,431 injured during the previous year.

During the calendar year 1919 there were 108 employees killed and 1,975 injured in coupling or uncoupling locomotives or cars, as compared with 164 killed and 2,332 injured during 1918. Casualties to employees in 1919, due to coming in contact with fixed structures, resulted in 56 deaths and 1,009 injuries, the corresponding figures for 1918 being 83 and 1,367. In 1919 there were 97 employees killed and 6,219 injured in getting on or off cars or locomotives.

[The Bureau's summary of train accident investigations was reported in the *Railway Age* of December 17, page 1077.]

Investigation of Safety Devices

During the year plans of 54 devices were presented for consideration and revised plans and specifications were submitted in connection with 14 devices; the plans of 65 devices were examined and opinions thereon transmitted to the proprietors or their agents. Of the number examined, five possessed merit as safety devices, warranting some degree of commendation. Of the latter, one was a flashing-light signal, one an automatic connector, one a steam and water cock, and two were hand brakes.

During the year tests were made on the Richmond, Fredericksburg & Potomac of a portion of the automatic train-control apparatus of the Pittsburgh Train Control Co., Pittsburgh, Pa. This automatic train-control system is the continuous-control, induction type, employing alternating-current track circuits, induction coils suspended from the locomotive above the track rails, and an electron tube in the locomotive circuits which serves, in effect, as a relay. The purpose of these tests was to determine whether the intended functions of this device could be accomplished under railroad operating conditions and to supply data regarding the feasibility of using an electron tube on a locomotive for purposes of an automatic train-control system. The results of the tests demonstrated that it was possible to accomplish the intended functions of this apparatus under service operating conditions, but indicated that considerable development work in connection with the apparatus is required before this system can be considered a practical method of automatic train control.

Tests have also been conducted of the device of the United States Train Signal Co., of Portland, Me. This device is an electropneumatic signal system providing means of transmitting signals between the cars and the locomotive in a train, and vice versa. It consists of electropneumatic valves controlled by a series circuit, one valve being installed in each car or locomotive cab, and provided with indicators, both audible and visual, which are operated when the circuit is interrupted; circuit controllers for operating the device are provided in each car and locomotive. The examination and tests of this device demonstrated that visual and audible signals, which are displayed and sounded simultaneously on each equipped vehicle, can be transmitted as rapidly as the circuit controller can be operated; and signals can be acknowledged by engine crew or transmitted from engine crew to train crew without the use of the locomotive whistle.

An inspection has been made and demonstrations witnessed of the automatic connector of the Robinson Connector Co., New York, N. Y., as installed on passenger

equipment of the New York Central operating between Dunkirk, N. Y., and Titusville, Pa. This connector is of the butt face, straight port type, with wing type guiding members, which form the gathering and registering devices. As a result of the inspections and demonstrations of this device, the Robinson connector is considered well adapted to accomplish its intended functions when used on passenger-train equipment. The few irregularities of operation noted during these demonstrations were without exception due to details of construction and installation which can readily be improved. The use of gaskets of special design is undesirable from an operating standpoint. It is believed the gathering range and registering means employed by this device are adequate and reliable and that with this connector tight joints can be maintained.

Preliminary steps have been taken and plans are being formulated for the administration of section 26 of the Transportation act, conferring upon the commission authority to require the use of automatic train stop or train control devices and other safety devices in designated locations and to prescribe specifications and requirements therefor.

Block Signal Statistics

The commission's annual statistical bulletin for January 1, 1920, covering block-signal and train-order mileage, was compiled by this bureau. As shown by this bulletin, the total length of railroad in the United States operated by the block-signal system on January 1, 1920, was 101,884.2 miles, of which 37,968.8 miles were equipped with automatic block signals, and on 63,915.4 miles the nonautomatic block-signal system was in use. Comparing these figures with the corresponding record for the preceding year, there was an increase of 979.4 miles equipped with automatic block signals, and an increase of 1,007.1 miles in nonautomatic block-signal mileage, the total increase in block-signal mileage being 1,986.5 miles.

The report includes the usual tabulation showing the results of the inspection of safety appliances and tests of air brakes on trains arriving at and departing from terminals. Numerous judicial interpretations of the safety appliance law and the hours of service law are summarized in the report.

Chicago & Eastern Illinois Reorganization Plan

The Chicago & Eastern Illinois Railway, a new Illinois corporation, has filed an application with the Interstate Commerce Commission for authority to issue its securities to take over the property of the Chicago & Eastern Illinois Railroad, now in the hands of receivers, and to meet the obligations of the old company. It is proposed to assume the underlying bonds and equipment obligations of the old company to the amount of $5,350,000, which are not to be disturbed, and to issue prior lien bonds of the new company to the amount of $4,285,000, to mature not before January, 1961, the proceeds to be used to refund obligations to the United States and other obligations, and for making additions and betterments. The new company also asks authority to issue $32,156,000 of general mortgage bonds at 5 per cent, maturing January, 1951, $24,030,150 of 6 per cent preferred stock and $25,500,000 of common stock. This will make the total capitalization of the new company $91,321,150, as against $115,605,043 for the old company, and its fixed charges will be $2,169,628, or $2,118,952 less than those of the old company.

The application states that as soon as and if the commission will make an order authorizing the issue of new securities, the foreclosure sale set for January 11, 1921, can be held and the plan which has been agreed to by the various stockholders' committees can be declared operative. The method by which the division of the securities of the reorganization company should be made has been agreed upon by the committees. The new company will pay the receivers' certificates now outstanding and certain other charges in cash and will make an offer to the remaining holders of the securities of the old company by which they will exchange their bonds and stocks for the bonds and stock of the new company. The new company proposes to raise money by loans from the government and an assessment on its stockholders and creditors. Holders of the preferred and common stock of the old company may receive an equal amount of common stock of the new company in exchange, on the payment of an assessment of $30 per share, for which they will receive one-half in general mortgage bonds and one-half in preferred stock. The opportunity of a similar assessment may be offered to the creditors and bondholders.

The proceeds of the assessment (approximately $6,000,000), plus the proceeds of the proposed settlement with the director general (approximately $6,500,000) and the advance from the revolving fund by the commission ($785,000), together with current earnings, will make possible the completion of the reorganization. The application states that in the seven years the company has been in receivership it has been practically entirely rebuilt and modernized as a first-class railroad with increased earning capacity. The reorganized company should have first-class credit in every way, better than that of the old company and certainly far better than that of the receiver. It will have no debts other than current operating expenses, except its long-term bonds and its equipment obligations and its obligations to the government, which will not mature for 10 and 15 years. During the receivership the rebuilding was financed by devoting practically all earnings of the property to the program of rebuilding and by $3,437,758 provided by the director general of railroads for additions and betterments and $741,000 for equipment. Several items of property then owned by the company have been separated, including coal properties acquired in 1912, by the issue of $5,167,000 of bonds, the Evansville & Indianapolis Railroad and the Chicago & Indiana Coal Railway. A substantial part of the floating debt remains unpaid, consisting principally of debt for money loaned and also an issue of $6,000,000 of receivers' certificates. All bonds which were liens on the property outstanding at the date of the receivership have been financed except a few underlying bonds. The carrying out of the proposed settlement by the director general by which the company is to receive $3,000,000 in cash and a loan of $3,500,000 and the loan to be made by the government, are declared to be a prerequisite to the reorganization.

The company will have greatly simplified its capitalization. Its general mortgage bonds and preferred stock will take the place of many of the various bond issues now outstanding. Interest on the general mortgage bonds should be earned and the preferred stock should be able to earn dividends almost at once, while the common stock will have a prospect of earnings and at some later period may share in the distribution of earnings. The company will begin business with current operating expenses, which will be covered by its current receipts, and have an adequate cash working capital. The present operating management is to be continued without substantial change. The Illinois Public Utilities Commission also filed a statement saying that it had no objection to the plan of reorganization nor to the proposed issue of securities.

T. D. Heed, financial assistant to the receiver for the Chicago & Eastern Illinois, has issued a statement saying:

"We have put the proposed issuance of securities of a new company up to the Interstate Commerce Commission. This is the first case involving a reorganization to go before the

Commission under the new Transportation Act, and presumably that body will wish to proceed slowly, with the feeling that any action it takes in this case may become more or less a precedent for other reorganizations.

"Committees working toward a reorganization of this property are not averse to the Commission taking its time, as the market for securities just now is at its worst. A little later we might find a reorganization easier to accomplish.

"We have not agreed upon any assessment yet, nor have we settled our accounts with the government for the use of our property during federal control. We have had offers from the director-general, but have not accepted any."

Chairman Clark Discusses Freight Rates

WASHINGTON, D. C.

CHAIRMAN CLARK of the Interstate Commerce Commission has written a letter to Senator Harris of Georgia in reply to a letter from the senator expressing a hope that an adjustment can be made which will bring down freight and passenger rates and asking for information from the commission on the subject, in which the chairman expresses the opinion that "it is by no means certain that even with the existing level of rates the carriers can, under the existing level of operating expenses, the principal items of which are wages and fuel, earn a reasonable income.

The senator said in his letter that it had been brought to his attention that the present high passenger and freight rates are doing more to decrease the amount of income received by the railroads than if lower rates were in effect. He said that both the public and the railroads deserve an honest living, but feared that both are now suffering. Chairman Clark replied that the desire expressed by the senator to see freight rates and passenger fares placed within the reach of the average person and at the same time give the railroads a reasonable income, "is one in which we all cordially join." "Times are abnormal," he said, "and conditions generally affected by the aftermath of the war. It is trite to say that the country must get back to a more normal condition and more normal bases for commerce, industry and transportation. It is not to be expected that we will get back to pre-war prices for labor, commodities or for transportation, but it is to be expected and really is necessary to get back to a situation in which prices of labor, commodities and transportation will bear proper relative proportions." The period within which the readjustment of rates contemplated by the transportation act and recognized as necessary by everybody must be made was short, said Chairman Clark, and the matter had to be dealt with in a broad and somewhat general way. The propriety of that line of action was recognized by those interested on both sides, as was also the necessity for a readjustment. Naturally in those readjustments, the interests of the carriers and of their patrons are in conflict and their views diverge.

"The financial results from the operation of the railroads by the government are well known, as is also the fact that the level of operating expenses had risen out of all proportion to the revenue from the then existing rates," Mr. Clark continued. "The operating ratios were and still are abnormally high. We are endeavoring to keep abreast of the situation. We are exercising our powers insofar as seems appropriate, to prevent unreasonable or inappropriate increases in charges by the carriers, and co-operating with the carriers and the shippers in bringing about appropriate readjustments through reductions in charges, especially where it appears that the existing charges are such as to prevent the movement of traffic. I think you are entirely correct when you say 'both the public and the roads deserve an honest living, but I fear both are now suffering.'"

Chairman Clark said that a substantial reduction in the amount of freight received for transportation has resulted in large part from the closing down of a great many industries and to the shortening of time of operation in many manufacturing and industrial enterprises in every part of the country.

Rail Statistics Show Improvement for 1914 Rolling

THE ANNUAL REPORT on rail failures just made public by the American Railway Engineering Association shows that further progress has been made in the reduction of rail failures. According to this report, which was prepared by M. H. Wickhorst, engineer of tests for the rail committee and which appears in the association's Bulletin No. 229, failures in rails rolled in 1914 averaged 74 failures per 100 miles of track in the five years of service on which data are now available. This represents a distinct improvement over the returns on rails rolled in 1913, which showed 91.9 failures per 100 miles for five years' service, and is a much better showing than the 398.1 failures for the 1908 rails, the first rollings for which complete statistics were made by the Rail committee.

TABLE I—AVERAGE FAILURES PER 100 TRACK MILES

Year rolled	Years service 0	1	2	3	4	5
1908	...	....	....	....	....	398.1
1909	...	....	....	....	224.1	277.8
1910	...	....	....	124.0	152.7	198.5
1911	...	....	77.0	104.4	133.3	176.3
1912	...	28.9	32.1	49.3	78.9	107.1
1913	2.0	12.5	25.8	44.8	69.5	91.9
1914	1.2	8.2	19.8	32.9	50.9	74.0
1915	0.7	8.9	19.0	34.2	53.0	....
1916	1.6	11.8	29.2	47.7	....	....
1917	5.3	21.6	38.9	....	....	....
1918	1.6	8.9	....	....	....	....
1919	2.0	....	....	....	....	....

Mr. Wickhorst calls attention to the rather disturbing fact that less favorable results are being obtained for rails rolled subsequent to 1914. This is clearly shown in Table I summarizing the rail failure statistics to date in which it is seen that the failures for one, two, three and four years' service on rails rolled in 1918, 1917, 1916 and 1915, respectively, are heavier than for corresponding periods of service in earlier rollings. Mr. Wickhorst's comment on this is that "during the war and for a while thereafter there were difficulties in the way of maintaining a high standard of quality in the manufacture of rails, but a study of the detail results suggests that in some cases, there may have been a loss of control of the mill situation."

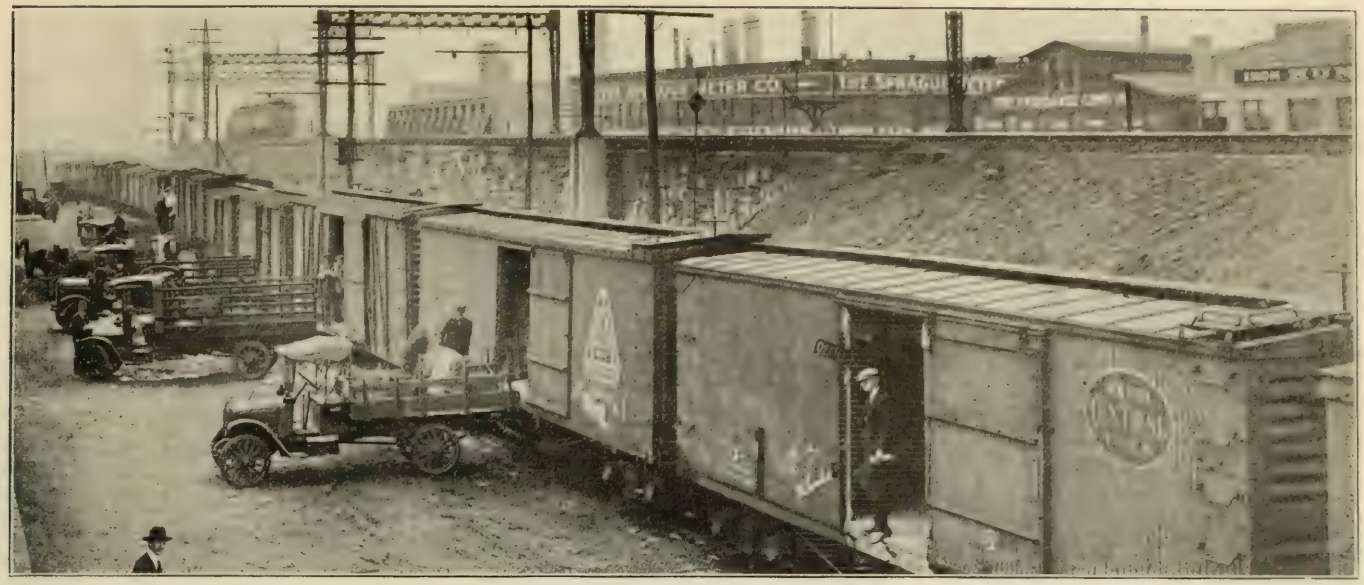
As to future performance the feeling is more favorable since the report states that: "A drop in the failures from almost 400 per 100 track miles for five years' service in the 1908 rails, to 74 in the 1914 rails, is a decrease of over 80 per cent. A close study of the detail reports indicates that a further decrease of over 80 per cent of the failures of the 1914 rails is possible. We should now set up as a new objective the reduction of the failures to below 10 per 100 track miles for five years' service, or below two failures per 100 track miles per year.

"The tonnages and track miles of rail represented by the statistics in this report are given below:

TABLE II

Year rolled	Tons	Track miles
1914	1,149,410	7,917.26
1915	1,077,558	7,280.51
1916	1,245,185	8,407.55
1917	1,136,944	7,615.46
1918	947,073	6,354.44
1919	620,250	4,272.95
Totals	6,176,420	41,848.17

"As there have been comparatively few Bessemer rails listed in recent years, they are no longer listed separately."



Loading L. C. L. Freight at Bridgeport

Less-Car-Load Shippers Co-operate in Car Loading

Local Agent's Discretion in Choosing Route, with Sailing-Day Plan, Saves Cars and Time

At Bridgeport, Conn., last spring and summer, the delays incident to the extreme freight congestion which prevailed throughout the Eastern States at that time were materially moderated by having shippers load package freight directly into cars placed on team tracks. By means of a systematic scheme which was adopted for advising the principal shippers, a day in advance, of the precise location of cars to be loaded for different important destinations, a large volume of freight was moved in this way, when, because of shortage of labor and the resulting congestion, the movement of the goods through the freight house in the ordinary way would have been out of the question. This arrangement proved so satisfactory that it is still kept up, to the mutual satisfaction of shippers and carrier.

Important features of the arrangement are a sailing-day plan, to economize cars, and an informal agreement between the railroad and the shippers under which the freight agent is allowed some discretion in holding shipments over a day or two, whenever the limitations imposed by the size of the yard, or a deficiency in the car supply, have made such delay necessary.

From a memorandum by H. M. Hedderly, local agent, we have gathered the following notes of this interesting experiment:

Bridgeport, served by one railroad, the New York, New Haven & Hartford, has been since 1915 one of the busiest manufacturing cities of the country, and its products go to all parts of the West and South. At the period of greatest stagnation, due to the outlaw strikes, there were hundreds of cars standing idle in Bridgeport, while at the same time the factories were continuing to turn out their products in full volume. Ninety per cent of the products of the Bridgeport factories was destined for points outside of New England; and the important gateways through which this merchandise was to move were also in trouble; Bridgeport was not the only center of difficulty. After a number of weeks of this situation some of the firms were on the verge of financial failure, and something had to be done. The first move was to permit the loading of carload freight. These shipments were taken "subject to delay" and also subject to the privilege, on the part of the railroad, to forward the goods over the first open route available.

Following a conference with the Board of Trade and other organizations it was decided to extend this direct-loading privilege to smaller manufacturers by accepting l. c. l. freight in the same way, provided the shippers would to some extent pool their shipments so as to deliver goods for given destinations on given days, the privilege of routing still being left to the railroad.

As a beginning in this experiment, each shipper sent to the railroad a memorandum showing the destination and the approximate tonnage of proposed shipments. This put in the hands of the railroad a large amount of data, the arrangement of which, in order to determine the most practicable routes, required several days. Having made a program, the agent placed a limited number of cars and prepared a list of them, with destinations. This arrangement was carried out without trouble; and this freight, together with the carload shipments, amounted to about 400 cars before there was any chance to move any of them beyond the Hudson River. The shippers were, however, in part satisfied, as they could invoice their goods and thereby secure some measure of relief, enabling them to continue the operation of their factories.

By the middle of July the principal gateways—Buffalo, Pittsburgh, Cleveland, Chicago and St. Louis—had been materially relieved and normal operation was resumed.

The benefits of the sailing-day plan and of loading direct into cars were, however, so marked that the practice of placing cars to be loaded for certain prominent points was kept up; and has been developed so that now arrangements for loading like that, for example, prescribed for Thursday, September 2 (shown in the sample statement below) have become a regular thing.

There is some pressure to go back to the old plan, of moving outbound freight through the freight house. One

of the principal objections, however,—that the shipper has no room on his own premises to store shipments, waiting for the date set by the railroad, beyond one day,—has been pretty well exploded, so far as Bridgeport is concerned, by the experiences of the past summer, when large numbers of shipments had to be held by some of the manufacturers for several weeks.

The New Haven road connects with all lines to the West and to the South, and, of course, in exercising discretion in selecting the routes, has to take care to be always neutral. For example, cars for Buffalo will be given to the Lehigh Valley one time, and then the next time to the Delaware, Lackawanna & Western; then, next, perhaps, the cars will be sent over the Boston & Albany and the New York Central; and later to the Erie or the Pennsylvania. Cars destined to points beyond the Mississippi River are alternated over several lines. To some of the remote points a car can be loaded full only about once a week, and the endeavor is made in such cases to set the car on the same day of each week.

Explaining the details of his plan, Mr. Hedderly says:

We load an average of 15 cars a day under this plan, employing six receiving clerks, one route clerk and six stevedores. In July our cost averaged 38 cents a ton, and in August, 51 cents, under the recent wage award. We handle an average of 150 tons a day, with a maximum of 225 tons. The average loading per car in July was 20,860 lb. and in August 23,700 lb.

The lists for shippers are prepared three days in advance and are called for by patrons daily in person, or by messenger, or by their truckmen. In giving out these lists in advance we have at times violated embargoes, but we have never had a car held up. It is necessary to make the lists 36 hours ahead of time in order to give customers an opportunity to assemble their freight for certain cars. During the beginning of this plan there was an extreme shortage of labor in our freight houses and the discharging direct to cars by their own forces was a great relief to shippers.

In handling freight in this manner we have reduced claims for shortages and for damage, as well as practically eliminating requests for tracing. We are loading cars to their cubical carrying capacity; and if any car is not fully loaded it is held over and placed on the list again three days later, when it is filled. This expedient, however, is not frequently resorted to.

Below is a sample of the car lists sent to shippers, that for a recent average day:

CARS TO LOAD. THURSDAY, SEPTEMBER 2, AT UNION STREET YARD, TRACK 8

Chicago, Ill. Route, B&A NYC	Load Chicago only	Direct car
Philadelphia, Pa. Route, PRR	Philadelphia only (Walnut Street)	Direct car
Pinners Pt., Va. Route, PRR NYP&N ACL	All points in North and South Carolina and Georgia, except Atlanta, on Atlantic Coast Line R. R., and all points in Florida.	
Spencer Transfer, N. C. Route, PRR Sou.Ry.	All points in North and South Carolina and Georgia, except Atlanta on Southern Ry.; and all points in Tennessee.	
Collinwood Tfr., Ohio Route, B&A NYC	All points on New York Central Lines in Ohio, except Cleveland and Cincinnati; Indiana except Indianapolis; and Illinois except Chicago.	
Elizabethport Tfr., N. J. Route, CRR of NJ	Points in Pennsylvania and New Jersey except Jersey City and Newark on CRR of NJ; points on P&R in New Jersey except Trenton.	
Pittsburgh Tfr., Pa. Route, PRR	All points on Pennsylvania R. R. west of Pittsburgh except Cleveland, Chicago and St. Louis.	
Chicago Tfr., Ill. Route, NYC CMSt.P	Points in Wisconsin except Milwaukee.	
Chicago Tfr., Ill. Route, LV NYC CB&Q	Points in Oklahoma, Kansas and Missouri except St. Louis.	
Black Rock, N. Y. Route, DI &W MC	All points in Michigan except Detroit and points on Pere Marquette R. R. and Grand Trunk R. R.	

Shippers should furnish tonnage as shown. This schedule is conditioned on empty cars being available, and inquiry should be made before starting shipments from factory.

Under the old plan of accepting freight indiscriminately for various points we could only hope to load to transfer points, or for immediate connections, because the traffic was routed over so many different lines. This, of course, resulted in handling and rehandling the goods, while under this plan we get the full benefit of the most direct loading and full car loading; while yet the shipper has his choice of routes at stated intervals.

Our plan has been adopted to some extent by other lines. One large concern in New York state shipping newsprint paper formerly loaded shipments to a nearby transfer point to be distributed, but now is loading its Southern shipments over a direct route, breaking bulk at Charlotte, N. C., or Hamlet, N. C., with a much improved service. Cars usually reach the break-bulk point in less time than had been required to get through the nearby transfer.

The picture shows the loading track full of cars. One of the cars in the string, the first one, bears a sign "office." This does not mean that the car is used exclusively for that purpose, but is to indicate to teamsters that that is the place to look for the receiving clerk.

The Application of Engineering to Transportation*

By J. A. Peabody

Signal Engineer, Chicago & North Western, Chicago

EVERY ONE KNOWS that the transportation facilities of the railroads of the United States are far below the requirements and that enormous sums of money must be spent in order that the railroads may regain their position.

Numerous solutions of the difficulty are offered and these, I think, can all be divided into two classes; first, efficiency in the use of present facilities; second, increase of facilities.

It is relative to the second solution, viz. the expenditure of the vast sums that must be made, that the engineer should give his attention. His knowledge, ability and best thought must be brought to bear in assisting the executives in determining where the money is to be spent if tremendous waste is to be prevented.

It seems to me that we have come to a new period where the railway engineer has an opportunity to come into his own, but where railway engineers, if they are to make the best of their opportunities, must get into closer contact with the necessities of their business than ever before.

In the distant past when additional facilities were required, it was only a question of building an addition to a railroad. Later it became necessary to double track and, in a few instances, to install three or four tracks, together with yard and engine house facilities. It is but a few years since signaling and interlocking were introduced and it was some time afterwards before it was realized that both signals and interlocking could be used to facilitate traffic as well as protect it. There is no doubt but that properly installed block signaling and interlocking alone would make easy the operation of some lines that are now badly congested and pay heavy returns on the investment.

Traffic is handled by the operating men over tracks furnished by the civil engineers, by means of locomotives and cars furnished by mechanical engineers and with the assistance of telegraph, telephone and signals furnished by communicating and signal engineers. But can you find

*Abstracted from a paper presented before the Western Society of Engineers, Chicago, on September 16, 1920.

where any one, engineer or otherwise, has planned the whole so that the parts will fit properly together? When some big improvement is to be made, such as a large terminal, an organization is often created which may make a study of the existing necessities and future requirements, but such an organization is more apt to be made up of men selected for their ability to carry out the work from plans and instructions laid down in such a definite form as to leave little, if any, leeway, and when that particular piece of work is completed the organization is generally disbanded. Special men are sometimes employed either as consulting engineers or as assistants to the president or vice-president; but this is rare and few have had a permanent place in the organization.

Small improvements almost invariably are first suggested by an operating officer, usually divisional, who is confronted with an absolute need. If the railroad organization is of the division type, the superintendent and division engineer get together and plan relief. Under these conditions effect only and not cause is usually seen and the plans, of necessity, reflect the fact.

Division officers are busy men; they have little time or opportunity to find out what others are doing and certainly neither time nor opportunity to make complete studies to determine what the possible requirements will be 20 years or even 10 in advance. Division officers are generally required to get along with what they have and ask for as little as possible; this, together with the other reasons mentioned, results in recommendations for improvements which a close study with full information may show to be entirely erroneous.

An efficiency engineer has been defined as an engineer who is ready to tell any one how to do things which he cannot do himself. Far be it from me to recommend such an engineer to take care of this situation. I do believe, however, that there is a place on every large railroad for a man who, with proper assistance, makes a specialty of studying the transportation problem. Such a man, I believe, can properly be termed "transportation engineer." The decision as to just where a transportation engineer would best fit in the railroad organization will unquestionably vary on different railroads, depending somewhat on the size of the road, more on the amount and importance of the work undertaken and most on the man.

There would seem to be almost no limit to the possible scope of the work which might be brought under the term of transportation engineering, because, with the movement of both freight and passenger traffic to be studied, there must come studies of the growth of communities, mining, farming, urban, suburban and industrial, in order to determine the trend so that the necessities of the future may be foreseen and planned for. The studies relative to the handling of freight would not only be those relative to moving trains over the road, important as that is, but also that of handling freight trucks from the time they approached the railroad property to the time they are emptied into the cars or freight houses and the freight thence to the made-up trains and, of course, vice versa.

There is the importance of moving freight trains over the road. How often when this is under consideration is a definite analysis made to determine where the difficulty lies? Wellington mentions the necessity for the proper location of passing tracks, but it was not until within a very short time that F. L. Dodgson developed a method of analysis to determine on the proper location of passing tracks on a single track railroad by establishing as nearly as possible an equal distance, in time, between all passing tracks.

Of course, the theoretical location of a passing track is not the only thing to be taken into consideration. After the theoretical location is obtained a practical location must be selected taking into consideration the possibility of a train being able to enter and leave the passing track in either direction if possible, also to obviate curves, or, if not possible, to have the passing track on the outside of the main track at the curves. Another thing to look out for are highway crossings.

After all these things have been taken into consideration it goes without saying that the cheapest place, in first cost, to construct a passing track will seldom be selected. It is also almost as obvious that the cheapest place, as far as the cost of operation is concerned, will have been selected.

The cost of operating trains, not for the railroad as a whole, but for each engine division, should be gone into in order to determine, if possible, how each may be cheapened. The cost of switching in each yard should be known. The cost of handling engines at each terminal should be known, to disclose where it would be advisable to make studies relative to reducing that cost. Analysis should be made of each piece of congested main track and methods for increasing its capacity determined, together with, of course, the cost of doing the work; the relative cost of operation also should be taken into a consideration. In this connection not only comes the question of proper location of passing tracks, as heretofore mentioned, but also there should be taken into consideration signaling, interlocking, the dispatching system, reduction of grades and curvature and every other item that will go to make for economical operation.

Analysis of large terminals should be made to determine whether the handling of cars cannot be reduced materially. In a large terminal, such as Chicago, the consolidation of some yards would reduce the transfer work and therefore the several handlings of a car. It would also materially shorten the time required to deliver a car from the road to an industry or vice versa.

The methods generally used in the handling of l.c.l. and trap car freight in large terminals seem to me to be very crude and it would seem that a close study of this would produce methods that would result both in quicker and cheaper handling.

In all this we must not forget the passenger service, and in this connection it would seem that there are opportunities for materially increasing the revenue by decreasing the cost of operation, particularly in handling suburban traffic. Today I believe that the steam railroad engineer is very much behind the electric railway engineer in his knowledge of what can be done in this direction. In connection with the subject of electrification, there is certainly food for thought, as it does not seem that there could be much question but that many lines that are now decidedly congested on account of the gradients could have their capacities greatly increased by electrification and probably the cost of operation decreased as well.

Any engineering body or individual wishing to take up the question of transportation engineering will find the subject has a breadth requiring the investigation of every item of economical operation. My conclusion is that the transportation problems of today will only be solved by the application of engineering knowledge and that consequently the engineer has a better opportunity of knowing his worth today than ever before.

A Cab Signal, both visual and audible, and which is actuated by the explosion of torpedoes on the track, has been applied to a locomotive of the London & Southwestern. The locomotive has tubes, about 2 in. in diameter, fitted in front of the leading wheels, arranged like an ordinary sand pipe. By agitating the air in the tube the explosion of a torpedo is made to expand a small pneumatic chamber, fixed on the engine frame, which expansion opens a normally closed electric circuit. The apparatus has been tried, with very satisfactory results.

Operating Statistics for October

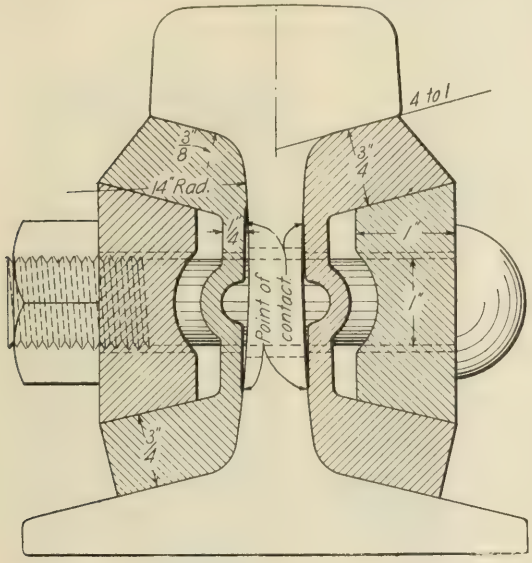
The Interstate Commerce Commission has issued a tabular summary of operating statistics for the month of October, 1920, of roads having annual operating revenues in excess of $25,000,000. The figures for ton miles, train miles, car loading and car mileage and net ton miles per car day (including mixed and special train service) are summarized in the following tabulation by the Commission:

Region		Freight service train-miles (thousands)		Net ton-miles (millions)		Net ton-miles per loaded freight car-mile		Car-miles per car-day		Net ton-miles per car-day	
		1920	1919	1920	1919	1920	1919	1920	1919	1920	1919
New England Region											
Boston & Albany	October	329	339	142	161	25.3	24.5	33.8	33.1	566	559
	10 months	3,085	2,654	1,361	1,184	24.9	22.2	27.2	32.0	473	502
Boston & Maine	October	729	768	379	380	25.5	24.4	19.9	18.8	338	320
	10 months	6,929	5,954	3,305	2,839	24.5	23.3	16.4	17.6	290	298
New York, New Haven & Hartford	October	618	619	341	364	25.1	24.3	12.8	15.3	233	279
	10 months	5,098	5,059	2,569	2,760	23.7	23.3	10.2	14.2	181	249
Great Lakes Region:											
Delaware & Hudson	October	443	449	405	387	35.9	35.8	31.4	32.4	726	744
	10 months	4,230	3,712	3,759	3,076	35.3	35.7	27.6	26.6	658	615
Delaware, Lackawanna & Western	October	620	496	533	455	28.7	28.8	38.2	30.8	719	653
	10 months	5,167	4,607	4,421	4,203	28.7	29.6	28.7	27.7	582	579
Erie (including Chicago & Erie)	October	1,251	1,090	1,149	1,052	28.7	28.3	35.6	37.5	670	712
	10 months	10,735	9,597	9,896	8,827	29.2	28.5	25.4	31.4	520	600
Lehigh Valley	October	697	594	661	595	32.8	31.4	29.1	24.2	633	557
	10 months	6,034	5,372	5,402	4,902	31.6	30.5	21.0	22.8	467	490
Michigan Central	October	574	598	433	473	23.9	21.5	31.1	24.8	510	400
	10 months	5,268	5,164	4,195	3,782	24.5	20.9	19.9	25.6	364	385
New York Central	October	2,211	2,178	2,280	2,231	28.8	26.5	26.0	27.9	483	514
	10 months	20,709	18,779	20,482	18,061	28.2	26.2	22.4	24.4	425	426
Pere Marquette	October	393	401	253	259	25.9	24.8	19.2	18.0	371	333
	10 months	3,437	3,386	2,278	2,131	26.4	24.3	15.7	18.2	322	329
Pittsburgh & Lake Erie	October	173	137	286	193	42.0	42.4	11.7	10.7	334	279
	10 months	1,261	1,280	1,934	1,847	42.3	41.1	8.4	9.2	244	248
Wabash	October	653	629	474	461	25.7	24.9	31.8	27.4	614	533
	10 months	5,803	5,218	4,092	3,419	25.1	23.6	26.6	26.7	524	466
Ohio-Indiana-Allegheny Region:											
Baltimore & Ohio	October	2,184	2,070	2,087	1,936	36.4	32.7	25.9	26.4	615	579
	10 months	19,828	16,585	18,185	14,887	34.7	33.3	24.6	23.1	577	504
Central of New Jersey	October	353	387	257	252	34.4	33.7	15.2	16.1	333	332
	10 months	3,194	3,028	2,203	2,041	33.9	33.1	13.8	13.5	299	277
Cleveland, Cincinnati, Chicago & St. Louis	October	727	768	622	673	29.5	30.2	31.4	32.5	580	640
	10 months	7,098	6,281	5,754	5,318	28.5	28.0	28.1	27.8	542	528
Pennsylvania System	October	5,321	5,387	5,092	4,999	36.0	33.9	23.3	23.3	548	530
	10 months	48,858	47,284	43,077	41,723	34.4	36.3	19.7	19.7	457	457
Philadelphia & Reading	October	734	683	717	708	38.7	38.4	22.7	22.0	578	544
	10 months	6,381	5,808	5,984	5,464	38.1	37.9	19.5	19.3	502	479
Pocahontas Region:											
Chesapeake & Ohio	October	912	917	1,163	1,144	42.8	40.2	34.2	33.1	867	785
	10 months	8,615	7,329	10,465	8,651	41.2	40.5	36.3	25.9	912	624
Norfolk & Western	October	949	862	1,130	1,046	43.4	39.6	36.2	34.6	986	852
	10 months	8,141	7,376	9,776	8,768	41.7	39.6	35.0	29.0	936	713
Southern Region:											
Atlantic Coast Line	October	603	670	294	312	22.3	21.0	24.1	23.5	372	338
	10 months	6,893	6,545	3,209	2,994	21.5	21.4	22.9	20.8	339	304
Illinois Central (including Yazoo & Mississippi Valley)	October	2,069	1,798	1,603	1,345	31.4	28.2	44.6	42.1	874	793
	10 months	19,449	14,872	14,588	11,218	29.2	26.9	41.2	32.9	815	611
Louisville & Nashville	October	1,632	1,634	871	876	31.3	29.7	31.1	30.1	621	596
	10 months	15,746	14,412	8,393	7,597	30.2	29.1	31.1	25.5	627	509
Seaboard Air Line	October	434	389	226	207	23.6	21.8	24.9	23.6	424	364
	10 months	4,623	3,875	2,412	1,934	23.1	22.0	22.1	20.5	368	322
Southern Railway	October	1,529	1,307	791	705	24.8	21.8	24.8	23.3	425	378
	10 months	14,899	11,210	7,976	5,976	23.6	22.2	23.7	20.6	409	339
Chicago & North Western	October	1,979	1,826	1,071	1,000	24.6	22.8	26.2	24.4	424	376
	10 months	17,396	14,994	9,786	8,502	25.8	24.6	22.1	20.3	387	335
Chicago, Milwaukee & St. Paul	October	1,888	1,993	1,232	1,301	26.2	24.5	34.2	30.0	594	513
	10 months	17,379	16,849	11,176	10,809	25.4	24.7	25.9	27.0	462	468
Chicago, St. Paul, Minneapolis & Omaha	October	361	411	179	212	24.4	24.4	23.8	31.8	434	555
	10 months	3,486	3,134	1,583	1,434	23.8	23.5	22.3	20.8	401	241
Great Northern	October	1,241	1,303	1,025	1,018	29.6	28.2	33.1	32.2	639	608
	10 months	10,218	9,513	8,153	7,588	28.8	28.7	27.7	23.3	549	458
Minneapolis, St. Paul & Sault Ste. Marie	October	658	710	374	379	25.2	22.7	28.3	32.0	491	531
	10 months	5,702	5,362	3,083	2,799	23.6	22.6	27.1	24.2	481	404
Northern Pacific	October	1,098	1,237	841	907	27.9	25.5	35.0	35.6	703	683
	10 months	9,839	9,283	7,580	7,058	27.2	26.8	33.8	27.1	672	520
Oregon-Washington R. R. & Navigation Co.	October	249	265	163	183	27.7	25.9	35.7	33.9	725	647
	10 months	2,506	2,147	1,764	1,460	28.1	26.2	30.8	27.1	668	538
Central Western Region:											
Atchison, Topeka & Santa Fe	October	1,957	2,092	1,158	1,246	22.3	21.6	39.6	40.2	579	576
	10 months	18,128	16,650	10,833	9,709	22.7	22.0	33.3	28.5	520	439
Chicago & Alton	October	382	379	217	226	26.8	27.3	23.8	23.3	415	423
	10 months	3,474	3,173	1,974	1,792	26.9	26.2	23.3	22.2	420	372
Chicago, Rock Island & Pacific	October	1,535	1,520	776	835	25.8	24.8	31.1	24.9	545	456
	10 months	14,496	12,830	7,445	6,432	36.3	23.5	20.2	24.7	469	417
Chicago, Burlington & Quincy	October	2,021	1,951	1,565	1,538	29.5	27.5	37.8	35.8	678	660
	10 months	17,703	15,612	13,764	11,921	28.5	27.0	31.8	27.5	618	502
Denver & Rio Grande	October	387	371	216	205	26.4	26.2	23.9	22.9	414	385
	10 months	3,005	2,697	1,841	1,569	29.4	28.9	20.1	15.0	408	289
Oregon Short Line	October	458	480	293	310	29.2	26.7	46.1	47.7	840	900
	10 months	4,260	3,702	2,972	2,458	29.4	27.3	46.5	34.3	958	660
Southern Pacific	October	1,469	1,297	977	915	25.4	24.8	37.1	37.8	652	663
	10 months	12,724	11,162	8,679	7,843	25.3	25.5	35.3	33.2	637	586
Union Pacific	October	1,644	1,536	1,052	982	25.2	23.0	84.0	75.4	1,414	1,173
	10 months	12,538	11,166	8,359	7,430	24.3	23.4	72.8	58.7	1,289	971
Southwestern Region:											
Missouri, Kansas & Texas	October	352	325	206	178	25.0	22.5	30.0	28.8	451	434
	10 months	3,273	3,081	1,901	1,673	23.8	23.3	28.5	24.6	418	350
Missouri, Kansas & Texas of Texas	October	302	284	148	107	25.3	23.0	21.9	14.4	352	234
	10 months	2,696	2,645	1,176	1,084	24.6	23.6	17.6	13.2	283	197
Missouri Pacific	October	1,262	1,216	843	755	27.3	25.5	24.8	27.1	494	491
	10 months	11,750	10,383	7,612	6,252	26.8	25.3	22.9	21.8	458	400
St. Louis-San Francisco	October	989	925	433	436	26.2	25.4	22.3	21.7	386	385
	10 months	9,203	8,267	4,161	3,716	25.8	25.0	21.1	19.0	371	325
Texas & Pacific	October	348	333	174	154	23.4	23.6	24.3	15.8	389	258
	10 months	3,363	3,471	1,640	1,520	23.4	23.0	21.8	19.2	357	308

Bureau of Statistics, December 23, 1920.

A New Rail Joint

A RAIL SPLICE must fulfill two conflicting requirements: it must serve as a girder to provide continuous bean action of the rail across the joint and it must afford an efficient slip joint for ready adjustment for changes in temperature. One of the most interesting of the new designs of rail joints which has been offered as a new solution for this perplexing problem and which has been subjected to service trials recently is that now being placed on the market by the American Rail Joint Company, 141 Broadway, New York City.



Section Showing the Double Bar Arrangement

The splice bars forming this joint are in two parts, the outer or channel-shaped part which engages the fishing surfaces of the rail and a smaller bar designed to fit the secondary fishing surfaces on the larger bar. The larger or channel-shaped bar is made with a relatively thin web which is curved, as shown in the drawing, to afford considerable resilience for the purpose of spreading the two flanges of the bar apart, as may be necessary to obtain the proper adjustment of the fit against the fishing surfaces of the rail and to take up such wear as occurs in these contact surfaces. The agency for accomplishing this adjustment of fit is provided by the smaller bars of the joint which, when forced together by tightening up the bolts, serve to force the channel-shaped bars into a snug fit, not only against the fishing surfaces of the rail, but also against a considerable portion of the web. Another feature to which attention is drawn by the manufacturers of this splice is that portions of this joint, such as the inner bars, may be renewed independently of the rest of the joint, thereby effecting a considerable saving.

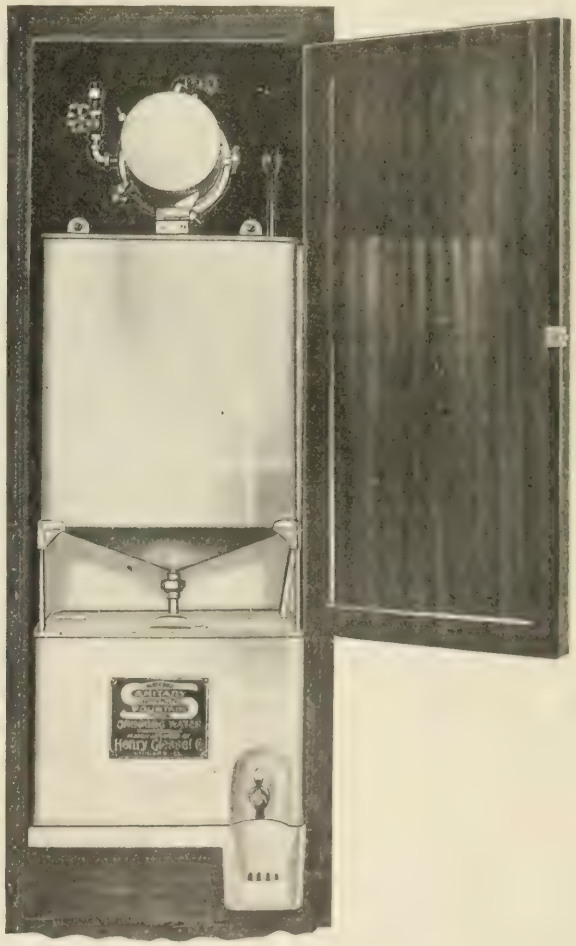


An Installation of the New Rail Joint

Rail joints of this type have been in service on tracks of the Boston & Albany over a distance of two miles for two years and nine months (the photograph shows a portion of this installation), while nine other roads have recently placed orders for joints of this kind to be used on a mile or more of track, each for further tests. The drawing shows the dimensions of this joint as applied to a 90-lb. A. R. A. Type-A rail, the section to which most of the recent orders for these joints will be applied.

North Pole Sanitary Drinking Fountains

THE HENRY GIESSEL COMPANY, Chicago, Ill., has developed and placed on the market several types of drinking fountains that have proved to be a sanitary and economical part of railway equipment. These fountains are of substantial construction, effect a considerable saving in the amount of ice used and require only a minimum of attention at terminals.



Porcelain Enameled Fountain for Passenger Coaches

There are several designs of fountain for use in passenger carrying equipment, one of the latest types being illustrated. The fountain for passenger coaches consists of a filter, shown at the top, a storage tank having a capacity of seventeen gallons and an ice chamber containing a cooling pan with a capacity of three cups so that only the water that is being used

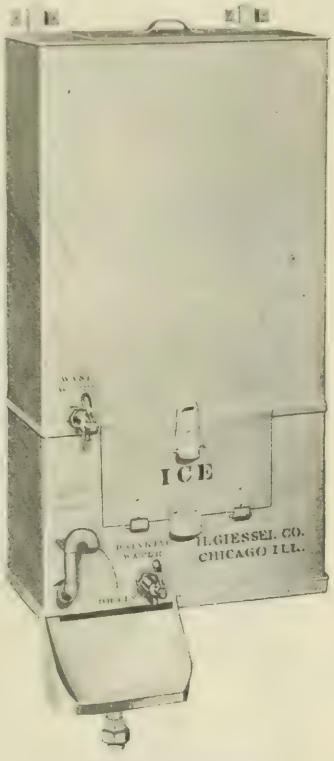
is cooled, thus effecting a great saving in the amount of ice required.

A fountain designed for use in mail cars which is made with or without a filtering apparatus is also shown and, being similar in construction to that used for passenger coaches, furnishes the employees of the railway mail service with sanitary drinking water. The fountain proper consists of a storage tank for filtered water and an ice compartment in the bottom of which is placed the cooling pan through which the water flows from the storage tank to the faucet. The water supply is drawn from the overhead tank of the car and, by gravity, passes through the filter on the top of the fountain into the storage tank and thence into the cooling tank.

These fountains require no steaming or cleansing during train operation as all that is necessary is to change the filter stones at terminals every seventy-two hours, simply replacing the stones with freshly sterilized ones. This operation requires only about ten minutes per car, the thorough cleansing and sterilizing of the entire apparatus being necessary only at infrequent intervals as the use of freshly sterilized filter stones meets all of the sanitary regulations in the various states and has been favorably passed upon by the United States Board of Health. However, provision is made for



Fountain for Mail Cars

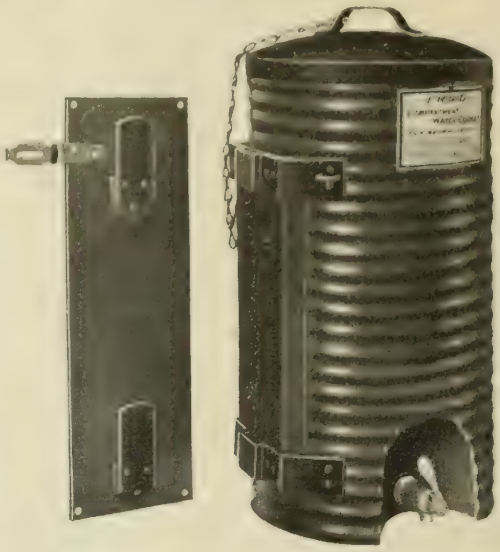


Type Used in Baggage and Express Cars

convenient and thorough cleaning of all parts of the cooler. By the removal of five clamps, the filter casing may be removed and the filter stone taken out by unscrewing the pipe connection with which it is attached to the fixed end of the filter case. It is then easily and thoroughly cleaned by steam or by submerging in hot water. An opening is provided on the front of the storage tank near the bottom which is closed by a plug. Removal of this plug permits the interior of the tank to be cleaned by the insertion of a steam nozzle.

To drain the system, a cock is opened in the bottom of the cooling tank which permits the water in the storage tank to flow directly into the ice chamber and thus out through the drain.

An adaptation of this fountain for baggage, express and other cars where drinking water may be required also is shown. In addition to the supply of drinking water, a tank for wash water is provided. Besides the three tanks already mentioned, this company also manufactures a portable tank for locomotive tenders. This tank has an ice compartment as in the other fountains and thus provides pure water without contamination from ice which may be secured from sources where it is impossible to eliminate cinders or other impurities. In this tank the melted ice drains off and, as only a small portion of the water is in contact with the ice at any one time, the economy of the cooler is apparent. As shown in the illustration, a bracket is permanently attached



Special Cooler for Locomotive Tenders

to the tender and sockets are provided on the tank so that it may be securely suspended from the bracket and thus withstand the shocks incident to the operation of the locomotive.

A filter operating in a manner similar to the filter used with these fountains, is manufactured by the Giessel Company for use in conjunction with the Giessel standard cooling pan and makes a complete filtering and cooling apparatus for dining cars. These filters and fountains are in use on a large number of railroad cars on a number of the larger railroads in the United States and observations made by two of the largest roads show that 25 lb. of ice is sufficient for a run of 500 miles. These fountains are made of cast iron, white porcelain enamel, are easily kept clean and add to the interior finish of a car.



Photo by Keystone View Co.

Station at Peking, China

General News Department

President Wilson has sent to the Senate the nomination of W. L. Chambers for reappointment as a member of the United States Board of Mediation and Conciliation.

The shops of the Louisville & Nashville, at Etowah, Tenn., were destroyed by fire on December 21; estimated loss, including machinery and damage to locomotives, $100,000.

The Senate, on December 27, adopted a resolution by Senator Nelson, of Minnesota, calling on the Interstate Commerce Commission to report to the Senate the increased cost of railroad fuel for the current year over the cost for the year 1919.

The Earl of Bessborough, chairman of the board of the London, Brighton & South Coast, died suddenly on December 1. Lord Bessborough was in his seventieth year. He joined the board of the London, Brighton & South Coast in 1896 and succeeded Lord Cottesloe as chairman in 1908.

Engineering Council has issued in booklet form its recommended uniform law for the registration of architects, engineers and land surveyors. While this organization is not advocating the registration of engineers, it has prepared this law, which it is offering in those states where such legislation is under consideration for the purpose of promoting uniformity in legislation of this character.

The committee on appropriations of the House of Representatives has recommended an appropriation for the Interstate Commerce Commission for the fiscal year 1922 of $4,893,100, which is $200,000 more than was appropriated for 1921, but $681,400 less than the commission estimated would be required. For the Railroad Labor Board the committee recommended $400,000, or $150,000 less than was asked. For the Alaska government railroad the committee recommended $4,000,000.

The Transportation Club of Tulsa, Okla., has elected the following officers: J. A. Bernier, of the Kerr Glass Manufacturing Company, president; H. J. Conley, of the Bay State Refining Company, first vice-president; R. V. Miller, general agent of the Wabash, second vice-president; E. C. Kitching, division freight agent of the Atchison, Topeka & Santa Fe, third vice-president; R. C. Hughes, of the Wabash, secretary; J. M. Usher, of the Price Sand Company, treasurer; L. M. Klein, of the Gulf Pipe Line Company, once the Gypsy Oil Company, director for three years; A. C. Holmes, of the Empire Refineries, Inc., director for two years; W. O. Allen, of the Kerr Glass Manufacturing Company, director for one year.

Samuel Rea, president of the Pennsylvania Railroad, has ordered a general curtailment of expenses. He says: "Conditions now confronting the Pennsylvania and other railroads make it essential to observe the utmost economy consistent with safety and efficiency. Traffic has already declined and unmistakable indications exist of a slowing up of business. It is very important that the situation should be clearly understood by the employees and the public. It is hoped that such reduction in business as may take place will continue for only a brief period, but this condition has already involved curtailment, and will necessitate further reduction in the number of employees and in the working expenses and capital expenditures until the situation improves."

The Chicago Safety Council recently organized a Steam Transportation Committee, which held its first meeting on December 21. At this meeting a general discussion took place as to the general activities which the committee would undertake. It was explained, however, that it was the intention that action should be taken as heretofore by individual roads regarding specific matters and an attempt be made to bring about the desired improvement or adjustment without referring matters to this committee for handling, except in special cases. C. L. Hinkle, general manager of the Chicago Great Western, is chairman of the committee, the personnel of which is representative of all the railroads in the city. Meetings of the committee are to be held once each month on the second Friday of the month at 12:30 p. m. in the Sherman Hotel, Chicago.

Representatives of State Manufacturers' Associations are to hold a convention at the Congress Hotel, Chicago, on January 21, to discuss the proposition of the railway brotherhoods for the creation of a National Adjustment Board. Believing that such domination of the labor unions means the destruction of discipline, efficiency and loyalty, the manufacturers hold that if the railroads are thus shackled, the resulting conditions must necessarily be reflected in the organization of every manufacturer; and all industrial associations, the purpose of which is the general good of the manufacturing interests, and all corporations, firms and individuals having to do with the production of manufactured articles, and all employers' associations and employers, are requested to send delegates to the convention. It is proposed to "formulate a clear and fearless expression of opinion," appoint proper committees to carry out the conclusions, and take such steps as will bring to the attention of the country the serious situation that will follow, should the railroad brotherhoods succeed in carrying out their purpose. The president of the manufacturers' organization is William Butterworth, Moline, Illinois, and the secretary is John M. Glenn, Chicago.

Mexican Roads in Per Diem Agreement

J. E. Fairbanks, secretary of the American Railway Association, announces that the National Railways of Mexico and Operated Lines (Mexican Government Administration), have settled certain claims for value of cars delivered to them prior to January 1, 1918, and that they are now restored to membership in the American Railway Association and to the per diem agreement.

Cars belonging to American and Canadian railroads which were delivered to Mexican railroads prior to January 1, 1918, are to be considered as sold to the Mexican roads at their cost price, less depreciation, with 5 per cent simple interest from the date of delivery of the car. All repair bills in connection with such cars are to be canceled. All Mexican cars upon American railroads are to be returned to Mexico as promptly as possible without any transportation charge, but the Mexican railways are to pay, without interest, the repair bills due to American or Canadian railroads. Any Mexican cars destroyed on American railways prior to July 1, 1919, are to be paid for at book value, less depreciation, with 5 per cent simple interest from date of destruction. All per diem charges are to be mutually canceled. The Mexican railways are to make an initial payment of 25 per cent within thirty days and the balance in three equal instalments, six months apart.

Owing to the failure to return cars or to pay per diem, the National Railways of Mexico were suspended from the per diem rules agreement on January 1, 1919. There were many unsettled accounts for repairs and for per diem balances.

A total of 468 American freight cars is involved in this settlement, valued at approximately $388,000, and the estimated interest due to January 1, 1921, is approximately $98,000. The National Railways of Mexico will now settle with American railroads on the basis of the American per diem rate of one dollar per car per day.

Train Robbers Caught

The northbound through express of the Illinois Central was boarded by two robbers near Gilman, Ill., on the night of December 28, and money and valuables were taken from 30 or more passengers in a sleeping car. At Kankakee, 25 miles north of Gilman, the robbers escaped, but later were apprehended at Aroma Park, about four miles away. The robbers were twin brothers, Jose and Jacob Scott. From Kankakee they intended, it is believed, to rob a southbound train on the Big Four; but the agent at Aroma Park telegraphed a warning that two men resembling the robbers were in his waiting room. Police arrived as the Big Four train pulled in and chased Jacob Scott through the train into a wash room, firing through the walls until the robber was mortally wounded. The other one surrendered. Several hundred dollars in cash and jewelry were recovered.

Railroad Administration Announces Settlements

The United States Railroad Administration announced on December 29 that it had recently made the following final settlements for claims arising from federal control and paid out to the several railroads the following amounts: Abilene & Southern, $150,000; Buffalo, Rochester & Pittsburgh, $1,000,000; Cincinnati, Indianapolis & Western, $40,000; Spokane, Portland & Seattle, $1,600,000; Fort Dodge, Des Moines & Southern, $300,000; El Paso Union Passenger Depot, $5,665.86; Sioux City Bridge Company, $98,546.92; Northwestern Pacific, $525,000; Mississippi Central, $220,000; Louisiana & Mississippi Railroad & Transfer, $33,231.81; Chicago, Milwaukee & St. Paul, $13,750,000; St. Louis National Stock Yards, $100,000; Eastern Steamship Lines, $250,000. The payment of claims on final settlement is largely made up of balance of compensation due, but includes all other disputed items as between the railroads and the Administration during the 26 months of federal control. Eighty-seven roads have now filed their final claims.

Woolley Retires from Interstate Commerce Commission

The term of office of Robert W. Woolley as a member of the Interstate Commerce Commission expires on December 31 and he has not been reappointed. In a recent statement to the press Mr. Woolley said he had notified the President that he did not wish to be reappointed. He was appointed on September 29, 1917, for the unexpired term of the late Judson C. Clements. This leaves two vacancies on the commission, as James Duncan, vice-president of the American Federation of Labor, did not accept his recess appointment. Mark W. Potter and Henry Jones Ford, who have been serving under recess appointments, have not been confirmed by the Senate, although the President sent their nominations, together with that of Mr. Duncan, to the Senate at the opening of the new session. As it is understood the Senate does not intend to confirm the President's appointments, it appears that the new President will have an opportunity to appoint four commissioners.

A. S. C. E. Joins in Dissolution of Engineering Council

The board of direction of the American Society of Civil Engineers has reconsidered its resolution of November 9, regarding the dissolution of the Engineering Council. As it now appears that participating societies, such as the American Society of Mechanical Engineers, the American Institute of Electrical Engineers and the American Institute of Mining and Metallurgical Engineers, may discontinue their work in the Engineering Council as a consequence of their having joined the Federated American Engineering Societies, it was resolved that the representation of the A. S. C. E. be authorized to join with a majority of the member societies in action to terminate the existence of the Engineering Council at the end of the year 1920.

Among other matters the board also appointed a special committee on bridge design and construction, which is to confer and co-operate with similar committees of such societies as the A. R. E. A., etc. The members at present consist of H. C. Baird, J. E. Greiner, C. W. Hudson, M. S. Ketchum, F. E. Turneaure, A. F. Robinson, H. B. Seaman, B. R. Leffler and J. R. Worcester.

The annual meeting of the society will be held on January 19 and 20, 1921, at 33 West Thirty-ninth street, the headquarters of this society. It will be called to order at 10 a. m.

Work of the American Engineering Council

The second meeting of the executive board of the American Engineering Council was held in New York on December 17, 1920, with President Herbert Hoover presiding. Districts 1 and 2 were represented by W. B. Powell, of the Buffalo Engineering Society, and Gardner S. Williams, of the Detroit Engineering Society. The committee on the nomination for secretary asked for more time and secured it. As a result of the dissolution of the Engineering Council, the chair was authorized to appoint the present committees of that body to continue to function as committees of the new organization. A small appropriation was made for publicity and the committee on this work authorized to appoint a co-operating board of engineering editors. The board, in answer to a communication from the American Association of Engineers asking them to send a representative to a national conference on engineering publicity, resolved that it was the sense of the meeting that, though the American Engineering Council would be glad to co-operate, they were not yet sufficiently organized to send a representative. Mr. Hoover presented the results of numerous visits throughout the country as regards the trend of engineering societies in this federation movement. He found a general desire towards the movement, but that it hinged more on territorial organization than on national. He also discussed the question of dues as complicated by this question. The board voted that it did not desire to become a member of the United States Chamber of Commerce, feeling that it could do better work by being independent, though it would be glad to co-operate whenever there was need.

Causes of South Pittston Collisions

The two collisions which occurred on the Lackawanna & Wyoming Valley (electric) road at South Pittston, Pa., on July 3, 1920, caused 17 deaths (not 22, as reported at the time) and the investigations, of the Interstate Commerce Commission find that responsibility for the cause—failure to protect trains by flag—rests on a half dozen individuals.

The road is double track. The grade is undulating, but at the point of collision was descending (northward) about two per cent. The trains involved were northbound No. 6, No. 21, No. 3, and No. 4, each consisting of one or two cars. They left Wilkesbarre in this order in the afternoon at 6:10, 6:25, 6:32 and 6:50. No. 6, after leaving Inkerman at 6:28 p. m., five minutes late, was run for some distance very slowly to permit the conductor to collect fares, and while moving at from 15 to 25 miles an hour was struck by the following train, No. 21, moving at about 35 miles an hour. The conductor of No. 6 was fatally injured. Train No. 3, following, was flagged by the conductor of No. 21; it was moved forward, picked up the injured conductor, was set back to Yatesville crossover, and then proceeded northward on the southbound track, having got leave over the telephone, orally, to do so. No. 3 had been properly flagged by No. 21, but after No. 3 crossed over to the southbound track, the northbound track was left without a flagman, and train No. 4 came on and ran into the rear of No. 21, crushing the rear car of the standing train.

Negligence and disregard of rules appear in the narrative of the testimony of nearly all of the men interested. The most specific point is that the men in charge of No. 3, after clearing the northbound track, assumed, without warrant, that the train despatcher had arranged for a single-track operation and that therefore there was no need of flagging train No. 4. The motorman of the latter did not see the rear end of train No. 21 until he was within 200 ft. of it, and his train was moving at 40 miles an hour, or faster.

There was no block system. Train No. 6 had fallen back on the time of No. 21, and, according to the rules, should have been protected by flag or fusee, no arrangement being provided, apparently, for maintaining a time interval at any station. All of the trainmen were experienced and all but one had been in the service at least nine years. The train despatcher, who is held in some degree at fault, was employed as operator in 1909 and promoted to despatcher in 1918.

Traffic News

Two complete sugar mills and a crusher, 41 carloads, were recently moved from Buffalo, N. Y., to Havana, Cuba, in eleven days. The train was run from Buffalo over the Lehigh Valley to Allentown, Pa., in 30 hours. Moving over the Reading, the Western Maryland, the Norfolk & Western, the Atlantic Coast Line and the Florida East Coast, it reached Key West ten days later, and Cuba, by car ferries, on the following morning. The freight charges on the shipment amounted to $37,179.

The Car Service Division of the American Railway Association has announced that beginning January 1, 1921, the railroads will be permitted to accept for shipment into Mexico small arms and small arms ammunition. The circular is a modification of previous orders, issued by the Car Service Division in compliance with the President's proclamation of July 12, 1919, which placed an embargo on shipments to Mexico of all arms and ammunition except such as are authorized by the United States government. The change permitting shipments was made at the request of the state department.

Passenger and freight rates will be reduced throughout Canada on January 1, in accordance with the provisions of the order by which the Board of Railway Commissioners authorized advances last September, the board having denied recent petitions to suspend or postpone the advances. The September order granted an increase in passenger rates of 20 per cent applicable to the end of 1920. From now until July 1, 1921, the increase will be 10 per cent instead of 20; and on July 1 the rates are to come back to the basis in effect prior to the issuance of the order. There will be no reduction in the increase granted in parlor and sleeping car rates and excess baggage. On freight there was a general increase in eastern territory of 40 per cent; this will now drop to 35 per cent; and the increase of 35 per cent in western territory will drop to 30 per cent.

"Clyde-Southern Special" is the name of a rail and water route just announced by the freight department of the Southern Railway and the Clyde Steamship Company, to begin service on January 15, 1921. Freight shipped from New York and Boston by Clyde steamships to Charleston, S. C., and Jacksonville, Fla., will be taken by the Southern on fast freight trains to the west and southwest. Through package cars will be run to 22 of the principal commercial centers and distributing points of the South. There will be three sailings weekly from New York and one from Boston. Package cars will deliver freight in Augusta, Columbia, Spartanburg and Greenville on the third day after leaving New York; Atlanta and Athens, fourth day; Birmingham, Selma, Meridian, Chattanooga, Knoxville, Columbus, Ga., and Montgomery, fifth day; Mobile, New Orleans and Memphis, sixth day; Little Rock, seventh day, and Oklahoma City, eighth day. From Jacksonville package cars will give fourth day delivery in Valdosta, Cordele and Macon.

New York State Passenger Fares

The injunction secured by the officers of the state and the city of New York against the general increase of passenger fares, as ordered by the Interstate Commerce Commission, is still in effect so far as concerns the Long Island Railroad and the Staten Island Rapid Transit Company, Justice Russell Benedict, of the Supreme Court, having on December 24 refused to decide the case until there could be a final hearing on the question of making the injunction permanent. Justice Benedict's decision fills 40 typewritten pages. He declares that the sovereign rights of the state are in danger from the encroachments of the federal government.

The Long Island contends that it is now carrying passengers at unreasonably low rates; and officers of the company fear that unless the desired advances can be made, they will be confronted with the problem of reducing expenses or diminishing the number of trains. The Long Island derives 70 per cent of its revenue from passenger traffic.

Coal Production

Production of soft coal during the week of December 18 is estimated by the Geological Survey at 12,184,000 net tons. Cumulative production for the calendar year up to December 11 now stands at 537,555,000 net tons, as against 536,288,000 for 1917, 566,349,000 for 1918 and 441,592,000 for 1919. If the rate of production be continued for the balance of the year, the total output will be 555,000,000 tons. The percentage of full time output lost on account of transportation disability during the week of December 11 was 18½ per cent. Final data on the tonnage of bituminous coal dumped over Lake Erie piers during the season show a total of 23,667,138 net tons, an increase of 916,746 over 1919, but a decrease of 5,721,104 in 1918.

Anthracite Shipments in November

The shipments of anthracite in November, as reported to the Anthracite Bureau of Information, amounted to 5,765,347 gross tons, against 6,240,901 tons in October, a decrease of 475,554 tons. The decrease was due entirely to the fewer number of working days in November, as, because of election day and holidays last month the collieries were operated only 21 days, whereas in Ostober there were 24 days of active operation. For each working day in November the average shipments were 274,540 tons, as compared with 260,033 tons in October.

Shipments by originating carriers were as follows:

	November, 1920	October, 1920
P. & R. R. W.	1,238,994	1,317,070
L. V. R. R.	1,002,329	1,180,270
C. R. R. of N. J.	453,139	486,609
D. L. & W. R. R.	792,157	846,054
D. & H. Co.	814,167	893,058
Penna R. R.	424,745	484,940
Erie R. R.	603,766	531,598
N. Y. O. & W. R. W.	175,074	190,958
L. & N. E. R. R.	260,976	310,344
Total	5,765,347	6,240,901

Illinois Commuters Fight Increased Rates

That the petition to the Interstate Commerce Commission of railroads operating between Chicago and its suburbs for 20 per cent increase in commutation fares will be vigorously opposed by commuters and the state was indicated at hearings on this subject held at Chicago on December 18 and 20 by W. A. Disque, attorney-examiner of the Commission. Following the second day's hearing, it was agreed that the case be resumed at Washington on January 13. In the meantime, attorneys for both sides of the controversy will prepare their briefs for presentation at that time.

Morton Culver, assistant attorney-general of Illinois, H. W. Slater, railroad expert, and Mathew Mills, attorney for the State Commission, are handling the case for the state and it is probable that its defense will be based on the allegation: (1) That the railroads have not made proper application to the state public utilities commission and that they are not therefore legally entitled to the increase. (2) That the railroads are making money at the present rates and are therefore not entitled to the increase. (3) That the suburbanites have been induced to settle in Chicago's outlying districts on the supposition that they would be given reasonable rates into the city and it would be a violation of public policy to increase commutation rates at the present time.

The carrier's side of the controversy is being directed by R. V. Fletcher, general solicitor of the Illinois Central, who based arguments for the petition on the unfavorable relation of the revenues derived from suburban passenger traffic to the expense of maintaining that service.

During the progress of the Chicago hearings voluminous evidence, showing the losses sustained by the eight railroads handling this traffic out of Chicago, was presented. In answer to part of this testimony the charges were made that these losses were sustained because of the large number of passengers carried on passes and because of the unnecessary expenses incurred at suburban stations.

Representatives of the carriers are looking for a quick decision after the resumption of the hearings at Washington.

Commission and Court News

Interstate Commerce Commission

The commission has further suspended until January 29 the operation of the proposed cancellation of the existing provisions for the absorption of handling charges on rice and rice products at New Orleans, Gretna, Harvey and Westwego, La., for export and coastwise traffic.

The commission has suspended to May 15 the operation of certain schedules contained in a tariff issued by the El Paso & Southwestern, which increase the charges for diversions and reconsignment of fruits and vegetables and other commodities and restrict the number of diversions and back haul privileges.

The commission has suspended until April 23 the operation of certain schedules appearing in F. A. Leland, agent's tariff, which would make an increase of 35 per cent over rates in effect on August 25, 1920, from points in Texas to destinations in defined territories, in lieu of the present inter-territorial percentage increase of 33⅓ per cent.

The Railroad Commission of California has refused authority to the American Express Company to increase its rates. The company had applied for an increase of 13 per cent in order that the California rates would harmonize with the increase recently granted by the Interstate Commerce Commission. In refusing the increase, the California commission stated that the affirmative showing from the express company as to the reasonableness of the proposed new rates had not been produced. It was also brought out at the hearing that operating costs are lower in Zone 5, comprising the states of California, Oregon and Washington, than in the other zones.

The Public Service Commission of Oregon has filed a petition with the Interstate Commerce Commission asking for a preliminary order requiring the continued use by the Great Northern and the Spokane, Portland & Seattle of the terminal facilities of the Northern Pacific Terminal Company in Portland, Ore., as now used by certain trains of these companies, in accordance with the practice adopted during federal control. On December 28, Commissioner Aitchison telegraphed the Oregon commission that the presidents of the Union Pacific and the Southern Pacific had acceded to the commissioner's request that the vacation order to those roads be postponed for a reasonable length of time pending the commission's investigation. Chairman Clark of the commission, will expedite the hearing as much as possible.

State Commissions

The Railroad Commission of Louisiana, by Circular No. 710, has notified all railroads in the state that violations of orders of the commission establishing rates within the state which are not specifically covered by the decision of the Interstate Commerce Commission in the Natchez case, will be promptly punished by the imposition of penalties as prescribed by law. Carload rates on certain commodities have been published without authority.

The Southern Pacific has applied to the Railroad Commission of California to change the switching limit, for the handling of yard traffic at San Francisco. The application was filed in compliance with an order issued by the commission, in accordance with which the Southern Pacific was to remove discriminations in switching charges existing between San Francisco and South San Francisco. The Southern Pacific was required to place South San Francisco within the San Francisco switching limits and to apply all switching rates pertaining to San Francisco to South San Francisco also. The company's application proposes that the intrayard switching charge between South San Francisco and San Francisco be reduced from 80 cents to 70 cents per ton, and that the minimum charge be reduced from $15 to $12. The company also requests authority to cancel the present rate of 37½ cents per ton, now applying between San Francisco and South San Francisco on traffic delivered to the State Belt Railroad when destined to points beyond by water route, and asks permission to increase this charge to 70 cents per ton.

Personnel of Commissions

President Wilson on December 7 sent to the Senate the nominations of Henry Ford Jones, Mark W. Potter and James Duncan for membership on the Interstate Commerce Commission. Professor Jones and Mr. Potter have been serving as members of the commission under recess appointments announced after the Senate had failed to confirm the original appointments. Mr. Duncan declined to serve under a recess appointment. It is the general understanding that the Senate intends to withhold its confirmation of the President's appointees at this session.

The New York State Public Service Commission, Second District, has consolidated its divisions covering steam and electric railroads into the Division of Railroads with Charles R. Vanneman, chief of the Division of Steam Railroads, the chief of the Consolidated divisions, and Ray G. Winans, assistant inspector, as chief inspector of electric railroads. Charles R. Barnes, chief of the Division of Electric Railroads, resigned recently to become the head of the commission operating the street car lines in Rochester. Mr. Winans was assistant to Mr. Barnes. Mr. Vanneman has been with the commission since March 3, 1910, when he was appointed as inspector of the Division of Transportation. In 1914 he was promoted to be chief of the division of Steam Railroads. He has supervision over grade crossing work.

Court News

Railroad's Duty to Collect Freight Charges

Coal was shipped in interstate commerce without prepayment of freight; the last carrier paid back charges; the consignee refused to accept the coal or pay the charges, and the coal, when sold, did not bring sufficient to satisfy the charges. The last carrier was held entitled, and under duty, to save itself from penalty, to enforce collection of the charges from the shipper.—Central of Georgia v. Lovell, 180 N. Y. Supp. 922.

Safety Appliance Acts—
Flanges of Locomotive Wheels

In an action for the death of a fireman alleged to be due to defects in a flange on a locomotive wheel which caused a derailment, the Texas Supreme Court holds that under the Federal Safety Appliance Acts, and rules and regulations of the Interstate Commerce Commission, thereunder prescribing with particularity the extent of wear on the flange of a locomotive wheel which renders it defective, the railroad was not negligent where the flanges of the wheel were in accordance with such rules. The question of whether the railroad exercised ordinary care to keep the flanges safe for the operation of the locomotive is not the test of negligence in such a case.—Lancaster & Wight v. Allen (Tex.), 217 S. W., 1032.

Right to Refuse to Accept Commodity for Carriage Is a Judicial Question

Manufacturers of silk sought to restrain the Director General's order of February 29, 1920, amending the Consolidated Freight Classification by canceling ratings on silk and placing silk in the list of commodities that will not be accepted for carriage by freight. The Circuit Court of Appeals, Second Circuit, held the plaintiffs entitled to a preliminary injunction, restraining enforcement of the order, since what was complained of was not a question of rates, fares, charges, classifications, regulations, or practices, or changes therein, which would be an administrative subject within the cognizance of the Interstate Commerce Commission, but was, not merely a temporary embargo, but a permanent prohibition of the carriage of silk at all, and therefore was a judicial question, within the cognizance of the courts.—Cheney Bros. v. Hines, 266 Fed. 210.

Foreign Railway News

English Railwaymen's Spare Time Jobs

LONDON.

Complaints have been received by the railway union leaders in England that railwaymen are in their spare time working at gardening, painting, farming, and as musicians. Mr. Cramp, industrial secretary of the National Union of Railwaymen, is urging the branch officers of the union to stamp out the practice, and states that they did not fight for an eight-hour day in order to prevent other men from obtaining a living.

New Rolling Stock for New Zealand Railways

LONDON.

The government of New Zealand has just signed a contract with the North British Locomotive Company for the delivery of 25 Pacific type locomotives at a price of $43,225 each. The weight of the locomotives will be 190,000 lb. in working order. Cammell Laird & Co. have received the contract for the delivery of 2,500 eight-ton freight cars at a price of $1,139.75 per car. In addition to the above, there are under construction in New Zealand, by Price Brothers, Thames, 20 locomotives of the Pacific type, similar in every respect to those to be supplied by the North British; also, ten of the same type to be built in the government's own workshops. The government is now calling for bids for 1,000 additional freight cars to be built in New Zealand.

Spanish Railways to Order Rolling Stock

LONDON.

The Times (London) trade supplement states that the ministry of public works of Madrid, Spain, has announced that on January 15, 1921, an opportunity will be offered to foreign firms to secure orders for 119 railway engines and tenders needed by the Spanish railways. Estimates must be handed personally by a duly accredited representative of the firm making the offer, between 10 and noon on the day of January 15 at the ministry of public works, Madrid. The principal condition of the contract is that the engines must be delivered within ten months.

The Spanish government is also advertising for bids, which will close January 25, for 3,500 freight cars to be supplied to the government railways, according to cable advices received last week from Commercial Attache Cunningham, at Madrid.

Electrification on the Midi Line, France

LONDON.

The Midi Railway is considering electrifying the following main lines: Toulouse to Tarbes, Pau, Bayonnes, about 220 miles; and Bordeaux to Dax, Hendaye, about 160 miles. Branch lines to be electrified are: Toulouse to Auch, 60 miles; and Montrejeau in Bagneres-de-Luchon, 24 miles. If the full plans of the chief engineer of the Midi Railway are carried out, about 1,000 miles of main and branch lines will be electrified between 1920 and 1925. The necessary power will be obtained from the Pyrenees, partly from two stations at Soulom and Eget, in the Hautes-Pyrenees, which are already working, and partly from three new stations in the valley of Ossau, Basses-Pyrenees. Between 1925 and 1930 two further groups of lines will be electrified. The first group, comprising 370 miles, will be supplied by two existing power stations at La Cassagne and Fontpedrouse, in the valley of the Tet (Pyrenees-Orientales); by three new stations in the same valley—Olette, Fontpedrouse and Les Bouillouses—and by three new stations in the valley of the Ariege—Ax-les-Thermes, Merens and Saillans. The second group, consisting of 370 miles, will be supplied by seven power stations which are to be constructed in the Cevennes.

Equipment and Supplies

Car Production—Eleven Months' Figures

The production of freight cars for domestic service in November by the car building companies reporting to the Railway Car Manufacturers' Association, totaled 5,902, as compared with 5,999 in October. The total for the first eleven months of the year was 39,486. The deliveries of passenger cars totaled 48, as compared with 21 in October and 38 in September.

The figures for the month and the accumulative figures for the eleven months are as follows:

TABLE I—CARS DELIVERED

	Freight cars		Passenger cars	
	Domestic	Foreign	Domestic	Foreign
January	4,482	1,904	1	9
February	3,774	1,039	4	..
March	2,796	1,994	11	28
April	2,127	1,912	15	..
May	2,636	1,387	..	..
June	2,608	708	..	21
July	2,583	380	18	27
August	3,056	1,184	21	13
September	3,529	1,088	38	..
October	5,999	668	21	13
November	5,902	976	48	7

TABLE II—CARS ON ORDER AND UNDELIVERED

(Figures for end of month)

	Freight cars			Passenger cars		
	Domestic	Foreign	Total	Domestic	Foreign	Total
December, 1919	24,816	10,720	35,536	407	110	517
January, 1920	27,282	9,381	36,663	311	103	414
February	29,706	8,389	38,095	282	103	385
March	33,061	7,854	41,455	522	80	602
April	42,869	7,180	50,049	586	88	674
May	47,761	6,338	54,099	732	110	842
June	48,171	7,792	55,963	796	97	893
July	50,275	8,212	58,487	811	88	899
August	49,442	7,574	57,016	861	75	936
September	48,114	6,793	54,907	903	75	978
October	46,051	7,026	53,077	851	66	917
November	41,290	6,234	47,524	925	59	416

TABLE III—FREIGHT CAR REPAIRS

	Delivered during month	Delivered Jan. 1 to end of month	On order and undelivered at end of month
May	2,296	10,442	20,130
June	2,541	12,983	24,092
July	2,491	15,474	23,541
August	2,518	17,992	27,031
September	3,148	21,140	26,710
October	3,945	25,205	27,779
November	4,345	29,550	25,663*

* Exclusive of 553 for foreign companies, making a total of 26,216.

Locomotives

THE SOUTHERN RAILWAY, reported in the *Railway Age* of October 22, as asking for prices on 50 locomotives, is now inquiring for 50 Mikado type locomotives and 10 Mountain type locomotives.

Freight Cars

THE UNITED FRUIT COMPANY, Pier 9, North River, New York, has ordered 3, 5,000-gal. tank cars from the General American Tank Car Corporation.

THE SOUTHERN RAILWAY, reported in the *Railway Age* of October 15, as asking for prices on 2,500 box cars of 40 tons capacity, has renewed its inquiry for this equipment.

THE WEST INDIA SUGAR FINANCE CORPORATION, 129 Front street, New York, has ordered 1, 5,000-gal. capacity, narrow-gage tank car, from the General American Tank Car Corporation, for export to Santo Domingo.

Iron and Steel

THE NEW YORK CENTRAL has ordered 71,500 tons of rails from the Illinois Steel Company; also, 11,000 tons from the Carnegie

Steel Company, and will place additional orders for 93,000 tons for its 1921 requirements.

The Pennsylvania System's order for 150,000 tons of rails for its 1921 requirements, reported in the *Railway Age* of December 3, was divided as follows: Carnegie Steel Company, 45,000 tons; Cambria Steel Company, 45,000 tons; Lackawanna Steel Company, 10,000 tons, and the Bethlehem Steel Company, 50,000 tons.

Signaling

The Pennsylvania is installing a complete new twenty-three lever Union electro-pneumatic interlocking machine at "AR" Tower, Gallitzin, Pa.

The Pennsylvania is installing a Union 23-lever electro-pneumatic interlocking machine at Gallitzin, Pa.; 17 working levers and six spare spaces.

The Missouri, Kansas & Texas plans to install automatic block signals on its lines between Parsons, Kan., and Wyborg, Okla., and between McAlester, Okla., and Springtown, a total of 100 miles of road.

The Cleveland, Cincinnati, Chicago & St. Louis has ordered from the Union Switch & Signal Company mechanical interlocking machines for Crestline, Ohio; Ansonia, Ohio, and Harvard, Ohio; 36 levers, 39 levers and 34 levers, respectively; and the two last mentioned have each six electric levers.

Trade Publications

Thermit Welding.—An instruction book, especially prepared for use by men actually performing thermit welding repairs in railroad shops, has recently been issued by the Metal & Thermit Corporation, New York. This booklet, which is known as Pamphlet No. 41, is of convenient pocket size for ready reference.

Leather Belting.—The manufacture and renovation of leather belting are treated in Catalogue No. 12 of the Consolidated Belting Company, Philadelphia, Pa. A valuable feature of the catalogue is a concise discussion of belting problems and their solution and formulas for calculating the proper sizes and speeds for belts.

Lubrication.—Technical discussions of lubrication and the use of lubricating oils in various industries form the subjects of the articles in the monthly publication of the Texas Company, New York City. This magazine is distributed without cost to those who are especially interested in the use and selection of lubricants.

Radial Drills.—The Western Machine Tool Works, Holland, Mich., has recently issued Catalogue No. 21, in which its line of plain and universal radial drills is fully described and illustrated. The special feature of these drills is the low hung drive in which the spindle driving gear is located at the lower end of the spindle just above the socket.

Increment Borer.—Keuffel & Esser Co., New York, has reissued its eight-page pamphlet on the Swedish Increment Borer, with a new price list. This pamphlet describes a small instrument for obtaining core drill specimens from trees or timber for the purpose of determining density or other qualities of the timber, depth of penetration of preservatives, etc.

Farlow Draft Attachments.—Under this title, the T. H. Symington Company, Chicago, has just issued a circular in which the Farlow attachments for application with the Type "D" coupler and friction draft gear are briefly described and their construction clearly illustrated. The circular contains four pages and has received general distribution.

Cinder Handling Plants.—The Roberts & Schaefer Company, Chicago, has issued a 16-page pamphlet known as Bulletin No. 39, illustrating and describing several types of equipment manufactured and installed by that company for the handling of cinders from locomotive cinder pits. These include simple conveyors for dumping into cars on an adjacent track as well as more elaborate forms of equipment for conveying cinder from pits under a number of tracks to storage bins of several thousand cubic feet capacity.

Supply Trade News

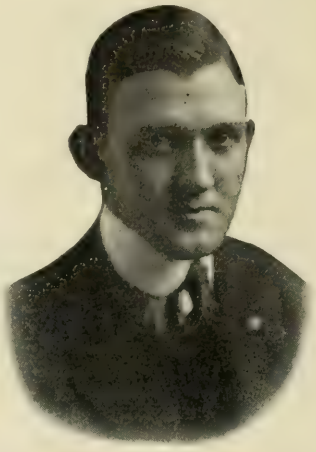
Fred N. Baylies, general sales agent of the **P. & M. Company,** Chicago, has been elected vice-president of the company, in addition to his other duties, effective December 21.

Lucian C. Brown and **George W. Brown,** 50 Church street, New York City, have been appointed representatives in the New York district of the **Edgewater Steel Company,** Pittsburgh, Pa.

Harry C. Holloway, secretary and general manager of the **Maintenance Equipment Company,** Chicago, has been elected vice-president, in addition to his other duties, effective December 21.

Harry F. Lowman, vice-president of the **Bradford Draft Gear Company,** New York, will transfer his headquarters on January 1, from New York to the Munsey building, Washington, D. C.

Howard C. Mull, manager of the sales department of the Verona Tool Works, Pittsburgh, Pa., with headquarters at Chicago, has been appointed manager of the railway department of the **Reliance Manufacturing Company,** of Massilon, Ohio, with offices at Chicago, effective January 1. Mr. Mull was born on July 13, 1889, at Cincinnati, Ohio, and entered railway service in the engineering department of the Cleveland, Cincinnati, Chicago & St. Louis, in 1910. Two years later he was transferred to Cleveland, Ohio, and placed in charge of safety matters. In May, 1913, he entered the employ of the Verona Tool Works, and two years later was promoted to representative of sales, western territory, with headquarters at Chicago. In 1918, he was appointed manager of sales, with headquarters at Chicago, the position he occupied at the time of his recent appointment.



H. C. Mull

R. J. Hinkle has been appointed railroad representative of the **Garlock Packing Company,** Palmyra, N. Y., with headquarters at Philadelphia. Mr. Hinkle's territory embraces the eastern and southern railways.

The Hallidie Machinery Company, L. C. Smith building, Seattle, Wash., has been appointed representative of the **Conveyors Corporation of America,** Chicago, formerly the American Steam Conveyor Corporation.

Edward S. Jenison, who for the past five years has been manager of the Philadelphia, Pa., office of the **Goulds Manufacturing Company,** Seneca Falls, N. Y., manufacturers of Goulds pumps, has been appointed acting general sales manager with headquarters at Seneca Falls, to succeed **W. E. Dickey,** who will retire on January 1.

The Vapor Car Heating Company, Inc., Chicago, Ill., will reopen its office in the Munsey building, Washington, D. C., on January 1, and will be represented by **Harry F. Lowman,** vice-president of the **Bradford Draft Gear Company,** New York. Mr. Lowman was formerly with the Vapor Car Heating Company, Inc.

P. S. Graver, general manager of the **Graver Corporation,** East Chicago, Ind., has been elected vice-president. **K. W. Bartlett,** formerly general manager of sales, has been promoted to succeed Mr. Graver and **William C. Gibson** has been appointed to succeed Mr. Bartlett.

Charles T. Topping has severed his connection with the Lakewood Engineering Company, Cleveland, Ohio, to engage in business as the **Charles T. Topping Machinery Company,** Pittsburgh, Pa., dealer in construction equipment. The company will act as district sales representatives of the **Austin Machinery Corporation,** Chicago.

Walter M. Taussig, treasurer and general manager of sales at New York of the **American Chain Company, Inc.,** Bridgeport, Conn., has been elected second vice-president; **Wilmot F. Wheeler,** production manager, is now also treasurer and **Arthur P. Van Schaick,** assistant general manager of sales, has been appointed general manager of sales.

H. L. Dean, formerly manager of the compressor and engine sales division of the Chicago Pneumatic Tool Company, New York, has resigned and **J. F. Huvane** has been appointed eastern manager of compressor and engine sales, with headquarters at 6 East Forty-fourth street, New York, and **G. C. Vanden Boom** has been appointed western manager of compressor and engine sales, with headquarters at 300 North Michigan boulevard, Chicago.

The Central Metal Products Corporation, with general offices at Canton, Ohio, is the successor of the **Zahner Metal Sash & Door Company,** Canton, and the **Empire Art Metal Company,** College Point, L. I., N. Y. **E. A. Williams, Jr.,** president of the Garford Motor Truck Company, at Lima, is president of the new company; **C. R. Jamison,** formerly works manager and general sales manager of the Berger Manufacturing Company, Canton, is vice-president and general manager; **H. R. Grable,** formerly secretary and treasurer of the Zahner Metal Sash & Door Company, Canton, is secretary and treasurer; **Harry G. Bow,** formerly president and general manager of the Canton Metal Products Company, Canton, is general sales manager, and **A. J. Connell,** formerly vice-president of the Empire Art Metal Company, College Point, is eastern manager.

Harry B. Stafford, for some three years manager in the Construction Division of the United States Army, has opened an office at 30 Church street, New York, as consulting industrial labor administrator. Prior to his entry into the army Mr. Stafford was general agent for the Southern Railway at Minneapolis. During his service in the Construction Division he was the officer in charge of both the Industrial Service and Labor Procurement Sections and it was his duty to not only help to procure labor for the some 4,000 building projects for which the Construction Division of the Army was responsible, but also to equalize wages and settle labor disputes. He is therefore well qualified for the business he has established, which is that of acting as an adviser to the executive heads of corporations which are not sufficiently large to maintain special departments of their own, for the purpose of establishing and maintaining harmony between employer and employee.

Passenger Fares in Europe and America.—Individuals, commercial organizations and associations in the middle west are being informed through letters and advertisements put out by the Illinois Central, that passenger transportation fares are less in the United States than those in other countries. For example, the fare between Jackson, Miss., and New Orleans, La., a distance of 183.1 miles, is $7.13, the fare for a lower berth $3.65 and the total $10.78. On the other hand, the fare between London and Manchester, England, 183.5 miles, is $11.07, the sleeping car fare $2.43, and the total $13.50. These figures include the recent increases and also the American war tax of 8 per cent. In addition to the service represented by the payment of these fares, the statement points out that the custom of handling ordinary baggage without charge is unknown abroad, while baggage rates are much greater than the excess rates in this country.

Railway Construction

Atchison, Topeka & Santa Fe.—This company has awarded contracts to the Roberts & Schaefer Company, Chicago, for the construction of three reinforced concrete, automatic, electric locomotive coaling and sanding plants of 300 tons capacity each, to be located at Guthrie, Cushing and Skedee, Okla. The approximate contract price was $165,000.

Chicago Union Station.—This company is preparing plans for the construction of a 16-story office building in connection with its station project at Chicago. The company is also accepting bids for structural steel to be used in building a viaduct at Van Buren street, Chicago, extending from Canal street to the Chicago river.

Southern Pacific.—This company is relaying 100 miles of main track between Lucin and Colin, Utah, and between Argenta and Harney, Nev., with new 90-lb. rail. The company is constructing additional facilities at Sparks, Nev., to accommodate the new icing plant of the Pacific Fruit Express. These improvements involve the purchase of 26 acres of additional right-of-way and the construction of about 2 miles of additional tracks. The yards at Carlin and at Wells, Nev., are being rearranged and extended, involving the construction of about 2¼ miles of tracks, and the shifting of 2,600 ft. of main tracks and 3,700 ft. of yard tracks. At Ogden, Utah, and is shifting 2,000 ft. of old tracks to provide a conand is changing other tracks to improve switching conditions, which involve the construction of approximately 1¼ miles of new tracks, the shifting of 2,000 ft. of old tracks, and extensions to the tracks of the Union Pacific. The Central Pacific is constructing 2,693 ft. of new tracks at Ogden, Utah, and is shifting 2,000 ft. of old tracks to provide a connection with the icing tracks of the Pacific Fruit Express.

The Texas & Pacific has begun the job of moving its stationery department from Marshall, Tex., to Dallas.

On Top of the Job.—Today, for the first time in five years, our railroads have not only caught up, but are actually out soliciting business. There are now no embargoes or restrictions of any kind on freight transportation. The railroads are able to handle expeditiously all business offered. In other words, they are on top of the job.—*Chicago (Ill.) Journal of Commerce.*



Photo by International.

President-Elect Harding at the Throttle of the Locomotive Which He Drove Twenty-Three Miles Across the Texas Prairies With His Wife an Interested Onlooker

Railway Financial News

ATLANTIC COAST LINE.—J. P. Morgan & Co. have sold an issue of $1,800,000, series D, 6% per cent equipment trust certificates, due $300,000 yearly, from February 1, 1922, to February 1, 1936, inclusive. The certificates are issued in part payment for standard new railway equipment, consisting of 30 locomotives, 25 passenger cars, 400 coal cars, 500 box cars and 200 phosphate cars. The cost of this equipment is approximately $6,220,000, of which $1,720,000 is to be paid by the railroad company in cash, the cash payment thus being over 38 per cent of the amount of the certificates. The certificates were offered at prices to yield 7 per cent for the first five maturities, 6¾ per cent for the second five maturities, and 6⅝ per cent for the remaining maturities.

ATLANTIC COAST LINE.—The Interstate Commerce Commission has issued an order authorizing this company to enter into an equipment trust agreement for the purchase of $6,220,000 of equipment and to issue $4,500,000 of equipment trust certificates.

BALTIMORE & OHIO.—The Interstate Commerce Commission has approved a loan of $5,200,000 to the National Railway Service Corporation for account of the Baltimore & Ohio to enable that company to provide itself with freight-train equipment at a total estimated cost of $14,233,000. The railway company itself is required to finance about $9,000,000 to meet the loan of the government. The National Railway Service Corporation has been approved by the commission as an agency through which loans to carriers for equipment will be made, under special authority conferred upon the commission by the transportation act.

BOSTON & MAINE.—This company is asking holders of the $319,000 3½ per cent bonds of the Boston & Lowell and $290,000, 3½ per cent bonds of the Connecticut River, both maturing January 1, next, to accept new 10-year gold mortgage bonds of the Boston & Maine, bearing 7 per cent in settlement.

President Hustis sent the following statement to holders of the maturing bonds:

The Boston & Maine offers in settlement of these maturities its 10-year gold mortgage bonds bearing 7 per cent interest, payable semi-annually. These bonds will be secured by first mortgage on all the property of the consolidated Boston & Maine Railroad, except that there remain three issues secured by prior liens on small parts of our property known as the Portsmouth, Great Falls & Conway, the Worcester, Nashua & Rochester, and the Troy & Boston railroads. On account of the present financial conditions these bonds cannot be sold on the market at satisfactory prices.

At the present time, pending the completion of an accounting with the United States Government for the period of federal control and the subsequent guarantee period, the working capital of the Boston & Maine, in common with that of many other roads, is largely in the hands of the Government.

Aside from any claims which might be of a controversial nature there is unquestionably due a very substantial sum. In fact, several weeks ago the Interstate Commerce Commission certified to the Secretary of the Treasury an immediate payment on account of $2,500,000, but payment was withheld on account of a technical ruling of the Comptroller of the Treasury. The position of the Treasury Department is now being contested in the courts, but pending the outcome of these proceedings and the result of other negotiations now being conducted with the Government, cash is not available which can be supplied to the payment of these bonds.

CENTRAL OF NEW JERSEY.—The special semi-annual dividend of 2 per cent is not being paid at the present time. A circular of the company states that for many years a dividend of 2 per cent has been declared payable in December out of dividends of 13 per cent per annum received by it on its $8,489,400 stock in the Lehigh & Wilkes-Barre Coal Company. The coal company has received its usual dividend, but the railroad company is enjoined from receiving its part of this dividend by the decree of the federal court in the so-called Reading trust suit. The railroad company confidently expects ultimately to receive the amount of this dividend from the coal company and to distribute it to its stockholders, but is prevented by the injunction from doing so now.

CHICAGO & EASTERN ILLINOIS.—The reorganization plan is given on another page of this issue.

GRAND RAPIDS & INDIANA.—The lease of this company's railway and properties to the Pennsylvania Railroad for a long term of years, effective January 1, 1921, was approved by the stockholders at a special meeting.

ILLINOIS CENTRAL.—This company has applied to the Interstate Commerce Commission for authority to issue $3,245,000 of its 4 per cent refunding mortgage bonds originally issued in 1913, to be pledged for the purpose of obtaining loans for the current necessities of the company; also, $3,708,000 of Illinois Central and Chicago, St. Louis & New Orleans joint first and refunding mortgage bonds to reimburse the treasury for advances made for additions and betterments to the Chicago, St. Louis & New Orleans and the Canton, Aberdeen & Nashville. These bonds are also to be pledged for the purpose of obtaining loans. The first pledge will be to meet the financial necessities of the company arising from its failure to receive the government guaranty.

NEW YORK CENTRAL.—The Interstate Commerce Commission has approved a loan of $26,775,000, chiefly to the Michigan Central, the Cleveland, Cincinnati, Chicago & St. Louis, the Cincinnati Northern, the Toledo & Ohio Central, the Zanesville & Western, the Kanawha & Michigan, and the Lake Erie & Western, which are subsidiaries of the New York Central, and the New York Central itself, to aid the carriers named in providing themselves with new equipment and additions and betterments to existing equipment and to way and structures, at a total estimated cost of $56,625,000. The carriers themselves are required to finance about $30,000,000 to meet the loan of the government.

The total proposed expenditure of $56,625,000 includes $39,800,000 for new equipment, of which $29,650,000 is to be financed by the company and $9,950,000 from the loan; also, $5,312,000 of additions and betterments to existing equipment to be financed from the loan, and $11,313,000 of additions and betterments to ways and structures to be financed by the loan. The company and its subsidiaries have themselves financed by the sale of securities since the termination of federal control $63,625,000 for refunding and other necessary corporate purposes.

NEW YORK, NEW HAVEN & HARTFORD.—The payment of $2,500,000 to this railroad on December 28 as a compromise settlement in the so-called restitution suit against former directors was approved by Judge Hough in the United States District Court. The court fixed the counsel fees of the plaintiffs at one-third of the settlement, or $833,333.33.

The suit was brought by Edwin Adams, Julius C. Morse, George C. Fisk (deceased), James F. Ray and Mary M. Clark against William Rockefeller, Charles M. Pratt, Lewis Cass Ledyard and J. Pierpont Morgan, Herbert L. Satterlee, William P. Hamilton and Lewis Cass Ledyard as executors under the will of J. P. Morgan (deceased) and Florence A. Twombly as executrix under the will of Hamilton McK. Twombly, and the New York, New Haven & Hartford Railroad. The purpose was to recover money lost by alleged unlawful and ultra vires acts of directors in the years 1890-1914.

PENNSYLVANIA RAILROAD COMPANY.—See Grand Rapids & Indiana; also Pittsburgh, Cincinnati, Chicago & St. Louis.

PITTSBURGH, CINCINNATI, CHICAGO & ST. LOUIS.—At the stockholders' meeting held in Pittsburgh on December 29 to vote on the lease of this company's railroad and property to the Pennsylvania Railroad Company, 828,778 shares, which at par aggregate $82,877,800 out of a total of $84,518,322 of capital stock, or over 98 per cent, voted in favor of the lease, and only 2,000 shares, par value $200,000, in opposition to it.

TOLEDO TERMINAL RAILROAD.—This company has applied to the Interstate Commerce Commission for authority to issue $72,000 of 6 per cent promissory notes as part payment for two freight locomotives at $48,250 each, purchased from the American Locomotive Company.

WILMINGTON, BRUNSWICK & SOUTHERN.—The Interstate Commerce Commission has approved a loan of $90,000 to this company to aid the carrier in meeting its maturing indebtedness and providing itself with additions and betterments to way and structures at a total estimated cost of $125,000. The carrier itself is required to finance about $35,000 to meet the loan of the government.

Railway Officers

Executive

R. C. Vaughan, whose appointment as vice-president of the Canadian National was announced in the *Railway Age* of December 17 (page 1095), was born December 1, 1883, and was educated in the public and high schools. He entered railway service in 1898 with the Canadian Pacific and remained with that company for four years. He then went to the Grand Trunk for a brief period and, in 1903, entered the employ of the Canadian Northern in the office of the third vice-president. In 1910 he was appointed assistant to the third vice-president and, in 1918, assistant to the president of the Canadian National. He served in that capacity until his recent appointment as vice-president.

Financial, Legal and Accounting

H. T. Evans, auditor of the Chicago, Indianapolis & Louisville, has been promoted to comptroller, effective December 10.

Operating

W. L. White has been appointed general manager of the Yosemite Valley, effective January 1.

H. H. Vance, whose appointment as general superintendent of the Southern was announced in the *Railway Age* of December 17 (page 1095), was born in Alabama, and, after graduating from high school in 1887, entered the employ of the Alabama Great Southern as a brakeman. Two years later he was promoted to freight conductor and, in 1895, to passenger conductor. He was appointed trainmaster with headquarters at Birmingham in 1903. In 1912 Mr. Vance went with the Southern as superintendent of terminals at Birmingham, Ala. In 1915 he was appointed division superintendent with headquarters at Birmingham and served in that capacity until his recent promotion.



H. H. Vance

J. J. McCullough, whose appointment as superintendent of the Puget Sound division of the Northern Pacific, with headquarters at Seattle, Wash., was announced in the *Railway Age* of December 3 (page 1001), was born on June 17, 1871, at DeSoto, Ill., and entered railway service in 1887, as a freight brakeman on the Illinois Central. In 1888, he became a freight brakeman on the Minneapolis & St. Louis, and was shortly promoted to conductor, running out of Minneapolis, Minn. He left the service of the Minneapolis & St. Louis in 1894 to become a switchman on the Great Northern, at Superior, Wis., being employed by that road as switchman and as general yardmaster until 1900, when he was appointed general yardmaster on the Erie, with headquarters at Jersey City, N. J. During his 6 years of service with the Erie, Mr. McCullough was promoted to trainmaster, but resigned in 1906 to become trainmaster on the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn. He was appointed trainmaster on the Northern Pacific in 1907, and was soon promoted to superintendent, a position which he held until January 10, 1918, when he was given active charge of terminal operation at Minneapolis, under the United States Railroad Administration. He was retained, on March 1, 1920, as joint terminal superintendent of the Northern Pacific, the Great Northern, the Chicago, Milwaukee & St. Paul, and the Union Pacific, being employed in closing up federal operation until December 1, when he returned to his former position as superintendent on the Northern Pacific.

W. J. Sullivan, chairman of the Committee on Car Service at Birmingham, Ala., retired from that position on December 15 upon dissolution of the committee and has been appointed traffic manager for the Black Diamond Coal Mining Co., Birmingham. Mr. Sullivan was born at Walton, Kentucky, January 23, 1883, and entered railway service in 1896 as a telegraph operator on the Cincinnati, New Orleans & Texas Pacific. He subsequently served the same road as agent, despatcher and chief despatcher. In June, 1908, he went to the St. Louis-San Francisco as chief despatcher. Later he was promoted to assistant superintendent and, thereafter, to inspector of passenger train service. On August 1, 1918, Mr. Sullivan left the Frisco to become traveling representative in the Southern region for the United States Railroad Administration. When the roads were returned to their owners he continued to serve in the same capacity for the Car Service Division of the American Railway Association. On August 15 he went to Birmingham as chairman of the Committee on Car Service.



W. J. Sullivan

J. H. Redding, whose appointment as superintendent of the Wheeling Terminal division of the Pennsylvania was announced in the *Railway Age* of December 10 (page 1046), was born November 26, 1877, at Philadelphia. He entered the employ of the Pennsylvania in the office of the engineer maintenance of way in 1897 and remained in that position until April, 1905, when he became transitman, reporting to the principal assistant engineer, Eastern Pennsylvania division. In June of the same year he was appointed assistant supervisor of the Philadelphia division, and the following year, was transferred in the same capacity to the Maryland division. In 1907 Mr. Redding was promoted to supervisor on the Sunbury division and during the next ten years served in that capacity on four other divisions in turn. In 1917 he became division engineer on the West Jersey and Seashore division and subsequently served in the same office on the Middle and New York divisions. At the time of his promotion to superintendent at Wheeling, Mr. Redding was assistant superintendent of the Pittsburgh division, having been appointed to that position on March 1, last.



J. H. Redding

Traffic

C. H. McNie has been appointed general live stock agent of the Chicago & North Western, with headquarters at Chicago, effective January 1, succeeding D. D. Cutler, who has retired.

Walter Gray, traveling agent on the Kansas City, Mexico & Orient, with headquarters at Kansas City, Mo., has been promoted to general agent, with headquarters at El Paso, Tex., succeeding T. K. Partridge, who has resigned to accept service with the Southwestern Portland Cement Company at Los Angeles, Cal.

K. B. Hannigan, whose appointment as general freight agent of the Southern with headquarters at St. Louis was announced in the *Railway Age* of December 24 (page 1138), was born August 18, 1869, at St. Louis, Mo. He was educated at St. Malachy's College of that city and entered railway service in 1886 as a messenger for the Missouri Pacific. He was later promoted to claim clerk and served in that capacity on the Missouri Pacific, the St. Louis Southwestern and several other roads in and around St. Louis. In 1901 he went to the Southern as a commercial agent and was promoted in 1915 to assistant general freight agent, in which position he was serving when his latest promotion was announced.

W. F. Griffitts, whose appointment as passenger traffic manager of the Delaware, Lackawanna & Western was announced in the *Railway Age* of December 24 (page 1138), was born on March 1, 1871, at Philadelphia, Pa. He was educated in the public schools and entered railway service in 1884 as a clerk for the Chicago, Burlington & Quincy at Omaha, Neb. Subsequently he held various clerical positions with that company at St. Joseph, Mo., and St. Louis. In 1897 he became chief clerk in the passenger department of the Kansas City, Pittsburg & Gulf (now a part of the Kansas City Southern) and remained in that position until 1899, when he went to New York as chief rate clerk for the Delaware, Lackawanna & Western. In 1901 he was promoted to chief clerk of the passenger department and, in 1910, to assistant general passenger agent. Mr. Griffitts was general passenger agent at the time of his recent promotion, having been appointed to that position in 1914.

Mechanical

C. H. Temple, superintendent of motive power and car department of the Canadian Pacific, West Lines, has been appointed chief of motive power and rolling stock, with headquarters at Montreal, effective January 1.

P. O. Wood, superintendent of the St. Louis-San Francisco with headquarters at Memphis, Tenn., has been appointed assistant superintendent of motive power with headquarters at Springfield, Mo. Mr. Wood was born at Memphis, Tenn., in 1877. He entered the service of the Kansas City, Memphis & Birmingham (now a part of the Frisco) in 1891 as a machinist's apprentice in the Memphis shops. After completing his apprenticeship he served as a machinist and air brake repairman until 1904, when he became a locomotive fireman. In 1907 he was promoted to engineman and, in 1913, to assistant superintendent of locomotive performance. In 1916 another promotion made him assistant general superintendent of motive power. In 1917 he became division superintendent at Memphis and remained in that position until his recent appointment.

Engineering, Maintenance of Way and Signaling

L. P. O. Exley, office engineer of the Mobile & Ohio with headquarters at St. Louis, Mo., has been appointed office engineer of the Gulf, Mobile & Northern, with headquarters at Mobile, Ala.

Charles Scott, supervisor of bridges and buildings on the Buffalo, Rochester & Pittsburgh with headquarters at East Salamanca, N. Y., has been promoted to acting engineer of masonry with the same headquarters, succeeding George H. Stewart. **W. E. Maley** has been promoted to acting supervisor of bridges and buildings to succeed Mr. Scott.

E. J. Henriques has been appointed office engineer of the Mobile & Ohio with headquarters at St. Louis, Mo. **J. V. Johnston,** assistant to bridge engineer with headquarters at St. Louis, has been promoted to division engineer with headquarters at Murphysboro, Ill., succeeding S. F. Ryan. **C. V. Irvine,** division engineer on the Columbus & Greenville, has been appointed assistant engineer of the Mobile & Ohio with headquarters at St. Louis.

William H. Penfield, whose promotion to engineer maintenance of way of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, was announced in the *Railway Age* of December 10 (page 1048), was born on January 12, 1874, at Foxbury, Pa., and entered railroad service in 1894, with the Buffalo, Rochester & Pittsburgh. During the next five years he served on this road as chainman, rodman, leveler and transitman on location surveys, and as instrumentman on construction and maintenance work, and later as office draftsman. On August 1, 1899, he entered the service of the Chicago, Milwaukee & St. Paul, as a resident engineer on construction, and was made successively assistant engineer on maintenance, and locating engineer, which positions he held until March 1, 1903, when he was appointed locating engineer on the Western Pacific, being employed on location work through Beckwith Pass in the Sierra Nevada mountains and the upper Feather River country in California. On December 15, 1905, Mr. Penfield returned to the Chicago, Milwaukee & St. Paul as engineer of construction, with headquarters at Butte, Mont., with jurisdiction over the location and construction of the main line between Butte and Lombard, Mont. In June, 1911, he was promoted to assistant chief engineer, with headquarters at Chicago. At the time of his recent promotion, Mr. Penfield was engineer of track maintenance, a position to which he had been appointed in February, 1913.



W. H. Penfield

Obituary

Junius L. Burgess, paymaster on the Chicago & North Western, with headquarters at Chicago, died at Oak Park, Ill., on December 23.

David L. Bush, assistant to the vice-president of the Chicago, Milwaukee & St. Paul and formerly vice-president in charge of operation, died on December 23.

William M. Lampton, general freight agent of the Denver & Rio Grande, with headquarters at Denver, Col., died at Denver on December 27. Mr. Lampton was born on September 2, 1863, and was educated at Westminster College, graduating in 1881. He entered railway service as a traveling auditor with the Texas & Pacific in 1882. From 1885 to 1892, he was engaged in mercantile business at Fort Worth, Tex. In October of the latter year, he re-entered railway service with the Denver & Rio Grande as a claim clerk, he was made chief clerk in July of that year and was promoted to general agent in the freight department in February, 1898. He became assistant general freight agent in November, 1899, and in May, 1914, was promoted to the position he held at the time of his death.

PENNSYLVANIA STOCKHOLDERS on December 11 reached the new high record number of 131,115.

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